

## ***Input Needed – Rubbed Finishes***

We need your assistance. Ward Malisch and I are working on a draft of an article on rubbed finishes. Over the past 50 years, there has been much confusion about a rub finish and how it is accomplished. In addition, concrete curing specifications requiring forms to be left in place for 3 to 7 days, and a trend toward stronger concrete mixtures, have made rubbing “green” concrete difficult to impossible. We want to illustrate contractors’ concerns with rubbed finishes, specifications, costs and durability. Send photos, info, experiences and job stories to [bsuprenant@asconline.org](mailto:bsuprenant@asconline.org).

### **Examples of Rubbed Finish—Past and Present**

**1970:** Specifications required a rubbed finish with a carborundum brick on an exposed wall for a county jail in Illinois. The specified concrete strength was 3000 psi at 28 days and the forms were removed in a day. At that time, the fins were removed and the wall was rubbed, creating enough paste to cover bugholes and fine lines.

**2015:** Specifications required a rubbed finish on the underside of a post-tensioned concrete parking lot exposed deck in Houston. The specified concrete strength was 5000 psi at 28 days and 3500 psi for post-tensioning. On day four, the concrete was too strong to receive a rub finish; as a result, fins and offsets were removed with a hand-grinder, and bugholes had to be filled with additional grout before the surface was sacked.

Strength of the “green” concrete rubbed in 1970 was probably about 500 psi, while the concrete that was to be rubbed in 2015 was about 3500 psi. There is clearly a significant difference in procedures and cost in rubbing 500 psi concrete and attempting to rub, probably grinding, 3500 psi concrete. We need to convey these differences to the design community.

### **ACI 301 Specifications**

Rubbed finishes have been specified by ACI 301 Specifications for Concrete since 1960 including (a) smooth rubbed finish, (b) sand floated finish, (c) grout cleaned finish, and (d) cork floated finish. The 1972 specification discontinued the sand floated finish. The 1996 specification added that a smooth, rubbed finish was to be accomplished after the period required for curing by leaving the forms in place. Early versions of the specification stated that a smooth rubbed finish was to be produced on “green” concrete or “freshly hardened” concrete.

The 2005 version stated: “...produce finish on hardened concrete no later than the day following formwork removal”. And no cement grout is to be used other than paste drawn from the concrete itself by the rubbing process. This creates a conflict with specifications requiring form removal at 3 to 7 days, since the concrete will be too hard to draw paste from the surface. The rub finish then turns to grinding the fins and offsets and adding grout and sacking. This rub to grind/sack creates a changed condition that is rarely recognized and not paid for. Thus the concrete contractor has to absorb the increased cost.

The 2020 version of ACI 301 will be out this year with proposed changes to rubbed finishes. We will keep you posted when the document becomes final.