



Australian Government

RIICWD501D Prepare detailed design of foundations

Release: 2

RIICWD501D Prepare detailed design of foundations

Modification History

Release	Comment
1	This unit replaces RIICWD501A Prepare detailed design of foundations
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to prepare detailed designs of foundations in Civil construction.

This unit is appropriate for those working in management roles.

No licensing, legislation or certification requirements apply to this unit at the time of publication.

Unit Sector

Civil construction

Elements and Performance Criteria

1. Plan and prepare for the detailed design of foundations	1.1 Access, interpret and apply foundation design documentation and ensure the work activity is compliant 1.2 Obtain, read, interpret, clarify and confirm work requirements 1.3 Identify, interpret and confirm the foundations project requirements and information 1.4 Prepare a design plan which makes best use of the available resources and meets the design requirements
2. Undertake the detailed design of foundations	2.1 Interpret and analyse data and identify viable design options 2.2 Interpret and analyse data and make a recommendation for the preferred option 2.3 Complete the detailed design of the foundations 2.4 Prepare a cost estimate for executing the designed foundations

	2.5 Participate in the review of the foundations design with peers and stakeholders 2.6 Complete the documentation for the foundations design 2.7 Monitor and coordinate the progress of other team members involved in the design process 2.8 Gain design approval
3. Finalise design processes of foundations	3.1 Ensure filing of design records is completed 3.2 Complete and submit design cost and other reporting 3.3 Participate in performance review of the design process 3.4 Seek client feedback and contribute to the verification of the design 3.5 Close out all systems
4. Support and review the application of the design of foundations	4.1 Provide clarification and advice to those applying the design 4.2 Review the application of the design and recommend changes for continuous improvement 4.3 Contribute to the validation of the design

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIICWD501A Prepare details design of foundations

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIICWD501D Prepare detailed design of foundations

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Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant legislation, documentation, policies and procedures
- implements the requirements, procedures and techniques for the safe, effective and efficient completion of the detailed design of foundations including:
 - accessing and interpreting plans, drawings, specifications and design briefs
 - accessing and interpreting engineering survey and geotechnical information
 - accessing and interpreting hydrological, meteorological, cultural and heritage data
 - accessing and interpreting foundations options selection data
 - applying strength of materials and statics principles
 - analysing foundations and design footings
 - sizing foundations components
 - applying computer aided drafting design (CADD) and drafting technology
 - applying Industry or government standard design software
 - applying engineering graphical presentation techniques
 - maintaining design and cost records
- works effectively with others to undertake and complete the detailed design of foundations that meets all the required outcomes including:
 - complying with written and verbal reporting requirements and procedures
 - communicating clearly and concisely with others to receive and clarify work instructions
 - communicating clearly and concisely with others to coordinate work activities

- demonstrates completion of detailed designs of foundations that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
 - carrying out risk assessments
 - interpreting and analysing data
 - preparing a design plan
 - preparing a cost estimate
 - obtaining design approval
 - completing and submitting design cost
 - participating in performance review of the design process
 - providing clarification and advice to those applying the design
 - performing a validation of the design
 - calculating loads, sheer forces, bending moments, stresses, areas, volumes and mass
 - developing and applying design plans
 - selecting foundations design options

Knowledge Evidence

The candidate must demonstrate knowledge in preparing detailed designs of foundations through:

- accessing, interpreting and applying organization and site requirements and procedures for:
 - risk assessment and management
 - statutory compliance
 - occupational health and safety
 - environmental management
 - cultural and heritage
 - quality management
 - Australian and other relevant standards
 - Industry and organisational design
 - current Industry best practice
 - foundations design
 - foundations options
 - foundations geometrics
 - trench and pit shoring
 - design reviews
 - documentation, recording and reporting
 - design approvals
 - performance reviews
 - system close out
- potential hazards, constraints and conditions

- techniques for choosing preferred options
- team leadership techniques
- operational techniques
- foundations materials characteristics
- foundations construction plant and equipment capabilities
- cost estimation techniques

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment; and,
- outcomes of this unit that occur in an office-based setting may be assessed in a simulated 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; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive	3-6	3 Years

(Quarrying)		
Metalliferous Mining and Civil Construction	3-6	5 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.	

*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 frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

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