



Australian Government

Assessment Requirements for FWPTMM5209 Determine prefabricated timber building systems designs for compliance, manufacture and installation

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Modification History

Release	Comments
Release 1	This version released with FWP Forest and Wood Products Training Package Version 4.0.

Performance Evidence

An individual demonstrating competency in this unit must satisfy all of the elements and performance criteria of this unit. There must be evidence that the individual has assessed complete sets of timber building design documentation for two construction projects relating to different classes of buildings that, as defined in the National Construction Code (NCC), allow the use of one or more panelised or modular prefabricated timber building system types, including:

- cross-laminated timber floor and wall systems
- post and beam systems (Glulam, laminated veneer lumber)
- panelised floor cassette systems
- panelised wall systems (including cladding, insulation, windows or doors)
- panelised and pre-finished wall systems (inclining above, electrical, mechanical, plumbing or lining)
- pre-finished and fully finished timber-based modules

In doing the above, the individual has:

- determined and confirmed with stakeholders whether the design is fit for purpose and meets capabilities within the supply chain regarding prefabrication, storage, transportation and on-site installation
- determined the compliance requirements of physical prefabricated timber building system for:
 - structural robustness
 - durability
 - fire resistance and acoustic and thermal properties
 - health and safety hazards during all stages of the life cycle
 - transportation
- assessed whether the design provides adequate solutions to meet all compliance requirements, determining design actions according to standards to fill the design gaps

- verified design considerations regarding services installation and mitigation of possible effects during transportation, handling, on-site installation or maintenance
- verified the level of provisions in design documentation to demonstrate or specify:
 - structural compliance
 - health and safety information for each stage of prefabricated timber building system life cycle
 - prefabricated timber building system and components maintenance during prefabricated timber building system design life
 - materials, separations, insulations, fire warnings, a fire-fighting management system for required fire, acoustic, thermal and waterproofing performance
 - installation and connections requirements for each service
 - tolerances for prefabricated timber building system and its components
 - lifting requirements for each stage of prefabricated timber building system life cycle
 - restraint conditions during transportation
 - installation sequence for prefabricated timber building systems and components.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- basic uses of BIM (Building Information Modelling) software or similar for sharing and coordinating information among stakeholders during the prefabricated timber building system life cycle
- principles of collaborative design analysis:
 - Design for Manufacture and Assembly
 - lean processes (off-site manufacture, storage, transportation and on-site installation)
 - Failure Mode and Effects Analysis
- readily available prefabrication technologies for different types of prefabricated timber building systems (two- and three-dimensional) and components including:
 - structural timber
 - cross-laminated timber
 - laminated veneer lumber
 - Glulam
 - I-Joists
 - floor trusses
 - services
 - windows, glazing and plasterboard
- relevant legislation, standards and technical design guides or codes for:
 - structural design of prefabricated timber buildings and systems
 - implementation of safe design principles
 - installation of hydraulic, electrical, mechanical, fire protection and acoustic systems

- transportation restrictions and load restraint requirements
- NCC Performance Requirements for prefabricated timber building systems as classified via their function:
 - structural robustness
 - structural safety
 - fire resistance, thermal performance and acoustic performance
- elements of valid approval and compliance processes with reference to:
 - NCC assessments, calculations and evidence requirements for controlling the risk of structural failure and safety
 - fire, acoustic, thermal resistance and waterproofing of prefabricated timber building systems for complying with standards
- considerations and industry-accepted design solutions for prefabricated timber building systems (including structural and non-structural timber components and connections) as required by NCC, standards and technical design guides for:
 - structural robustness, verification methods and traceability of risks
 - structural durability with reference to environmental and specific conditions affecting durability of timber components and connections, high-risk areas within the building structure (including bathroom and external walls), specific hazards (particularly insect and fungal attack, weathering, moisture exposure and fire) and solutions considering preservative treatments, moisture contents, weatherproofing insulations and cladding
 - fire engineering measures, sound propagation and thermal resistance with reference to structural deflection of fire-rated elements and use of fire, vibrational/acoustical and thermal insulations; relevant design procedure for joint/connections involving timber structures to retain the integrity of insulation, material and system while considering effects of transport, handling and installation processes on connections
 - acceptable tolerances for material quality, off-site manufacture and on-site installation
 - services installation including hydraulic, electrical, mechanical, fire protection and acoustic systems
 - health and safety risks about the off-site manufacture, storage, transportation, on-site installation, use and maintenance of prefabricated timber building system
 - transportation and lifting requirements with reference to different load characteristics and appropriate road trucks and cranes or lifting plants, factors influencing lifting stability, behaviour/fatigue of timber and connections to temporary lifting loads, load restraint methods and friction factors affecting strength resistance and structural response of prefabricated timber building system
- design provisions and technical specifications as required by the Safe Design of Structures Code of Practice, NCC and other standards and technical guides for any person who carries out work activities in relation to a prefabricated timber building system:
 - health and safety provisions
 - connections specifications
 - design tolerances and specifications
 - thermal, acoustic and fire compliance provisions
 - transport and handling modes including lifting and stacking specifications

- installation sequencing provision
- maintenance provision.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- resources, equipment and materials:
 - timber building design documentation for two construction projects relating to different classes of buildings that allow the use of panelised or modular prefabricated timber building systems
 - computer with internet access and BIM software that is currently used in building design practices to view and print three-dimensional models, finite element models, two-dimensional computer-aided design drawings and design documentation
 - access to current legislation, standards, codes and technical design guides relevant to prefabricated timber building systems
- specifications:
 - access to relevant codes, standards and government regulations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volumes, including Implementation Guides, are available at VETNet: -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0d96fe23-5747-4c01-9d6f-3509ff8d3d47>