



Australian Government

RIICRC209E Lay reinforced concrete box culverts

Release: 1

RIICRC209E Lay reinforced concrete box culverts

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 lay reinforced concrete box culvert (RCBC) units in civil construction, including setting out and excavating sites, installing RCBC units and constructing support slabs and concrete bases.

It applies to those working in operational roles. They generally work under supervision to undertake a prescribed range of functions involving known routines and procedures and take some responsibility for the quality of work outcomes.

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 and prepare to lay reinforced concrete box culverts	1.1 Obtain, interpret, clarify and confirm work requirements 1.2 Access, interpret and apply documentation required to lay reinforced concrete box culverts 1.3 Identify and address potential risks, hazards and environmental issues, and implement control measures within scope of own role 1.4 Select and wear personal protective equipment according to site requirements 1.5 Identify, obtain, confirm and implement signage requirements 1.6 Select plant, tools and equipment required to carry out tasks and check for faults

ELEMENT	PERFORMANCE CRITERIA
	1.7 Check reinforced concrete box culvert (RCBC) units and confirm conformity against job requirements 1.8 Confirm plant and/or crane requirements to assist in preparing ground and placing box culverts according to job requirements
2. Set out and excavate	2.1 Determine location and depths of excavation according to job requirements 2.2 Set out and mark excavation location according to job requirements 2.3 Advise plant operator of excavation requirements 2.4 Check excavation depths and grades against job requirements 2.5 Compact and prepare foundations base for testing
3. Construct concrete base	3.1 Set out and construct formwork to specified dimensions according to job requirements 3.2 Place steel reinforcement according to job requirements 3.3 Form recesses in slab according to job requirements 3.4 Connect and tighten hold down anchors according to job requirements 3.5 Place, compact, finish and cure concrete according to job requirements
4. Lay culvert units	4.1 Place continuous mortar bed to support legs 4.2 Lower and position RCBC units to line and level on supporting slab 4.3 Connect hold down anchors to RCBC units 4.4 Finish joints between RCBC units according to job requirements 4.5 Infill space between legs of multiple culverts according to job requirements 4.6 Install spanning slabs for multiple culverts according to job requirements 4.7 Cut off and treat lifting lugs 4.8 Finish inlet and outlet of culvert 4.9 Advise plant operator of compaction and backfill requirements and backfill culvert to specified finish level according to job requirements
5. Conduct clean up activities	5.1 Clear work area and dispose of or recycle materials according to site requirements 5.2 Clean, check, maintain and store tools and equipment according to manufacturer specifications and site requirements

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	Calculates basic measurements, including mass and dimensions
Self-management	Monitors and minimises own exposure to worksite risks and hazards during work activities

Unit Mapping Information

Supersedes and is equivalent to RIICRC209D Lay reinforced concrete box culverts.

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 RIICRC209E Lay reinforced concrete box culverts

Modification History

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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:

- lay reinforced concrete box culverts on at least two occasions, including:
 - installing at least 30 RCBC units to design specifications
 - constructing at least two RCBC support slabs
 - setting out and excavating to place RCBC units in specified location, depths and grades according to job requirements
 - compacting and preparing foundations base for testing
 - constructing a concrete base to specified requirements, including:
 - constructing formwork
 - placing steel reinforcement with form recesses in slab
 - connecting and tightening hold down anchors
 - placing, compacting, finishing and curing concrete
 - laying and finishing off culvert units to specifications
 - advising plant operator of compaction and backfill requirements and backfilling culvert to required finish level
 - clearing work area and disposing of, recycling or storing materials.

During the above, the candidate must:

- locate and apply required documentation, policies and procedures
- implement the requirements, procedures and techniques to lay reinforced concrete box culverts, including:
 - identifying and applying relevant drawings and job specifications to all work activities
 - identifying, addressing and reporting potential hazards and risks
 - identifying, obtaining, confirming and implementing signage requirements
 - selecting and checking for faults all plant, tools and equipment required to carry out tasks

- identifying, addressing and reporting environmental issues and ground conditions
- confirming plant and/or crane requirements to assist in preparing ground and placing box culverts
- work with others to lay reinforced concrete box culverts in a way that meets requirements, including:
 - preparing for and organising work activities to meet task requirements
 - communicating with others to receive and clarify work instructions
 - using communication techniques and aids to advise others of work activity and exclusion zones
 - monitoring hazards and identifying and communicating changes to work environment.

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 lay reinforced concrete box culverts
- policies, procedures and documentation required to lay reinforced concrete box culverts, including those relating to:
 - site requirements
 - manufacturer specifications for required plant and equipment
 - relevant drawings and job specifications
 - hazard and risk management
 - environmental protection and ground conditions
 - work activity set up procedures
 - communication techniques and aids
 - project quality requirements
 - site isolation and traffic control responsibilities
 - work health and safety
 - waste management
- types, characteristics, technical capabilities and limitations of equipment required to lay reinforced concrete box culverts
- principles and techniques for effective reinforced concrete box culvert laying, including those relating to:
 - setting out and excavating sites to place RCBC units
 - compacting and preparing foundations base for testing
 - installing RCBC units
 - constructing RCBC support slabs and concrete bases.

Assessment Conditions

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

- include access to:
 - personal protective equipment
 - equipment required to lay reinforced concrete box culverts
- 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 (RTOs) 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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