



Australian Government

RIICWM504E Prepare civil works bill of quantities

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to prepare a civil works bill of quantities in civil construction. It includes identifying and calculating on-site resource requirements and finalising and reviewing the application of the bill of quantities process.

It applies to those working in managerial or technical specialist roles. They generally apply a broad range of technical and managerial skills and are responsible for the delivery of outputs that meet site requirements.

Licensing, legislative and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Users must check requirements with relevant body before applying the unit.

Unit Sector

Civil construction

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan for the civil works bills of quantities	1.1 Obtain, interpret and confirm work requirements 1.2 Access, interpret and apply documentation required to prepare civil works bill of quantities and confirm work activity is compliant 1.3 Prepare a draft works program that details tasks to be undertaken 1.4 Gain agreement on draft works program
2. Identify and calculate on-site labour requirements	2.1 Interpret and analyse data and identify the types and numbers of on-site labour required to undertake each stage 2.2 Identify the total amount of on-site labour required overall to meet required project outcomes 2.3 Complete documentation of stage by stage and overall labour

ELEMENT	PERFORMANCE CRITERIA
	requirements
3. Identify and calculate materials requirements	3.1 Interpret and analyse data and identify types and quantities of materials required to undertake each stage 3.2 Identify total quantity of materials required overall to meet required project outcomes 3.3 Complete documentation of stage by stage and overall materials requirements
4. Identify and calculate the on-site sub-contractor service requirements	4.1 Interpret and analyse data and identify the types and numbers of on-site sub-contractor services required to undertake each stage 4.2 Identify total number of on-site sub-contractor services required to meet required project outcomes 4.3 Complete documentation of stage by stage and overall on-site subcontractor services requirements
5. Finalise civil works bills of quantities process	5.1 Complete and submit bill of quantities and other reporting according to site requirements 5.2 Gain approval of bill of quantities 5.3 Confirm required filing of bill of quantities is completed
6. Support and review the application of the bill of quantities	6.1 Provide clarification and advice to those applying bill of quantities 6.2 Review application of bill of quantities and recommend improvements to civil works bill of quantities preparation processes

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	Applies basic mathematics to calculate labour and materials requirements and bill of quantities
Oral communication	Conveys information and requirements clearly and listens actively
Reading	Identifies and interprets relevant information from workplace procedures, documentation and legislation
Writing	Prepares specific information that complies with requirements, using sector-specific vocabulary, grammatical structures and conventions

Unit Mapping Information

Supersedes and is equivalent to RIICWM504D Prepare civil works bill of quantities.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIICWM504E Prepare civil works bill of quantities

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare civil works bill of quantities on at least two occasions, including:
 - identifying relevant information and scope of the work required
 - identifying viable options and selects civil works bill of quantities
 - consulting with internal and external clients and relevant authorities
 - conducting a risk assessment of the existing and potential hazards
 - obtaining further site data, including:
 - known and potential hazards, constraints and conditions
 - cultural and heritage data
 - geological data
 - geotechnical data
 - hydrological data
 - survey data
 - metrological data.

During the above, the candidate must:

- locate and apply required legislation, documentation, policies and procedures
- implement procedures and techniques for the preparation of civil works bills of quantities, including accessing, interpreting and applying:
 - project plans, drawings and specifications
 - civil works construction materials test results
 - civil works options selection data
 - computer based works planning technology
 - client feedback techniques
 - size civil works components

- calculation of areas, volumes, labour hours, materials quantities, sub-contractor service capabilities, productivity and required hours
- work with others to prepare a civil works bill of quantities that meets required outcomes, including:
 - providing instruction and supervision using communication techniques and equipment
 - preparing for and conducting briefings, toolbox and site meetings
 - completing written records and reporting systems
 - consulting with stakeholders.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislation required to prepare civil works bill of quantities
- policies, procedures and documentation required to prepare civil works bill of quantities, including those relating to:
 - risk assessment and management
 - statutory compliance
 - work health and safety
 - emergency response
 - environmental management
 - cultural and heritage management
 - quality management
 - communication techniques and equipment
 - contract management
 - reviewing, approving and filing records of bills of quantities
 - workplace reporting and recording
 - cultural and heritage requirements
- principles and techniques for preparing civil works bill of quantities, including those related to:
 - interpreting data, including:
 - engineering survey information
 - hydrological data
 - geotechnical information
 - civil works construction materials test results
 - meteorological data
 - cultural and heritage data
 - civil works options selection data.
 - confirmation methods, including consultations
- types, characteristics, technical capabilities and limitations of materials, plant and equipment required for preparing civil works bill of quantities.

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - personal protective equipment
 - equipment required to prepare civil works bill of quantities
 - be conducted in a safe environment; and,
- be assessed in the context of this sector's work environment; and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures and processes directly related to the industry sector for which it is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory regulatory standards as set out in the Standards for Registered Training Organisations 2015/Australian Quality Training Framework mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing the required level of RII training product knowledge
- having an understanding and knowledge of legislation and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence outlined in this unit of competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must have current industry skills directly relevant to the training and assessment being provided. This means the industry subject matter expert must demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 year
	2	2 years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 years
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no industry standard is specified should comply with any relevant regulation.	

*Guidance on simulated environments has been stipulated in the Companion Volume Implementation Guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a unit of competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

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