



Australian Government

Department of Education, Employment and Workplace Relations

CPCBC4004A Identify and produce estimated costs for building and construction projects

Release: 1

CPCBC4004A Identify and produce estimated costs for building and construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to establish the estimated costs associated with the acquisition of materials and labour on building and construction sites, together with the application of relevant overhead costs and margins. Knowledge of physical resource and supplier identification, assessment of the availability of and requirements for skilled labour and application of appropriate codes, regulations and approvals gaining processes is essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of estimators, builders, managers and trade contractors within the construction industry responsible for producing estimated costs for labour, materials, overheads and on-costs on various residential and commercial construction projects within their scope of work as a trade contractor or builder.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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. Read and interpret plans and specifications.	<p>1.1. Appropriate plans and drawings are correctly identified.</p> <p>1.2. Project <i>plans and specifications</i> are read and understood.</p> <p>1.3. Levels, heights, gradients and other measurements are interpreted.</p> <p>1.4. Measurements are made and quantities identified from plans and specifications that conform to standard industry practice.</p>
2. Identify and calculate labour costs.	<p>2.1. Types and numbers of appropriate on-site personnel are identified and the time required on site is estimated.</p> <p>2.2. Labour hours for non-contract elements of on-site work are calculated.</p> <p>2.3. Costs or rates for required on-site work are calculated.</p>
3. Identify and establish physical resource requirements.	<p>3.1. Physical resource requirements are identified.</p> <p>3.2. Lists of materials are produced and quantities calculated.</p> <p>3.3. Quantities are established against project or standard construction contracts.</p> <p>3.4. Supplier prices for materials and consumables are obtained.</p> <p>3.5. Plant or equipment requirements are identified and costed.</p>
4. Develop estimated project costs.	<p>4.1. Appropriate labour rates and material costs are selected and applied.</p> <p>4.2. Estimates of <i>unit costs</i> are determined and applied as appropriate.</p> <p>4.3. Costs to the project of WorkCover, Environmental Protection Agency (EPA) requirements, seeking approvals, waste management site fees and other statutory or additional costs are identified and applied.</p> <p>4.4. Company overhead recovery and margins are applied.</p> <p>4.5. Completed estimated <i>project costs</i> are calculated for inclusion in a tender or bill.</p>

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:
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - read and interpret drawings and specifications
 - use language and concepts appropriate to cultural differences
 - use and interpret non-verbal communication
- contractual arrangement problem solving
- estimate labour and materials costs from written information
- numeracy skills to calculate labour hours and costs, material quantities and costs
- use appropriate costing software programs.

Required knowledge

Required knowledge for this unit is:

- how to access and interpret:
 - national codes, including Building Code of Australia (BCA) and the Plumbing Code of Australia
 - Australian standards relevant to the industry sector
- includes state or territory and local government building and construction codes, standards and government regulations relevant to the form of building or construction being undertaken (e.g. WorkCover and EPA)
- types of building and construction drawings and specifications
- types, scope and usage of labour through the employee and subcontractor systems
- operation and structure of the organisation's costing and contracting system.

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 by the preparation of a detailed estimate of labour, materials and other project costs as part of the preparation of a tender or bill for a residential or commercial construction project relevant to the specific trade or sector.

This unit of competency can 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:

- identify materials required for a project
- gather information about material supply
- interpret measurements and calculate quantities and costs
- plan and allocate human resources
- identify and cost other related costs, such as those required to meet statutory and planning approval processes
- produce documentation that meets the timeframes and quality standards established by the organisation
- communicate effectively, both verbally and in writing.

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:

- documentation that should normally be

EVIDENCE GUIDE

available in either a building or construction office

- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

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

EVIDENCE GUIDE

must relate to a number of performances assessed at different points in time and separated by further learning and practice, 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.

Plans and specifications include:

- building codes
- materials lists and quantity schedules
- materials specifications
- sketches or drawings
- statements of requirements.

Plant or equipment requirements include:

- communications equipment
- conveyors
- heavy equipment, such as wheeled and tracked earthmoving equipment, trucks and articulated vehicles

RANGE STATEMENT

- hoists
 - mobile and tower cranes
 - on-site equipment, such as:
 - compressors
 - pumps
 - generators
 - portable lighting
 - lifting equipment
 - portable compaction equipment.
- Unit costs* may include the cost of:
- construction cost per square metre
 - installation of pipes per metre
 - installation of sanitary ware per unit
 - laying of foundation per metre
 - laying of slabs per square metre
 - laying of steel tray roofing per square metre
 - masonry walls per square metre
 - painting per square metre
 - tiling per square metre.
- Project costs* include:
- building or construction materials
 - communications costs
 - cost of meeting statutory requirements, e.g. EPA
 - fuels, lubricants and consumables
 - organisational and subcontract labour hours
 - overheads
 - project administration costs
 - site facilities, such as:
 - offices
 - toilets
 - lunch rooms
 - waste removal fees.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area