What causes stucco to become soft or crumbly? What if anything does wet curing have to do with the outcome? —E-mail

According to AWCI’s Technical Manual No. 15, Evaluation of Three Coat Portland-Cement Plaster (Stucco), there are several causes for soft or crumbly stucco. “Properly proportioned, mixed, applied and cured portland cement plaster will be hard to the touch and abrasion resistant. Plaster that has been insufficiently moist cured, applied using poor curing procedures, or had excessive amounts of aggregate or poorly graded aggregate added to its mix, can become soft or crumbly.”

The manual further explains that using a plaster mix that has been partially frozen or allowing a recently applied stucco surface to freeze is also likely to produce soft, crumbly stucco. “Properly proportioned, mixed, applied and cured portland cement plaster will be hard to the touch and abrasion resistant. Plaster that has been insufficiently moist cured, applied using poor curing procedures, or had excessive amounts of aggregate or poorly graded aggregate added to its mix, can become soft or crumbly.”

Immediately before finish-coat application, the base coat should be moistened. This moisture along with the water in the finish coat provides the total curing of the finish coat plaster. No additional water should be applied to the finish coat plaster until it has hardened. Addition of water to colored finish coat plaster before hardening is a common cause of color variations . . . .”

Casey Seis of El Rey Stucco explains that proper wet curing is as important as any other facet of stucco application; that wet curing also greatly complements the mix of additives used in “one coat” stucco in achieving a good, hard, crack-free stucco finish.

According to Seis, in the dry climate of the Southwest, proper hydration is a must for ensuring a long-lasting stucco system, whether three coat or one coat. He explains that to properly wet-cure a stucco finish, it is necessary to get the surface of the brown coat wet and keep it wet before the moisture in the original application has had an opportunity to dissipate. If the initial moisture can be kept in the stucco, it will cure properly and develop into a strong, long-lasting membrane. Conversely, if the brown coat is exposed too long to dry hot winds, and worse, direct sun, attempts to wet-cure the stucco may be too late.

Seis recommends beginning the wet curing within 20 minutes to 2 1/2 hours of applying the brown coat (he actually used the word “soak” to describe the process) to keep the original moisture in the membrane. He contrasted this with the humid conditions of Virginia, where he once told the plasterer that it was necessary to begin the wet curing process immediately, which the plasterer found quite amusing—amusing enough to ignore. Seis says when he returned the following day to prove his point, he was astonished to discover that the humid climate had produced ideal curing conditions, and a rock-hard stucco membrane.

About the Author
Lee G. Jones is AWCI’s director of technical services. Send your questions to him in care of AWCI’s Construction Dimensions, or send your e-mail question to jones@awci.org.