

REGISTERED NATIONAL STANDARD

UNIT OF COMPETENCY



Title:	Construct fire-rated brick and block walls ¹				
TQF Level:	4	Credits:	6	Version:	1
National standard code:	NS162-04				
Associated qualification (and code):	National Certificate in Bricklaying and Blocklaying Level 4 QR-04-NQ-028-02-1005-26-01				
Approval date:	10 September 2026		Review date:	10 September 2031	
Purpose:	This unit describes the skills and knowledge required to construct fire-rated brick and block walls, including laying fire resistant brick and block for buildings, walls and service openings. Work involves selecting compliant materials, constructing fire rated components, and ensuring proper fire proofing of wall penetrations and junctions. The unit applies to bricklayers and blocklayers working on both new and existing structures. Individuals are expected to take responsibility for planning and completing tasks safely and efficiently while adhering to workplace procedures and the Tonga National Building Code. The unit emphasises correct installation of fire-resistant materials, effective sealing of openings, and maintaining structural integrity to ensure buildings achieve required fire protection and safety performance. This unit supports bricklayers who are expected to take responsibility for assigned fire-rated brick and block construction tasks and complete work independently while meeting Tonga National Building Code requirements. In successfully completing this unit standard, learners are able to: • Interpret construction drawings, specifications, and standards relating to fire-rated brick and block construction • Plan and organise work tasks, materials, and sequencing to achieve efficient fire-rated brick and block laying operations • Prepare the worksite, materials, tools, and equipment while following OHS and environmental procedures. • Identify and control hazards associated with brick and block work (e.g., manual handling, silica exposure, working at heights)				

¹ Due to safety issues inherent in working with electricity and combustible substances, all training and assessment activities must be in accordance with Tonga National Building Code.

	• Identify and apply fire resistance level (FRL) requirements for walls, openings, and materials • Check conformity of fire-rated materials against specifications and standards • Set out wall position, gauge, and bond in accordance with design requirements • Mix and apply mortar to required consistency for fire-rated construction • Construct fire-resistant brick and block walls maintaining line, level, plumb, bond, and gauge • Install fire-rated components including door jambs, service penetrations, and insulation • Ensure fire sealing and continuity of fire barriers at joints, openings, and roof connections • Apply finishing techniques such as raking or ruling joints and cleaning surfaces to achieve required finish • Ensure work meets required tolerances and quality standards • Clean up work area and dispose of, reuse, or recycle materials according to environmental procedures • Maintain and store tools and equipment in safe and serviceable condition • Comply with Tonga National Building Code fire control and separation requirements and relevant standards
Learning Outcome 1 (LO1)	Prepare and organise work to construct fire-rated brick and block walls
Performance standards	1.1 Read, interpret and apply fire-rated brick and block construction requirements from plans, specifications and Tonga National Building Code; 1.2 Follow requirements in workplace safety and environmental documentation and workplace procedures; 1.3 Identify location and composition of brick and block wall. 1.4 Use measurements and apply formulas to calculate material quantities; 1.5 Determine job priorities and sequence job tasks in consultation with others on site; 1.6 Identify potential hazards and determine and implement control measures; 1.7 Select and use personal protective equipment (PPE) appropriate for job; 1.8 Select equipment and tools and report damage or malfunction to relevant person;

	1.9 Check conformity of materials against the specifications and place materials in preparation for the work.
Learning Outcome 2 (LO2)	Construct fire-rated brick and block wall
Performance Standards	2.1 Set out and mark position, gauge and bond of brick and block wall; 2.2 Mix mortar and check consistency with job requirements. 2.3 Construct fire-rated brick and block wall maintaining bond, gauge and level to the set-out height; 2.4 Remove mortar residue, rake or rule joints to specified profile and depth; 2.5 Clean and brush down face of brickwork prior to mortar drying.
Learning Outcome 3 (LO3)	Clean up fire-rated wall construction work area
Performance standards	3.1 Clear the work area and dispose of waste materials following workplace and environmental requirements; 3.2 Clean tools and equipment; 3.4 Check for serviceability and report any damage or faults; 3.3 Store and secure tools and equipment following workplace procedures; 3.5 Store materials for reuse or recycle materials following workplace requirements.
Pre-requisites	NS133-03 Apply <i>Occupational Health and Safety</i> (OHS) requirements, policies and procedures
Co-requisites	N/A
Underpinning skill and knowledge	The following skills and knowledge underpin this unit standard: <u>Skills:</u> Work Planning and Preparation • Select, fit and use PPE appropriate for the job. • Read, interpret and apply fire-rated brick and block requirements from plans, specifications, standards and codes. • Identify Fire Resistance Levels, wall location and composition.

	• Identify hazards and implement control measures (e.g., fire, manual handling, silica). • Calculate material quantities using measurements and formulas. • Prioritise tasks and sequence work activities. • Check condition of tools, equipment and materials for compliance. Construction Techniques • Set out brick and block walls accurately, including gauge and bond. • Mix mortar to required consistency. • Lay fire-rated brick and block to specification, maintaining bond, gauge, level and correct height. • Remove mortar residue, rake or rule joints to required depth and profile. • Brush down brickwork prior to mortar drying. • Install fire-rated steel door jambs. • Fire-proof service penetrations of varied sizes. • Fit fire-rated insulation between brick and block walls and roof coverings. Finishing and Housekeeping • Clean up worksites, dispose/recycle materials appropriately. • Clean and maintain tools/equipment and store them safely. <u>Knowledge:</u> Materials Selection • Characteristics, applications and limitations of materials used in fire-rated brick and block: • fire-resistant bricks and blocks • mortar ingredients • fire seals and insulation • Principles of heat transfer and its effects on materials. Fire-Rated Construction Requirements • Tonga National Building Code fire control and separation requirements. • Fire Resistance Levels (FRLs) and their application. • Fire-rated brick and block requirements and legislation. Construction Processes and Techniques
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	• Techniques for constructing fire-rated brick and block walls. • Processes for damp proofing and flashing. • Installing fire-rated steel door jambs. • Fitting continuous fire-rated seals between structure and roof cladding. • Brickwork tolerances required by standards. Terminology, Documentation and Tools • Construction terminology related to fire-rated brick and block. • Features of working drawings and specifications. • Functional/operational features of plant, equipment, hand and power tools. Occupational Health and Safety and Environment • Job Safety and Environmental Analysis (JSEA). • Working at heights. • Hazardous manual handling. • Exposure to silica and loud noise. • Environmental requirements for processes and waste management.
Assessment requirements	<u>Assessment methods</u> may include more than one of the following: Direct Observation Assessment of learners while they are performing tasks in real time in a real simulated environment. • The learner performs practical tasks. • The assessor watches the learner complete these tasks against a checklist or performance standards. Assessor Requirements • Use a structured observation checklist aligned to performance standards • Observe multiple occasions to ensure consistency of competence. • Record evidence of safe work practices, correct use of equipment, etc. • Provide immediate feedback where appropriate. • Ensure conditions reflect real workplace standards. Oral Questioning Verbal questions asked to assess the learner's understanding of knowledge and reasoning.

	• Conducted during or after practical tasks. • Can be structured (planned questions) or informal (follow-up probing). Assessor Requirements • Ask questions that test underpinning knowledge • Use open-ended questions • Confirm learner understanding where practical performance is not enough. • Record responses clearly (notes or checklist). • Adjust language to suit learner literacy levels. Written Test A structured assessment requiring learners to provide written responses. • Short-answer questions, multiple choice, or case scenarios. • Typically conducted off-site or in a classroom environment. Assessor Requirements • Design questions that assess knowledge. • Ensure the test is clear, aligned to unit requirements and appropriate for language, literacy, numeracy levels • Mark responses using a marking guide or model answers. • Provide feedback and identify gaps in knowledge. • Ensure results reflect the learner's independent performance. Work-Based Activity Assessment conducted in a real workplace while the learner performs actual job tasks. • Learners complete normal workplace duties. • Evidence is collected over time. Assessor Requirements • Coordinate with workplace supervisors. • Gather evidence such as - Observation reports, Supervisor feedback, etc. • Verify that tasks meet unit performance standards. • Ensure authenticity (learner's own work). • Confirm competence across different situations and timeframes. Assessment should use a combination of the above methods to ensure sufficient, valid, authentic, and current evidence of
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	competence in both skills and knowledge, in line with unit requirements. <u>Context of Assessment:</u> Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects a real workplace setting. Assessment is to comply with relevant regulatory or relevant standards' requirements. Assessment of essential knowledge will usually be conducted in an off-site situation.
Moderation arrangements	1. Training providers must have their own moderation system approved by TNQAB before accreditation is granted: a) Relevant internal moderation processes are documented; b) Assessment is planned for each unit, and moderation processes are integrated into such plan. 2. Unless specified elsewhere, external moderation is conducted by the National Qualifications unit of TNQAB for all unit components of a national qualification: a) Samples of assessed activities are submitted for moderation; b) Moderation (external) forms are available on request.
Resource requirements	1. Power point presentations 2. Trainer's Guide 3. Learner's Guide 4. Tonga National Building Code 5. Videos on fire-rated brick and block wall construction 6. Plans and Specifications 7. Clay bricks and concrete blocks 8. Mortar materials (cement, sand, lime, water) 9. Fire-rated insulation materials 10. Fire seals and fire-resistant sealants 11. Fire-rated door frames (e.g., steel door jambs) 12. Materials for sealing service penetrations 13. Additives for mortar (plasticisers, bonding agents) 14. Cleaning materials (e.g., acid solution for brick and block cleaning)

	15. Trowels 16. Brick hammer 17. Bolster 18. Jointing tools 19. Tape measures 20. Levels (spirit level) 21. Squares 22. String lines and line pins 23. Bricklayers' profiles 24. Set-out rods or brickies' tape 25. Mixing equipment (manual or mechanical mixer) 26. Hand and power tools (including battery-operated tools) 27. PPE's 28. Site safety signage and barriers 29. JSEA (Job Safety and Environmental Analysis) 30. Structured assessment and evidence-collection tools 31. Calculator (standard: fx82, fx100)
Requirements to complete this unit	There are three (3) Learning outcomes and nineteen (19) Performance Standards to measure competence. To demonstrate competence, the person studying this unit is: a. Required to demonstrate all LOs to the expected standards; b. Required to attain an Achieved Grade (Competent) to fulfil the requirements of the Unit Standard; c. Eligible to three (3) attempts to achieve the required competency within 14 days of the first attempt. Failure to achieve the required competency after three (3) attempts on the specific part of the assessment will require the person studying this Unit to re-enrol for the same Unit.
Important notes and definitions	<u>Notes:</u> 1. All training and assessment activities must be in accordance with Tonga National Building Code. 2. Assessors must comply with the Tonga national assessment and moderation requirements.

Definitions:

1. *Bond* refers to the pattern of laying bricks or blocks to ensure strength and proper load distribution (e.g., stretcher bond).
2. *Brickwork Tolerances* refers to acceptable limits of variation in brick and block work
3. *Damp-Proofing and Flashing* refers to systems used to prevent moisture ingress, which may also be integrated with fire-rated construction.
4. *Fire Resistance Level (FRL)* refers to a rating that indicates the ability of a building element to withstand fire in terms of structural adequacy, integrity and insulation.
5. *Fire Seal* refers to a material used to seal joints or penetrations to prevent the passage of fire and smoke.
6. *Fire Separation* refers to the use of construction elements to prevent the spread of fire between different areas of a building.
7. *Fire-Rated Brick and Block* refers to brick and block construction designed to resist the spread of fire for a specified time period.
8. *Fire-Rated Door Jamb* refers to a structural frame for a door designed to maintain fire resistance at openings.
9. *Fire-Resistant Material* refers to materials specifically designed to withstand high temperatures and prevent fire spread.
10. *Gauge* refers to the vertical spacing of courses to ensure consistent height and alignment.
11. *Hierarchy of Control* refers to a system used to minimise workplace hazards, ranked from elimination to PPE.
12. *Insulation (Fire-Rated)* refers to material used to reduce heat transfer and maintain fire resistance in walls and junctions.
13. *JSEA (Job Safety and Environmental Analysis)* refers to risk assessment process.
14. *Level* refers to perfect horizontal alignment

	15. <i>Line</i> refers to straight alignment along a length 16. <i>Mortar</i> refers to mixture used to bond brick and block units. 17. <i>OHS (Occupational Health and Safety)</i> refers to workplace safety regulations and practices. 18. <i>Plumb</i> refers to perfect vertical alignment 19. <i>PPE</i> (Personal Protective Equipment) refers to safety equipment such as helmets, boots, gloves, and high-visibility clothing. 20. <i>Raking joints</i> refers to removing mortar to create joint profile. 21. <i>Service Penetration</i> refers to an opening in a wall for services (e.g., pipes, cables) that must be sealed to maintain fire resistance. 22. <i>Silica dust</i> refers to hazardous dust produced during cutting brick and block materials. 23. <i>Tolerance</i> refers to the allowable variation in construction dimensions and alignment as defined by standards. 24. <i>Tonga National Building Code</i> refers to a set of technical provisions for the design and construction of buildings and structures in Tonga. 25. <i>Work area</i> refers to the particular section where tasks are performed at the work site.
Public comments on unit	Please contact TNQAB National Qualifications Unit (email EnquireNQ@tnqab.to or Telephone 28136) if you like to discuss or suggest changes to the details of this unit.