

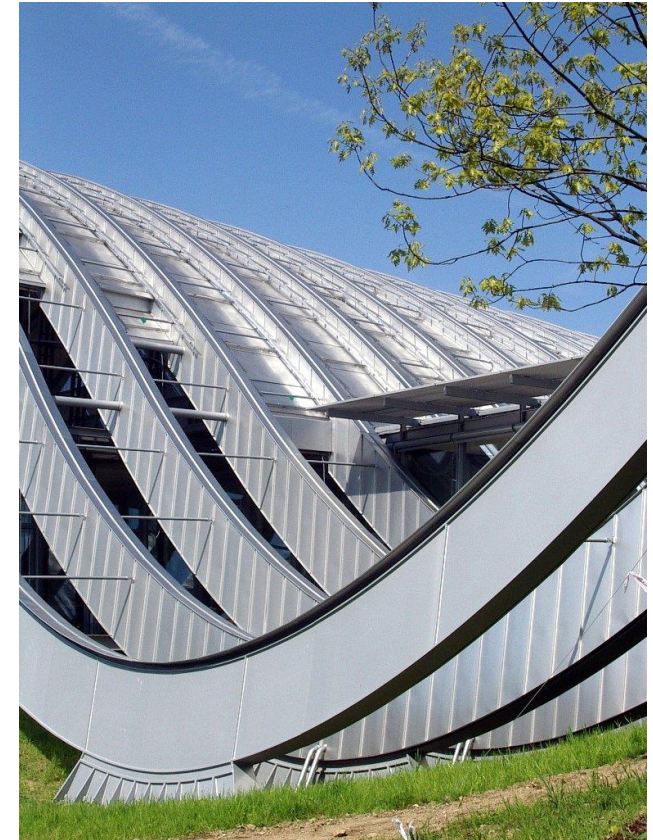
STEELWORK QUALITY AND COMPLIANCE



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- Introduction
- Problems to address to mitigate risk
- De-specification and Product Substitution – NCC context
- NCC 2022 - Australian Standards AS 4100, AS/NZS 5131
- The National Structural Steelwork Compliance Scheme (NSSCS)
- ASI Awareness



About the Australian Steel Institute

The Australian Steel Institute (ASI) is the nation’s peak body representing the entire steel supply chain, from the primary producers through to end users in building and construction, resources, heavy engineering and manufacturing.

A not for profit, member-based organisation, the ASI’s activities extend to; advocacy and support, steel excellence, standards and compliance, training, events and publications. The ASI provides marketing and technical leadership to promote Australian-made and fabricated steel as the preferred material to the building, construction, resources, and manufacturing industries, as well as policy advocacy to government.

	Membership representation			
Product supply chain:	Steel mills	Distributors	Roll formers	Fabricators
Services:	Galvanizers	Paint Coating	Support services	Detailers
Professional:	Builders	Engineers	Specifiers	Educators



- Our WTO obligations open the door to international trade
- But... who polices that door, and how and when?
- It has worked for Australian sourced product because we have a legal system.
- Legal measures are not easy internationally...

A very simple question that goes to **your** duty of care:

How can a structure be safe when the veracity of the steel and steelwork in that structure cannot be established?

The problems we see in the market:

1. Some overseas steel falsely represented as being produced to full compliance with Australian Standards.
2. Deliberate fraud.
3. Lack of definition of responsibilities for critically evaluating compliance and approving product.
4. Engineers infrequently contracted for site or product surveillance.
5. Lack of transparency with NCP problems – most are hushed up.
6. A lack of understanding of how to assess compliance correctly

Problems to address to mitigate risk

FRAUD



'Silastic' welds



Water-filled members

MATERIALS



Pressure vessel cracking



Bolt failures



Material cracking



Poor galvanising

WORKMANSHIP



Poor welding



Poor workmanship




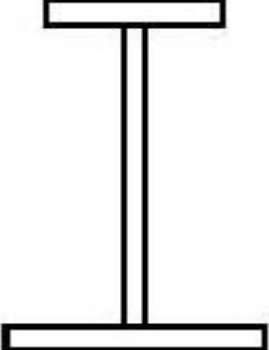
Poor painting



Weld cracking

De-specification and Product Substitution – NCC context

Particular Concerns with imported fabricated 3 plate beams (Welded Beams) replacing the specified Hot Rolled Universal Beams

Specified Beam – Hot Rolled Universal Beam	Substituted Beam – 3 Plate Welded Beam
	

Particular Concerns with some imported fabricated 3 plate beams (welded beams)

- top and bottom flanges out of alignment and of different widths.
- pitted steel visible in flanges.
- inadequate welding of beams to end plates.
- suspected fillet welds used where full penetration butt welds are specified/required.
- unnecessary welded joints in the length of beams which increases the risk of failure due to a larger amount of potentially faulty welding.
- lack of documentation/information on welders' qualifications and competence.
- incorrect/inadequate material test certificates provided for the steel plates leading to a lack of knowledge of the chemical composition and strength of the steel plates.
- no material test certificates provided for some of the steel plates causing a lack of traceability of the steel.
- the overseas fabricator only providing test results for a sample of the steel used rather than the full batch testing results including statistical test data in line with what is required by Australian Standard AS 4100.



Applicable Australian Standards for imported fabricated 3 plate beams (welded beams)

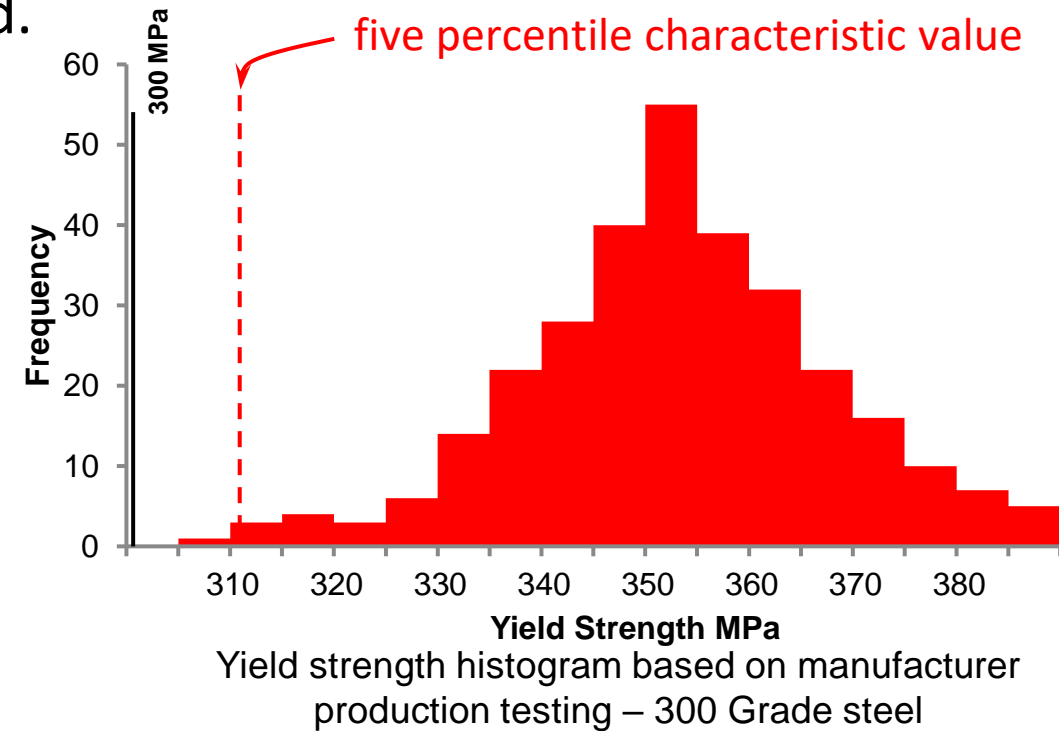
- If a welded beam is manufactured to **AS/NZS 3679.2** then:
 - The manufacturer has process controls in place to ensure compliance.
 - Certificates will contain the information required by the Standard.
- Alternatively, if a bespoke welded beam is fabricated, then:
 - The welded beam, and in particular the welds, must be designed.
 - The applicable fabrication Standard is **AS/NZS 5131**.
 - The materials, cutting, holing, coping and welding must conform to **AS/NZS 5131**.
- Fabricated beams made from multiple plates present issues with ascertaining compliance of the steel.



De-specification and Product Substitution – NCC context

Standards Context - Basis for design resistance ϕR_u :

- The NCC (clause BP1.2) requires that “The structural resistance of materials and forms of construction **must be determined using five percentile characteristic material properties...**”
- Manufacturers target long term quality (LTQ) values to ensure the design assumptions in the calibration exercise remain valid.
- Manufacturers operate ‘initial type testing’ (ITT) and ‘Factory production control’ (FPC) to ensure LTQ is maintained.
- On the graph shown, at least 95% of the results exceed the design grade of 300 Mpa.



It follows that:

- A single batch test (mill certificate) only affords a snapshot of manufacturer's production at a point in time.
- A batch test does not give an indication of LTQ levels.

Therefore:

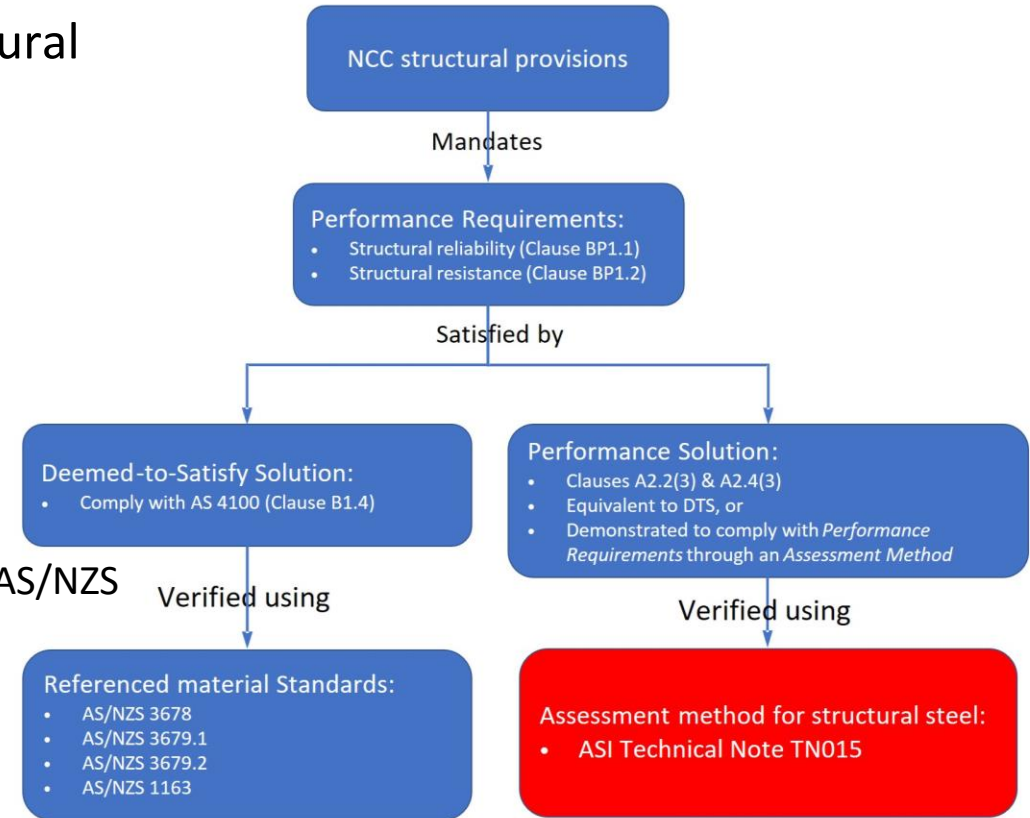
- A single batch test (mill certificate) **CANNOT** be used to regrade steel
 - It is **NOT** a five percentile value!
- A single tensile coupon test **CANNOT** be used to determine the steel design grade
 - It is **NOT** a five percentile value!
- If the five percentile material properties are required to be assessed, sufficient tests must be performed to form a statistical basis.



De-specification and Product Substitution – NCC context

NCC Context - in respect of **structural provisions** (including structural steelwork):


1. Performance requirements are defined in:
 - Clause BP1.1 for structural reliability
 - Clause BP1.2 for structural resistance
2. Deemed-to-satisfy solution for structural resistance:
 - Clause B1.0 references clause B1.4
 - Clause B1.4 -> For steel structures, AS 4100 is the DTS solution
 - AS 4100 references AS/NZS 3678, AS/NZS 3679.1, AS/NZS 3679.2 and AS/NZS 1163 for structural steel sections, plates and tubes
3. Performance solution for structural resistance:
 - Clause B1.0 references clauses A2.2(3) and A2.2(4)
 - At least equivalent to DTS, or
 - Demonstrated to comply with all relevant *Performance Requirements* through an *Assessment Method* – *ASI Tech Note 015*



Structural steel that cannot be demonstrated to have been manufactured to the requirements of the Australian Standards called up in AS 4100 cannot be a deemed-to-satisfy solution. It must be treated as a *Performance Solution* and must be demonstrated to comply to all relevant *Performance Requirements* through an *Assessment Method*.

- ASI Tech Note TN-015
- Establishes a verification protocol for structural steel:
 - Steel manufacturer verification
 - Supply chain verification
 - Traceability verification
 - Product performance verification
- Consistent with the principles for performance verification under the NCC

Download for free from: [ASI - Technical Notes \(steel.org.au\)](https://www.steel.org.au)

 <p>AUSTRALIAN STEEL INSTITUTE (ABN)ACN (94) 000973 839 www.steel.org.au ASI TECHNICAL NOTE TN015 V1</p>	<p>REF: ASI TN015 Version 1_DRAET</p>
	<p>ASI Head Office Level 3, Building 3, 20 Bridge St Pymble NSW 2073 Tel: 02 8748 0180 Email: enquiries@steel.org.au</p>
<p>Author: P.W KEY</p>	<p>Date: June 2021</p>
<p>Page 1 of 57</p>	

ASCERTAINING COMPLIANCE OF STRUCTURAL STEEL

Synopsis

This Technical Note provides a risk-based fit-for-purpose actionable approach to ascertaining the compliance of structural steel to meet the performance intent mandated by the NCC and Australian Standards. The developed 'steel verification protocol' allows stakeholders to make an informed judgement on the most appropriate conformity assessment pathway.

This Technical Note has been reviewed by a panel of industry stakeholders, as detailed in Appendix A. Their support is gratefully acknowledged.

OUTLINE

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De-specification and Product Substitution – NCC context

New 2 page brochure – Ascertaining Compliance of Structural Steel



The procurement, fabrication and erection of structural steelwork for buildings, infrastructure and resources projects involve a supply chain that is as varied as it is long. The quality and traceability of steel is therefore dependent on a number of parties in the supply chain. If any link in this chain is broken, the ability to ascertain compliance is compromised. The Australian Steel Institute (ASI) 'Steel Verification Protocol' establishes a methodology to ascertain compliance. As with the majority of construction products, structural steel intended for the Australian marketplace must meet the performance intent of: the National Construction Code (NCC), Australian Standards, and the basic principles of duty of care established under Workplace Health and Safety legislation.

THE NATIONAL CONSTRUCTION CODE (NCC)

The NCC is a performance-based code and specifies means to achieve compliance to a range of Performance Requirements (as per Figure 1 opposite). Structural steel that cannot be demonstrated to have been manufactured to the requirements of the Australian Standards called up in AS 4100 cannot be a deemed-to-satisfy solution but must be treated as a Performance Solution and must be demonstrated to comply to all relevant Performance Requirements through an Assessment Method.

Assessing a performance solution is not a trivial task, and in most cases requires information to be assessed early in the process, rather than after a building or structure has been procured. The design, as typically defined in the design drawings and specifications, prescribes the required product compliance, usually by reference to (Australian) Standards. If a product that does not comply with the design requirements is proposed to be procured, authorisation for the change must be obtained from the designer prior to procurement.

AUSTRALIAN STANDARDS

Like most contemporary design standards around the world, AS 4100 *Steel structures* is in limit state format. For a structure subjected to actions, the structural steel elements and connections are designed to ensure the structure is within the limit states for strength, stability, serviceability, brittle fracture, fatigue, fire, ductility and durability. Put simply, the design action (S^*) must be less than or equal to the design resistance (ϕR_u).

Uncertainties relating to both the actions and the actual capacity of the resisting members are resolved by using a probabilistic approach in design. The actions (loads) are considered as having a probability distribution as shown in Figure 2. The design action is represented by S^* on the curve, while the upper and lower limit represents the uncertainty which arises due to the lack of control over or incomplete knowledge of the actions.

BASIS FOR DESIGN VALUES

The design equations in limit state standards such as AS 4100 *Steel structures* are calibrated to ensure an acceptably low probability of failure. This calibration exercise considers, amongst other things, members being understrength due to variation in material strength and section properties. To ensure the design assumptions in the calibration exercise remain valid, the structural steels produced by manufacturers must meet long-term minimum, or in some cases maximum values, also known as long-term quality (LTQ) levels. To achieve these long-term quality levels, the manufacturer will target a mean value of material property higher



Figure 1. NCC verification hierarchy



distribution curve be at least 300 MPa. This is called the 5 percentile characteristic strength. This means that 95% of the yield strength test results for the steel are above the required 300 MPa yield strength. It follows that:

- A single batch test (mill certificate) only affords a snapshot of manufacturer's production at a specific point in time
- A batch test does not give an indication of LTQ levels

Therefore:

- A single batch test (mill certificate) CANNOT be used to regrade steel to a higher strength
- A single tensile coupon test CANNOT be used to determine the steel design grade
- If the five percentile material properties are required to be assessed, sufficient tests must be performed to form a statistical basis

STEEL VERIFICATION PROTOCOL

A robust steel verification protocol as shown in Figure 4 must:

1. Establish the veracity of the product at multiple points in the journey from manufacturer to intended use on the project.
2. Maintain verifiable traceability, that is, the ability to link the credentials (documentation provided by the manufacturer) of the steel to the product in hand
3. Be able to be applied to both locally manufactured and imported product.
4. Maintain a similar 'quality bar' (the quality defined by the Australian Standards), regardless of point of manufacture.
5. Be cost effective and commercially viable and, ideally, reward good procurement practice with more cost-effective outcomes.
6. Be able to respond in a timely manner to supply of necessary documentation and when product non-compliance is identified.

Accordingly, within the context of the current Australian procurement environment, the recommended steel verification protocol must:

1. Establish the acceptable quality credentials of the steel

2. Establish the acceptable quality credentials of the steel manufacturer
3. Establish traceability of the product from manufacturer to use on the project
4. Where steel is not manufactured to an Australian Standard, establish the acceptable performance requirements of the steel defined in the applicable Australian Standard for the steel product concerned, as referenced in the NCC.
5. Assign appropriate responsibility to the applicable stakeholders in the supply chain.

For further details, please refer to ASI Technical Note TN015 *Ascertaining Compliance of Structural Steel*, which is free to download at <https://www.steel.org.au/resources/elibrary/technical-notes/>

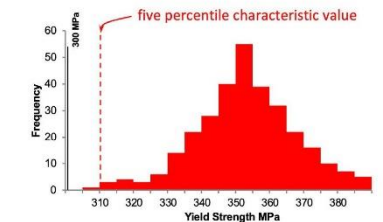


Figure 3. Yield strength histogram based on manufacturer production testing – 300 Grade steel. (Image courtesy InfraBuild).

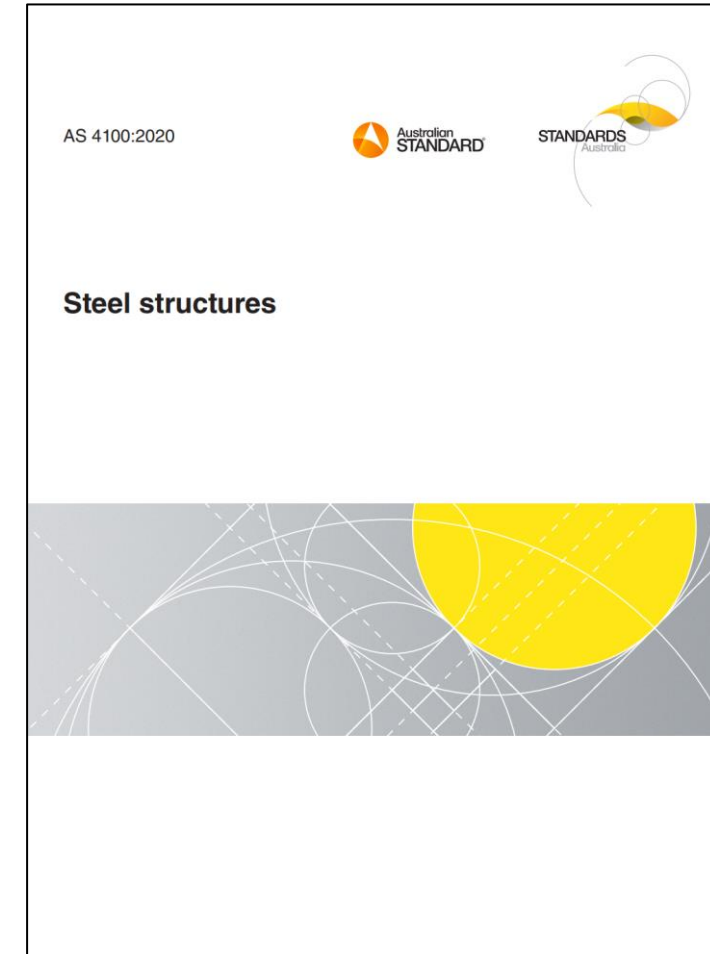
KEY TAKEAWAY: Structural steel that cannot be demonstrated to have been manufactured to the requirements of the Australian Standards called up in AS 4100 cannot be a deemed-to-satisfy (DTS) solution. It must be treated as a Performance Solution and must be demonstrated to comply to all relevant Performance Requirements through an Assessment Method to meet the requirements of the NCC.



Changes in Australian Standards to address non-compliant structural steelwork

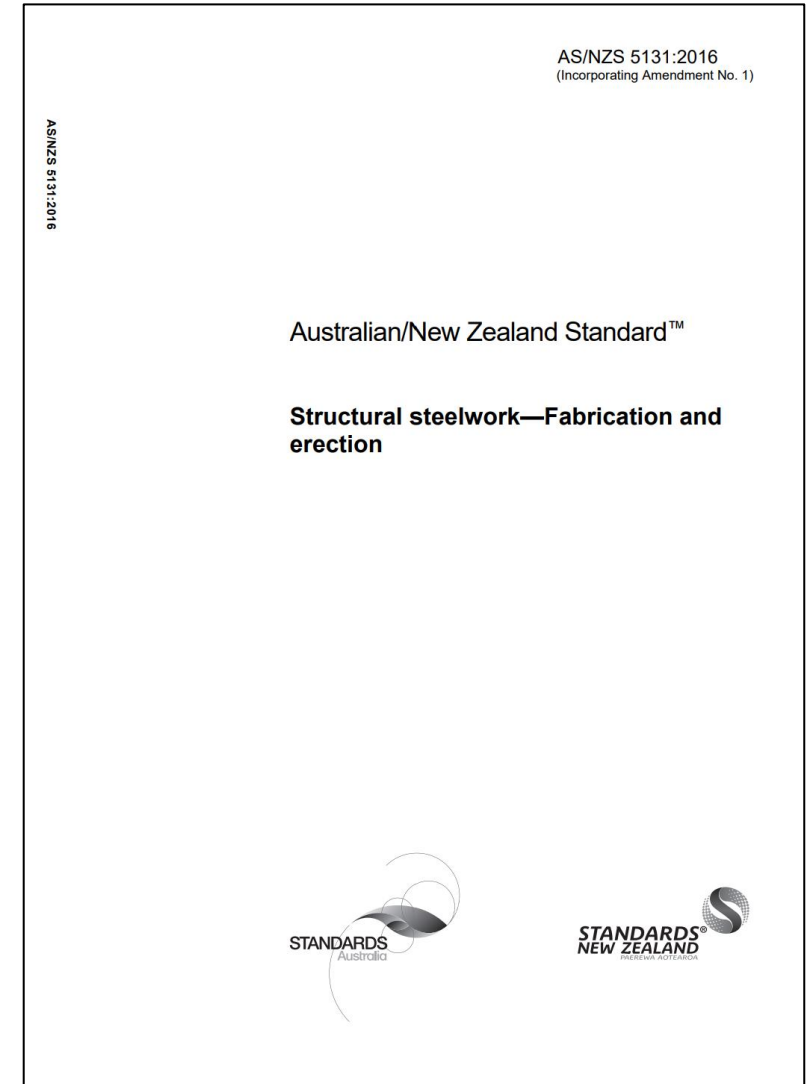
AS 4100:2020:

- Sets out minimum requirements for design of steel structures according to the limit states design concept
- Revision (August 2020) referenced AS/NZS 5131 for fabrication and erection
- Makes reference to four 'Construction Categories' CC1, CC2, CC3 and CC4
- Provides guidance on assessment of the Construction Category in Appendix L



AS/NZS 5131:2020:

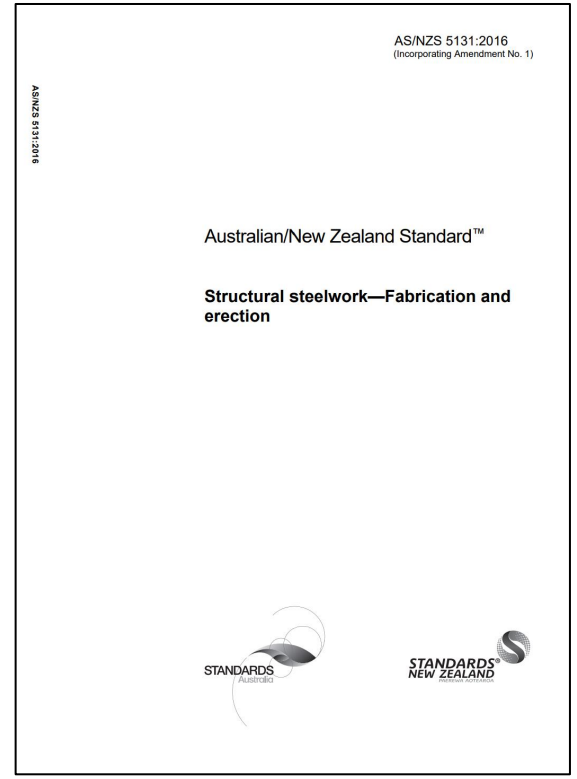
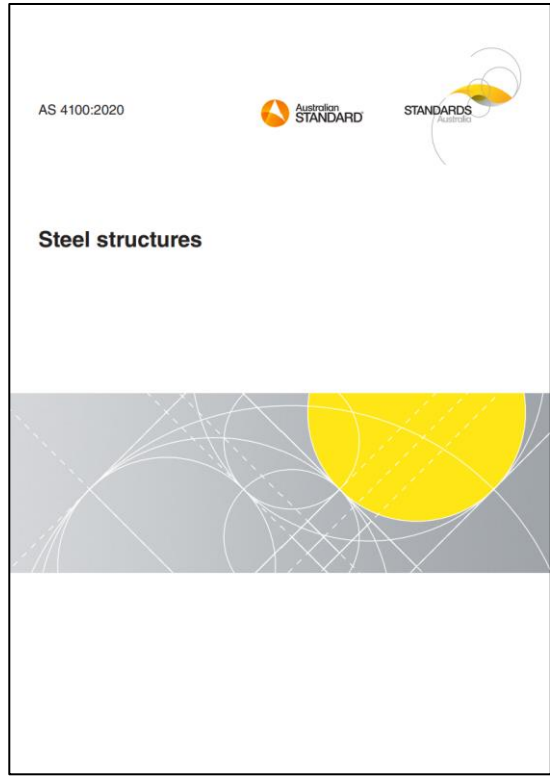
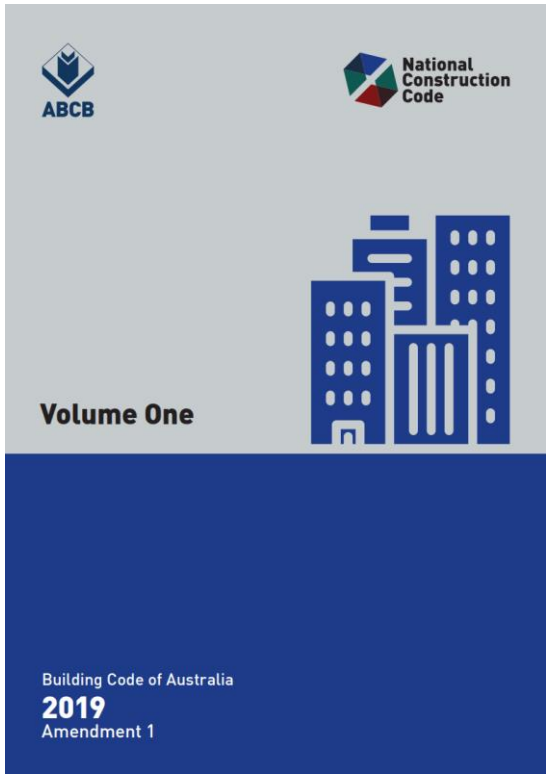
- Sets out minimum requirements for fabrication and erection of structural steelwork.
- Published in 2016, with 2020 revision.
- Makes reference to four ‘Construction Categories’ CC1, CC2, CC3 and CC4, with increasing requirements for management of quality.
- Provides guidance on assessment of the Construction Category in Appendix C, identical to that in AS 4100.





Australian Standards AS 4100, AS/NZS 5131 and the NCC

Australian Steel Institute



National Construction Code

AS 4100:2020
Revision published 21/8/2020

AS/NZS 5131 Amd. 1
Amendment published 21/8/2020

Next update 2022

References

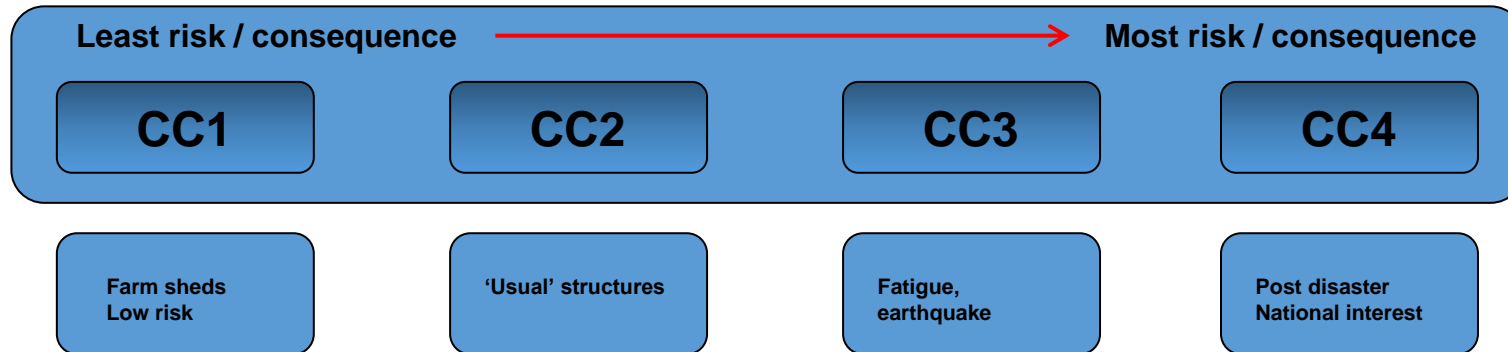
AS 4100 (2020 revision)

References

AS/NZS 5131 Amendment 1

Construction Categories

A risk-based fit-for-purpose classification:



- The engineer assigns a 'Construction Category'
- The engineer adjusts his specification

This de-risks the process and makes life easier!

Construction Categories

Construction Category	Example structure types ⁽¹⁾
CC1	<ul style="list-style-type: none"> • Farm sheds; greenhouses; fences; gates; small signs
CC2	<ul style="list-style-type: none"> • Low- to medium-rise buildings (industrial buildings, residential buildings, offices, residential apartments and retail) • Single and two level school buildings and structures
CC3	<ul style="list-style-type: none"> • Large structures (e.g. high-rise buildings) • Large stadia • Road and rail bridges • Post-disaster buildings (e.g. hospitals)
CC4	<ul style="list-style-type: none"> • Structures with extreme consequences of structural failure
<p>Notes:</p> <p>The structure types shown are indicative only. The assessment of the construction category is the responsibility of the engineer based on the guidance provided in AS 4100 and AS/NZS 5131. The 'Building importance level' from the NCC is one factor in the assessment of the construction category.</p>	

Construction Categories (CC) and example structure types

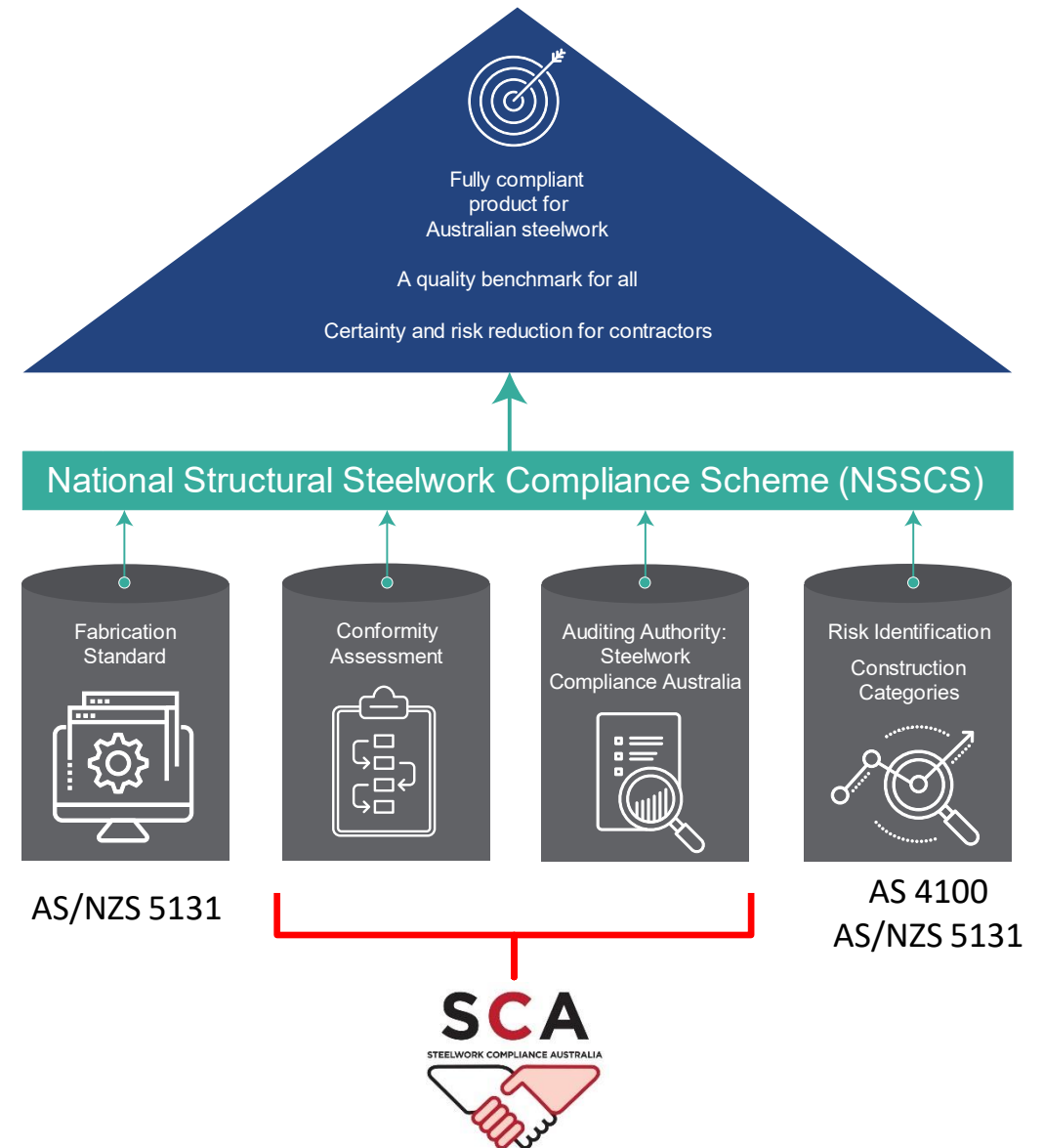
A Compliance Scheme for Australia

Four pillars:

1. Fabrication Standard (AS/NZS 5131).
2. Risk identification – engineers obtain CC from AS 4100 & AS/NZS 5131.
3. Conformity assessment (SCA).
4. Auditing & certification (SCA).

Outcomes:

- Truly independent certification.
- Rationalisation and cost effectiveness.
- Fit-for-purpose (risk levels).
- Open scheme (local or overseas located fabricators can be certified).
- Streamlines project sign-off by RPEQ Engineer.
- Amounts to a 'National technical prequalification scheme'.



Summary - Why we need 3rd party fabricator certification.

- Because non-compliant construction products are circulating in the market.
- Because our Regulation is not adequately policed.
- Because we are now sourcing globally and insist on the cheapest product without adequate regard to quality.
- Because acceptable quality defined by our Standards needs to be properly checked, which is not easy for most stakeholders. Construction product compliance is complicated! Current safeguards such as NCBP (Qld) chain of responsibility legislation is reactive not proactive.
- Because procurers need help to properly assess quality and ensure their 'Duty of care' under WHS Regulation.
- Because engineers are asked to 'certify' and they are generally not properly equipped.

For all these reasons, **Compliance = Certification** in today's market.
ASI has developed the NSSCS to provide the market a solution.



National Structural Steelwork Compliance Scheme (NSSCS)

Steelwork Compliance Australia (SCA)

- Commenced in late 2014
- Audit fees are paid by steel fabricators
- Currently over 100 steel fabricators certified (23 in Qld)
- Queensland Govt is working with stakeholders to investigate the adoption of the certification scheme
- SA Government has mandated SCA 3rd party certification
- NSW Procurement has mandated AS/NZS 5131 and is developing an approach to 3rd party certification – supporting SCA to become JAS ANZ accredited



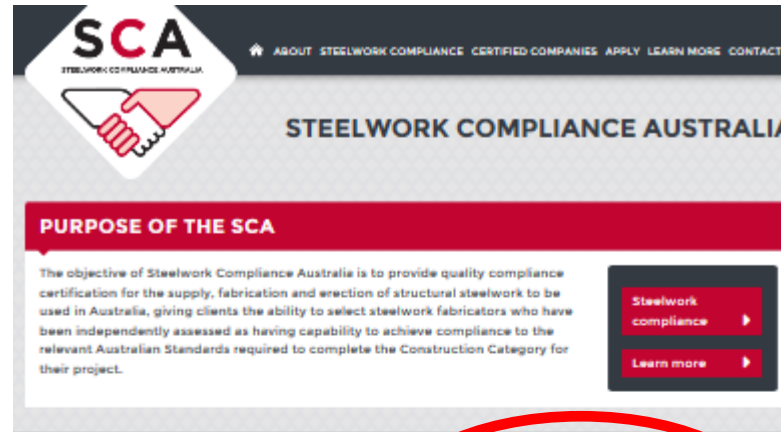
SCA was established by ASI to independently audit fabricators via the NSSCS to AS/NZS 5131.

National Structural Steelwork Compliance Scheme (NSSCS)

How to find a certified Fabricator



<http://www.scompliance.com.au/>



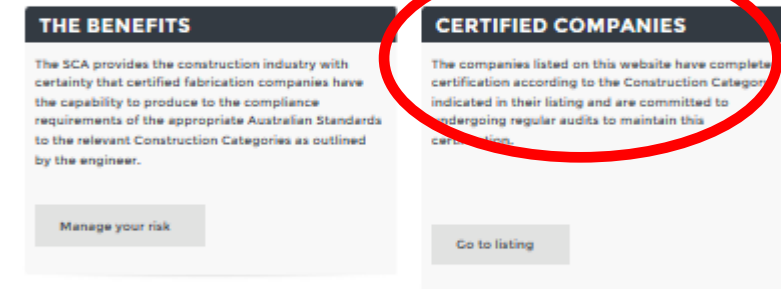
SCA
STEELWORK COMPLIANCE AUSTRALIA

ABOUT STEELWORK COMPLIANCE CERTIFIED COMPANIES APPLY LEARN MORE CONTACT

PURPOSE OF THE SCA

The objective of Steelwork Compliance Australia is to provide quality compliance certification for the supply, fabrication and erection of structural steelwork to be used in Australia, giving clients the ability to select steelwork fabricators who have been independently assessed as having capability to achieve compliance to the relevant Australian Standards required to complete the Construction Category for their project.

Steelwork compliance
Learn more



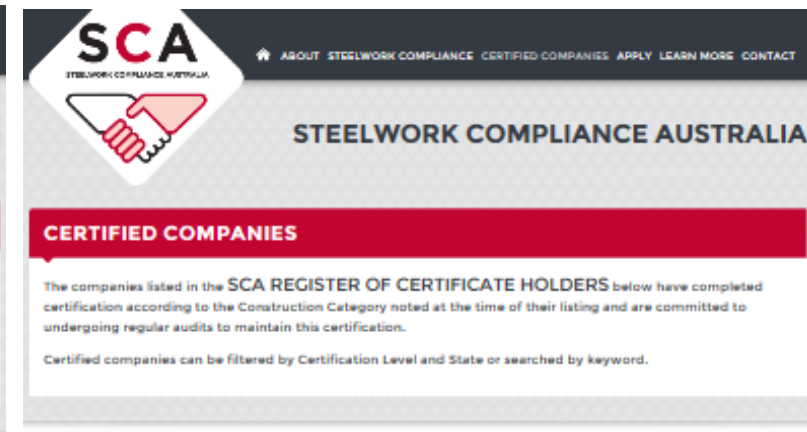
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ABOUT STEELWORK COMPLIANCE CERTIFIED COMPANIES APPLY LEARN MORE CONTACT

CERTIFIED COMPANIES

The companies listed on this website have completed certification according to the Construction Category indicated in their listing and are committed to undergoing regular audits to maintain this certification.

Go to listing



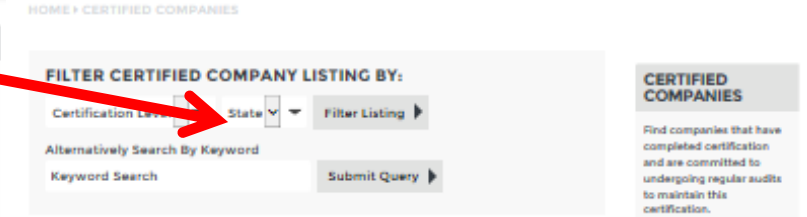
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ABOUT STEELWORK COMPLIANCE CERTIFIED COMPANIES APPLY LEARN MORE CONTACT

CERTIFIED COMPANIES

The companies listed in the SCA REGISTER OF CERTIFICATE HOLDERS below have completed certification according to the Construction Category noted at the time of their listing and are committed to undergoing regular audits to maintain this certification.

Certified companies can be filtered by Certification Level and State or searched by keyword.



HOME > CERTIFIED COMPANIES

FILTER CERTIFIED COMPANY LISTING BY:

Certification Level State Filter Listing

Alternatively Search By Keyword

Keyword Search Submit Query



STRUCTURAL CHALLENGE 2

03 9795 7111 63 Star Crescent, Hallam VIC <http://www.structuralchallenge.com.au>

Certificate ASI Member



NETWORK STEEL 1

07 3821 0424 3 Enterprise Street, Cleveland QLD <http://www.networksteel.com.au>

Certificate



IDEC SOLUTIONS PTY LTD 2

07 3908 9600 28 Arton Road, Hemmant QLD <http://www.idec.com.au>

Certificate ASI Member



BREZAC CONSTRUCTION 2

07 3903 6188 27-35 Calcum Court, Crestmead QLD <http://www.brezac.com.au>

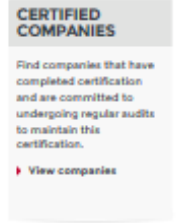
Certificate ASI Member



THE CERTIFICATION PROCESS

Below is the basic process we follow in order to certify a steel fabrication company.

STEP 1	STEP 2	STEP 3	STEP 4
Complete the application form providing us with details on your company.	The SCA will get in touch with you to discuss the next steps and requirements for certification.	Start the auditing process by purchasing the audit suited to your business.	Join the list of certified companies.



CERTIFIED COMPANIES

Find companies that have completed certification and are committed to undergoing regular audits to maintain this certification.

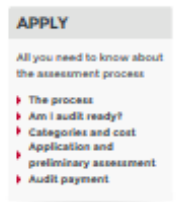
View companies



STEELWORK COMPLIANCE

The essential tools

- Code of Practice
- Conformity Assessment
- Construction Categories



APPLY

All you need to know about the assessment process

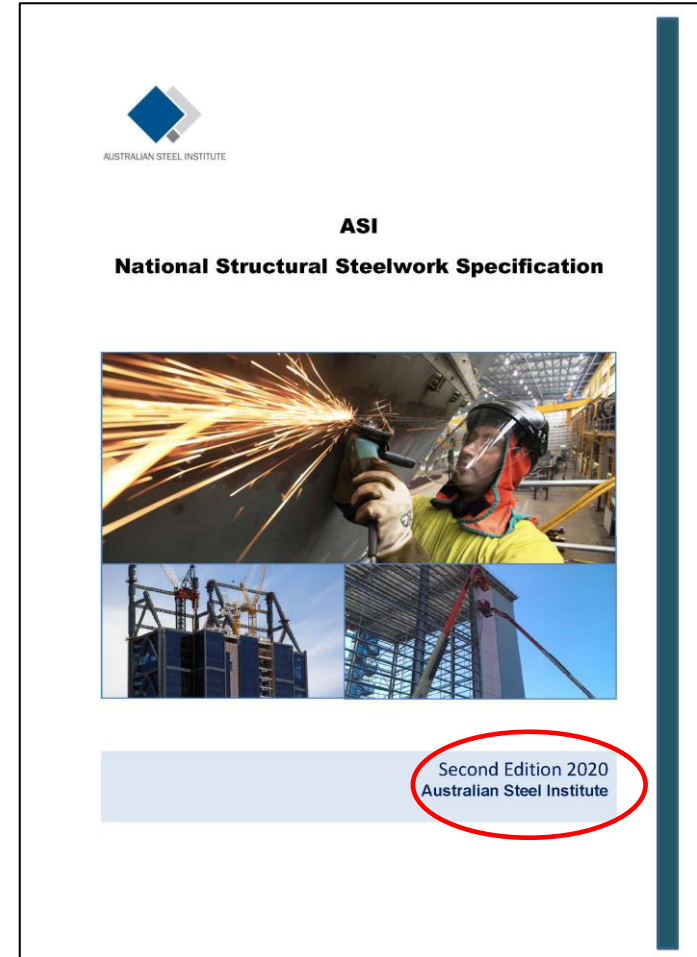
- The process
- Am I audit ready?
- Categories and cost
- Application and preliminary assessment
- Audit payment

Implementation Tools to embed AS/NZS 5131 into projects:

- ASI has created the ‘National Structural Steelwork Specification’.
- ‘Standard Drawing Notes’ (SDN) are also available.
- The NSSS and SDN are a free download from the ASI website.

Available for free download from ASI website:

<https://www.steel.org.au/focus-areas/quality-and-compliance/national-structural-steelwork-specification/>





National Structural Steelwork Compliance Scheme (NSSCS)

Australian Steel Institute

ASI is calling on Govt authorities to require SCA 3rd party Fabricator certification as a pre-qualification at the tender stage.

The South Australian Government has successfully mandated this level of certification for projects funded by the South Australian Government since 2017.

Recommended Contract Wording

"All fabricated structural steelwork specified for this project must comply with Australian Standard AS/NZS 5131 Structural Steelwork - Fabrication and Erection. The project documentation must also nominate the appropriate Construction Category(s) in accordance with AS/NZS 5131.

All structural steelwork must be fabricated by fabricators certified under the ASI National Structural Steelwork Compliance Scheme (NSSCS) (see www.scacompliance.com.au) operated by Steelwork Compliance Australia (SCA) for the Construction Category(s) defined in the project specification.

All tenderers (fabricators) must have documented current evidence of having fulfilled 'Stage 1' of the SCA certification process, including a gap analysis of the necessary actions to meet the required Construction Category. The successful fabricator(s) must submit documentary evidence of current full certification to the relevant Construction Category before work commences on the project. The certification must be maintained for the duration of the project."

<https://www.steel.org.au/focus-areas/quality-and-compliance/nsscs-for-clients-and-government/>

GOOD PRACTICE STEELWORK PROCUREMENT

Recommended contract wording



Context

This document has been prepared to assist procurers of structural steelwork to protect against non-compliant processes and non-conforming product.

ASI has prepared a suite of supporting material, including:

- ◆ AS/NZS 5131 'Structural steelwork – Fabrication and erection'
- ◆ 'National Structural Steelwork Specification' (NSSS) and 'Standard Drawing Notes': download free in Word or PDF at steel.org.au/key-issues/compliance/national-structural-steelwork-specification/
- ◆ National Structural Steelwork Compliance Scheme (NSSCS): see steel.org.au/key-issues/compliance/asi-in-compliance/
- ◆ Fabricator certification to one of the 'Construction Categories' CC1 to CC4 in AS/NZS 5131. Fabricator certification is undertaken by the separate company Steelwork Compliance Australia (SCA): see www.scacompliance.com.au/

The Australian Standard AS/NZS 5131 should be called up in project specifications and contract documentation for all projects involving structural steelwork in Australia.

ASI has created the NSSCS to address the need for a robust, cost-effective and responsive third-party solution for ascertaining compliance of structural steelwork. For projects where risk of failure of the structural steel component must be avoided, the ASI recommends **those stakeholders responsible for procurement of structural steelwork MUST specify third-party certified fabricated steelwork to the NSSCS to satisfy duty of care.** A fundamental component of the NSSCS is the use of fabricators who have been certified to one of the Construction Categories defined in AS/NZS 5131.

Recommended contract wording

"All fabricated structural steelwork specified for this project must comply with Australian Standard AS/NZS 5131 Structural Steelwork - Fabrication and Erection. The project documentation must also nominate the appropriate Construction Category(s) in accordance with AS/NZS 5131.

All structural steelwork must be fabricated by fabricators certified under the ASI National Structural Steelwork Compliance Scheme (NSSCS) (see www.scacompliance.com.au) operated by Steelwork Compliance Australia (SCA) for the Construction Category(s) defined in the project specification.

All tenderers (fabricators) must have documented current evidence of having fulfilled 'Stage 1' of the SCA certification process, including a gap analysis of the necessary actions to meet the required Construction Category. The successful fabricator(s) must submit documentary evidence of current full certification to the relevant Construction Category before work commences on the project. The certification must be maintained for the duration of the project."

Further background and basis for the recommended contract wording is provided on the following page.

Visit our website at steel.org.au/key-issues/compliance for all our tools



ASI Awareness

Australian Steel Institute

- **ASI website landing page:** see <https://www.steel.org.au/focus-areas/steel-and-design/standards-and-design/key-standards-updates/>
- **Tech Note TN014:** Structural steelwork certification in Australia
- **Tech Note TN015:** Ascertaining compliance of structural steel. Download for free from: [ASI - Technical Notes \(steel.org.au\)](#)
- **Updates:** of various Tech Notes and our NSSS and SDN
- **Planning series of 'Guidance Notes':** intended for various members of supply chain

AS/NZS 5131 & AS 4100 2020 UPDATE: SUMMARY OF CHANGES AND IMPLICATIONS



AUSTRALIAN STEEL INSTITUTE

OVERVIEW

On 14th August 2020, Standards Australia published an amendment to AS/NZS 5131:2016 *Structural steelwork – Fabrication and erection*. Following this, on 21st August 2020, Standards Australia published a revision to AS 4100 *Steel structures*.

AS 4100 and AS/NZS 5131 work together to ensure risk-minimised, fit-for-purpose design and construction outcomes for steel structures. They are therefore significant for all members of the steel supply chain, including steel manufacturers, distributors, steel detailers, fabricators, erectors, designers, constructors and certifiers. **All members of the steel supply chain should be aware of the 2020 changes to these Standards**, the implications for their business and business relationships, and their duty of care under both Workplace Health and Safety (WHS) and National Construction Code (NCC) regulations.

HISTORICAL CONTEXT

Fabrication and erection of structural steel was previously addressed in two chapters of AS 4100. This was in sharp contrast to the situation in America, Canada, Europe and the UK. In each of these first-world countries, fabrication of structural steel is referenced to a self-standing separate Standard or specification, usually of a few hundred pages in length.

To ensure Australia maintained a baseline of internationally accepted 'good practice' and clearly defined quality standards, the Australian Steel Institute (ASI) developed a fabrication and erection Code of Practice, with agreement from Standards Australia that it would be submitted to become the first Standard for fabrication and erection of structural steel in Australia and New Zealand. The new Standard, AS/NZS 5131 *Structural steelwork - Fabrication and erection*, was published in 2016.

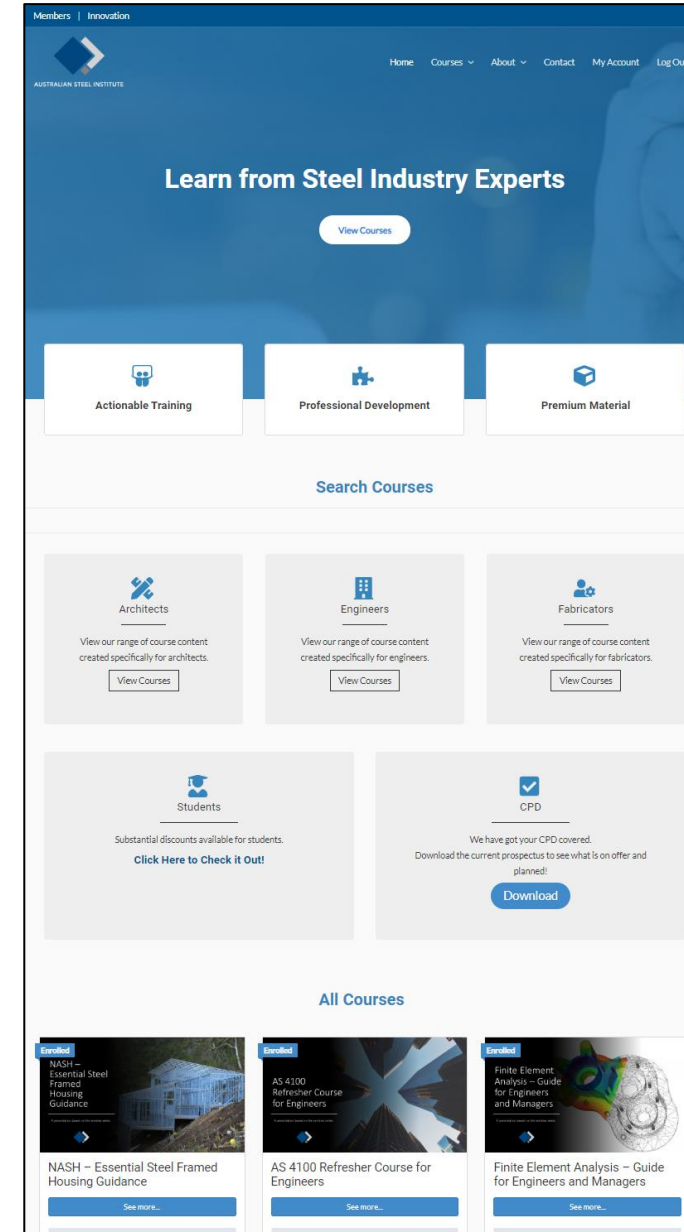
Following the publication of AS/NZS 5131, the next step was to revise AS 4100 to reference AS/NZS 5131 and remove the existing requirements for fabrication and erection from AS 4100. Significantly, as AS 4100 is a primary reference under the National Construction Code (NCC), referencing AS/NZS 5131 from AS 4100 **will effectively make AS/NZS 5131 a secondary reference under the NCC**.



As AS 4100 is a primary reference under the National Construction Code (NCC), referencing AS/NZS 5131 from AS 4100 will effectively make AS/NZS 5131 a secondary reference under the NCC.

Visit the eLearning Portal at:
<https://learn.steel.org.au/>

- Structural Steelwork Compliance – Tools to minimise risk. *Free 1.5 hour eLearning course.*
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The screenshot displays the Australian Steel Institute eLearning Portal. The header includes navigation links for Home, Courses, About, Contact, My Account, and Log Out. The main heading is "Learn from Steel Industry Experts" with a "View Courses" button. Below this are three categories: Actionable Training, Professional Development, and Premium Material. A "Search Courses" section follows, featuring filters for Architects, Engineers, and Fabricators, each with a "View Courses" button. There are also sections for Students (with a "Click Here to Check it Out!" link) and CPD (with a "Download" button). The "All Courses" section at the bottom shows three course cards: "NASH – Essential Steel Framed Housing Guidance", "AS 4100 Refresher Course for Engineers", and "Finite Element Analysis – Guide for Engineers and Managers".

Thank you!

Email me: johnng@steel.org.au

