

Setting Time Expectations for Hard-Trowel Finishing

Project specifications rarely set limits on concrete setting time. Concrete producers sometimes address setting-time requirements. Concrete contractors must always consider setting times because of the large impact that setting time has on the overall construction schedule, manpower and equipment allocation, and time required for each concrete placement. To determine an appropriate in-place concrete cost for bidding purposes, contractors must estimate the waiting time needed before finishers can start floating. This waiting time is related to setting time.

In a survey, ASCC members were asked how long they expected finishers to wait before they began floating concrete at 50, 70, and 90 °F (10, 20, 30 °C) (“The Cost of Waiting,” Concrete Construction, June 2000). Concrete is usually ready to be power floated when there's a 1/4 in. (6 mm) or less footprint indentation and no visible surface bleed water. Waiting times from the survey are as follows:

ASCC Concrete Contractor Expected Waiting Times

Temperature	Time to start power floating (1/4 in. footprint)
At 50 °F	4-1/4 h
At 70 °F	2-3/4 h
At 90 °F	1-3/4 h

Waiting times greater than those shown are likely to lead to increased costs due to increased finishing time or needed mixture adjustments. Cost-increasing

adjustments may include the use of an accelerator, more portland cement, or a Type III cement; changes in water-reducing admixtures; or changes in the total cementitious materials (reduction in fly ash and slag).

Schedule changes that move summer concrete placements to winter are a problem because, unless mixture adjustments are made, the waiting times may increase by 2 h or more due to lower temperatures. When concrete is purchased by a third party, concrete proportions and ingredients may be chosen without regard for the effect on finishing time and resultant costs to the contractor.

Concrete contractors who have to wait for the concrete to set incur costs of about \$300/h. If the concrete temperature drops from 70 to 50 °F, the average cost for adjusting the mixture to reduce waiting time is about \$6.50/yd³. Concrete contractors consider these costs when evaluating the concreting materials and proportions or when considering changes in the construction schedule. If conditions change after the bid, the contractor will evaluate the incurred extra material and placing costs to determine the need for a change order.

Contact your ASCC concrete contractor to discuss setting-time expectations before the bid. If you have any questions, consult with your ASCC contractor or call the Technical Hotline at (800) 331-0668.