Learner Workbook

TRAINER'S MARKING GUIDE

RIICBS203E –
Safely handle bituminous materials

This resource was developed by:

EASY GUIDES
Australia Pty Ltd

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Contents

Training support materials

Training package: Resources and Infrastructure Industry Training Package
Unit of competency: RIICBS203E Safely handle bituminous materials

Application / Context of Assessment

This unit describes the skills and knowledge required to safely handle bituminous materials in civil construction.

It applies to those working in operational roles. They generally perform routine tasks and work under direct supervision.

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.

Knowledge Questions

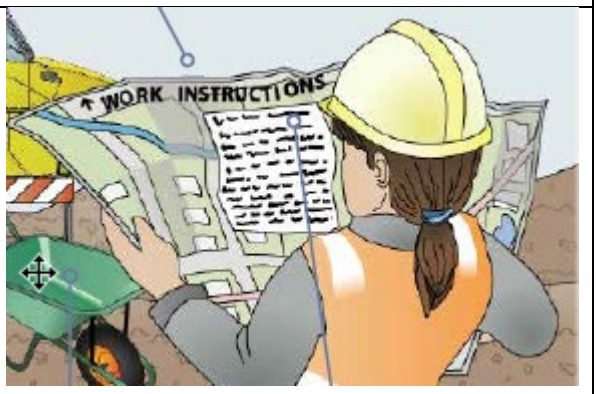
Element 1 – Prepare to conduct asphalt paver operations

Question 1 **What is the difference between asphalt and bitumen?**	PC 1.1
Answer may include but not limited to: Bitumen is the sticky, black binder that holds the aggregates together, while asphalt is the composite material created by mixing bitumen and aggregates to create a durable road surface.	

Question 2 **What are the four different types of bitumen?**	PC 1.1
Answer may include but not limited to: • Asphalt • Bituminous roofing materials • Bituminous paints and coatings • Bituminous membranes.	

Question 3 **How do you get, understand and confirm work requirements when working with bituminous materials?**	PC 1.1
Answer may include but not limited to: Firstly, review any project documents, plans, or instructions. Secondly, check the site conditions and environment Thirdly, communicate with team members to make sure you have a shared understanding of the work.	

Question 4 **How can you confirm work requirements for the job you will be doing?**	PC 1.2
Answer may include but not limited to: 1. Read the job description provided by the employer or project manager. 2. Talk to the employer or project manager about the specific job requirements. 3. Seek guidance from your supervisor or experienced colleagues. 4. Visit the job site to understand the project better. 5. Review project plans and specifications. 6. Talk to the project team.	

Question 5 **What do the job's work instructions explain?**	PC 1.2
Answer may include but not limited to: • What to do in unexpected situations like bad weather. • What the job is. • Where the job is. • How to do the job safely. • How long the job will take. • What tools and equipment you need. • How to do the job from start to finish.	

Question 6 **What is an example of material calculations when working with bitumen?**	PC 1.1, 1.2
Give an example of the following two items in a job: • Bitumen quantity calculation. • Aggregate quantities. [Note: Trainer to check answer.]	

Question 10 **What kinds of information do you need before starting work?**	PC 1.1, 1.2
Answer may include but not limited to: • Plans – what you need to do • Specifications – rules and details about the job • Operational details – how you will do the job • Quality requirements of the job – the standards you are expected to meet.	

Question 11 **When planning your job, why do you need to know what other people are doing on site?**	PC 1.1
Answer may include but not limited to: • To make sure you will not get in the way of other jobs being done • To make sure you know what others are doing near where you must work.	

Question 12 **What are environmental issues when working with bitumen?**	PC 1.3
Answer may include but not limited to: **Water contamination:** Improper handling can contaminate water sources, harming aquatic life and water quality. **Air pollution:** Heating and processing release pollutants, impacting air quality and health. **Habitat disruption:** Construction can damage ecosystems and wildlife habitats. **Wildlife impact:** Spills can harm animals that come into contact with contaminated areas. **Soil contamination:** Mishandling can lead to soil pollution, affecting land use and quality. **Greenhouse gas emissions:** Bitumen processes contribute to climate-changing emissions. **Waste generation:** Bitumen activities produce waste, which if mismanaged, leads to pollution. **Spills and accidents:** Accidental spills cause long-lasting harm to soil, water, and wildlife.	

Question 13 **What are potential hazards when working with bitumen?**	PC 1.3
Answer may include but not limited to: • Skin and respiratory irritation • Burns • Asphalt fumes • Fire and explosion • Slips, trips, and falls • Ergonomic hazards • Chemical exposure • Noise exposure	

Question 14 **What is a Job safety and environment analysis (JSEA) and a Safe work method statement (SWMS)?**	PC 1.3
Answer may include but not limited to: These forms help you plan for the work you will do. It is very important you fill these out before you start work. They help you work out the tools, equipment and PPE you need to do the job safely.	**Job Safety Analysis Worksheet** Company name: Date: JSA No. Site name: Permit to work requirement: Yes ☐ No ☐ Contractor: Approved by: Activity: **Activity** List the tasks needed to do the job in the order they are done. / **Hazards** Next to each task list the hazards that could cause injury when the task is done. / **Risk control measures** List the control measures needed to remove or minimise the risk of injury from the hazard you have identified. / **Who is responsible?** Write the name of the person responsible (supervisor or above) for putting the control measures in place.

Question 15 **What PPE should you use when working with an bitumen?**	PC 1.4
Answer may include but not limited to: • Hard hat • Safety gloves • Hi-vis vest • Dust mark • Long sleeved top and pants • Ear muffs • Boots • Safety glasses or goggles • Sunscreen.	

Question 16 **When do you wear respiration gear such as a mask?**	PC 1.4
Answer may include but not limited to: When the area is dusty or polluted.	

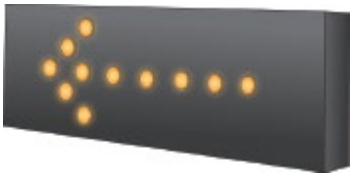
Question 17 **When do you wear hearing protection?**	PC 1.4
Answer may include but not limited to: You must wear hearing protection when there is a danger to your hearing from the work site or the equipment you are operating.	

Question 18 **What traffic management signage might you need when working with bitumen?**	PC 1.5
Answer may include but not limited to: • "Road Work Ahead" or "Construction Zone" signs, • "Detour" signs, • "Lane Closed" or "Lane Shift" signs, • "Reduce Speed" signs, • "Flagger Ahead" signs, • "No Parking" signs, and "End Road Work" or "End Construction" signs.	

Question 19 **What is the aim of a traffic control plan?**	PC 1.5
Answer may include but not limited to: The aim of a traffic control plan is to maintain a safe flow of traffic around the work area.	

Question 20 **What does the traffic management plan (TMP) tell you?**	PC 1.5
Answer may include but not limited to: It tells you how to control vehicles in and around the worksite. It helps keep the site safe for you and others.	

Question 21 **Where do you put up warning signs?**	PC 1.5
Answer may include but not limited to: • Near underground services • Near dangerous places • In places you need traffic control • On site fencing.	

Question 22 **What signs may be used in a traffic control plan?**	PC 1.5
Answer may include but not limited to: • Speed limit signs • Warning signs • Arrow boards • Portable traffic lights.	

Question 23 **What equipment may be used in a traffic control plan?**	PC 1.5
Answer may include but not limited to: • Stop-slow bats • High visibility vests • Radios • Barricades • Cones • bollards	

Question 34 **What hazards and risks do you need to check for?**	PC 2.3
Answer may include but not limited to: • Burns and scalds • Inhalation hazards • Fire and combustion hazards • Slips, trips, and falls • Heavy equipment hazards • Exposure to hazardous chemicals • Excessive heat and sun exposure • Environmental impact • Respiratory issues • Traffic hazards	

Element 3 – Demonstrate First Aid for bitumen burns

Question 35 **What first aid should be done if someone gets a bitumen burn?**	PC 3.1
Answer may include but not limited to: **Remove the Heat Source** **Cool the Burn** Use cool (not cold) running water to cool the affected area for at least 10-20 minutes. Do not use ice or very cold water, as it can further damage the skin. Cooling the burn helps to reduce pain and limit the depth of the injury. **Protect the Area** **Seek medical attention** **Pain management** Over-the-counter pain relievers like ibuprofen or acetaminophen can be used to help manage pain. Always follow the recommended dosages on the packaging.	

Score for knowledge assessment

Knowledge Assessment		
Correct answers:	_____ / 40	
Percentage:		
Result (circle):	Satisfactory	Not satisfactory

Trainer feedback:

If you have any questions about your results, speak to your trainer/supervisor.

Practical assessment tasks – Check List

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:

- safely handle bituminous materials on ***at least two occasions with at least two different asphalt or surface types.***

NOTE: You will do each task once when completing the workbook and once when doing the final summative assessment.

Practical Assessment Task 1 – Prepare to handle bituminous materials

(PC 1.7, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7)

SCENARIO [Your trainer will give you the following job or something similar.]

Your job is to prepare to handle bituminous materials. You will be doing routine jobs under direct supervision.

Demonstrate the following steps:

Task - **Road Construction Worker**	**Satisfactory**
Site Preparation: Assisting with the preparation of the construction site by clearing debris, marking boundaries, and setting up safety barriers. This is typically done under the guidance and direct supervision of experienced construction workers.	
Material Handling: Carrying and distributing bituminous materials like asphalt mixtures, gravel, or other materials used in road construction. They work closely with equipment operators and follow their instructions.	
Equipment Operation Support: Assisting equipment operators (such as asphalt paver operators or roller operators) by guiding them and ensuring the proper distribution and compaction of bituminous materials. Laborers may use hand tools to shape and spread materials.	
Traffic Control: Setting up and managing traffic control devices and signs to redirect and ensure the safety of drivers and pedestrians around the construction site. This is typically done under the supervision of flaggers or traffic control personnel.	
Material and Tool Maintenance: Assisting in the maintenance and cleaning of construction equipment, hand tools, and materials. This includes tasks like cleaning and storing tools and equipment properly.	

Safety Compliance: Following strict safety guidelines and procedures when working with bituminous materials and heavy machinery. They must also report safety concerns to supervisors.	
Documentation and Reporting: Assisting in keeping records of work activities and reporting progress to supervisors or more experienced workers.	

The applicants' performance in Practical Assessment 1 – Prepare to conduct asphalt paver operations:

☐ **Satisfactory**	☐ **Not yet satisfactory**
Applicant signature:	**Date:**
Trainer/trainer signature:	**Date:**

Practical Assessment Task 2 – Work safely with bituminous materials

(PC 2.1, 2.2, 2.3)

SCENARIO [Your trainer will give you the following job or something similar.]

Your job is to repair potholes. You will be doing routine jobs under direct supervision.

Demonstrate the following steps:

Task - **Road Construction Worker**	**Satisfactory**
Step 1: Safety Precautions Before starting any work, the pothole repair worker, working under direct supervision, ensures they are equipped with the necessary personal protective equipment (PPE), such as gloves, safety glasses, and a high-visibility vest.	
Step 2: Site Inspection The worker, guided by the supervisor, inspects the pothole site to assess its size, depth, and condition.	
Step 3: Traffic Control If the pothole repair is on a road, the worker and the supervisor set up appropriate traffic control measures. This includes placing cones, signs, and barricades to protect the work area and ensure the safety of passing vehicles.	
Step 4: Preparation of Bituminous Material The worker assists the supervisor in preparing the bituminous material, which may be hot asphalt mix or a cold patch material. They ensure that the material is at the correct temperature and consistency for proper application. [Note: Bitumen could be: 1. asphalt 2. bituminous roofing materials 3. bituminous paints and coatings 4. bituminous membranes	
Step 5: Pothole Cleaning The worker, under direct supervision, uses a shovel, broom, or compressed air to clean the pothole of loose debris, water, and loose asphalt fragments. The objective is to create a clean, dry surface for the new material to adhere to.	

Step 6: Tack Coat Application (Optional) The supervisor decides if a tack coat is necessary. If so, the worker assists in applying a thin layer of tack coat to the sides and bottom of the pothole to help bond the new material with the existing pavement.	
Step 7: Bituminous Material Placement Working closely with the supervisor, the worker fills the cleaned pothole with the bituminous material. They ensure the material is slightly overfilled to account for compaction during the next steps.	
Step 8: Compaction Using a compaction tool (such as a handheld compactor or a vibratory plate compactor), the worker, under the supervision's guidance, compacts the bituminous material to ensure it's tightly packed and level with the surrounding road surface.	
Step 9: Final Inspection The worker and supervisor jointly inspect the repair to ensure it meets quality standards. They check for proper compaction, alignment with the road surface, and overall smoothness.	
Step 10: Cleanup The worker assists in cleaning the work area, removing any excess bituminous material, and ensuring that traffic control devices are safely removed.	
Step 11: Documentation The worker may be responsible for documenting the work performed, including the materials used and any notes on the repair process.	