Australian Government

Department of Education, Employment and Workplace Relations

FPICOT4201B Produce complex truss and frame plans and details using computers

Release: 1

FPICOT4201B Produce complex truss and frame plans and details using computers

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the outcomes required to use computerised systems to produce and detail complex truss or frame plans, including layout production, fabrication and installation instructions General workplace legislative and regulatory requirements apply to this unit; however there are no specific licensing or certification requirements at the time of publication This unit replaces FPICOT4201A Produce complex truss or frame plans and details using computers

Application of the Unit

Application of the unit	This unit involves producing complex truss or frame plans and details using computers in a forestry office setting The skills and knowledge required for competent workplace performance are to be used within the scope of the person's job and authority

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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. Interpret plans and loading conditions	1.1. Applicable ***occupational health and safety*** (OHS), ***environmental***, ***legislative*** and ***organisational requirements*** relevant to detailing truss or frame plans using advanced computerised systems are followed 1.2. Drawings and documentation are obtained and work requirements interpreted and checked 1.3. Plans are reviewed and ***loading information*** is interpreted 1.4. Drawing views and notes are reviewed and additional design requirements and restrictions are identified and followed 1.5. Additional information and data are obtained from ***appropriate personnel*** or sources 1.6. Functional and pictorial ***image of structure***, trusses or frames is created based on design requirements 1.7. Design requirements outside normal ***software*** limitations are specified and appropriate assistance is sought 1.8. ***Communication*** with others is established and maintained in line with OHS requirements
2. Test design options and select best option	2.1. Fixed ***design details*** are transferred to layout data in line with software requirements 2.2. Frame or truss design types are specified and timber type and species are selected in line with ***material*** suitability and availability 2.3. Common industry spacing of frames, trusses and their components are set to the defined design structure in line with industry standards 2.4. Component sizes are fixed to clarify and firm design options 2.5. Layouts, spacing and sizing of individual structural members are progressively selected in line with software requirements 2.6. Design options are produced and design details selected, reviewed and revised in line with software and work order
3. Produce layouts and cutting requirements	3.1. Design records are reviewed for design integrity, completeness and consistency in line with applicable certifying authority standards 3.2. Structure layout drawings and truss or frame ***assembly drawings*** are produced using software in line with workplace and software requirements 3.3. Component cutting detail is produced in line with

ELEMENT	PERFORMANCE CRITERIA
	manufacturing requirements and schedules 3.4. Design records and documentation are completed and maintained in line with workplace procedures
4. Provide advice on design and production issues	4.1. ***Questions*** regarding design and assembly requirements are answered and explained comprehensively in a clear and concise manner 4.2. Effective communication techniques are used to assist and develop production personnel 4.3. Alternative materials and sizes for components are provided within the scope of the design and work requirements 4.4. Common site problems are discussed and prevention strategies are examined and adopted to ensure future site practice meets design requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

Required skills include:

- Technical skills sufficient to safely and accurately produce complex truss or frame plans and details using computerised systems and provided software; design and detail timber trusses or frames that use available material and meet the required standards; produce drawings and cutting lists suitable for manufacture
- Communication skills sufficient to use appropriate communication and interpersonal techniques with colleagues and others; complete, record and maintain information
- Literacy skills sufficient to interpret and apply relevant information, common industry terminology and specifications in written, diagrammatic and verbal form
- Numeracy skills sufficient to select appropriate mathematical and estimation processes
- Problem solving skills sufficient to identify problems and demonstrate appropriate response procedures

Required knowledge include:

- Applicable commonwealth, state or territory legislation, regulations, standards, codes of practice and established safe practices relevant to the full range of processes for producing complex truss or frame plans and details using computers
- Environmental protection requirements, including the safe disposal of waste material

REQUIRED SKILLS AND KNOWLEDGE

- Organisational and site standards, requirements, policies and procedures for producing complex truss or frame plans and details using computers
- Environmental risks and hazards
- Using energy effectively and efficiently
- Using material effectively and efficiently
- Procedures for recording, reporting and maintaining workplace records and information
- Procedures for applying building and structural regulations and site policy
- Range, types and uses of computer programs and software, including estimation software
- Common industry terminology for all component types
- Relationship between component loads, supports and spans and component loads, species, type, dimensions and grade
- Industry standard cross section sizes and profiles, length and spacing dimensions
- Established communication channels and protocols
- Problem identification and resolution strategies, and common fault finding techniques
- Types of tools and equipment, and procedures for their safe use and maintenance
- Appropriate mathematical procedures for estimating and measuring, including calculating time to complete tasks

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

A person who demonstrates competency in this unit must be able to provide evidence that they can select and use computerised systems to accurately produce complex plans and details of trusses or frames; and provide advice on design and production issues

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

The evidence required to demonstrate competency in this unit must be relevant to, and satisfy, all of the requirements of the elements of this unit and include demonstration of:

- following applicable commonwealth, state or territory legislative and regulatory requirements and codes of practice relevant to producing complex truss or frame plans and details
- following organisational policies and procedures relevant to producing complex truss or frame plans and details
- applying communication techniques and safe work practices in the work area
- interpreting plans, loading conditions and technical information and conveying information in written, sketch and verbal form
- using appropriate computer software, systems and techniques to accurately produce complex plans and details of trusses or frames
- testing design options, selecting best option and producing timely and accurate designs for manufacture and construction
- applying mathematical procedures, such as estimation and measurement
- providing design and production advice

Context of and specific resources for assessment

- Competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of required knowledge, other than confirmatory questions, will usually be conducted in

EVIDENCE GUIDE

an off-site context

- Assessment is to follow relevant regulatory or Australian Standards requirements
- The following resources should be made available:
  - workplace location or simulated workplace
  - materials and equipment relevant to undertaking work applicable to this unit
  - specifications and work instructions

EVIDENCE GUIDE

Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the FPI11 Training Package
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required knowledge
- Assessment must be by direct observation of tasks, with questioning on required knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the required knowledge
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency
- The assessment environment should not disadvantage the candidate
- Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English
- Where the participant has a disability, reasonable adjustment may be applied during assessment
- Language and literacy demands of the assessment task should not be higher than those of the work role

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.

RANGE STATEMENT

OHS requirements: are to be in line with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- fire fighting equipment
- hazard and risk control
- fatigue management
- elimination of hazardous materials and substances
- manual handling including shifting, lifting and carrying
- lifts and cranes, scaffolding, building codes and regulations

Environmental requirements may include:

- legislation
- organisational policies and procedures
- workplace practices

Legislative requirements: are to be in line with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice and may include:

- award and enterprise agreements
- industrial relations
- Australian Standards
- confidentiality and privacy
- OHS
- the environment
- equal opportunity
- anti-discrimination
- relevant industry codes of practice
- duty of care
- legal

Organisational requirements may include:

- organisational and site guidelines
- policies and procedures relating to own role and responsibility
- quality assurance
- procedural manuals
- quality and continuous improvement

RANGE STATEMENT

processes and standards
- OHS, emergency and evacuation procedures
- ethical standards
- recording and reporting requirements
- equipment use, maintenance and storage requirements
- environmental management requirements (waste minimisation and disposal, recycling and re-use guidelines)

RANGE STATEMENT

Loading information may include:	• details defining mass loads and externally applied loads (wind, surrounding structures, common or special building usage) • dimensions defining geometry and loading of individual structural members
Appropriate personnel may include:	• clients • colleagues • line management • software support engineers
Image of structure may include:	• load support • loading transfer mechanisms • tying positions
Software	is a commercial package running on suitable computer hardware and producing designs using specific truss or frame assembly hardware requirements
Communication may include:	• verbal and non-verbal language • constructive feedback • active listening • questioning to clarify and confirm understanding • use of positive, confident and cooperative language • use of language and concepts appropriate to individual social and cultural differences • control of tone of voice
Design detail may include:	• timber component species, type, cross section, grade, length and cutting angles • nail plate and other joining hardware sizes and marking requirements and may be selected from options on the basis of: • construction feasibility • cost • material availability • customer preference and site standards • material efficiency • energy efficiency
Material:	• is selected with regard to exposure and weathering

RANGE STATEMENT

	and may include:
Assembly drawings may include:	• timber of available species • solid types • laminated types • design assumptions regarding supporting and typing components • and may be designed as wooden roof and floor trusses and wall frames for solid brick, brick veneer and timber frame domestic houses
Questions may include:	• certifying authority requirements • building code requirements

Unit Sector(s)

Not Applicable

Competency field

Competency field Common Technical