



Finish Concrete

CPCCCO3042



SAFE WORK METHOD STATEMENTS (SWMS)

- Safe work method statements (SWMS) assist a PCBU to consider how certain activities will be carried out safely. The following should be noted:
- SWMS must be easy to understand, signed and dated;
- SWMS must be amended if there is a change in the activity and a copy must be given to the principal contractor;
- All persons affected by changes must be advised of amendments to the work method statement.

JOB SAFETY ANALYSIS (JSA)

- A job safety analysis is a procedure which helps integrate accepted safety and health principles and practices into a particular task or job operation. In a JSA, each basic step of the job is to identify potential hazards and to recommend the safest way to do the job.
- Identifies hazards and potential hazards that may be encountered while working.

SAFETY DATA SHEET (SDS)

- A safety data sheet (SDS) – previously called material safety data sheet (MSDS) - provides information which allows for the safe handling and use of substance/materials in the workplace. It describes:
- The identity of the product e.g. formulation or chemical name
- The properties and uses of the product
- Health hazard information precautions for use
- Safe handling information
- First aid instructions
- Methods for safe disposal
- Identify materials/substances that the product is incompatible with
- It is important that all waste material is removed from the construction site. This may include: construction materials, oils and fuel, garbage materials such as empty containers, wrappings, excavated soils

PLANS

- Before commencing any job, you will usually receive specific work instructions which will include plans.
- The main purpose of plans is to provide a visual representations of the work to be undertaken. If there are hazards and discrepancies between plans and what is on site, a site manage, supervisor or project manager should be notified.

MANUFACTURER SPECIFICATIONS

- Manufacturer guidelines and specifications must always be followed. By law these must be made available/provided at the point of sale by the manufacturer. Manufacturer guidelines and specifications can be available for anything on site, but most likely for materials, tools, equipment, heavy machinery, hazardous substances etc.

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

- An Environmental Management Plan (EMP) is a site or project specific plan developed to ensure that appropriate environmental management practices are followed during a project's construction and/or operation.
- Addresses clean up management, noise control and waste management.

The following documentation should be familiarised before work commences

- Codes of practice
- Safety manuals and instructions
- Safety legislation and regulations
- Site safety plans, policies and procedures
- Environmental legislations and regulations

<https://ncc.abcb.gov.au/>

NATIONAL
CONSTRUCTION CODE

Site Safety Plan
includes
emergency
procedures, points
of access,
hazards and risks
on site.

Barricading must be used when concreting as it informs other workers or the public that a concrete job is undergoing a finish and is not to be walked over.

Safety signs should be placed at eye height, where it is visible and around the work area it relates to e.g. do not enter, PPE required

Report hazards to Supervisor / Site manager / Project manager; Team leader; Shift supervisor; Work colleague; Engineer; Maintenance technician.

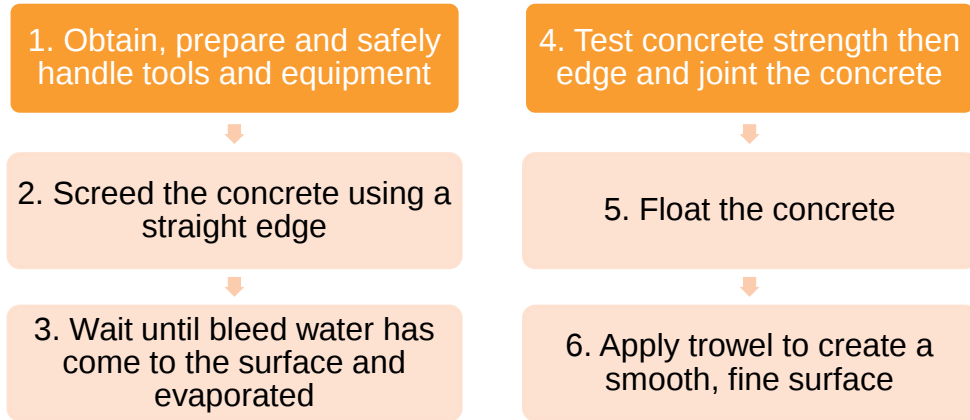
PPE

When undertaking work, eyes and face, hands, feet and body protection may need to be worn.

- Head - safety helmets, sun hats;
- Eyes/face - safety spectacles, goggles, face shields;
- Hearing - ear muffs, ear plugs;
- Airways/lungs - dust masks, respirators;
- Hands - gloves, barrier creams;
- Feet - safety boots and shoes, rubber boots;
- Body - clothing to protect from sun, cuts, abrasions and burns



Finishing process



- Finishing concrete refers to the final tip finish process which is completed in various ways according to the specified use of the concrete or the appearance required.
- Concrete slabs may be finished several ways. It depends on the effect desired and the use of the product. Some surfaces may be left *rough, others broomed, floated or trowelled*, and other surfaces may be *textured, coloured* or have *exposed aggregate*.

Screeding

- Screeding is usually the first finishing operation after the concrete is placed in the forms. It is performed with a screed.
- Screeding is the process of striking off the excess concrete to bring the top surface to the proper grade or elevation. The edge of the screed may be straight or curved depending on the surface requirements. The screed rests on the top of the forms and is moved across the concrete with a sawing motion. It is drawn backwards slightly.
- An excess of concrete should be carried along in front of the screed to fill low places as the tools are moved forward. But if too much concrete is allowed to build up in front of the screed, it may tend to leave hollows behind it.

- In normal concrete the dry materials used are heavier than water. They will begin to sink or settle to the bottom of a plastic concrete mixture shortly after placement. This settling action causes excess water to rise to the surface.
- This condition is called *bleeding*. Bleeding does not usually occur with air entrained concrete.
- It is very important that the first operations of placing, screeding and wood floating be performed before any bleeding takes place.

- If any finishing operation is performed on the surface while the bleed water is present serious scaling, dusting or crazing can result.
- The high and low spots may be eliminated and large aggregate embedded using a bullfloat. The operation should follow immediately after screeding to prevent bleeding.
- Finishing concrete before bleed water has evaporated can seal the surface prematurely. Water can be trapped beneath the thin surface layer causing blisters to form
- Some surface finishes may not need any further finishing, but most will require one or more the following operations.

- Joints can be of two general types:
- **Construction Joints:** These aim at bonding the new concrete to the hardened concrete in such a manner that the concrete appears to be monolithic and homogenous across the joint and allows for the no relative movement of the concrete on either side of the joint.
- **Control joints:** These allow for relative movement on either side of the joint, thus they can be either contraction joints or expansion joints. Control joints are a weakness placed in a particular area that is assisting in controlling where the concrete is best likely to crack. They are made $\frac{1}{4}$ (one-quarter) deep into the concrete.

- **Edging** provides a rounded edge or radius to prevent chipping or damage to the edge. The edger is run back and forth until the desired finish is obtained.
- Care should be taken to cover all coarse aggregate and not to leave too deep a depression on the top of the slab. This indentation could be difficult to remove during subsequent finishing operations.
- Edging produces a radius on the edge of the slab which prevents chipping. Running an edging tool around the perimeter of a slab rounds and compacts the corner
- Edging tool should be kept firmly against the formwork to prevent it from biting into the concrete
- Straight edge should overlap forms only if formwork is set to finished floor level

Floating

- After concrete has been edged or jointed, it should be allowed to harden enough to support a person and leave only a slight foot imprint. Floating should not begin until the water sheen has disappeared.
- When all bleed water and water sheen has left the surface, the concrete has started to stiffen.
- The surface is floated with wood or metal floats or with a finishing machine using float blades. Aluminium or magnesium floats work better especially on air-entrained concrete.
- *Metal floats* reduce the amount of work required by the finisher. Drag is reduced and the float slides more readily over the surface.
- It provides a dense smooth surface that could be slippery when wet.
- A *wood float* tends to stick to the surface and produces a tearing action. It provides a rougher texture that is not as slippery in wet conditions.
- The light metal float also forms a smoother surface texture than the wood float.
- Once the surface has been 'floated' the blades on the float are changed or the floating pan is simply removed to reveal the finishing blades. The finishing stage should be started when the surface has dried and waling over the surface leaves no indents. A good gauge is when the operator can place his hand on the concrete surface and cement is not left on his hand.
- For the finishing pass the blades are angled to suite the concrete, increasing the angle after each pass – an angle of around 5 -10° is usual, the steeper the angle the harder the finish. Several passes with the finish blades may be required to achieve the specified finish.

- Exposed aggregate offers a simple way of obtaining decorative finishes which are textures, colourful and highly immune to wear and weather. Various sizes and colours of gravel are available – but it is advisable to use aggregate 5 to 20mm diameter, which is smooth – not crushed rock with abrasive sharp edges.
- While the correct delay before removing the surface cement to expose the aggregate is most important to the production of a quality finish, it is difficult to nominate the specific time as it depends on many variables. Some of these are concrete temperature and age, type of cement, admixture type and the quantities of water, cement and admixtures used. The delay also depends on weather conditions, depth of pour, type of aggregate, type of sub-grade, etc.

Timing

- It is essential that the floating is started at the correct time. The operator must wait until the concrete is hard enough to hold the weight of the float and the operator.
- The surface appearance of an area that is ready for a trowelling machine will have a whitening look and must be hard enough to take machine weight.
- A useful mark when considering when to begin is when the operator leaves about 3mm footprints when standing upon the surface. This is because if the concrete is too wet the machine will simply tear up the surface and indeed if it is too dry the machine will not be able to trim high spots and fill lows effectively.
- The strength of setting concrete is assessed using a basic thumb test
- Two stages to a complete job.
- **Stage 1: Floating**
- **Stage 2: Finishing**

Finishing types and applications

Fine to medium broomed	Outside (e.g. paths, driveways, entertainment areas, carport floors, applications of covercrete)
Exposed aggregate	Outside (e.g. decorative areas)
Steel trowel	Inside (e.g. garage, house floors)
Wood/Coving float	Outside (e.g. sloping paths, patterned textures to finished surfaces)

Floats

Bull Float



Consists of a long handle which allows the operator to reach far out onto a slab without having to get on the concrete

Magnesium float/trowel



Hand operated float used for levelling large areas, smoothing the work surface for trowels. Does not draw moisture to the surface

Wood Float



Hand operated float used for levelling large areas and drawing moisture to the surface. Used for stairs, cold joints and applying decorative texture

Trowels

Fresno



A steel trowel attached to a bull float handle. It does not achieve the same degree of compaction as a hand trowel

Steel trowel



Lightweight, it smooths the surface of concrete without pulling the surface like a wood or resin tool

Power trowel



May be operated by hand or as a ride on. Finishes all concrete surfaces or provides a machined non-slip or textured finish

- It is essential that tools and equipment are checked for serviceability, and any faults are rectified or reported prior to commencement. This requires you to follow all workplace protocols for rectification and reporting applicable to your organisation. These protocols will require you to complete forms, place signage on equipment, and report faults to supervisors.
- Remember: before you use any equipment identify if there is a maintenance schedule, ensure that there are no discrepancies and that it is signed off.



DEFECTIVE EQUIPMENT PROTOCOL



- When work is completed the site should be cleaned.
- Excess materials used should be recycled or returned to storage.
- Maintain plant, tools and equipment
- All tools and equipment used on the job should be cleaned in order to maintain them in good condition. They should be stored safely and correctly in accordance with the manufacturer's recommendations and standard work practices, so as not to damage them.
- Report faults in logbook and in site records
- All personal rubbish should be placed in a bag and disposed of in the site rubbish bin.

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