

# RIICRC307E

## Conduct Road Pavement

### Learner Guide Instructions

#### Who is this document for?

The learner.

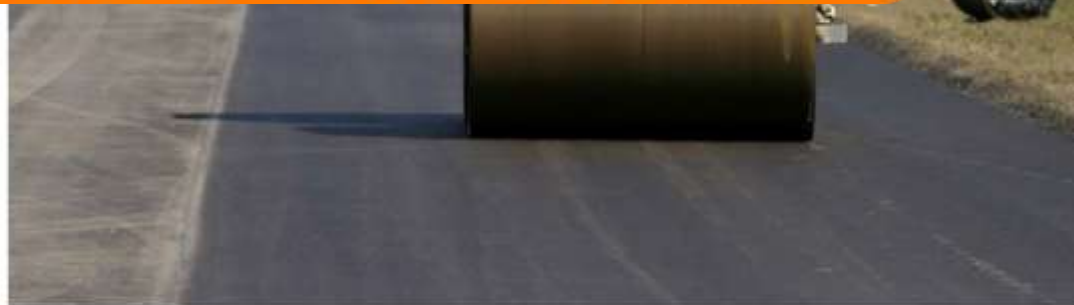
#### What is in this document?

- Course information that matches the PowerPoint presentation.
- Review questions.
- Practical assessment instructions for learners.

#### What do you need to do before you use it for the first time?

1. Rebrand the document.
2. Review the document as part of your validation process.
3. Set the reading and test time limits that are highlighted in pink at the end of the document.

**See the 'Read Me First' document for a complete set of instructions on how to use these resources.**



# LEARNER GUIDE

# RIICRC307E Conduct Road Pavement Construction

<b>Learner Name:</b>	
<b>Learner ID:</b>	
<b>Learner Contact Number:</b>	
<b>Learner Email Address:</b>	
<b>Date Training Commenced:</b>	

## **This Book Contains:**

- Course Information.
- Review Questions.
- Practical Assessment overview and Instructions.

# Table of Contents

<b>1.1 Introduction</b>	<b>5</b>
1.1.1 What is Road Pavement?	5
Review Questions	6
<b>1.2 Work Instructions</b>	<b>7</b>
1.2.1 Reading and Checking Your Work Instructions	7
1.2.2 Project Quality Requirements and Specifications	8
1.2.2.1 Compaction Standards	8
1.2.2.2 Testing Requirements	9
1.2.3 Organising Work Activities	10
1.2.4 Worksite Communications	11
1.2.4.1 Communicating with Others	12
Review Questions	13
<b>1.3 Working Safely</b>	<b>14</b>
1.3.1 Health and Safety Rules	15
1.3.2 Operations Documentation	15
1.3.3 How to Keep Everyone Safe	16
Review Questions	16
<b>1.4 Identify and Manage Risks and Hazards</b>	<b>17</b>
1.4.1 Identify Hazards	17
1.4.2 Assess Risks	18
1.4.3 Control Hazards	20
1.4.3.1 Personal Protective Equipment	21
1.4.3.2 Site Signage Requirements	21
1.4.4 Environmental Protection Requirements	22
1.4.4.1 Waste Management	23
1.4.5 Reporting Hazards and Environmental Issues	23
Review Questions	24
<b>2.1 Select Plant, Tools and Equipment</b>	<b>27</b>
2.1.1 Selecting the Correct Equipment	27
2.1.2 Common Plant, Tools and Equipment	28
2.1.3 Check Tools and Equipment	29
2.1.4 Report All Faults	29
2.1.5 Manufacturer Documentation	29
2.1.6 Equipment Limitations	30
Review Questions	30
<b>2.2 Survey the Work Area</b>	<b>32</b>
2.2.1 Check Site Layout	32
2.2.2 Ground and Material Conditions	32
Review Questions	33
<b>2.3 Set Out the Job</b>	<b>34</b>
2.3.1 Setting Out to Plans and Specifications	34
2.3.2 Establish Profiles	35
Review Questions	36
<b>2.4 Determine Layer Depth</b>	<b>36</b>
2.4.1 Road Pavement Materials	36
2.4.2 Determining Layer Depths	37
2.4.2.1 Communicate Layer Depths	37
Review Questions	38
<b>3.1 Direct Delivery Trucks</b>	<b>39</b>
3.1.1 Load Dispatch and Placement	39
3.1.2 Safe Delivery Directions	39
3.1.2.1 Notifying Operators of Unsafe Conditions	40
Review Questions	40

<b>3.2 Check and Adjust Moisture Content .....</b>	<b>41</b>
3.2.1 Field Moisture Tests.....	41
Review Questions .....	41
<b>3.3 Assess Road Pavement Laying .....</b>	<b>42</b>
3.3.1 Ensure Specifications Are Achieved .....	42
Review Questions .....	43
<b>3.4 Compaction Roller Passes .....</b>	<b>43</b>
3.4.1 Communicating with Roller Operators.....	44
3.4.2 Assess the Compaction Process .....	44
Review Questions .....	45
<b>3.5 Check Pavement Trimming.....</b>	<b>46</b>
3.5.1 Pavement Trimming.....	46
Review Questions .....	47
<b>3.6 Clean Up After Work.....</b>	<b>47</b>
3.6.1 Clearing the Work Area .....	48
3.6.2 Checking and Maintaining Equipment .....	48
3.6.2.1 Storage .....	48
Review Questions .....	49
<b>Practical Assessment Instructions .....</b>	<b>50</b>
Conditions of Assessment.....	50
Protective Personal Equipment (PPE) Requirements.....	50
Grounds for stopping the assessment.....	50
Achieving a Satisfactory Outcome .....	50
Practical Assessments .....	51

# 1.1 Introduction

These materials are based on the national unit of competency **RIICRC307E Conduct Road Pavement Construction**.

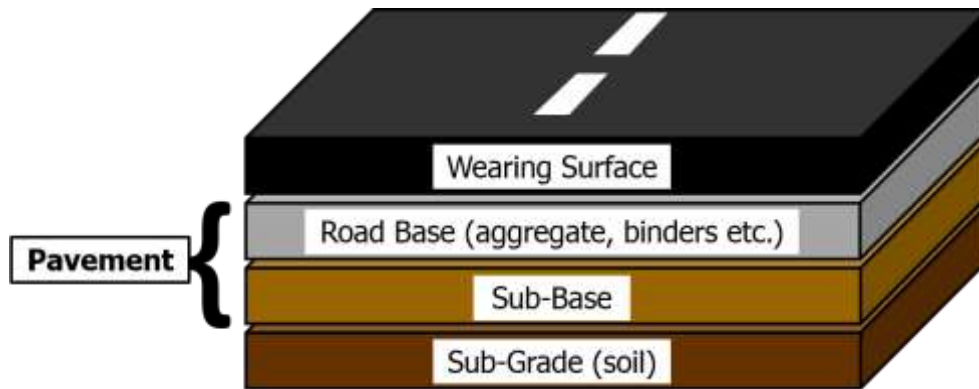
You will learn about:



- ◆ Planning and preparing for work.
- ◆ Setting out the work area.
- ◆ Placing and spreading materials.
- ◆ Compacting materials.
- ◆ Cleaning up the work area.

## 1.1.1 What is Road Pavement?

Road pavement is all of the materials above the sub-grade structure and below the wearing surface. It is sometimes known as the sub-base or base structure.



The construction of road pavement generally refers to finishing the surface of a road or repairing defects in the surface, rather than completing a full repair of the road.

As a guideline, the construction of road pavement involves the following steps:

- 1. Material delivery** – the materials for the work will be delivered on site in preparation for the work to begin. You may be required to direct the delivery trucks to the required locations.
- 2. Spreading and compacting** – materials are spread and compacted to the required dimensions and density, typically using rollers, graders and water trucks (where required).
- 3. Finishing** – while the materials are still slightly loose a final check is done to ensure the correct dimensions have been achieved. Repairs may be made at this stage to correct any imperfections prior to the compaction of the layer being completed.



This process may be repeated depending on the required amount of pavement layers for the job. These will be detailed in your work instructions, job specifications and relevant drawings and plans.

Work areas where road pavement construction is conducted may include:

- ◆ Haul roads.
- ◆ Formed/prepared roads.
- ◆ Access roads.
- ◆ Pads.
- ◆ Dam walls.



## Review Questions

<b>1.</b>	Which vehicles are typically used for the spreading and compacting of materials for road pavement construction?	<input type="checkbox"/>
<b>2.</b>	Why might repairs be made to the pavement layers prior to finishing the compaction of materials?	<input type="checkbox"/>
<b>3.</b>	What is road pavement?	<input type="checkbox"/>

## 1.2 Work Instructions

You need to be clear about what work you will be doing. Make sure you have everything about the job written down before you start. This includes what you will be doing, how you will be doing it and what equipment you will be using.



Make sure you have all of the details about where you will be working. For example:

- ◆ **The Site** – Is there clear access for all equipment? Are there buildings, structures, facilities or traffic in the way?
- ◆ **The Weather** – Is there wind, rain or other bad weather? Is it too dark?
- ◆ **Facilities and Services** – Are there power lines or underground services to think about?
- ◆ **Traffic** – Are there people, vehicles or other equipment in the area that you need to think about? Do you need to get them moved out of the area? Do you need to set up barriers or signs?
- ◆ **Hazards** – Are there dangerous materials to work around or think about? Will you be working close to traffic or machinery?

You also need to make sure you have all of the details about the kind of work you will be doing:

- ◆ **The Task** – What type of road needs to be constructed? How big is it? How long will it take? Does it need any special materials?
- ◆ **Equipment and Materials** – What type of equipment will be used? How big is it? How much room does it need? Are there any special materials or chemicals that will be used?
- ◆ **Communications** – How are you going to communicate with other workers?
- ◆ **Procedures and Rules** – Do you need any special permits or licences? Are there site rules that affect the way you will do the work?



### 1.2.1 Reading and Checking Your Work Instructions

All work needs to follow worksite, environment and company safety procedures.



Procedures help to make sure that all work is done in a safe way, without damaging equipment or putting people in unsafe situations. They also help to make sure that work is done in the correct order and doesn't interrupt or get in the way of other work that is happening on the site.

Your work instructions will tell you the safest way to do the job, and the equipment that you will need to use. It is a good idea to check your work instructions with your boss or supervisor to make sure you know exactly what you need to do.

In some situations you may be required to put together a clear set of instructions from various sources. To do this you may need to understand and obtain relevant information from site drawings, blueprints or plans.

If you don't know where to get your instructions or you can't understand them, you can ask your boss or supervisor. They will tell you where to find your work instructions and explain what they mean.



## 1.2.2 Project Quality Requirements and Specifications

Some of your work instructions might be given to you in plans, maps, reports and specifications. You will need to get the information out of these documents and use it to do your job.

Project specifications will tell you the types, quantities, grades and classifications of materials you will be working with.



Every task or activity relating to paved road construction will also have quality requirements relating to:

- ◆ Compaction.
- ◆ Drainage.
- ◆ Levels.
- ◆ Slope.
- ◆ Shape.

It is essential that these quality requirements are known, understood and adhered to in all paved road construction activities and tasks.

Plans are usually “scale drawings” that represent a large area on a small sheet of paper and show proportion at the same time.

Project plans and maps give you an overview of the site, for example:

- ◆ The location of your work area in relation to the whole work site.
- ◆ The position of stockpiles, work zones, roads and access areas.
- ◆ The location of environmentally sensitive or ‘no go’ areas.
- ◆ Contours, or the lay of the land, e.g. slopes, banks, depressions.



Depending on the project, drawings may be very detailed or they could be simple sketches.

You should learn about the conventions and symbols used in the plans and drawings so you can understand what the information means.

### 1.2.2.1 Compaction Standards



Compaction is where materials are compressed (squashed) into a given space to achieve a set amount of stability in the soil or materials.

During the compaction process, the amount of air spaces, voids and moisture trapped within the materials is squeezed out and more materials are pushed into the space.

Different types of soils and materials compact in different ways. Some, like sand, will need to be mixed with other materials before any compaction activities could start.

Other materials, such as clay, will need to be at the correct moisture content (not too wet or too dry). If too much water is used on the materials being compacted, compacting will bring excess water to the surface and prevent the materials from being compacted properly.

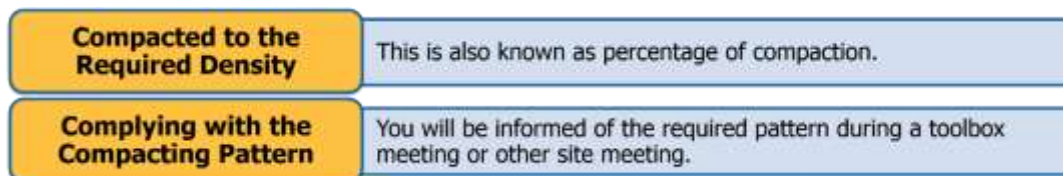


Knowing the required compaction amount or percentage is essential to the process. You will be able to find the percentage of compaction that you need to reach in site plans, quality assurance plans, and specifications, or by speaking with your supervisor or site quality assurance officer.



If you are not able to achieve the level of compaction required, speak with your supervisor to develop a work pattern or plan which will achieve the percentage of compaction required.

When compacting materials, remember to ensure the materials are:



Generally, you will be given a percentage of optimum compaction in your project quality instructions that must be attained during the work. The compaction percentage and pattern will vary depending upon the type of equipment that is used, the materials that are being worked with, and the requirements of the task.

### 1.2.2.2 Testing Requirements

To ensure you achieve the required specifications for each task, you may need to carry out some testing of the materials and work that has been completed.

The compaction standards and testing requirements for each task will be found in documents such as work instructions and site plans.

These documents will tell you:

- ◆ Amount of compaction required for the tasks.
- ◆ The range that is acceptable, for example if a 98% compaction standard is required then 97% - 99% may be acceptable.
- ◆ Compaction tests required.
- ◆ Stabilisation techniques and materials.
- ◆ Testing schedules and timeframes.
- ◆ Other applicable information.



Field testing compaction includes any tests that are conducted on site to determine the characteristics of soils and materials.

These tests are used to identify requirements for work based on moisture and compaction levels that are present and that need to be achieved for the project. This is particularly important in foundation work and road construction projects because the ground needs to be able to bear the weight of whatever is placed on top of it (layers or materials, roads and traffic).

There are two main methods used on most worksites for field testing compaction:

- ◆ **First Test for Compaction** – A long iron bar with a mushroom head is dropped on a surface. If a divot or mark is left it normally means the surface is too soft. If the rod bounces, it means enough compaction has been achieved to call for the lab testing to start.
- ◆ **Second Test for Compaction** – Deflections during proof rolling. Deflections are where material moves or leaves a track. It is an indication that there is softness in a layer and the material has not reached the required amount of compaction.



On some sites, the testing will be done by qualified laboratory technicians and engineers who have many tests that will give an in depth analysis of the materials. You may be required to assist these personnel with collecting samples during your work activities, or you may be required to take the results of the tests and make adjustments to work processes.

Regardless of the type of testing being conducted, you will need to follow the testing requirements of your site and follow the correct procedures. This will help to make sure you get the correct results each time and minimise errors.

### 1.2.3 Organising Work Activities

After receiving and clarifying all of your work instructions and requirements, you will need to organise and plan for your work activities. This is a major component of road pavement construction because each step must be completed before the next step can start.

Organising your work activities involves scheduling your daily and weekly tasks to complete all assigned tasks in the best, most efficient manner that still meets the requirements of the worksite. It will allow you to plan for the time ahead to ensure that project timelines do not get out of hand.

While you will be performing your own work activities you will also be involved with the activities of plant and machinery operators. This means you are required to sequence work activities and work with others onsite concerning timing issues.

Some people prefer a handwritten checklist or work method statement, others a computerised diary entry. What works for you is the most important thing.



A Work Method Statement (WMS) is a list of steps that outlines how a job will be done. It also includes any hazards that occur at each step, and what you need to do about them. These statements can also be known as Safe Work Method Statement (SWMS), Job Safety Analysis (JSA) or Safe Operating Procedure (SOP).

Work method statements are a great tool for organising your work activities and making sure you have completed everything. This is because they outline the details of all tools, equipment and coordination with other workers relating to your job. Make sure all of these are available and ready before you start.



Flexibility is important when organising your work priorities to allow you to reorganise if:

- ◆ Higher priority tasks arise.
- ◆ Accidents occur.
- ◆ Weather interferes.
- ◆ There are unexpected conditions onsite.

You need to take responsibility for your own activities to make sure that your assigned activities will be completed to the required standard, in the documented manner and within appropriate timeframes.

## 1.2.4 Worksite Communications

It is important to coordinate your activities with other workers when you are planning for and carrying out the work to make sure everyone knows:

- ◆ The work being completed.
- ◆ How, when and where you will be operating.
- ◆ What they need to do.

All workers on site must understand their own role and the roles of others before starting work. It helps to make sure work is done safely and efficiently.



You will also need to alert personnel to any hazards you notice during your work activities, including changing work environments.

People you may need to communicate and coordinate with on site include:

- ◆ Supervisors and management.
- ◆ Plant and vehicle operators.
- ◆ Traffic controllers or other workers on the site.
- ◆ Team leaders.
- ◆ Site safety personnel.
- ◆ Processing plant operators.
- ◆ Maintenance workers.
- ◆ Crane and float operators.
- ◆ Contractors.
- ◆ Inspectors, both internal and external, including WHS, environmental and quality assurance officers.
- ◆ Site visitors.



### 1.2.4.1 Communicating with Others

When communicating with others on site, make sure that you:



- ◆ Speak clearly and unambiguously – stick to the important details, don't waffle.
- ◆ Give instructions or directions so that they are easily understood.
- ◆ Provide complex information or explain issues to your listener in a way that ensures they understand. You could try breaking down the details, simplifying the information or referring to related examples.
- ◆ Listen carefully, answer questions and provide clarification as necessary. You can also ask questions to clarify understanding.
- ◆ Use all communications equipment appropriately, following the required procedures and protocols.

Communication equipment and methods you might need to use includes:

- ◆ Two-way radios.
- ◆ Telephones.
- ◆ Written reports.
- ◆ Emails.
- ◆ Text messages.
- ◆ Other site-specific systems.

Make sure that you follow your site procedures and protocols for communicating on site. This may include using the correct communication processes for communicating work activities or exclusion zones.



## Review Questions

<b>4.</b>	Why is it a good idea to check your work instructions with your boss or supervisor?	<input type="checkbox"/>
<b>5.</b>	Why should you learn about the conventions and symbols used in plans and drawings?	<input type="checkbox"/>

6.

What do deflections indicate when conducting the second test for compaction?



7.

What does organising your work activities involve?



8.

When communicating on site, what can you do to ensure understanding?



## 1.3 Working Safely

You must follow all safety rules and instructions when performing any work. If you are not sure about what you should do, ask your boss or supervisor. They will tell you what you need to do and how to do it in a safe way.





## 1.3.1 Health and Safety Rules

Every workplace has to follow laws and rules to keep everyone safe. There are 4 main types:

Rule or Law	Explanation
<b>Acts</b>	Laws to protect the health, safety and welfare of people at work.
<b>Regulations</b>	Gives more details or information on particular parts of the Act.
<b>Codes of Practice</b>	Are practical instructions on how to meet the terms of the Law.
<b>Australian Standards</b>	Give you the minimum levels of performance or quality for a hazard, work process or product.

Some states use OHS laws, and other states use WHS laws. They both talk about the same thing but use different words or names for people. If you have any questions about safety rules you should talk to your boss or supervisor.

## 1.3.2 Operations Documentation

Before starting your work you need to make sure you have access to all operations documentation for the job. This will help you to do your work in the safest way and make sure all work is compliant.

Operations documentation includes:

### Site Details

The information and safety requirements of the workplace environment (where you will be working).

### Hazard Details

Any hazards in the work area or related to the work. This could also include instructions on how to handle dangerous or hazardous materials.

### Task Details

Instructions of what the work is or what you will be doing (this can include diagrams or plans). Also instructions on how to safely do the job.

### Faulty Equipment Procedures

Isolation procedures to follow or forms to fill out.

### Signage

Site signage tells you what equipment you need to have, or areas that are not safe to be in.

### Emergency Procedures

Instructions on what to do in emergency situations, for example if there is a fire, accident or emergency where evacuation or first aid is needed.

### Equipment and Work Instructions

Details of how to operate plant and equipment and the sequence of work to be done.



### 1.3.3 How to Keep Everyone Safe



WHS law says that all companies and workers need to keep themselves and other people safe while they work. This is called a duty of care.

To keep yourself and other workers safe you need to:

- ◆ Follow your instructions.
- ◆ Follow all workplace rules.
- ◆ Make sure all equipment is safe to use.
- ◆ Carry out your work safely.
- ◆ Report any problems.

If you think something is dangerous, tell your boss or supervisor as soon as possible.

Your worksite will also have instructions for working safely including:

- ◆ Emergency procedures, including using fire fighting equipment, first aid and evacuation.
- ◆ Handling hazardous materials.
- ◆ Safe operating procedures.
- ◆ Personal protective clothing and equipment.
- ◆ Safe use of tools and equipment.



### Review Questions

<b>9.</b>	What are the four (4) types of health and safety laws and rules?	<input type="checkbox"/>
1.  2.  3.  4.		

**10.**

List three (3) things that may be included in 'operations documentation'.



1.

2.

3.

## 1.4 Identify and Manage Risks and Hazards

Before you start work, you need to check for any hazards or risks in the area.

If you find a hazard or risk you need to do something to control it. By lowering or removing risks we can make hazards less dangerous. This will help to make the workplace safer.



### 1.4.1 Identify Hazards

A **Hazard** is a thing or situation with the potential to cause harm or damage.

Part of your job is to look around to see if you can find any hazards before you start any work.

When you start checking for hazards, make sure you look everywhere. A good way to do this is to check:

- ◆ Up high above your head.
- ◆ All around you at eye level.
- ◆ Down low on the ground (and also think about what is under the ground).





Some hazards you should check for in the work area:

- ◆ Overhead and underground services.
- ◆ Uneven, soft, slippery or unstable terrain.
- ◆ Insufficient lighting.
- ◆ Trees.
- ◆ Fires.
- ◆ Bridges.
- ◆ Excavations.
- ◆ Buildings.
- ◆ Traffic.
- ◆ Embankments.
- ◆ Cuttings.
- ◆ Hazardous materials.
- ◆ Hot or sharp materials.
- ◆ Structures such as site offices and scaffolds.
- ◆ The weather and environment.
- ◆ Other workers or site visitors.
- ◆ On site vehicles, plant, equipment and machinery.
- ◆ Poorly maintained or faulty equipment.
- ◆ Road surfaces and edge solidity.
- ◆ Chemical hazards such as fuel, chemicals, contaminants, gases or dusts.

## 1.4.2 Assess Risks

A **Risk** is the chance of a hazard causing harm or damage.

Once you have identified the hazards on site or related to the work you will be doing you may be required to assess their risk level.

Risk levels are worked out by looking at 2 factors:

- ◆ **Consequence** – How bad will it be if the hazard causes harm?
- ◆ **Likelihood** – What is the chance of the hazard causing harm?



You can use a table like the one shown here to work out the risk level:

Likelihood	Consequence				
	1. Insignificant	2. Minor First Aid Required	3. Moderate Medical Attention and Time Off Work	4. Major Long Term Illness or Serious Injury	5. Catastrophic Kill or Cause Permanent Disability or Illness
1. Rare	Low	Low	Moderate	Moderate	Moderate
2. Unlikely	Low	Low	Moderate	Moderate	High
3. Possible	Low	Moderate	High	High	Extreme
4. Likely	Moderate	Moderate	High	High	Extreme
5. Almost Certain	Moderate	High	High	Extreme	Extreme

For example, a hazard that has a **Major** consequence and is **Almost Certain** to occur has a risk level of **Extreme**.

Likelihood	Consequence				
	1. Insignificant	2. Minor First Aid Required	3. Moderate Medical Attention and Time Off Work	4. Major Long Term Illness or Serious Injury	5. Catastrophic Kill or Cause Permanent Disability or Illness
1. Rare	Low	Low	Moderate	Moderate	Moderate
2. Unlikely	Low	Low	Moderate	Moderate	High
3. Possible	Low	Moderate	High	High	Extreme
4. Likely	Moderate	Moderate	High	High	Extreme
5. Almost Certain	Moderate	High	High	<b>Extreme</b>	Extreme

The risk level will help you to work out what kind of action needs to be taken, and how soon you need to act.

The table below is an example of a site risk policy:

Risk Level	Action
<b>Extreme</b>	<b>This is an unacceptable risk level.</b> The task, process or activity <b>must not proceed</b> .
<b>High</b>	<b>This is an unacceptable risk level.</b> The proposed activity can only proceed, provided that: <ol style="list-style-type: none"> <li>1. The risk level has been reduced to as low as reasonably practicable using the hierarchy of risk controls.</li> <li>2. The risk controls must include those identified in legislation, Australian Standards, Codes of Practice etc.</li> <li>3. The risk assessment has been reviewed and approved by the Supervisor.</li> <li>4. A Safe Working Procedure or Work Method Statement has been prepared.</li> </ol> The supervisor must review and document the effectiveness of the implemented risk controls.
<b>Moderate</b>	<b>This is an unacceptable risk level.</b> The proposed activity can only proceed, provided that: <ol style="list-style-type: none"> <li>1. The risk level has been reduced to as low as reasonably practicable using the hierarchy of risk controls.</li> <li>2. The risk assessment has been reviewed and approved by the Supervisor.</li> <li>3. A Safe Working Procedure or Work Method Statement has been prepared.</li> </ol>
<b>Low</b>	The proposed task or process needs to be managed by documented routine procedures, which must include application of the hierarchy of controls.



The action you take will depend on:

- ◆ The organisation's policies.
- ◆ The worksite's procedures.
- ◆ Relevant laws and regulations.

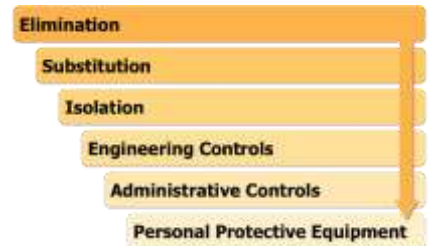
### 1.4.3 Control Hazards

The best way to control hazards is to use the Hierarchy of Hazard Control. The Hierarchy of Hazard Control is the name given to a range of control methods used to eliminate or control hazards and risks in the workplace.

You start at the top of the list and see if you can take away (eliminate) the hazard or danger.

If you can't take it away you move down the list to see if you can swap it for something safer (substitution).

Keep working through the list until you find something that controls that hazard or danger.



This table shows you the 6 different types of controls in order from best to worst:

Hierarchy Level	Action
<b>1. Elimination</b>	Completely remove the hazard. This is the best kind of hazard control.
<b>2. Substitution</b>	Swap a dangerous work method or situation for one that is less dangerous.
<b>3. Isolation</b>	Isolate or restrict access to the hazard.
<b>4. Engineering Controls</b>	Use equipment to lower the risk level.
<b>5. Administrative Controls</b>	Site rules and policies attempt to control a hazard.
<b>6. Personal Protective Equipment</b>	The least effective control. Use PPE while you carry out your work.

Hazard control measures need to be put in place before you start your work, or as soon as you see a hazard while you are doing your work. Hazard controls can sometimes be listed in your work instructions or you can ask your boss or supervisor for help.

Talk to the other workers in the area to make sure they are aware of the control measures you have put in place.

Once a hazard control is in place you will need to check to make sure it is working well to control the hazard or danger.

Talk to your supervisor or safety officer if you are not sure if it is safe enough to carry out your work. If you think the hazard is still too dangerous you should not try to do the work.



### 1.4.3.1 Personal Protective Equipment

Personal Protective Equipment (PPE) is clothing and equipment designed to lower the chance of you being hurt on the job. It is required to enter most work sites. It includes:



- ◆ Head protection – hard hats and helmets.
- ◆ Foot protection – non-slip work boots.
- ◆ Hand protection – gloves.
- ◆ Eye protection – goggles, visors or glasses.
- ◆ Ear protection – plugs or muffs.
- ◆ Breathing protection – masks or respirators.
- ◆ Hi-visibility clothing – clothing that makes you stand out and lets other people know where you are.
- ◆ Weather protection – clothing that protects you from the sun or from the cold.

Make sure any PPE you are wearing is in good condition, fits well and is right for the job.

If you find any PPE that is not in good condition, tag it and remove it from service. Then tell your supervisor about the problem and they will organise to repair or replace the PPE.

### 1.4.3.2 Site Signage Requirements

In some cases you may need to isolate the work area. Set up barricades and signage to warn others that you are working in the area and that it is dangerous for them to come too close.

Signage requirements will differ depending upon the location of the site. Highway signage requirements are different from rural roads or footpaths.

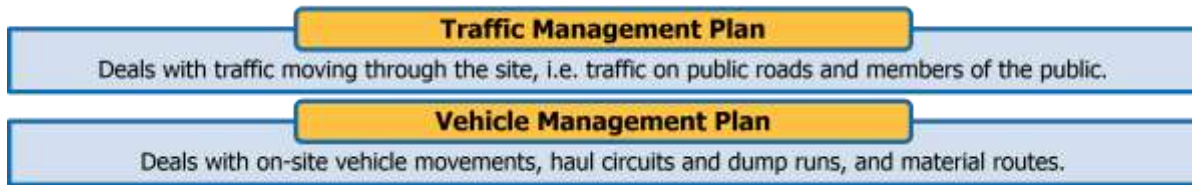


Sites that could require signage may include:

Site Type	Signage Requirement
<b>Urban Environments</b>	All require signage but the number of signs will vary with the level of congestion or use. Low traffic or rural areas can have fewer signs than a major road.
<b>Off-Road and Un-Trafficked Areas</b>	Require isolation signage and restricted access signs.
<b>High-Use Areas</b>	Parking sites, pedestrian areas and buildings – signage could vary depending on the location.
<b>Open Trenches</b>	Any areas of open trenches should be signed and isolated from the public.



To control the movement of traffic around and through the site there are 2 different types of management plans:



A Traffic Management Plan provides the details to safely manage traffic during the conduct of works on roads and normally includes:

- ◆ A traffic guidance scheme (diagrams).
- ◆ Worksite hazard assessment (such as a Work Method Statement).
- ◆ Details of the location, nature and duration of the works.

In the traffic or vehicle management plan, signs and the distances between signs will be listed. Reading the plans will show you where particular signs need to be placed.



Signs and barriers may include:

- ◆ Danger or warning signs like speed limits, 'workmen ahead' or 'reduce speed'.
- ◆ Flashing lights.
- ◆ Barricades, fences and cones.
- ◆ Guide signs.
- ◆ Arrow boards.
- ◆ Bollards.
- ◆ Portable traffic lights and signals.
- ◆ Hazard markers.



General awareness of the 'rules of the road' on site will help ensure a safe working environment for everyone.

## 1.4.4 Environmental Protection Requirements

Environmental protection requirements are part of every worksite. Make sure you check with your supervisor about what environmental issues need to be managed during your work.

The requirements are used on worksites to ensure the minimum possible effects on the immediate work environment such as plants, animals and resources. They also cover more immediate physical issues such as noise, dust and vibration.







All environmental details should be listed in an 'Environmental Management Plan' for the site. It can include details for:

- ◆ Waste management.
- ◆ Water quality protection.
- ◆ Noise control.
- ◆ Vibration control.
- ◆ Dust management.

The environmental management plan will outline the steps and processes needed to prevent or minimise damage to the environment through the use of machinery and equipment.

### 1.4.4.1 Waste Management

It is very important that water, air and land are protected from pollution sources. Steps must be taken to either protect the environment or restore it after work is done.

Waste and clean-up management may include taking steps to use environmentally friendly materials (including recycled materials) and implementing methods of sorting waste into categories for recycling and correct disposal.

The plan will outline:

- ◆ Disposal of site waste materials and rubbish.
- ◆ Recycling of waste materials.
- ◆ Re-use of waste materials.



### 1.4.5 Reporting Hazards and Environmental Issues

Any hazard or environmental issue that you identify will need to be reported. If you have taken any action you will also need to report those details.



This could include written or verbal reports. Your worksite may have standard paperwork that needs to be filled out, for example:

- ◆ Hazard report forms.
- ◆ Work method statements.
- ◆ Other documents.

Your report may need to be given to a safety officer, supervisor or a member of the management team.

## Review Questions

**11.**

List four (4) examples of hazards that you may identify in the work area.



1.

2.

3.

4.

**12.**

What two (2) factors can you look at to figure out the risk level?



1.

2.

**13.**Using the table provided, what is the risk level of a hazard with a consequence of **Moderate** and a likelihood of **Almost Certain**?

Likelihood	Consequence				
	1. Insignificant	2. Minor First Aid Required	3. Moderate Medical Attention and Time Off Work	4. Major Long Term Illness or Serious Injury	5. Catastrophic Kill or Cause Permanent Disability or Illness
1. Rare	Low	Low	Moderate	Moderate	Moderate
2. Unlikely	Low	Low	Moderate	Moderate	High
3. Possible	Low	Moderate	High	High	Extreme
4. Likely	Moderate	Moderate	High	High	Extreme
5. Almost Certain	Moderate	High	High	Extreme	Extreme

**14.**

What is the hierarchy of hazard control?

**15.**

List three (3) examples of Personal Protective Equipment (PPE).



1.

2.

3.

**16.**

What are the two (2) types of management plans used to control traffic?



1.

2.

**17.**

What five (5) details will be included in an environmental management plan?



1.

2.

3.

4.

5.

**18.**

Who might you give your report of hazards and environmental issues to?



## 2.1 Select Plant, Tools and Equipment

Once you have confirmed your job requirements you need to choose the right plant, tools and equipment to get the job done.



### 2.1.1 Selecting the Correct Equipment

When choosing plant, tools and equipment you need to think about:

- ◆ The task requirements, specifications and goals.
- ◆ The appropriateness of the equipment for the completion of the task.
- ◆ The characteristics, correct use, operating capacity and limitations of each item.
- ◆ The potential risks to yourself and others in the intended use of the equipment.

Information about technical capabilities and limits can be found in the manufacturer's specifications and manuals supplied by the manufacturer of each item.



It is essential to choose the correct item for the task you are going to undertake. Using the wrong equipment can make the job slower, harder and less safe.

To ensure you have selected the correct item, you will need to check the task requirements, specifications and goals. You should also speak with your team leader or supervisor if you are unsure about what tools or pieces of equipment to choose.

It is not safe to operate plant, tools or equipment outside of site procedures and the manufacturer's specifications. This may cause the equipment to break and could also cause an accident or injury.

## 2.1.2 Common Plant, Tools and Equipment

Plant items that you may come across during road pavement construction activities may include:

- ◆ Rollers.
- ◆ Graders.
- ◆ Skid-steers.
- ◆ Backhoes.
- ◆ Pavers.
- ◆ Excavators.
- ◆ Front-end loaders.
- ◆ Tip trucks.
- ◆ Water carts.



Tools and equipment for road pavement construction may include:



- ◆ Shovels.
- ◆ Levelling equipment.
- ◆ String lines.
- ◆ Crowbars.
- ◆ Tape measures.
- ◆ Handsaws.
- ◆ Cutting knives.
- ◆ Hammers.
- ◆ Trowels.
- ◆ Formwork.
- ◆ Jackhammers.
- ◆ Vibrating plates.
- ◆ Hand tampers.

If the correct tools are not available, report the matter and either source the proper equipment or wait for it to be brought on site. Never try to complete the work with the wrong equipment as this is a safety risk.

## 2.1.3 Check Tools and Equipment

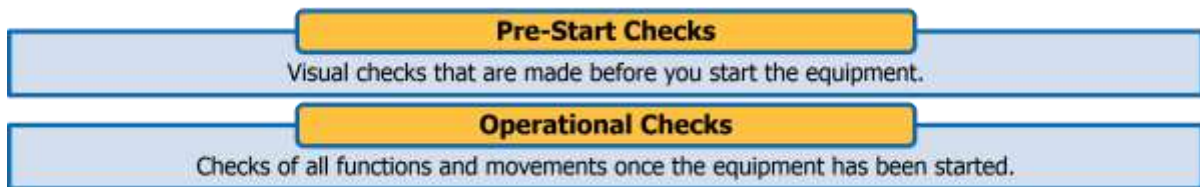
Before you use any piece of equipment, you need to conduct routine checks to make sure it is safe to use. Check the equipment logbook before you start your inspection to see if there are any faults that still need to be fixed before you can use it.

Also make sure you are wearing the correct PPE before you start checking any machines or equipment.

Generally, routine checks are performed at the start of each day or shift. You can use an inspection checklist to keep a record of the checks you have made.



If you need to use small plant items to complete your work (such as jackhammers and vibrating plates) you will need to check the equipment both before and after it has been started. This involves:



Communication equipment should also be checked regularly to ensure it is in good working order.

## 2.1.4 Report All Faults



If faults are found with the equipment, it is necessary to report them to your worksite or maintenance supervisor. This is so the fault can be recorded, and the item tagged or locked out until repaired.

Equipment that is faulty should be moved to an isolation area and tagged with an appropriate tag that meets the needs of the workplace. This is to ensure the fault does not cause an accident or injury to other workers. Damaged or defective items must not be used.

Record the details of the problem in a fault report or the equipment logbook.

## 2.1.5 Manufacturer Documentation

All the equipment and tools used in civil construction will have manufacturer documentation, also called manufacturer instructions.

This documentation may include:

- ◆ Instructions for assembly and use.
- ◆ Maintenance schedules.
- ◆ End of use guidelines.
- ◆ Known hazards or risks.
- ◆ Important contact details for repairs or enquiries.







It is important that you follow the guidance provided in manufacturer documentation as this will ensure all tools and equipment are being used safely. Reviewing this documentation is an important part of meeting WHS responsibilities.

Not following guidance given in the manufacturer's instructions can lead to unsafe work practices which could lead to illness, injury or in some cases death.

Manufacturer's instructions are often referred to when conducting a risk assessment, or learning how to use a new tool or install a piece of equipment.

If you are not sure where to locate these documents, then ask your supervisor or manager.

## 2.1.6 Equipment Limitations

It is important that you understand the limitations and capabilities of the equipment you use. This will minimise the chance of you using it in a way that is dangerous or may result in damage to the equipment.

Be aware of the duration and intensity of the work that is being completed using plant and equipment and make sure that you do not use it in a way that exceeds manufacturer recommendations.

Do not attempt to use any equipment you have not received proper training for as you could injure yourself or others on site.



## Review Questions

<b>1.</b>	How can you ensure you have selected the correct equipment?	<input type="checkbox"/>
<b>2.</b>	Why do you need to conduct routine checks on your equipment?	<input type="checkbox"/>

**3.**

What should you do if you find a fault with the equipment during routine checks?



**4.**

What are three (3) examples of manufacturer documentation?



1.

2.

3.

**5.**

Why is it important that you understand the limitations and capabilities of the equipment you use?



## 2.2 Survey the Work Area

Before you start any work you need to look around the site. The inspection and preparation of the worksite includes:

- ◆ Identifying site entry and exit points for plant and vehicles moving through the site.
- ◆ Working out the path of movement for plant, vehicles and materials.
- ◆ Identifying hazards, and taking suitable actions to deal with them.
- ◆ Making sure all equipment, resources and workers are available for the task.



### 2.2.1 Check Site Layout

The work area will need to be surveyed for work paths that will allow easy access for all delivery trucks and plant to make the movement of materials as safe and efficient as possible. These are called the access and egress points.



Normally, these details will be set out in the project specifications, plans and drawings, and particularly the vehicle management plan. Access and egress routes should be outlined in these as well as any material movement requirements. You may be required to set up signs or barricades as set out in the plans, and to make adjustments to these as work progresses.

You will need to survey the work area to make sure that the plans can safely be implemented and that conditions on or around the site match those outlined in the plans. Sometimes conditions may have changed between when the plans were developed and when work on site begins. If the plans do not match the site you will need to speak to your supervisor.

You may also need to survey the work area regularly, such as at the start of each day or shift, to make sure that you are aware of any changes to the site or access and movement routes and to ensure that materials can still be moved safely.

This survey of the work area should be carried out in consultation with other relevant personnel on site. This will ensure that everyone is aware of what will be done as well as when and why.

### 2.2.2 Ground and Material Conditions

When surveying the work area, you also need to make sure you are familiar with the ground conditions or materials on site before work begins. Have a look at the composition of the materials to see what kind of equipment is best suited to work with them.

The 2 biggest factors to keep in mind when conducting road pavement construction and sub-grade preparation are:

- 1. Without a solid foundation upper layers will be unstable and cause failures** – taking the time with the foundation helps make the upper layers smoother and more easily constructed.
- 2. Treatment of different soils will be outlined in the plans and specifications** – this will account for the differences in the materials across the site.



Ground conditions, terrain and grades will affect the operation of the machines and equipment used on site. Some equipment will be better suited to specific conditions. Operators will need to be able to change operational styles and techniques based on the prevailing conditions.

The conditions should also be checked to make sure they are safe and appropriate for support plant and vehicles. Some soil types may not be safe for unloading trucks, as the soil may not be able to support the weight of a loaded truck or may require extra safety precautions.

If you are having difficulty with visual identification, you can feel the materials to check for clay content or plasticity.

When feeling the materials, you are trying to identify the different components by the size of the aggregates and the amount of clay.

Clay is an important component of materials on a civil construction worksite as it gives the materials a plasticity, which allows the materials to bind together well.

Notify relevant personnel of ground conditions, including your supervisor and operators of plant, machinery and equipment if they may influence the way work is completed.



## Review Questions

6.

Why will the work area need to be surveyed for work paths that will allow easy access?



7.

When should you notify relevant personnel of ground conditions?



**8.**

What are the two (2) biggest factors to keep in mind when conducting road pavement construction and sub-grade preparation?



1.

2.

## 2.3 Set Out the Job

Setting-out is the activity of putting out reference points and markers that will guide the construction of roads.



### 2.3.1 Setting Out to Plans and Specifications

When setting out the area, you must ensure you are working with the correct plans and specification details. When establishing offset pegs and profiles you will be working with the survey benchmarks.

Each job site will have a variety of conditions which need to be met and areas that will need to be established. These areas will be detailed in the site plans and task specifications.

When reading and interpreting the plans you must be as accurate as possible. Any mistake when reading or interpreting the plans could have significant impacts on the job as a whole.

Tips for reading and interpreting the plans include:

- ◆ Orient any maps and drawings to the area you are working in.
- ◆ Plans can include scientific and technical information. If you are unsure of the terms used or the meanings of the readings discussed, ask for assistance.
- ◆ Specifications will detail every aspect of the finished product. Always check your team can achieve the required results with the available materials before starting activities.





Once you have read the plans and specifications and have identified what you need to do and where you need to do it, you will need to set out the areas for paved road construction.

Plans for setting out will include the limits of the clearing to be done and establishing the work area footprint. This area will need to be marked in accordance with your organisational procedures.

Each set out plan will also give details of the distance from planned or proposed features such as culverts or environmental features.

These distances can help ground your boundaries of work areas. Other distances may be given from a proposed centre line of the work area.

## 2.3.2 Establish Profiles

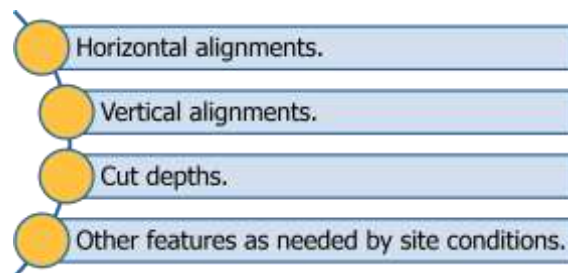
The next step is to determine the profiles to be achieved. Refer to the plans and specifications for the task. These profiles ensure a consistent level is achieved.

When establishing profiles, you will use pegs and string lines to define the areas to be worked. These pegs will be applied in accordance with site requirements and will show either the limits of the working area and or the level to be achieved.

Often profile markers will be used to indicate cut and fill locations on the site. They may also indicate any changes in the work surface.



You should regularly check your plans, specifications and cross sections to ensure correct formations are being achieved. This could include:



Often when establishing offset pegs and profiles to line and level, you will need to have an understanding of the levelling equipment used on your site.

These could include:



- ◆ Laser levels.
- ◆ Straight edge.
- ◆ Dumpy level (theodolite).
- ◆ Measuring tapes and wheels.
- ◆ String lines.
- ◆ GPS equipment if available and appropriate for the task you are completing.

If you are unfamiliar with any of these items, speak with a supervisor for instruction on how to use them.



## Review Questions

9.

List three (3) examples of levelling equipment that may be used to establish profiles on site.



1.

2.

3.

## 2.4 Determine Layer Depth

With the job set out to plan and the profiles established, you will need to determine the depths of layers for spreading materials.

The characteristics of pavement materials are important to know before starting work.

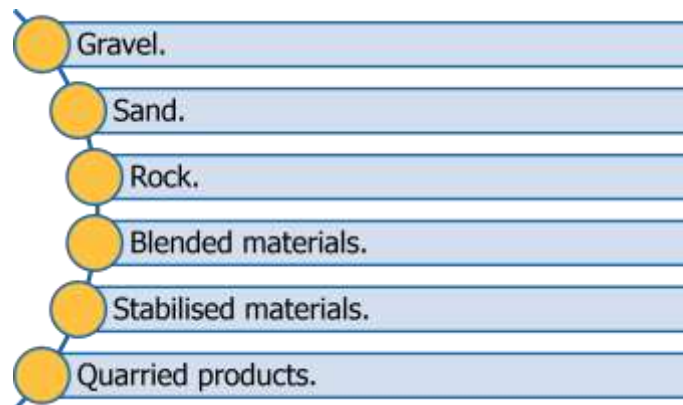
In most cases, the material properties will have been tested through a geotechnical laboratory prior to the start of works.



After determining and confirming the layer depths for spreading materials you will need to communicate this information to the plant operators working with you.

### 2.4.1 Road Pavement Materials

Materials commonly used during road pavement construction include:



It is important that each site treats the materials in an appropriate manner, taking into account their characteristics and types.

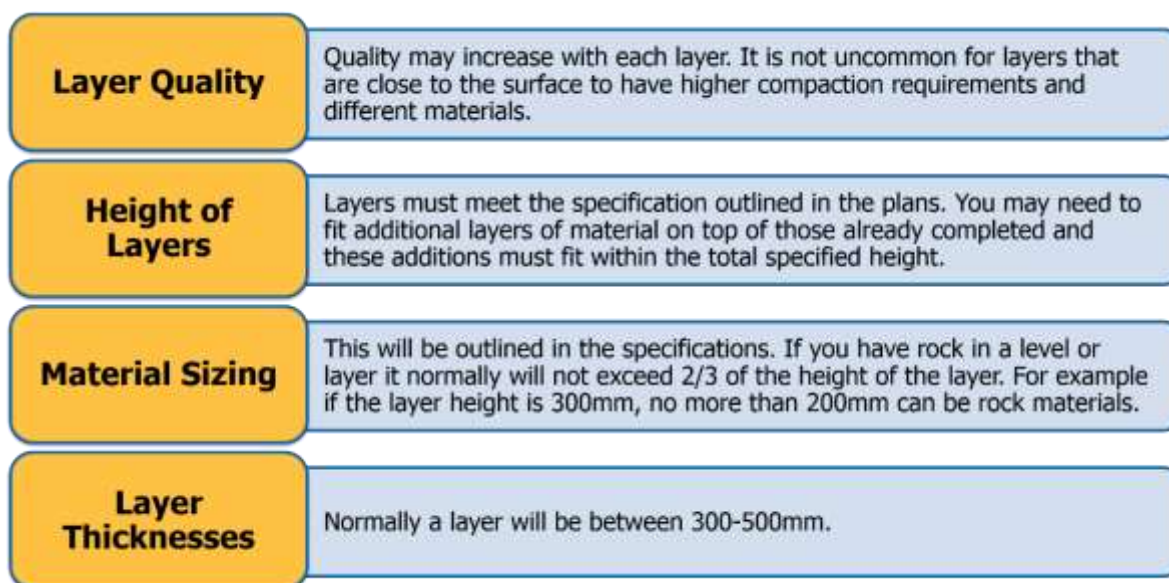
Geological surveys for the site will have identified the characteristics of the local environment. These will assist in determining the materials that need to be imported.

All materials will need to be placed in layers that contribute to the final road construction. Each layer will have specified depth and material requirements. These must be abided by at all times.



## 2.4.2 Determining Layer Depths

Some things to consider when determining layer depths include:



### 2.4.2.1 Communicate Layer Depths

Once you know the depth and materials being used for each layer, you will need to communicate this information to the plant operators who will spread the materials.

When informing the plant operators of the task requirements, make sure you communicate effectively and use the approved site processes for communication.

It is important to ensure they have understood you and are clear about their instructions. Miscommunication can cause problems later, such as not meeting requirements or specifications.

Signage, hand signals and other non-verbal methods may be used in some situations, particularly noisy environments.



Before commencing road pavement construction, it will be necessary for you to confirm the signals that may be used.

## Review Questions

**10.**

What communication methods might you use when communicating work instructions in a noisy environment?



**11.**

What will you need to do once you know the depth and materials being used for each layer of road pavement?



## 3.1 Direct Delivery Trucks



One of the tasks undertaken during road construction activities will be directing delivery trucks, machinery and plant items to the required location for unloading of materials.

Firstly, you need to determine the correct location for the materials. This location could be a stockpile, spoil site or another specific area close to plant or machinery.

Once this is decided, ensure you are directing the operator to deliver the materials in a manner that is safe and appropriate for the machinery being used.

Make sure you direct drivers along paths or roads and always warn them of any other plant and equipment that may be in the area.

Always use the appropriate and approved methods of communicating load dispatch instructions to the operators.

### 3.1.1 Load Dispatch and Placement

Load dispatch and placement is commonly done by 3 methods:

- ◆ **Running Out Materials** – Driving slowly and allowing the materials to spill at a designated rate from the truck.
- ◆ **Dumping or Stockpiling** – Creating piles of materials that are spread at a later date.
- ◆ **Side Tipping** – Involves a side tipping truck which allows the materials to be run out in rows ready for grading.



Load dispatch and placement areas will vary with the plant and equipment available on site. Always plan your directions so you are taking full advantage of the machinery at your disposal.

### 3.1.2 Safe Delivery Directions



Safety when directing delivery trucks is essential. You are working with large machinery that is capable of killing or injuring you or others on site.

You must position yourself so you are visible at all times. Even if you are communicating with the operator by two-way radio or other verbal means, make sure they can see you at all times.

Never stand directly behind a machine, always stand to one side. Remember, if you can't see the driver, the driver can't see you.

You will need to resolve any coordination requirements with all appropriate personnel before starting your work. This will include organising communications equipment, filling out documents and deciding on any special hand or whistle signals that will be used with other personnel.

Confirm any signage, hand signals and other non-verbal methods with personnel before commencing road pavement construction.



If you are at all unsure about any aspects of communication on your worksite, re-read your work instructions or plans and speak with your supervisor.

### 3.1.2.1 Notifying Operators of Unsafe Conditions



When supporting plant operations it is essential that you notify the plant or machinery operator of any unsafe conditions or situations. This is to prevent potential damage to property, machinery, environment, structures or other areas.

Communication is the key to successfully notifying drivers and other operators of situations that could cause damage or be unsafe.

The single most important signal you can learn is the stop signal. Most sites will have stop signals for both hand and radio communications. This signal could vary between sites, so it is essential that you confirm it for each site.

Your site communications plan should also detail radio call signs and protocols for speaking with operators.

If you have been unable to avoid damage, you must contact your supervisor immediately. Do not wait until the end of the run or shift. Make immediate contact in accordance with the site requirements and procedures.

Some sites will require other personnel to be notified as well. If this is required on your site, ensure you follow the appropriate procedures.



## Review Questions

<b>1.</b>	What are the three (3) common methods of load dispatch and placement?	<input type="checkbox"/>
1.		
2.		
3.		

<b>2.</b>	Why is it essential to notify plant operators of any unsafe conditions or situations?	<input type="checkbox"/>

## 3.2 Check and Adjust Moisture Content

Moisture content is vital to the success of the road construction processes. Moisture levels determine the compactability of the soils and materials being worked with.

The moisture content of the materials is critical to achieving compaction by swelling the clay particles in the materials, which allows good interlocking to be achieved. Materials that are too dry will not 'bed down' correctly.

At all times the moisture content must be uniform throughout the layers. Occasionally you may need to adjust the moisture content to ensure correct levels.



### 3.2.1 Field Moisture Tests



Field moisture tests are conducted by designated laboratories on most civil construction sites. These tests are commonly used to determine the:

- ◆ Amount of water to be applied during stabilisation activities.
- ◆ Amount of water to be applied before other activities.
- ◆ Presence of highly reactive soils, i.e. soils that retain high water concentrations or that may have elements which change the chemical composition of the soils when water is added.

The results of each of these tests will need to be acted on in accordance with the site requirements and task specifications. Actions may include:

- ◆ Adding more moisture.
- ◆ Removing moisture or allowing the materials to dry.
- ◆ Adding more materials.

Moisture content will need to be checked on a regular schedule. This schedule may need to be changed daily, depending on environmental and weather conditions.



## Review Questions

<b>3.</b>	What are three (3) adjustments that may be carried out in response to moisture content tests?	<input type="checkbox"/>
1.		
2.		
3.		



## 3.3 Assess Road Pavement Laying

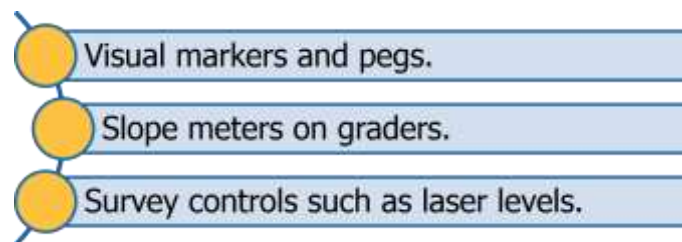
You need to assess the work to ensure the road pavement specifications have been achieved prior to completing any finishing actions.



### 3.3.1 Ensure Specifications Are Achieved

Assessing the road pavement laying process is critical. This is because every level will have specific heights and dimensions that must be achieved. Without regular assessment you can't be sure the specifications are being reached.

Normally these assessments will be done using:



Procedures for road pavement assessment may also involve:

- ◆ Checking the surface finish (wearing surface) and surveying finished areas.
- ◆ Assessing all materials above the sub-grade and below the wearing surface (also known as the sub-base or base structure).
- ◆ Laboratory testing.
- ◆ Drive testing to measure the 'bump' in the road surface.



It is only after all assessments have been passed and all people involved agree that the dimensions and specifications have been reached that each stage can progress or be considered complete.



Each organisation will have different processes and procedures for these activities. It is vital you know and follow them at all times.

Any changes to the work environment, including problems and hazards during work activities, needs to be communicated to the site supervisor and other appropriate personnel as soon as possible. This will help to prevent the hazards from becoming too dangerous and will help your supervisors account for time line changes. Issues could be reported through verbal communication or via written methods.

## Review Questions

4.

List two (2) pieces of equipment that may be used to assess road pavement laying.



1.

2.

## 3.4 Compaction Roller Passes



When the road materials are in place and ready for compaction, most sites will conduct a trial section.

This trial section is used to determine the number of passes required by the roller or similar machinery to achieve the specified compaction.

Once this has been determined, you will need to inform the roller operators of the outcomes, making sure they understand the required number of passes.

The number of passes required could change if there are:

- ◆ Differing materials across the job site.
- ◆ Moisture level variances.
- ◆ Different size rollers in use.
- ◆ Other variable factors.



Compaction methods will depend on the size of the area, the materials being worked with and the availability of equipment.



Large scale jobs such as road pavement construction will require large equipment such as rollers.

When working on a small area such as a parking bay, it may be more practical to achieve compaction with smaller, hand-held equipment such as whacker-packers.

Always work within organisational and site requirements and refer to the plans and specifications to ensure you are meeting expectations.

When discussing with the roller operators the number of passes, you should also talk about the use of vibration and static modes. Different conditions will require different modes from the roller. Each site will vary as to when vibration and static modes should be used.

### 3.4.1 Communicating with Roller Operators

The way you communicate with the roller operators will depend on site requirements. Common methods of providing information include:

- ◆ Daily instructions.
- ◆ Task directions.
- ◆ Verbally.
- ◆ In writing.



Roller operators need to be informed of the number of passes and understand the requirements for compaction to ensure they are achieving the correct levels without overworking the area.

Over-compaction could cause as many problems as under-working the material.

### 3.4.2 Assess the Compaction Process

In-between roller passes, assess the process to ensure the specified number of passes are being made. Once this has been done, you should assess the area to determine if the correct compaction has been achieved.

You can check the required level of compaction in 2 ways:

- 1** Visually.
- 2** Density and compaction testing.

Density and compaction testing will be conducted by lab technicians who come onto the site. If the compaction does not meet the specifications, it will be classified as non-conforming.

Non-conforming areas will need to be re-worked to achieve the required level of compaction.

If re-working is required, make sure that the correct documentation is completed and all steps in the process are noted.

Uniformity of compaction across all layers in the subgrade is important. Each layer must be consistent both within the layer and with the previous layer. This will ensure the overall consistency and success of the process.



It is important to raise any issues with your supervisor as soon as possible if the required compaction cannot be achieved.

## Review Questions

**5.**

What are four (4) common methods of providing information to roller operators about the required number of passes?



1.

2.

3.

4.

**6.**

Why should you assess the compaction process in-between roller passes?



**7.**

Why do you need to assess the area after the required number of compaction passes have been made?



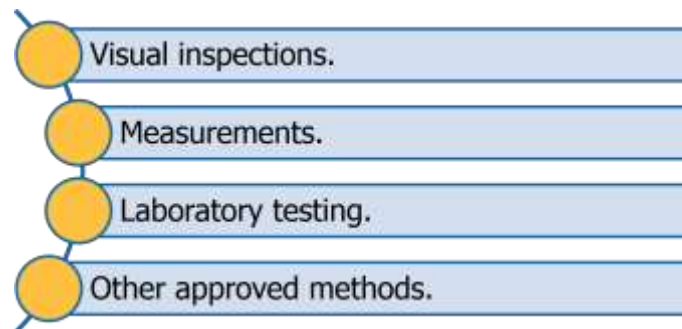
## 3.5 Check Pavement Trimming

With the road pavement construction tasks completed, you will need to check the pavement trimming to ensure the specified tolerances have been achieved.



### 3.5.1 Pavement Trimming

Methods for checking the trimming will be determined by your site processes and could include:



Pavement trimming is the process of cutting back the pavement to the required levels and tolerances. It will normally be completed by the final trim grader operator for the site.

Trimming is a specialist task that requires precision and experience. Before you assess the trimming for compliance, you need to be aware of the job requirements, outlined in the project specifications.

The final trim will need to conform closely to the specifications and tolerances. In some areas you may need to build up the pavement to allow for enough clearance for trimming to occur.



Once trimming is complete, ensure you check the end product. If it does not meet the requirements, you will need to rectify any works until the pavement finally meets the specifications.

## Review Questions

8.

What are two (2) methods of checking pavement trimming?



1.

2.

## 3.6 Clean Up After Work

Once all your road pavement construction tasks are finished, you will need to clean up the site. This includes removing any tools and equipment that have been used.





## 3.6.1 Clearing the Work Area

In clearing your work area you will be carrying out housekeeping activities.

Housekeeping procedures on your site may include:

- ◆ **Eliminating or controlling any potential hazards.** Your duty of care means you shouldn't leave a possible source of danger or accident for others.
- ◆ **Using the correct PPE.** Make sure you use appropriate PPE when dealing with waste or possible hazardous materials as you clear up.
- ◆ **Removing any hazard controls that are no longer needed,** e.g. temporary fences, barricades and signage.
- ◆ **Recycling or disposing of materials,** e.g. clays, mud, topsoil, organic materials, stones, rocks, gravel and bituminous mixes, paper and site rubbish. Put any waste materials in the bins provided, and recycle where possible, in line with the site plans for environmental management or waste disposal.
- ◆ **Maintaining and storing plant, equipment and tools.**



Good housekeeping will help you to see any problems or hazards on the worksite. This will help you to make sure the working environment is safe.

It is your responsibility to clean up after your work activities and not leave it to someone else to do.

## 3.6.2 Checking and Maintaining Equipment

All tools and equipment must be kept in good working order. This means cleaning, checking, maintaining and storing them correctly, and following worksite procedures and manufacturers' guidelines.



Clean all items by removing dirt, mud, moisture or other contaminants.

While you are cleaning, check each item for damage or wear and tear. If anything is wrong report it, repair it, or have it fixed by a qualified person.

Tools and equipment need to be maintained in line with manufacturers' recommendations or your worksite procedures.

Maintenance of equipment may include oiling of timber surfaces, greasing of metal surfaces or lubricating moving parts.

Keeping items of equipment in the best possible condition prolongs the working life of the piece of equipment.

### 3.6.2.1 Storage

Make sure plant, tools and equipment are stored correctly and in the right place.

Most items will have storage instructions to make sure they don't get damaged and can be easily found the next time they are needed.

Keeping plant, tools and equipment in the best possible condition means they will have a longer working life. It also ensures they are safe to use.

Always follow the manufacturer's guidelines, operating instructions and worksite procedures for looking after each item.



## Review Questions

**9.**

List three (3) examples of materials that will need to be recycled or disposed of during site clean-up tasks.



1.

2.

3.

**10.**

Why will most items have storage instructions that you must follow?



# Practical Assessment Instructions

The practical assessment consists of 3 individual assessments, which may run in a single sequence from task to task under the guidance of the assessor.

## Conditions of Assessment

1. You are required to undertake an assessment for the unit RIICRC307E in the Civil Construction industry.
2. The assessor will provide you with instructions about what you are required to do.
3. If you are unsure about what you have to do, ask the assessor before you start.
4. Each person must be observed and be assessed as being competent in each task even in situations where the work is completed by a team.
5. You may not use any references, books, or course notes during the assessment, unless these resources are common to completing the task when performed in a real work environment.
6. All assessments must be satisfactorily demonstrated. If you do not satisfactorily complete an assessment a result of 'Not yet competent' will be recorded.
7. You should be able to complete all assessments within [99] minutes. The time stated is as a guide only. If you cannot complete the assessment in the stated time then this will be considered when assessing overall competency.

## Protective Personal Equipment (PPE) Requirements

You must wear safety clothing and equipment as required by the risk assessment of the workplace or assessment environment. This includes:

[Enter any equipment appropriate to the course, or delete the equipment that is not necessary.]

- Safety helmet (where required).
- Appropriate footwear.
- High-visibility vest or similar clothing.
- Other protective clothing and equipment as appropriate.

Your assessor will confirm the availability of required PPE when making arrangements to conduct the assessment. If you do not have the appropriate equipment the assessment cannot be undertaken.

## Grounds for stopping the assessment

If at any time during the practical assessment you act in a way that puts yourself, other learners, equipment, or property in any danger, the assessment will be stopped immediately. Your assessor will identify and record the dangerous act to you and re-schedule the assessment to be attempted again at a later time. You may be required to complete part or all of the practical assessment again at that time, at the discretion of your assessor.

## Achieving a Satisfactory Outcome

In order to achieve a satisfactory outcome for the practical assessment you will need to:

- Complete all tasks and assessments in their entirety.
- Complete all tasks and assessments satisfactorily in a timely manner, representative of real world conditions, expectations, and outcomes.
- Complete all tasks and assessments safely, using the correct techniques and methods, and ensuring your own safety and the safety of others at all times.
- Working with others, where necessary, to safely, effectively, and efficiently achieve all outcomes of the tasks and assessments.

# Practical Assessments

The practical assessments are outlined below:

## Assessment 1: Plan to Conduct Road Pavement Construction

You will be required to locate, interpret, and confirm with relevant personnel the policies, procedures and documentation required to conduct road pavement construction in assessments 2 & 3. To successfully complete the assessment, you will need to:

- ◆ Locate, interpret, explain, and confirm work requirements, including:
  - ◇ Legislation required to conduct road pavement construction.
  - ◇ Relevant WHS guidelines.
  
- ◆ Access and interpret site policies, procedures, and documentation, including:
  - ◇ Site requirements. This will include:
    - Environmental protection.
    - Waste management.
    - Communication techniques and aids.
    - Site isolation, signage, barriers, and traffic control.
  - ◇ Hazard and risk management procedures.
  - ◇ Work activity set up procedures.
  
- ◆ Access and interpret manufacturer specifications for required plant and equipment, including their characteristics, capabilities and limitations.

## Assessment 2: Prepare for and Conduct Road Pavement Construction (Occasion 1)

You will be required to prepare the work area and demonstrate how to conduct a road pavement construction task in accordance with work requirements, specifications, and job plan. To successfully complete the assessment, you will need to:

- ◆ Confirm job requirements by checking plans, drawings, or instructions to identify:
  - ◇ Task specifications, including:
    - Compaction standards.
    - Compaction testing requirements.
  - ◇ Signage and barrier requirements.
- ◆ Identify hazards and manage potential risks according to site requirements, including:
  - ◇ Selecting and fitting PPE.
  - ◇ Implementing signage and barrier requirements.
  - ◇ Reporting potential hazards and risks.
- ◆ Identify, manage, and report environmental issues and ground conditions according to site requirements.
- ◆ Select and check appropriate plant, tools, and equipment for the task and report faults.
- ◆ Survey the work area for ease of access and the safe movement of materials.
- ◆ Set out the sub-base and base according to job requirements, including:
  - ◇ Setting out the job area according to the plans and survey controls.
  - ◇ Establishing offset pegs/profiles to the line and level.
- ◆ Place and spread materials according to job requirements, including:
  - ◇ Identifying the layer depth for spreading materials.
  - ◇ Informing appropriate plant operators of the layer depths.
  - ◇ Directing delivery trucks to the work area and informing drivers of the required dispatch method for load placement.
  - ◇ Checking the moisture content of the materials and adjusting as required.
  - ◇ Assessing road pavement laying and confirming heights and dimensions are achieved in line with job specifications.
  - ◇ Monitoring movements and hazards and communicating with relevant personnel any identified changes to the work environment.
- ◆ Compact materials in accordance with job requirements by:
  - ◇ Informing roller operators of the required number of compaction passes.
  - ◇ Assessing the compaction process and confirming the correct number of passes are made, including:
    - Taking appropriate action if an incorrect number of passes are completed.
    - Confirming compaction is uniform across the pavement.
  - ◇ Checking pavement trimming and finish, including:
    - Taking appropriate action to repair surface defects, if required.
    - Confirming specified tolerances are achieved in accordance with job requirements.
  - ◇ Monitoring movements and hazards and communicating with relevant personnel any identified changes to the work environment.
- ◆ Clean up after operations according to site requirements, including:
  - ◇ Clearing the work area.
  - ◇ Disposing of or recycling materials.
  - ◇ Cleaning, checking, maintaining, and storing tools and equipment in accordance with manufacturer specifications.

### Assessment 3: Prepare for and Conduct Road Pavement Construction (Occasion 2)

You will be required to prepare the work area and demonstrate how to conduct a road pavement construction task in accordance with work requirements, specifications, and job plan. To successfully complete the assessment, you will need to:

- ◆ Confirm job requirements by checking plans, drawings, or instructions to identify:
  - ◇ Task specifications, including:
    - Compaction standards.
    - Compaction testing requirements.
  - ◇ Signage and barrier requirements.
- ◆ Identify hazards and manage potential risks according to site requirements, including:
  - ◇ Selecting and fitting PPE.
  - ◇ Implementing signage and barrier requirements.
  - ◇ Reporting potential hazards and risks.
- ◆ Identify, manage, and report environmental issues and ground conditions according to site requirements.
- ◆ Select and check appropriate plant, tools, and equipment for the task and report faults.
- ◆ Survey the work area for ease of access and the safe movement of materials.
- ◆ Set out the sub-base and base according to job requirements, including:
  - ◇ Setting out the job area according to the plans and survey controls.
  - ◇ Establishing offset pegs/profiles to the line and level.
- ◆ Place and spread materials according to job requirements, including:
  - ◇ Identifying the layer depth for spreading materials.
  - ◇ Informing appropriate plant operators of the layer depths.
  - ◇ Directing delivery trucks to the work area and informing drivers of the required dispatch method for load placement.
  - ◇ Checking the moisture content of the materials and adjusting as required.
  - ◇ Assessing road pavement laying and confirming heights and dimensions are achieved in line with job specifications.
  - ◇ Monitoring movements and hazards and communicating with relevant personnel any identified changes to the work environment.
- ◆ Compact materials in accordance with job requirements by:
  - ◇ Informing roller operators of the required number of compaction passes.
  - ◇ Assessing the compaction process and confirming the correct number of passes are made, including:
    - Taking appropriate action if an incorrect number of passes are completed.
    - Confirming compaction is uniform across the pavement.
  - ◇ Checking pavement trimming and finish, including:
    - Taking appropriate action to repair surface defects, if required.
    - Confirming specified tolerances are achieved in accordance with job requirements.
  - ◇ Monitoring movements and hazards and communicating with relevant personnel any identified changes to the work environment.
- ◆ Clean up after operations according to site requirements, including:
  - ◇ Clearing the work area.
  - ◇ Disposing of or recycling materials.
  - ◇ Cleaning, checking, maintaining, and storing tools and equipment in accordance with manufacturer specifications.