



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **RIICCM209A Carry out concrete work**

**Release: 1**

## RIICCM209A Carry out concrete work

### Modification History

Not applicable.

### Unit Descriptor

This unit covers the carrying out of concrete work in the civil construction industry. It includes planning and preparing, selecting materials, setting out for concrete work, constructing and fitting reinforcement, erecting formwork, carrying out concrete work, stripping formwork, 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

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>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.</p>
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply <b>compliance documentation</b> relevant to the work activity 1.2. Obtain and confirm <b>safety requirements</b> from the <b>site</b> safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement <b>signage</b> requirements from the project <b>traffic</b> management plan 1.4. Select <b>plant, tools and equipment</b> to carry out <b>concreting work</b> consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify <b>environmental protection requirements</b> from the project environmental management plan, and confirm and apply to the allotted task
2. Select materials	2.1. Determine location of steel reinforcement and formwork from drawings and reinforcement schedule 2.2. Check reinforcement against drawings and specifications 2.3. Select <b>formwork</b> components/ <b>materials</b> consistent with job 2.4. Select and use fixing/fasteners
3. Set out for concrete work	3.1. Set string lines accurately from existing pegs 3.2. Check grades to ensure correct fall 3.3. Identify and protect services to prevent damage
4. Construct and fit reinforcement	4.1. Cut and bend <b>reinforcing fabric and bars</b> as required by project drawings and specifications 4.2. Tie/fix fabric and bars to configuration 4.3. Attach stiffening rods to panels as required to facilitate handling 4.4. Locate reinforcement material in formwork, and place it on bar chairs/spacers as determined from

	<p>drawings, noting clearance from formwork</p> <p>4.5. Locate and secure <b>cast-ins</b></p>
5. Erect formwork	<p>5.1. Clear work area and prepare surface for safe erection of <b>formwork</b></p> <p>5.2. Set out formwork to requirements of drawings and specifications</p> <p>5.3. Assemble/erect and brace formwork</p> <p>5.4. Position expansion joints to specification and to relevant Australian standard</p> <p>5.5. Position dowel joints</p> <p>5.6. Remove debris, sawdust and other waste material from formwork</p> <p>5.7. Apply release agent to manufacturer's specifications</p>
6. Carry out concrete work	<p>6.1. <b>Place concrete</b> correctly to specified levels and grades and to <b>avoid segregation</b></p> <p>6.2. Compact concrete using immersion vibrator or other specified method</p> <p>6.3. Screed, <b>finish</b> and apply <b>curing</b> process to concrete</p> <p>6.4. Cover and protect concrete surface adequately</p>
7. Strip formwork	<p>7.1. Remove edge boxing and braces sequentially</p> <p>7.2. Denail, clean, store or stack timber components</p> <p>7.3. Clean, oil, store or stack steel components</p> <p>7.4. Discard damaged formwork components after stripping</p> <p>7.5. Clean screens safely before movement, where applicable</p>
8. Clean up	<p>8.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan</p> <p>8.2. Clean, check, maintain and store tools and equipment</p>

## 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 carry out concrete work:

- apply legislative, organisation and site requirements and procedures for carrying out concrete work
- 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 carry out concrete work:

- site and equipment safety requirements
- steel reinforcement characteristics
- concrete characteristics and properties
- concreting principles
- structural technology
- formwork
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheet and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

## Evidence Guide

<p>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.</p>	
<p><b>Overview of assessment</b></p>	
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<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"> <li>• knowledge of the requirements, procedures and instructions for carrying out concrete work</li> <li>• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of concrete work</li> <li>• working with others to undertake and complete concrete work that meets all of the required outcomes</li> <li>• consistent timely completion of concrete work that safely, effectively and efficiently meets the required outcomes</li> </ul>
<p><b>Context of and specific resources for assessment</b></p>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances.</li> <li>• 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.</li> <li>• Customisation of assessment and delivery environment to sensitively accommodate</li> </ul>

	<p>cultural diversity.</p> <ul style="list-style-type: none"> <li>• Aboriginal people and other people from a non English speaking background may have second language issues.</li> <li>• 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.</li> </ul>
<b>Method of assessment</b>	<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"> <li>• written and/or oral assessment of the candidate's required knowledge</li> <li>• observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> <li>• implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes</li> <li>• consistent achievement of required outcomes</li> </ul> </li> <li>• first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> <li>• working with others to undertake and complete concrete work</li> </ul> </li> </ul>
<b>Guidance information for assessment</b>	<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. **Bold 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.

<p><b>Relevant compliance documentation</b> may include:</p>	<ul style="list-style-type: none"> <li>• legislative, organisational and site requirements and procedures</li> <li>• manufacturer's guidelines and specifications</li> <li>• Australian standards</li> </ul>
<p><b>Safety requirements</b> may include:</p>	<ul style="list-style-type: none"> <li>• 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</li> <li>• safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public</li> <li>• safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement</li> <li>• recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials</li> <li>• emergency procedures related to equipment operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation</li> </ul>



<b>Site locations</b> may include:	<ul style="list-style-type: none"> <li>any rural or urban civil construction project</li> </ul>
<b>Signage</b> may include:	<ul style="list-style-type: none"> <li>escort vehicle</li> <li>highway traffic signs</li> <li>site safety signage</li> <li>temporary signage for the benefit of motorists and pedestrians</li> <li>barricades</li> <li>traffic conditions signage</li> </ul>
<b>Traffic conditions</b> may include:	<ul style="list-style-type: none"> <li>congested urban environments</li> <li>low traffic rural areas</li> <li>off-road un-trafficked areas</li> <li>buildings</li> <li>parking sites</li> <li>pedestrian areas</li> </ul>
<b>Plant</b> may include:	<ul style="list-style-type: none"> <li>pre-mix truck</li> <li>crane</li> <li>kibble</li> <li>wheelbarrow</li> </ul>
<b>Tools and equipment</b> may include:	<ul style="list-style-type: none"> <li>floats</li> <li>trowels</li> <li>edging tools</li> <li>screeds</li> <li>wheelbarrows</li> <li>tremmies</li> <li>chutes</li> <li>vibrators</li> <li>rakes</li> <li>short handle shovels</li> <li>rods</li> <li>hammers</li> <li>hoses</li> <li>buckets</li> <li>sponges</li> <li>tarpaulins</li> <li>curing agent applicators</li> <li>kibbles</li> <li>nips</li> <li>bolt cutters</li> <li>reinforcement benders</li> <li>mesh guillotines</li> <li>steam generators</li> </ul>

	<ul style="list-style-type: none"> <li>• shutters</li> <li>• brushes</li> </ul>
<b>Concreting work</b> may include:	<ul style="list-style-type: none"> <li>• site slabs and may include footpaths</li> <li>• repairing of kerb and channel</li> <li>• gully pits</li> <li>• culvert end structures</li> <li>• foundations</li> <li>• head walls</li> <li>• wing walls</li> <li>• aprons</li> <li>• plinths</li> <li>• drains</li> <li>• hardstands</li> </ul>
<b>Environmental protection requirements</b> may include:	<ul style="list-style-type: none"> <li>• organisational/project environmental management plan</li> <li>• waste management</li> <li>• water quality protection</li> <li>• noise</li> <li>• vibration</li> <li>• dust and clean-up management</li> </ul>
<b>Formwork</b> may include:	<ul style="list-style-type: none"> <li>• steel shutters</li> <li>• timber</li> <li>• plywood</li> </ul>
<b>Materials</b> may include:	<ul style="list-style-type: none"> <li>• concrete</li> <li>• steel reinforcing</li> <li>• formwork components</li> <li>• curing agents</li> <li>• plastic membranes</li> <li>• water</li> <li>• sand</li> </ul>
<b>Reinforcing fabric and bars</b> may include:	<ul style="list-style-type: none"> <li>• mesh</li> <li>• reinforcement bars</li> <li>• ligatures</li> </ul>
<b>Cast-ins</b> may include:	<ul style="list-style-type: none"> <li>• services and fixtures tied to the reinforcement</li> </ul>
<b>Formwork</b> may include:	<ul style="list-style-type: none"> <li>• steel shutters</li> <li>• timber</li> <li>• plywood</li> </ul>
<b>Place concrete</b> may include using:	<ul style="list-style-type: none"> <li>• wheelbarrows</li> <li>• pumping equipment</li> <li>• kibble</li> </ul>

	<ul style="list-style-type: none"> <li>• chute</li> <li>• tremmie</li> <li>• truck placed</li> <li>• shovelling</li> <li>• vibrating</li> </ul>
<b>Avoiding segregation</b> may include:	<ul style="list-style-type: none"> <li>• minimising the height of a vertical drop including: <ul style="list-style-type: none"> <li>• using a tremmie</li> <li>• using the flexible hose of a concrete pump</li> </ul> </li> </ul>
<b>Finish</b> may include:	<ul style="list-style-type: none"> <li>• steel trowel</li> <li>• mechanical trowelling machine</li> <li>• broom finished,</li> <li>• wood float</li> <li>• bull float</li> <li>• brushed</li> </ul>
<b>Curing</b> may include:	<ul style="list-style-type: none"> <li>• flooding</li> <li>• coating with a membrane</li> <li>• applied moisture</li> <li>• steam</li> <li>• curing agents</li> <li>• plastic sheeting</li> </ul>

## Unit Sector(s)

Civil Works (Common Units)

## Competency field

Refer to Unit Sector(s).

## Co-requisite units

Not applicable.