

AHCLSC4XX Apply structural principles to Class 10 buildings

Modification history

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 7.0.

AHCLSC4XX	Apply structural principles to Class 10 buildings
Application	<p>This unit of competency describes the skills and knowledge required to apply structural principles to the construction of National Construction Code (NCC) Class 10 buildings.</p> <p>The unit applies to individuals who apply specialist skills and knowledge to apply structural principles to the demolition or construction of Class 10 buildings. This includes applying and communicating non-routine technical solutions to predictable and unpredictable problems.</p> <p>All work is carried out to comply with workplace procedures, health and safety in the workplace requirements, legislative and regulatory requirements, and sustainability and biosecurity practices.</p> <p>State/territory licensing, legislative or certification requirements apply in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
Prerequisite Unit	AHCLSC4XX Apply building codes and standards to the construction process for Class 10 buildings AHCWHS401 Maintain work health and safety processes
Unit Sector	Landscape (LSC)

Commented [PM1]: Do we need to include both these units as prereq's?

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Analyse the structural integrity of building project	1.1 Determine class of building, intended use and climate zone from the NCC 1.2 Analyse project compliance with NCC bushfire, high wind, earthquake and alpine environment requirements 1.3 Analyse building design and structural integrity from plans and specifications, building construction codes and Australian Standards 1.4 Determine the effect of section properties on various materials 1.5 Determine if structural performance meets NCC general requirements and performance requirements 1.6 Confirm analysis with industry design and building construction professionals 1.7 Conduct pre-commencement site inspection to confirm analysis 1.8 Assess new and emerging building technologies for application to the construction process and compliance with NCC requirements and Australian Standards
2. Plan, coordinate and manage the laying of footings	2.1 Identify earthworks and footing or slab configuration from project plans and specifications 2.2 Establish cut and fill, excavation and compaction compliance with geotechnical report 2.3 Assess performance or reinforcement, concrete and other elements that contribute to structural integrity of specified footings 2.4 Determine compliance with building and construction regulations, standards and codes 2.5 Set out footings according to project plans and specifications

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Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
3. Plan, coordinate and manage the laying of flooring systems	3.1 Identify flooring system materials, components and configuration from project plans and specifications 3.2 Establish footing type and tie-down details 3.3 Assess suspended flooring system component sections' compliance with standards and codes span requirements 3.4 Determine floor framing and flooring compliance with NCC performance requirements for climate zone, fire resistance and rising damp requirements 3.5 Supervise and check laying of specified floor system for compliance with project documentation
4. Plan, coordinate and manage the building of wall systems	4.1 Identify and analyse structural and non-structural wall systems used in the planning of the building and construction project 4.2 Determine materials used for timber and steel framing and structural steel members compliance with NCC performance requirements, and timber framing compliance with Australian Standards 4.3 Identify, implement and check processes for erecting structural and non-structural wall systems comply with manufacturer specifications and building and construction codes and Australian Standards 4.4 Plan, implement and check requirements for application of bracing, tie-downs, tolerances, allowances, and fixing and installation of wall frame components compliance with Australian Standards, codes and manufacturer specifications 4.5 Manage processes to ensure quality of the frame, whether factory pre-cut and pre-nailed, factory pre-cut and assembled on site, or cut and assembled on site 4.6 Identify and implement allowances for services to be installed 4.7 Check compliance of windows and doors installation with building and construction codes, Australian Standards and manufacturer specifications
5. Plan, coordinate and manage the building of structural roof systems	5.1 Identify type of structural roof system and components and determine compliance with NCC performance requirements 5.2 Plan, implement and check erection of structural roof, roof trusses or hand cut roof members compliance with building and construction codes, Australian Standards and accepted industry construction practices 5.3 Plan, implement and check installation of roof sarking and cladding, skylights, roof ventilators and service penetrations compliance with building and construction codes, Australian Standards and manufacturer specifications 5.4 Manage processes to ensure quality and finish of roof systems
6. Plan, coordinate and manage wall cladding	6.1 Assess structural performance of cladding to be used for bracing in the frame construction for compliance with building and construction codes, Australian Standards and manufacturer specifications 6.2 Determine cladding, vapour permeable sarking or waterproof membrane and components meet NCC performance requirements 6.3 Supervise and check installation of specified cladding compliance with building and construction codes, Australian Standards and accepted industry practices

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Oral communication	<ul style="list-style-type: none"> Initiate discussions with design and building construction professionals, using clear language and standard industry terminology to confirm analysis of project structural integrity

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCLSC4XX Apply structural principles to Class 10 buildings	Not applicable	The unit has been created to address an emerging skill or task required by industry	Newly created

Links	
	Companion Volumes, including Implementation Guides, are available at VETNet: https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

TITLE	Assessment requirements for AHCLSC4XX Apply structural principles to Class 10 buildings
Performance Evidence	
<p>An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.</p> <p>There must be evidence that the individual has applied structural principles to the construction of one Class 10 building project, and has:</p> <ul style="list-style-type: none"> • assessed the structural integrity of the construction project • applied technical construction principles and concepts to the selection, integration and building of construction elements and components • coordinated, planned, implemented and checked construction • planned and documented the structural principles of the building. 	
Knowledge Evidence	
<p>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:</p> <ul style="list-style-type: none"> • NCC: <ul style="list-style-type: none"> • performance requirements and general requirements • performance solutions and assessment methods • performance hierarchy • evidence of suitability for building materials and products • classes of building and types of construction • current building and construction codes and Australian Standards relevant to Class 10 building construction • workplace policies and procedures, quality systems, best practice approaches, and safety requirements • accepted industry practices • standards and codes for timber framing • structural principles: <ul style="list-style-type: none"> • behaviour of structural materials • dead, live and wind loads • performance of beams • performance of columns • performance of roof trusses • section properties • solution of force systems • wind bracing • project documentation: <ul style="list-style-type: none"> • approval project plans and specifications • structural designs and specifications • engineer's footing design and specifications • registered plans • contour site plan • geotechnical report • underpinning, rock anchors and shoring design and specifications • retaining wall and tanking design and specifications • structural, floor, wall and roof systems • organisational quality documentation: <ul style="list-style-type: none"> • policies and procedures • workplace procedures, workplace safety and environmental requirements • various construction contracts • footing systems: <ul style="list-style-type: none"> • bored pier footings • columns or stumps • concrete slab floors • reinforced piers and beams 	

Knowledge Evidence

- drilled and driven piles
- mass concrete piers
- screw piles
- waffle pod slabs
- brick bases
- floor system and components:
 - suspended and slab on ground concrete floors
 - suspended timber, metal and steel floor frames
 - engineered floor joists
 - platform floor construction
 - fitted (cut-in) floors
 - compressed sheet wet area flooring
 - sheet flooring
 - tongue and groove flooring
 - autoclaved aerated concrete (AAC) panel systems
- structural wall systems:
 - composite walls featuring tilt-up slab, engineered timber products and lightweight AAC
 - framed walls incorporating timber, engineered timber products and lightweight section steel
 - masonry walls incorporating cavity brick, single-leaf masonry and AAC
- wall cladding:
 - weather boards
 - coatings over base materials
 - corrugated metal sheeting
 - fibre cement and compressed wood panelling
 - tilt-up slab
 - unfired and fired AAC masonry
- structural roof systems:
 - timber and metal pre-fabricated trusses
 - hand cut timber
- roof types:
 - box gable
 - dual pitch
 - Dutch gable and Dutch hip
 - gable end
 - hip and valley
 - north light
 - skillion
 - rafter and purlin
- roof cladding:
 - concrete, clay and metal tiles
 - shakes and shingles
 - short and long run, various profile and metal sheeting
- AAC floor and wall systems
- causes and implications of structural defects related to failure of applying structural principles to residential and commercial buildings
- extent of remedial work required for various defects cause by inadequate design and application of structural principles.

Assessment Conditions

- Assessment of the skills in this unit of competency must take place under the following conditions:
- physical conditions:
 - a workplace setting or an environment that accurately represents workplace conditions
 - resources, equipment and materials:
 - construction drawings, site plans and specifications
 - software and hardware to source and document information

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Assessment Conditions

- specifications:
 - NCC Volume 2
 - current building and construction codes and Australian Standards relevant to Class 10 building construction
 - workplace policies and procedures, and quality procedures relevant to class 10 building construction
 - construction material manufacturer specifications
- relationships:
 - design and building construction professionals
- timeframes:
 - according to job requirements.

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

Links

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