Guidance for a Structural steel compliance path

Purpose

The purpose of this guide is to assist applicants who intend on making a building consent application which involves the use of structural steel. This will enable the appropriate compliance path to be determined and to understand the evidence requirements needed for the application. This guide provides information on the key elements to be addressed in a Structural steel compliance document, which must be formally submitted as a controlled and client approved document. The document must be signed off as approved by the structural designer and/or the structural PS1 author, as part of the consent application for the structure.

The scope of this guide is for the supply of all steel structural elements including rolled, formed, plate and all welded sections either locally or internationally fabricated.

It does not cover reinforcement steel.

This guidance is not intended to address durability, stability, fire compliance, construction monitoring, erection, producer statements or issues other than what is listed below.

The elements forming the compliance document will be:

1. Quality of steel = Demonstrate compliance to steel grade and type as specified on the drawings

2. Manufacture = Demonstrate compliance to grade and dimensions of rolled sections as specified on the drawings

3. Fabrication = Demonstrate compliance of structural sections to dimensional and weld details as specified on the drawings

For additional information please refer to the Steel Construction New Zealand website, report SCNZ 111: 2018 New Zealand Guide to the sourcing of compliant structural steels.

Verification testing

In certain circumstances and solely at council's discretion, 3rd party testing of landed welded sections may be required.

These may include but are not limited to:

1. Mechanical properties: yield strength, tensile strength, elongation and impact.
2. Chemical composition: product analysis
3. Weld quality: Destructive testing

Quality of steel pre-consent approval

Applicants must demonstrate compliance of the steel grade and type as specified on the drawings. This can be done in the following ways:

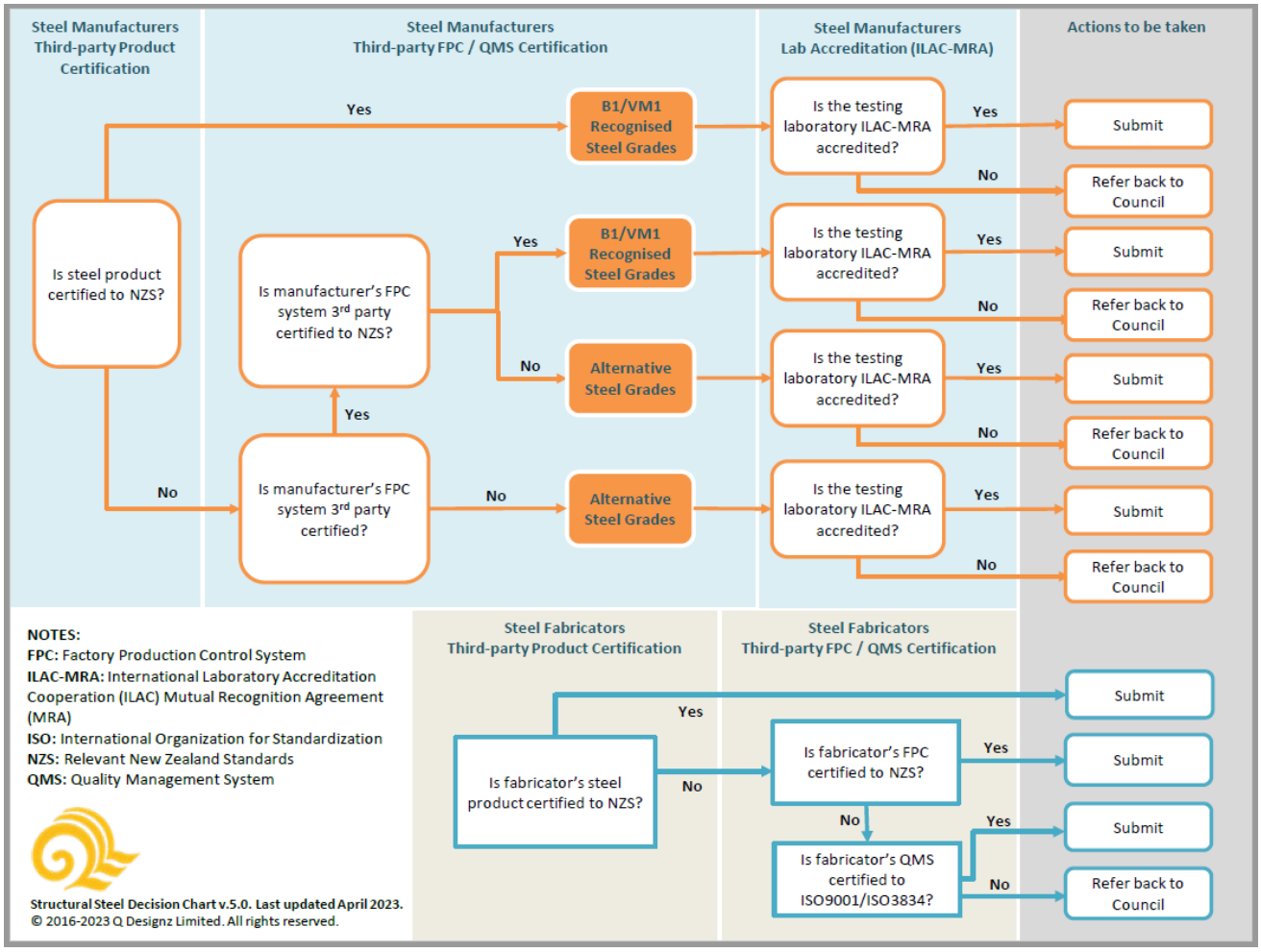
1. The applicant can provide a specific certificate of product performance issued by an approved and accredited 3rd party such as ACRS, BSI or JAS-ANZ. This certificate should be specific for each profile and size per grade of steel. These requirements should form part of the compliance document.

2. An alternative method of demonstrating compliance may be through a 3rd party inspection of the factory and a Factory Production Certificate (FPC) report to an approved standard.

Note: The reports must be specific to the sections, size and grade of steel. These requirements should form part of the compliance document.

Where neither of these are available a meeting between the authorised parties and council will be necessary to determine how compliance can be demonstrated. This is done using the structural steel decision chart below. Once agreed these requirements should form part of the compliance document.

Fig 1: Structural Steel Decision Chart



Manufacturing pre-consent approval

To determine if pre-consent approval is required, refer to the Risk matrix in the Construction category documentation requirements and Advice Notes section below.

The compliance documentation must clearly demonstrate that the steel grade & size as shown on the drawings, ordered, and delivered for erection on site, are the same (for overseas fabrication). This can be demonstrated by a "material take off" for each size and grade indicating proposed supply mills.

All rolled sections and plates for welded sections must be supplied from an approved mill.

Note:
Sections may be supplied from one or more mills across all profiles, grade or size including plate. However, each section must be supplied from an approved mill, with documentation provided per mill, forming part of the compliance document.

Fabrication pre-consent approval

All welded sections must be fabricated by an approved fabricator certified under the Steel Fabricator Certification (SFC) Scheme, or an approved equivalent. See Fig 1 Steel Fabricators Third-party FPC/ QMS Certification section or refer to Steel Construction New Zealand SCNZ SFC for more details on the SFC scheme.

An alternative method of confirming compliance could be destructive and or non-destructive testing carried out by an approved 3rd party in New Zealand. The level, type, specification and amount of testing will need to be agreed between council and the authorised parties. This must be recorded and will form part of the compliance document.

Documentation post consent approval pre-erection

Before any on-site erection commences, a completed manufactures data report must be submitted. This shall provide but is not limited to, the following information:

1) List of contents
2) Inspection & test plan
3) Inspection release note
4) Material certificate summary: Material certificates: Test reports and mill certificates
5) Certificates of conformity
6) Welding records
7) Non-destructive testing records
8) Heat treatment records
9) Dimensional & tolerance records
10) Painting & coating records
11) Drawings: Data sheets
12) Miscellaneous certification, test reports & records
13) List statutory or 3rd party approval requirements
14) Statutory or 3rd party approval documentation

Note these documents will be required prior to issue of a CCC

Construction category documentation requirements and Advice Notes

Building consent documentation must reference AS/NZS 5131, which specifies the minimum standards for Structural steelwork - Fabrication and erection. This relates to all structural steel whether it is installed in a residential or commercial project.

The documentation listed in AS/NZS 5131 should be co-ordinated by the Project Structural Engineer, Engineers specifications must be up to date, mention AS/NZS 5131 and be provided to council.

The documentation must nominate the construction category (CC). CC relates to the steel element, rather than the building, therefore there may be multiple CC levels recorded for a project. Structural Engineer to refer to AS/NZS 5131, Appendix C, section C4 Determination of the Construction Category, Table C4 to determine the Construction Category.

The following Risk Matrix identifies at which stage Auckland Council will require the steel compliance documentation.

Risk matrix for determination of the construction category alignment with advice notes

Importance level		1		2		3 & 4 See notes	
Service categories		SC1	SC2	SC1	SC2	SC1	SC2
Fabrication categories	FC1	CC1	CC2	CC2	CC3	CC3	CC3
	FC2	CC2	CC2	CC2	CC3	CC3	CC3

Key

Documents required before CCC

Documents required before site erection

Documents required timing to be agreed but generally before consent

NOTES
1 Importance level 5 structures are outside the scope of this determination

2 Project specific requirements should be determined for such structures

Note:
Risk Matrix obtained from *AS/NZS 5131, Appendix C, section C4 Determination of the Construction Category, Table C4*

Onsite Verification – Low & Medium Risk

For Green (low risk) or Amber (medium risk) applications the steel compliance evidence can be provided after consent. This will be recorded on the Advice Notes.

The majority of buildings will fall within the low & medium risk category because the typical nature of the steel elements means there is a high likelihood the installer will be able to select the steel element that has a compliance pathway to AS/NZS 5131. For this reason, steel documentation can be provided post consent.

When structural steel documentation is required to be provided post consent an Advice Note is to be added to AC1174 Schedule of inspections and documentation required for compliance.

Low Risk - Green

This category would usually relate to mainly hot rolled, formed sections (not fabricated) such as RSJ, HSS, PFS, RHS, etc. used as lintels. These are usually supplied from NZ suppliers accredited with SCNZ for the supply of steel to NZ standards.

Advice Note **BC PRDSTAT9 Inspection and Test Plan (ITP) structural steel welding** to be used. This will ensure structural steel documentation in accordance with AS/NZ 5131, before CCC is issued.

Medium Risk - Amber

Structural steel documentation to be provided, as determined by the construction category, in accordance with AS/NZ 5131, before site erection starts and approved by the construction monitoring engineer. These documents will only be available after a fabricator has been awarded and the steel fabricated. They will be available to the monitoring engineer when the steel is delivered to site. Therefore, it is recommended that the Auckland Council inspectors carry out an audit that the monitoring engineer has accepted the delivery of steel as meeting the requirements, before erection starts.

This category usually applies to structural steel from a New Zealand structural steel (SCNZ) certified fabricator (SFC) in New Zealand. As part of their accreditation, they must demonstrate to SCNZ (a certifying body of HERA) that they source steel from an accredited mill, or if not possible, then they have a robust QMS to demonstrate that the steel, if not to NZ standards, is an acceptable and comparable alternative.

Advice Note **BC PRDSTAT9 Inspection and Test Plan (ITP) structural steel welding** to be used.
And
Advice Note **BC PRDSTAT21-8 PS4 Structural Steel – Producer Statement Construction Review** to be used. This will ensure structural steel documentation in accordance with AS/NZ 5131, is received onsite and approved by the Construction Monitoring Engineer before installation.

Onsite Verification – High Risk

For High Risk - Red applications the structural steel compliance evidence will need to be supplied and reviewed as part of the building consent assessment. A pre-application meeting should be held for these types of applications. In most cases independent testing of the steel and welds at a certified laboratory in New Zealand is required when the steel is delivered but before erection.

This category usually applies where the majority of fabrication was performed overseas, from a non-accredited fabricator, using steel from an uncertified mill, often using complex cruciform or similar complex connections.

Advice Note **BC PRDSTAT9 Inspection and Test Plan (ITP) structural steel welding** to be used.
And
Advice Note: **BC PRDSTAT21-9 Structural Steel: Manufacturers Report** to be used. This will ensure structural steel documentation in accordance with AS/NZ 5131, is submitted to council before work occurs onsite.

Related Documents

Masterspec – Structural steel guidance

Steel Construction New Zealand
A generic Structural steel specification, made by steel construction New Zealand
www.scnz.org/specification

HERA
Notice – B1/VM1 Amendment 16 now published

AS/NZS 5131:2016 Structural steelwork – Fabrication and erection

Glossary

Acronym	Meaning
ACRS	Australian Certification Authority for Reinforcing and Structural Steels
BSI	British Standards Institution
JAS-ANZ	Joint Accreditation System of Australia and New Zealand