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Finishing Concrete Flatwork

1. WHAT is Finishing?

Finishing is the operation of consolidating, leveling, and creating a concrete surface of a desired texture and hardness. The finish can be decorative or strictly functional.

Finishing Concrete

2. HOW to Finish.

The finishing operation should be carefully planned. Skill, knowledge and experience are required to deal with a variety of concrete mixtures and field conditions. Having the proper man-power and equipment available, and timing the operations properly for existing conditions, is critical. A slope is necessary to avoid low spots and to drain water away from buildings.

Complete all subgrade excavation and compaction, formwork, placement of mesh, rebar or other embedments, as required, prior to concrete delivery. Delays after the concrete arrives create problems in finishing and can reduce final quality.

Guidelines for placing and consolidating concrete are:

a. A successful job depends on selecting the correct concrete mix for the job. Consult your Ready Mixed Concrete Producer.

b. If possible place concrete directly from the truck chute or use wheelbarrows, buggies or pumps to avoid excessively wet, high slump concrete. Start at the far end and work to the near end. On a slope use stiffer concrete and work up the slope.

c. Spread the concrete using a short-handled, square-ended shovel and a concrete rake. Do not use a garden rake since it will cause segregation.

d. Consolidate concrete and tamp the concrete along the edges of the forms to release air voids and consolidate the concrete.

e. Use a wood or metal straightedge (called a screed) to strike off the concrete and level it. Rest the screed on edge on the top of the forms, tilt it forward and draw it across the concrete with a sawing motion. Keep a little concrete in front of the screed to fill in any low spots.

Follow These Rules To Finish Concrete:

1. **FLOAT** the concrete as soon as it's been struck off making it as level as possible using either a bull float, darby or highway straightedge. The operation should be completed before any bleed water appears on the surface. The bull float or darby helps to embed the coarse aggregate, smooth the surface, and remove any high or low spots. Keep the bull float as flat as possible to avoid sealing the surface prematurely.
2. **WAIT** for the concrete to stop "bleeding". **All** other finishing operations **must wait** until the concrete has stopped bleeding and the water sheen has left the surface. Any finishing operations done while the concrete is still bleeding **will result** in later problems such as dusting, scaling, crazing, delamination and blis-

References:
References
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Concrete Alberta
4944 Roper Road NW, Edmonton, Alberta T6B 3T7
Ph: 780-436-5645 Fax: 780-436-6503
Email: info@concretealberta.ca
www.concretealberta.ca

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ters. The length of the waiting period will depend upon the setting and bleeding characteristics of the concrete and the ambient conditions. During the waiting period, protect the concrete surface from rapid evaporation if ambient conditions are hot, windy and dry. Provisions such as foggers, misters or monomolecular film, may be employed to address this issue. However, do not use any of these measures as finishing aids. Their purpose is to balance the rate of evaporation of bleed water with that of its arrival at the concrete surface to in order to minimize the risk of plastic shrinkage cracking associated with pouring concrete in these ambient conditions.

3. **EDGE** the concrete all the way around the perimeter of the slab. Spade the concrete next to the form gently using a small mason's trowel. Use the edging tool to obtain durable rounded edges. Do not over finish the edges.

4. **JOINT** the concrete by grooving it. Use a jointing tool with a blade at least one fourth the depth of the slab i.e. 25 mm deep joints on a 100 mm slab. Use a straight piece of lumber as a guide. A shallow-bit groover should only be used for decorative grooves (See CTT-6 for joint spacing).

5. **TROWEL** the concrete according to its intended end use. For sidewalks, patios, driveways, air entrained garage slabs, hard troweling is not usually required. Air entrained concrete should not be troweled. The Alberta Building Code Appendix A 9.3.1.6(2) mandates that air entrained concrete should not be steel or hard troweled. A light broom or a float finish should be applied. For a smooth non-air entrained floor, make successive passes with a smaller steel trowel and increased pressure. Repeated passes with a steel trowel will produce a smooth floor that will be slippery when wet. Excessive troweling will create dark "trowel burns". Improperly tilting the trowel will create an undesirable "chatter" texture.

6. **TEXTURE:** For air-entrained flatwork designed for vehicle and pedestrian traffic in wet or freeze-thaw conditions, texture using a light broom after the floating operation to give the concrete a slip resistant surface. For interior flatwork, texture the concrete surface after final troweling. Concrete can be finished with several decorative treatments, such as exposed aggregate, dry shake colour, integral colour and stamped or pattern concrete. Decorative finishes require much more care and experience.

7. **NEVER** sprinkle water or cement on concrete when finishing it. This may cause scaling or dusting.

8. **CURE** the concrete as soon as all finishing is completed to provide proper conditions for cement hydration, which provides the required strength and durability to the concrete surface. In severe conditions, slab protection may be needed even before finishing is completed. See CTT 11 for more information on curing concrete.

9. **AVOID** concrete chemical burns to skin by following proper safe handling practices and wearing appropriate personal protective equipment.

Follow These Simple Rules to Finish Concrete

1. Place and move concrete to its final destination using procedures that avoid segregation.
2. Strike off and obtain an initial level surface without sealing the surface.
3. Wait until the bleed water disappears from the surface before starting finishing operations.
4. Use the appropriate surface texture required for the application.
5. Avoid steel Troweling air-entrained concrete.
6. Cure the concrete to ensure it achieves the designed strength and durability.

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