



Australian Government

Department of Education, Employment and Workplace Relations

CPCCCA3009A Construct advanced roofs

Release: 1

CPCCCA3009A Construct advanced roofs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to plan, prepare, set out and construct pitched roofs on irregular plan building shapes which may have skewed, splayed or hexagonal ends. It includes such roofs that include dormer windows and may be of gable, hip, hip and valley, or combinations of these that are applied to different types and styles of buildings.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills to construct complex roofs in a variety of patterns applicable to a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units CPCCCA3007B Construct pitched roofs
CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant information for planning and preparation purposes. 1.2. Safety (OHS) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and quality requirements. 1.6. Materials appropriate to the work application including required fire resistance rating are identified, obtained, prepared, safely handled and located ready for use. 1.7. Environmental requirements are identified for the project in accordance with environmental plans and statutory and regulatory authority obligations, and are applied. 1.8. Passive and active fire control elements for roof construction are identified and applied.
2. Set out and prepare members for roof erection.	2.1. Set out for position of members is checked against top of plates in accordance with drawings and specifications for advanced roof construction. 2.2. Pattern rafter is set out and cut to length allowing for overhang. 2.3. Main ridge boards are marked and cut to length. 2.4. Common rafters are cut to length and checked. 2.5. Common rafters are erected in correct sequence. 2.6. Bevels and lengths for hip and valley rafters are determined from pitch of roof. 2.7. Hip and valley rafters are cut and fixed. 2.8. Creeper rafters are cut and fixed from pattern rafter, allowing for overhang.
3. Install roof support.	3.1. Bevels and lengths for under purlins are determined. 3.2. Under purlins are cut and installed.

ELEMENT	PERFORMANCE CRITERIA
	3.3. Struts are measured, cut and installed to under purlins, hips, valley and ridges to regulation. 3.4. Collar ties are installed to regulatory requirements. 3.5. Trimmers are fitted to gable ends to take gable end rafter and barge board. 3.6. Valley boards are cut and fixed.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
 - determine requirements
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - follow instructions
 - read and interpret:
 - documentation from a variety of sources
 - plans, specifications and drawings
 - report faults
 - use language and concepts appropriate to cultural differences
 - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

REQUIRED SKILLS AND KNOWLEDGE

- technological skills to:
 - use a range of mobile technology, such as two-way radio and mobile phones
 - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- ceiling framing
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- pitched roof construction techniques, including fire control and separation required by the Building Code of Australia (BCA) and other legislation
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for the calculation of material requirements
- quality requirements for advanced roofs
- roof calculations for lengths, quantities and pitch
- roof geometry
- roof set out
- roof types and design
- roofing materials, including their rated fire resistance
- roofing regulations
- timber types, structural properties and uses, including engineered timber products
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- complete the roof to be constructed, which must include a hip end other than square on plan (hexagonal or octagonal), for a full size project ensuring correct selection and use of fire-rated materials and methods of construction.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement

EVIDENCE GUIDE

- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing advanced roofs

RANGE STATEMENT

Planning and preparation include:

Safety (OHS) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- relevant Australian standards
- safe work procedures related to constructing advanced roofs
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.
- work site inspection
- equipment defect identification
- assessment of conditions and hazards
- determination of work requirements.
- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
 - earth leakage boxes
 - lighting
 - power cables, including overhead service trays, cables and conduits
 - restricted access barriers
 - surrounding structures
 - traffic control
 - trip hazards
 - work site visitors and the public
 - working at heights
 - working in confined spaces
 - working in proximity to others
 - working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

RANGE STATEMENT

Tools and equipment include:

- air compressors and hoses
- bevels
- chisels
- hammers
- hand saws
- marking equipment
- measuring tapes and rules
- nail bags
- nail guns
- power drills
- power saws and power leads
- protractors
- saw stools
- scaffolding
- spirit levels
- squares (combination/tri)
- stair clips and tables
- steel squares and fences
- string lines.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications, where specified
- workplace operations and procedures.

Materials include:

- bolts
- metal
- nails
- patented fasteners
- screws
- timber.

Environmental requirements include:

- clean-up protection
- noise and dust
- vibration
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Advanced roof construction:

- is to include the major roof and the additional minor roof components for the same building
- types include a junction and a hip end other than square on plan and include hexagonal,

RANGE STATEMENT

	octagonal, conical, pyramidal, splayed ends, equal and unequal spans, unequal pitch, Dutch gable, gambrel and mansard • methods include ensuring compliance with incipient spread of fire requirements.
<i>Pattern rafter</i> includes determining:	• height above birdsmouth • length of common rafter for pitch of roof • pitch and plumb cut for common rafters.
<i>Ridge boards</i> include:	• abutment joints scarfed or butt jointed • those marked for rafter positions from wall plates.
<i>Bevels and lengths:</i>	• determination of bevels may be ascertained by geometry, tables, applied method, steel square, direct method or trigonometry • lengths may be determined by tables, scale, direct method, steel square or trigonometry.
<i>Purlins</i> and <i>struts</i> include:	• patented systems and joints, which are to be accurate and close fitting.

Unit Sector(s)

Unit sector	Construction
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Co-requisite units

Co-requisite units	Nil
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Functional area

Functional area