



Australian Government

Department of Education, Employment and Workplace Relations

RIICRC209A Lay reinforced concrete box culverts

Release: 1

RIICRC209A Lay reinforced concrete box culverts

Modification History

Not applicable.

Unit Descriptor

This unit covers the laying of reinforced concrete box culverts in the civil construction industry. It includes planning and preparing, setting out and excavating, constructing concrete bases, laying culvert units, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

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. Plan and prepare	1.1. Access, interpret and apply <i>compliance documentation</i> relevant to the work activity 1.2. Obtain and confirm <i>safety requirements</i> from the <i>site</i> safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement <i>signage</i> requirements from the project <i>traffic</i> management plan 1.4. Select <i>tools and equipment</i> to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify <i>environmental protection requirements</i> from the project environmental management plan, and confirm and apply to the allotted task 1.6. Check <i>RCBC</i> units to ensure conformity
2. Set out and excavation	2.1. Determine location and depths of excavation from job drawings 2.2. Set out and clearly mark excavation location 2.3. Advise plant operator of excavation requirements 2.4. Check excavation depths and grades to conform with plans and specifications 2.5. Compact and prepare foundations base for testing
3. Construct concrete base	3.1. Set out and construct formwork to required dimensions 3.2. Place steel reinforcement to specifications 3.3. Form recesses in slab as specified 3.4. Connect and tighten hold down anchors to specified requirements 3.5. Place, compact, finish and cure concrete to specified 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

	<ul style="list-style-type: none">4.3. Connect hold down anchors to RCBC units4.4. Finish joints between RCBC units to specification4.5. Infill space between legs of multiple culverts to specification4.6. Install spanning slabs where specified for multiple culverts4.7. Cut off and treat lifting lugs4.8. Finish inlet and outlet of culvert4.9. Advise plant operator of compaction and backfill requirements and backfill culvert to required finish level
5. Clean up	<ul style="list-style-type: none">5.1. Clear work area and dispose of or recycle <i>materials</i> in accordance with project environmental management plan5.2. Clean, check, maintain and store tools and equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to lay reinforced concrete box culverts:

- apply legislative, organisation and site requirements and procedures for laying reinforced concrete box culverts
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to lay reinforced concrete box culverts:

- site and equipment safety requirements
- RCBC culverts and installation procedures
- confined space entry requirements
- dewatering
- concrete and concrete fabrication
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:</p> <ul style="list-style-type: none"> • knowledge of the requirements, procedures and instructions for laying reinforced concrete box culverts • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of reinforced concrete box culvert laying • working with others to undertake and complete the laying of reinforced concrete box culverts that meets all of the required outcomes • consistent timely completion of reinforced concrete box culvert laying that safely, effectively and efficiently meets the required outcomes • installation of thirty RCBC culvert units to design specifications • construction of a minimum of two RCBC support slabs
Context of and specific resources for assessment	<ul style="list-style-type: none"> • This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

	<p>may differ due to the site circumstances.</p> <ul style="list-style-type: none"> • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	<p>This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:</p> <ul style="list-style-type: none"> • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • working with others to undertake and complete the laying of reinforced concrete box culverts
Guidance information for assessment	<p>Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.</p>

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. **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.

--	--

Relevant compliance documentation may include:	<ul style="list-style-type: none"> • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	<ul style="list-style-type: none"> • OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan, including protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distances from excavations are kept, and areas secured from unauthorised access or movement • hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures including emergency shutdown and stopping, organisational First Aid requirements and evacuation
Site may include:	<ul style="list-style-type: none"> • any ground conditions in urban and rural areas
Signage may include:	<ul style="list-style-type: none"> • escort vehicle signage • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades

	<ul style="list-style-type: none"> • traffic conditions signage
Traffic conditions may include:	<ul style="list-style-type: none"> • congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	<ul style="list-style-type: none"> • levelling equipment • shovels • lifting equipment • crow bars • hammers • grinders • jointing equipment • oxy-acetylene equipment • scaffolding • saws
Environmental protection requirements may include:	<ul style="list-style-type: none"> • organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
RCBC culverts may include:	<ul style="list-style-type: none"> • those units used in the construction of culverts under roads

Unit Sector(s)

Road and Pavements Construction and Maintenance (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.