



Australian Government

RIICWD512D Prepare detailed design of motorways and interchanges

Release: 2

RIICWD512D Prepare detailed design of motorways and interchanges

Modification History

Release	Comment
1	This unit replaces RIICWD512A Prepare detailed design of motorways and interchanges
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 motorways and interchanges in Civil construction.

This unit is appropriate for those working in management or technical specialist 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 motorways and interchanges	1.1 Access, interpret and apply motorway and interchange design documentation and ensure the work activity is compliant 1.2 Obtain, read, interpret, clarify and confirm work requirements 1.3 Identify and confirm the motorways and interchanges 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 motorways and interchanges	2.1 Interpret and analyse data and identify viable options 2.2 Interpret and analyse data and recommend the preferred option 2.3 Complete the detailed design of the motorways and

	interchanges 2.4 Prepare a cost estimate for executing the designed motorways and interchanges 2.5 Participate in the review of the motorways and interchanges design with peers and stakeholders 2.6 Complete the documentation for the motorways and interchanges 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 motorways and interchanges	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 motorways and interchanges	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

RIICWD512A Prepare detailed design of motorways and interchanges

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 RIICWD512D Prepare detailed design of motorways and interchanges

Modification History

Release	Comment
1	This unit replaces RIICWD512A Prepare detailed design of motorways and interchanges
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.

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 motorway and interchange layouts 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 motorways and interchanges construction materials test results
 - accessing and interpreting motorways and interchanges selection data
 - applying computer aided drafting design (CADD) and drafting technology
 - applying engineering graphical presentation techniques
- works effectively with others to undertake and complete the detailed design of motorway and interchange layouts 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 motorways and interchanges that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
 - calculate areas, volumes, densities, mass, percentages and grades
 - maintain design and cost records
 - determine motorways and interchanges capacity requirements
 - select motorways and interchanges options
 - size motorways and interchanges components
 - select and apply appropriate construction techniques
 - develop and apply design plans
 - interpret and analyse data
 - complete a detailed design of motorways and interchanges
 - prepare a cost estimate
 - participate in a design review
 - obtain design approval
 - complete and submit design cost
 - review application of design and recommending changes

Knowledge Evidence

The candidate must demonstrate knowledge in preparing detailed designs of motorways and interchanges through:

- accessing, interpreting and applying legislative, organisation and site requirements and procedures for:
 - risk assessment and management
 - statutory compliance
 - wealth health and safety
 - environmental management
 - cultural and heritage
 - quality management
 - Australian and other relevant standards
 - Industry and organisational design
 - current Industry best practice
 - motorways and interchanges options
 - motorways and interchanges geometrics
 - motorways and interchanges surfacing
 - potential hazards, constraints and conditions
 - design review
 - documentation and reporting
 - design approvals and records filing
 - performance reviews

- systems close out
- techniques for choosing preferred options
- team leadership techniques
- operational techniques
- motorways and interchanges construction plant and equipment capabilities
- cost estimation techniques
- principles of road user behaviour

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 (Quarrying)	3-6	3 Years
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

Links

Companion Volume implementation guides are found in VETNet -

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