Title	**Analyse and evaluate material properties to produce material specifications for pre-nailed timber structures**		
Level	**5**	**Credits**	**5**

Purpose	This unit standard is intended for those working in timber structure detailing. People credited with this standard are able to analyse and evaluate materials properties to produce material specifications for pre-nailed timber structures to the level of performance required of a professionally competent detailer.

Classification	Construction Trades > Carpentry

Available grade	Achieved

Guidance Information

1 Scope
The context of this unit standard is detailing in a manufacturing environment for the production of pre-nailed timber structures used for the construction of small buildings.

2 Assessment
This unit standard is intended to align with the *New Zealand Diploma in Timber Structure Detailing – Specifications* and the New Zealand Diploma in Timber Structure Detailing (Level 5) [Ref: 4377].

Evidence for this standard must reflect professional competence.

Professional competence refers to the ability to work independently in order to meet the ethical and professional expectations of industry and clients on dynamic and varied projects operating in a commercial environment.

Professional competence must be confirmed by a person with current expertise in the timber structure detailing trade.

3 Definitions
Accessories are additional items used in the pre-nailed timber structure, and to package and transport the timber structures to site.
Composite products are a combination of timber and steel.
Engineered wood products are manufactured timber products. The strands, particles, fibres, veneers, or boards of wood are fixed or bound together with adhesives.
The *Legislative framework* refers to the hierarchy of Acts of Parliament, Regulations, Rules, local by-laws, Codes, Standards, approved codes of practice, and best practice guidelines.

Proprietary design software illustrates the design capacities and compliance with the New Zealand Building Code of pre-nailed timber structures using proprietary fixings and connectors.
Small building is of residential scale with lightweight timber-framing and/or concrete or concrete masonry construction, and generally of non-specific design.
Workplace procedures refers to the documented procedures specific to a work site which set out the standard and required practices of that workplace.

4 Legislation, standards and guidance information relevant to this standard includes the following; and any subsequent amendments and replacements.

New Zealand Diploma in Timber Structure Detailing – Specifications, BCITO, August 2021, available from www.waihanga.nz.

Legislation accessed at www.legislation.govt.nz
- Building Act 2004
- The New Zealand Building Code.

Standards accessed at www.standards.govt.nz
- NZS 3602:2003 *Timber and wood-based products for use in buildings*
- NZS 3604:2011 *Timber Framed Buildings.*

Skill specification and performance level guidance

Skill specification

Analyse and evaluate material properties to produce material specifications for pre-nailed timber structures.

Knowledge

How the types, and properties of timber impact its use in pre-nailed timber structures.

Range size, grade, finish, treatments, defect grade.

The causes of timber defects and preventative measures used to address these to ensure quality of timber for pre-nailed timber structures.

Range cup, bow, crook, twist.

How the types, and properties of engineered wood products impact its use in pre-nailed timber structures.

The types, properties, and application of composite products used in pre-nailed timber structures.

Range may include – flitch beam, steel web floor and ceiling truss.

How the types, properties, and application of fixings and connectors impact pre-nailed timber structures.

How the types, properties, and application methods of adhesives impact pre-nailed timber structures.

How the types, properties, application, and finish of accessories impact pre-nailed timber structures.

Range may include – damp proof course (DPC), plastic wrap, glut.

How materials physics impacts timber structure manufacturing work.

Range strength, deflection, expansion;
performance under – compression, tension, subject to friction, wear, loads, extreme temperature.

How materials chemistry impacts timber structure manufacturing work.

Range composition, form, treatments, malleability, flammability, volatility of material;
compatibility of different materials due to – chemical composition, usage, deterioration over time, effects on building performance, environment and people.

The process to analyse the properties of materials against specified requirements of the timber structures being detailed.

Skills

Analyse the behaviour of materials included in pre-nailed timber structure detailing technical data.

Range must include – timber, fixings, connectors, adhesives, accessories;
may include – engineered wood products, composite products.

Evaluate information to select, and source materials for pre-nailed timber structure manufacturing work.

Range must include – timber, fixings, connectors, adhesives, accessories;
may include – engineered wood products, composite products.

Produce a set of material specifications for pre-nailed timber structures.

Range all materials for manufacture and on-site assembly.

Performance level guidance

Performance must reflect workplace procedures, legislative frameworks and specific proprietary design software requirements.

Planned review date	31 December 2026

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 December 2021	N/A

Consent and Moderation Requirements (CMR) reference	0048

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@waihanga.nz if you wish to suggest changes to the content of this unit standard.