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Element 1:

Planning and preparing

Overview

Planning is essential for the successful creation of concrete products that meet the requirements of the task, organisation or client. Correct preparation of the area and the materials goes a long way towards the successful completion of the activity. Planning and preparing for the work tasks helps to ensure a good outcome.

During the planning and preparation stage you will need to identify signs and barricade requirements, select appropriate tools for the task and consider the safety requirements, environmental requirements and the best materials for the task.

Work instructions and operational details will give the exact requirements for the concreting task but each concreter will also need to calculate the quantity of materials needed to complete the task. Even if a client has told you how much concrete they think is necessary to complete the task, it is a good idea to do your own calculations and check exactly what is required.

Learning outcomes

You need to demonstrate competency in the following areas:

- Section 1.1 Obtaining, confirming and applying work instructions and operational details
- Section 1.2 Following safety requirements
- Section 1.3 Identifying and implementing signage and barricade requirements
- Section 1.4 Selecting plant, tools and equipment consistent with job requirements and checking them for serviceability
- Section 1.5 Calculating material quantity requirements
- Section 1.6 Identifying, obtaining and preparing materials, handling them safely and locating them ready for use
- Section 1.7 Identifying and applying environmental requirements

Section 1.2: Following safety requirements

Safety is fundamental to every worksite. Each state and territory has different safety requirements so it is important to check the exact requirements for your worksite. All states have occupational health and safety legislation and regulations relating to the following issues:



Every organisation will have safety plans and programs that must be understood and used. Some of these could include:

- safe operating procedures, including operational risk assessment and management of hazards associated with:
 - earth leakage boxes
 - lighting
 - power cables, including overhead cables and conduits
 - restricted access barriers
 - surrounding structures
 - traffic control
 - trip hazards
 - worksite visitors and the public
 - working at heights
 - working in confined spaces
 - working close to others
- manual handling activities including the use of equipment
- using fire-fighting equipment – a specialised skill requiring specific training
- safe working with tools and equipment.



Once you have identified the safety systems you need to comply with, then you can consider the specific needs or requirements of the project. Often these requirements will be detailed in your organisation's workplace safety plans, policies and procedures. Each worksite and organisation will have different requirements so you need to read, understand and follow the workplace procedures carefully on every job.

Knowing and following the safety requirements for the particular task being undertaken and the general requirements for the industry, is the only way to keep yourself and others on your team safe.

Find out more

Resource	Why it is useful
WorkCover NSW www.workcover.nsw.gov.au	This web page provides specific information about workplace safety in New South Wales. You may like to find the website that outlines workplace safety information for your home state or territory.
Safe Work Australia <i>National standard for construction work [NOHSC: 1016 (2005)]</i> www.safeworkaustralia.gov.au (Search for 'National Standard for Construction Work'.)	This document is the national safety standard for working in the construction industry.

Section task 1.2

1. Write a sentence to explain why it is important to know about emergency procedures.
2. List three places you could look for safety information about a task.

for powered hand tools to check equipment is lubricated, electrical cords are intact and safe and that the equipment will operate safely and effectively.

The procedures manual will outline the checks that should be done on workplace tools and equipment. Generally, tools that are used every day for concreting tasks are owned by the individual user, so each person needs to check their equipment carefully.

If you find a fault in company-owned equipment, plant or tools you must notify your supervisor immediately so the equipment can be replaced or repaired. On large worksites there will be procedures for notification, but on smaller worksites you will probably just speak with your supervisor. Faulty equipment needs to be tagged out (have a notice attached to it) to warn other workers that it should not be used.



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On concreting worksites, most faults will be rectified immediately by purchasing a replacement for the faulty piece of equipment. Some faults will need to be documented for insurance to be claimed. Your supervisor will explain which faults need to be documented.

Find out more

Resource	Why it is useful
South Coast Decorative Concrete Supplies Pty Ltd <i>Concrete placing rakes</i> www.scdcs.com.au/Placing-Rakes--Tools.html	This web page provides some examples of the types of tools used in concreting.
Laborers Health and Safety Fund of North America <i>Choosing safer hand tools in construction</i> www.lhsfna.org/files/handtools1.pdf	This web page discusses the importance of selecting the right tool for the job.

Section task 1.4

1. List five tools or pieces of equipment that may need to undergo a pre-start check.
2. Write a sentence to explain why faulty equipment needs to be tagged out.

In ACTION

Luke's story

Luke has just started working in his uncle's concreting firm. Luke starts on simple, smaller projects. His uncle has asked him to site manage a slab construction, with two other workers to assist him. Luke needs to confirm the work instructions, obtain operational details from the client and identify environmental and sign requirements.

Once Luke has the information needed, he identifies the safety needs, selects the appropriate tools and equipment and calculates the amount of concrete needed to build the slab.



Revision

- Careful planning and preparation is essential to the successful completion of any concreting task.
- Work instructions and operational details need to be obtained, confirmed and applied.
- Safety requirements must be followed to minimise risks and keep everyone safe.
- Signs and barricades are used on worksites to keep people safe and protect the concrete from damage while it cures.
- The formula for calculating concrete requirements is area multiplied by required depth – this gives you the requirement in cubic metres.
- Materials and tools need to be selected, identified, prepared and handled safely.
- Keeping materials stored close to where they will be used is essential to minimise potential manual handling injuries.
- Environmental regulations must be complied with during work and clean-up.

Are you ready?

Use this checklist to assess if you are ready for assessment activity 1.

I understand how to:

- ☐ Obtain, confirm and apply work instructions and operational details
- ☐ Follow safety instructions
- ☐ Identify and implement signage and barricade requirements
- ☐ Select plant, tools and equipment consistent with job requirements and check them for serviceability
- ☐ Calculate material quantity requirements
- ☐ Identify, obtain and prepare materials, handle them safely and locate them for use
- ☐ Identify and apply environmental requirements

Assessment activity 2

Erecting and stripping simple formwork

The following table maps the assessment activity for this chapter against the element and performance criteria of Element 2 in *CPCCCO2013A Carry out concreting to simple forms*.

Part	Element	Performance criteria
Whole activity	2	2.1, 2.2, 2.3, 2.4 2.5, 2.6, 2.7

- Create a checklist for a concreting worksite. This checklist can be in any format acceptable for a worksite or your assessor. The checklist needs to outline where you will find information required for:
 - preparing the subgrade
 - formwork design or instructions
 - formwork erection safety directions
 - release agent requirements and any safety information
 - de-nailing process and any checks that need to be done while de-nailing
 - cleaning instructions
 - stacking and storing instructions
 - considerations for removing formwork from the site.
- Write one sentence per item to explain the importance of:
 - following your workplace procedures for handling formwork.
 - ensuring the subgrade is in good condition and laid correctly.
 - ensuring the formwork is clean and checked before storing it.
 - removing formwork components from the site.
 - being able to read and understanding the formwork design from drawings.

Record your employability skills

When you have completed the assessment activity, make sure you record the employability skills you have developed in the table at the end of the learner guide. Keep copies of material you have prepared as further evidence of your skills.

Section 3.1: Handling and positioning reinforcing components safely

When you are concreting, you will need to position reinforcing components to add strength and stability to the work and provide a good structure for the concrete to be poured onto and around.

Reinforcing components include:

- bar chairs
- fabric sheeting mesh
- spacers
- reinforcing bars
- trench mesh.

The following images are of common reinforcing components used in concrete.



Reinforcing components must be positioned in accordance with the plans and specifications for the type of concreting project being constructed. Things to remember when positioning reinforcing components include:

- use an adequate amount of overlay material
- ensure the reinforcement sheets overlap by at least one square
- cut the reinforcement mesh so that it fits the area, if necessary
- tie the reinforcement to the bar chairs to keep the reinforcements in place
- ensure the correct strength of materials for the activity are used
- ensure the correct materials are used according to the plans and specifications.

When positioning the reinforcing components it is essential to place the items exactly where the plans require. The plans will detail exactly what height the components will need to be, how far from the edge the reinforcing must reach and the depth of the concrete needed to protect the reinforcement from rusting.

Reinforcing materials can be heavy, bulky and difficult to move on-site, so you will need to be aware of possible manual handling hazards. Only move the amount of materials that you feel comfortable with and be prepared to ask for assistance if necessary.

Section 4.3: Controlling pump line/chute and placing concrete

The advent of the concrete pump is viewed by many concreters as one of the best technological advances in concreting. Concrete pumps are used to move the concrete from the truck to the prepared formwork.

The pump itself is controlled by the truck driver or pump operator. The concreter will control the kibble by using the handle to open the chute which releases the concrete into the frame. A concrete pump will generally only be used for small, simple jobs or if the site is difficult to access.

Pumps become an essential tool on worksites that are large or up high. Concrete pumps work very well to get the concrete to the correct position when working on high rise buildings as they can move the concrete to the level required quickly.

All workers involved with pumping concrete need to read, understand and follow instructions set out in workplace procedures and the concrete pumping code of practice.

Workers will need to use personal protective equipment such as:

- safety helmets
- eye protection
- hearing protection
- gloves
- reflective safety vests
- safety boots
- rubber boots
- waterproof clothing.



When controlling the pump lines it is vital that you comply with the pumping code of practice. The pump delivery element of the code of practice includes the following points:

- Avoid unnecessary bends or curves.
- Ensure correct support for each section of the pump line.
- Don't use any material for supporting the pumping line unless it has been designed for that purpose.
- Identify and inspect all parts before use to look for wear and tear or damage.
- Ensure the pipe lines are designed for the correct pressure of the concrete.

Australian Standard 2550.15 – Cranes – Safe use Part 15: Concrete placing equipment must also be understood and followed whenever dealing with concrete pumping. These standards and codes of practice will be detailed or outlined in the worksite policies and procedures.

Section 4.5: Screeding concrete



Screeding of concrete is the movement and levelling of wet concrete to ensure there are no air bubbles, lumps or unfilled areas within the formwork. This movement is generally determined by what is most comfortable and safe for each individual. Screeding must be done with every concreting project, regardless of size.

Five steps to screeding

Tools required: screed or concrete rake, and shovel.

Step 1:

Concrete is poured into the formwork.

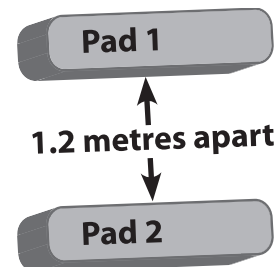
Step 2:

The wet concrete is shovelled around the formwork area to distribute it roughly but fairly evenly.

Step 3:

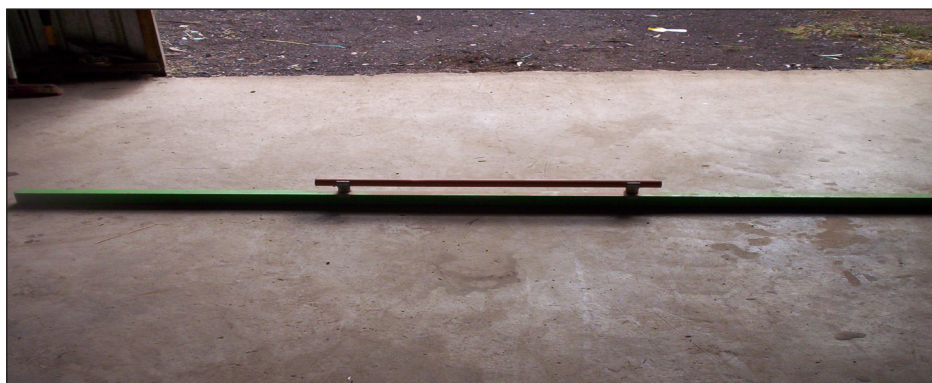
Two pad areas (smallish concrete area) are created at the correct depth. This depth is determined by the plans and specifications the concreter is working to. These pads are built and placed at a width that is the same width of the screed being used.

These pads are then used for alignment.



Step 4:

Concrete is now shuffled into the area between the pads ensuring the area between the pads is level. This is done with the screed; some organisations may use a concrete rake. A sawing motion is used to move the concrete ahead of the screed.



Photograph supplied by Craig McPherson

Section 4.6: Finishing the surface of concrete

The finishing process can begin when the concrete is able to bear the weight of the concreter without leaving too much of an imprint. Judging this stage is a skill that is developed over time in the industry. The type of finish required depends on the specifications and the client or customer requirements.

Some common types of finish are listed in this table:

Finish type	When it is used
Broomed	Good for outside area as it creates a low slip surface. Different weights of broom are used to achieve different effects. The bristles of the broom can be used to achieve different artistic effects.
Hand floating with a steel float	Generally used when the concrete needs to be smooth such as an internal house finish when the concrete will be covered with a floor covering. Due to technological advances this technique is not often used on large areas any more.
Power floating	Used on large areas. If this is to be the only finish to a concrete surface, it will be used for internal finishes such as polishing or when the surface will be covered because it creates a slippery surface.
Sponged	This finish is completed after a steel or power float to give a slight 'sanding' effect.
Stipple	A patterned finish in the concrete to reduce the slipperiness of the surface and provide visual interest. Often used as a decorative finish.
Trowelled	Used to achieved a smooth, even surface.
Machine trowelled	Used to achieve a smooth, even surface over a large area.
Wood floated	Generally used on outside areas as the wood float gives a slight roughness or texture that makes the surface less slippery.
Specialised	Finishes outside the scope of this course, such as polished concrete, exposed aggregate concrete, acid etched.

Never finish the concrete if there is water on the surface. The primary consideration when finishing concrete is to ensure you follow the specifications in the design plans so you are delivering the correct finish to the client.



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