



Australian Government

Department of Education, Employment and Workplace Relations

RIICBS307A Conduct bitumen sprayer operations

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers conducting bitumen sprayer operations in the civil construction industry. It includes planning and preparing, setting up sprayer, loading sprayer, operating bitumen sprayer, operating hand lance, unloading and emptying sprayer, carrying out operator maintenance, 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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply compliance documentation relevant to the work activity 1.2. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Select plant, tools and equipment to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify environmental protection requirements from the project environmental management plan, and confirm and apply to the allotted task
2. Set up sprayer	2.1. Carry out pre-operational checks on bitumen sprayer in accordance with organisation, manufacturer or site authorised procedures 2.2. Ensure ancillary tanks are full and adequate materials are determined to perform spray operations 2.3. Check tank for prevention of contamination 2.4. Obtain and translate spraying details 2.5. Calculate spraying speed and pump rpm 2.6. Introduce correct amount of cutter 2.7. Fit appropriate number and size of jets to the spray bar
3. Load sprayer	3.1. Check previous load details for compatibility 3.2. Load tank with the prescribed type and quantity of material 3.3. Add additives and mix where required 3.4. Check temperature of the material and heat material to comply with manufacturer's specifications 3.5. Measure, calculate and record material quantities and additives

4. Operate bitumen sprayer	4.1. Carry out start-up, park and shutdown procedures in accordance with manufacturer's and site requirements 4.2. Select and modify bitumen spraying techniques to appropriately meet changing work conditions 4.3. Plan work to maximise machine coverage and minimise hand spraying 4.4. Set control valves correctly for the type of operation 4.5. Conduct, control and monitor spraying operations to ensure materials are sprayed to specification 4.6. Carry out operations adjacent to traffic in accordance with authorised traffic management controls and in a safe manner at all times 4.7. Complete spraying without damage to property or vehicles
5. Operate hand lance	5.1. Inspect hand lance to ensure correct operation 5.2. Select hand lancing techniques to match work conditions 5.3. Conduct, control and monitor hand spraying operations to ensure compliance with specification 5.4. Carry out hand spraying operations adjacent to traffic in accordance with authorised traffic management plans
6. Unload/empty sprayer	6.1. Unload or empty tank into storage or waste 6.2. Clean tank interior and spray bar in accordance with Austroads Bitumen Sealing Safety Guide
7. Carry out operator maintenance	7.1. Conduct fault finding inspections in accordance with manufacturer's specifications and organisational requirements 7.2. Maintain spray bars and nozzles in good working order 7.3. Carry out routine operational servicing and lubrication tasks to manufacturer's and organisational requirements 7.4. Maintain equipment condition reports and

	records
8. Clean up	8.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 8.2. Clean, check, maintain and store plant, 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 conduct bitumen sprayer operations:

- apply legislative, organisation and site requirements and procedures for conducting bitumen sprayer operations
- 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 conduct bitumen sprayer operations:

- site and equipment safety requirements
- bitumen spraying procedures
- bituminous materials and their characteristics
- processes for heating bitumen
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of material requirements, application rates and travel speed
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- safe operating techniques in all terrain
- JSAs/safe work method statements

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	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: • knowledge of the requirements, procedures and instructions for conducting bitumen sprayer operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of bitumen sprayer operations • working with others to undertake and complete bitumen sprayer operations that meets all of the required outcomes • consistent timely completion of bitumen sprayer operations that safely, effectively and efficiently meets the required outcomes • a minimum of three different materials to be loaded, mixed, heated and sprayed for two sprayer loads each to be used for two straight runs, two tapers or turning slots and two restricted areas to specified tolerances (spray runs to be a minimum total of 60% of the tank) • a minimum of two areas to be hand lanced, each with a different material and to the specified tolerance • completion of all calculations and spray sheets for the activities in the two previous dot points
Context of and specific resources for assessment	• 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 may differ due to the site circumstances. • 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	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: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • 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: • working with others to undertake and complete bitumen sprayer operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and

	equity issues.
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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.

Relevant compliance documentation may include:	• 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:	• 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 parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance are kept from excavations, and areas secured from unauthorised access or movement • safe operating procedures including recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • recognising 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 related to equipment

	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Site may include:	• car parks • airport runways • container yards • hard stands • footpaths • bikeways • roadways
Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • traffic conditions signage
Traffic conditions may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	• bitumen sprayers • hand lances • hoses, • rags • transfer hoses • jets • basic tool kits • bitumen spray charts • end shields • gas bottles • lighters
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management

Bitumen sprayer refers to:	vehicles which are purpose built, self contained units fitted with pumping and heating equipment that can load, mix heat and spray bituminous materials onto a pavement at a specified rate: they also provide facilities for hand spraying
Materials may include:	- bitumen - cutback bitumen - polymer modified binders - multi-grade bitumen - bitumen emulsions - kerosene - distillate - adhesion agents
Record may include:	necessary calculations for quantities and rates of application achieved
Bitumen spraying is restricted to include mechanical bitumen: sprayers only and may include	- nominated rates of application - uniformity - loading - unloading - transferring - heating - spraying - hand lancing
Hand lancing techniques may include:	- vehicle being positioned so that hoses are not run over or entangled - correct pump pressure is used - area is sprayed to specification - a lookout is used to watch hoses and for other workers/public
Conditions may include:	weather conditions including visibility day or night, prevailing winds and dust

Unit Sector(s)

Bituminous Surfacing

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.