



**Australian Government**

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

# **RIICBS404A Apply the principles for the selection and use of bituminous emulsion**

**Release: 1**

## **RIICBS404A Apply the principles for the selection and use of bituminous emulsion**

### **Modification History**

Not applicable.

### **Unit Descriptor**

This unit covers the supervision of bituminous emulsion selection and use in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of bituminous emulsion selection and use are carried out in accordance with the accepted industry principles.

### **Application of the Unit**

This unit is appropriate for those working in a supervisory role or as a technical specialist, for bituminous emulsion selection and use 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. Ensure appropriate planning and preparation of tasks is carried out	1.1. Access, interpret and apply <b>compliance documentation</b> relevant to the work activity 1.2. Access, interpret and clarify the <b>specific task information and requirements</b> relevant to undertaking <b>bituminous emulsion selection and use tasks</b> 1.3. Ensure a <b>job plan</b> , is available which makes best use of the available resources and meets task requirements
2. Ensure appropriate planning and preparation of tasks is carried out	2.1. Confirm that the necessary <b>resources</b> are available for the safe, effective and efficient conduct of tasks 2.2. Ensure clear and timely <b>instructions</b> are communicated to <b>team members</b> and others involved, for the safe, effective and efficient conduct of the specific task requirements 2.3. <b>Set out</b> tasks as required for the effective completion of the task
3. Oversee the execution of tasks	3.1. <b>Monitor</b> bituminous emulsion selection and use performance to ensure it achieves the <b>required outcomes</b> 3.2. <b>Initiate</b> adjustments to work practice or job plan to ensure safe execution of work and achievement of required outcomes 3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded
4. Report on the execution of tasks	4.1. Complete and submit reports as required 4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks

## 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 in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to supervise bituminous emulsion selection and use:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare short messages
- prepare and present job reports
- prepare and maintain log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- apply bituminous emulsion selection processes
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
  - volumes
  - tonnage required
  - paver and roller speeds
  - grades
  - percentages
  - areas

- resource consumption figures, including required supply rates
- interpret bituminous emulsion properties and test results
- provide recommendations for the improvement of the safe, effective and efficient execution of bituminous emulsion selection and use

### **Required knowledge**

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to supervise bituminous emulsion selection and use:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures
- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- quality management requirements and procedures
- work zone traffic management requirements and procedures
- contract management requirements and procedures
- communication requirements and procedures
- administrative requirements and procedures
- types of bituminous emulsion, their specifications, applications and constraints on their use
- bituminous emulsion heating, handling and storage methods
- bituminous emulsion plant and equipment capabilities
- bituminous emulsion manufacturing processes
- plant, equipment and tools maintenance requirements and procedures
- operational techniques for the execution of bituminous emulsion tasks
- bituminous emulsion task resource requirements and procedures
- activities scheduling requirements and procedures
- bituminous emulsion delivery requirements and procedures
- job plan drafting of and administration requirements and procedures
- reporting requirements and procedures
- workplace relationship requirements and procedures
- organisational, client and site operational requirements
- relationship between various areas of civil works
- team leadership techniques
- works planning techniques
- bituminous emulsion monitoring methods
- bituminous emulsion sampling and testing methods
- engineering survey principles
- materials quality and delivery requirements and procedures
- mentoring techniques
- estimating principles

- civil works construction sequencing
- bituminous emulsion and related activities' terminology
- set out requirements and procedures
- road geometry
- ground surface treatment requirements and procedures e.g. proof rolling
- pavement drainage requirements
- works planning techniques
- monitoring methods

## 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 the supervision of bituminous emulsion selection and use</li> <li>• implementation of procedures and techniques for the safe, effective and efficient supervision of bituminous emulsion selection and use</li> <li>• working with others to plan, prepare and conduct bituminous emulsion selection and use</li> <li>• provision of clear and timely instruction and supervision by the individual of those involved in bituminous emulsion selection and use</li> <li>• evidence of the consistent successful supervision of bituminous emulsion selection and use</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>• Evidence for assessment is best gathered using the outcomes of products and processes in the workplace.</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> </ul>

	<ul style="list-style-type: none"> <li>• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity.</li> <li>• Aboriginal people and other people from a non English speaking background may have second language issues.</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>• Where applicable, physical resources should include equipment modified for people with disabilities.</li> <li>• 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 procedures and techniques for the safe, effective and efficient achievement of the required outcomes</li> <li>• consistently achieving the 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 plan, prepare and conduct bituminous emulsion selection and use</li> <li>• provision of clear and timely instruction and supervision by the individual of those involved in the conduct of bituminous emulsion selection and use</li> </ul> </li> </ul>
<b>Guidance information for assessment</b>	Consult the SkillsDMC User Guide for further information on assessment including access and



	equity issues.
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## Range Statement

<p>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>	
<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> <li>• code of practice</li> <li>• Employment and workplace relations legislation</li> <li>• Equal Employment Opportunity and Disability Discrimination legislation</li> </ul>
<p><b>Specific task information and requirements</b> may include:</p>	<ul style="list-style-type: none"> <li>• site geological and geotechnical data, including:             <ul style="list-style-type: none"> <li>• rock types and characteristics</li> <li>• soil types and characteristics</li> </ul> </li> <li>• site hydrological data, including:             <ul style="list-style-type: none"> <li>• surface water</li> <li>• ground water</li> </ul> </li> <li>• site meteorological data, including:             <ul style="list-style-type: none"> <li>• rainfall</li> <li>• humidity</li> <li>• temperature</li> <li>• wind</li> </ul> </li> <li>• site engineering survey data</li> <li>• known and potential site hazards, constraints and conditions</li> <li>• site cultural and heritage information</li> <li>• task specifications</li> <li>• task drawings</li> <li>• sources of materials</li> <li>• other organisations and contractors involved in the task or related tasks</li> </ul>
<p><b>Bituminous emulsion selection and use</b> may include:</p>	<ul style="list-style-type: none"> <li>• new pavements sealing</li> <li>• existing pavement repair and rehabilitation</li> <li>• their use as tack coat for asphalt, as spray seal, cold mix and stabilisation binders and in slurry</li> </ul>

	sealing <ul style="list-style-type: none"><li>• modification with polymers</li></ul>
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<p><b>Bituminous emulsion selection and use tasks</b> may include:</p>	<ul style="list-style-type: none"> <li>• site preparation methods</li> <li>• load and haulage methods</li> <li>• heating, handling and storage methods</li> <li>• placement methods</li> <li>• distribution methods</li> <li>• surface finishing methods</li> <li>• line, grade and level control methods</li> <li>• compaction and water selection and use methods</li> <li>• sediment control methods</li> <li>• application as tack coat for asphalt, as spray seal, cold mix and stabilisation binders and in slurry sealing</li> </ul>
<p><b>Job plan</b> is to include:</p>	<ul style="list-style-type: none"> <li>• human resource requirements</li> <li>• plant and machinery requirements</li> <li>• construction materials requirements</li> <li>• sub-contractor support requirements</li> <li>• waste disposal requirements</li> <li>• coordination requirements</li> <li>• activity scheduling</li> <li>• materials delivery scheduling</li> <li>• risk assessment and management requirements</li> <li>• occupational health and safety requirements</li> <li>• quality management requirements, including testing scheduling requirements</li> <li>• traffic management requirements</li> <li>• environmental requirements</li> <li>• task monitoring requirements</li> <li>• task performance monitoring requirements</li> <li>• communication requirements</li> <li>• reporting requirements</li> </ul>
<p><b>Resources</b> are to include:</p>	<ul style="list-style-type: none"> <li>• labour</li> <li>• plant, equipment and tools</li> <li>• highway haulage vehicles</li> <li>• construction materials</li> <li>• sub-contractor services</li> </ul>
<p><b>Instructions</b> are to include:</p>	<ul style="list-style-type: none"> <li>• briefings</li> <li>• handovers</li> <li>• work orders</li> <li>• toolbox meetings</li> <li>• site meetings</li> </ul>

<b>Teams members</b> may include:	<ul style="list-style-type: none"> <li>• other members of the organisation's management team</li> <li>• members of the team directly involved in the task</li> <li>• suppliers representatives</li> <li>• sub-contractors representatives</li> <li>• supervisors or managers of other organisations who are involved in related tasks</li> </ul>
<b>Set out</b> is to include:	<ul style="list-style-type: none"> <li>• control lines</li> <li>• cleared width</li> <li>• batters</li> <li>• off-sets</li> </ul>
<b>Monitor</b> is to include:	<ul style="list-style-type: none"> <li>• ongoing risk assessment</li> <li>• engineering survey</li> <li>• sampling and testing</li> <li>• observation and recording</li> <li>• general supervision</li> </ul>
<b>Required outcomes</b> may include:	<ul style="list-style-type: none"> <li>• task specifications requirements</li> <li>• task drawings requirements</li> <li>• coordination requirements</li> <li>• activity scheduling requirements</li> <li>• unit cost requirements</li> <li>• overall task cost requirements</li> <li>• waste management requirements</li> </ul>
<b>Initiate</b> is to include:	<ul style="list-style-type: none"> <li>• written communication</li> <li>• oral communication</li> </ul>

## Unit Sector(s)

Bituminous Surfacing

## Competency field

Refer to Unit Sector(s).

## Co-requisite units

Not applicable.