TECHNICAL Queries+ Quandaries

By Chuck Muehlbauer, MIA Technical Director

Plaster Spot Drying Time and Relative Humidity

Q: We do a lot of interior lobby cladding projects using 2 cm marble, travertine, or limestone anchored with traditional wire tie and plaster methods. It seems like years ago we were always working in enclosed space with the air conditioning running. Now, in the majority of our jobs, we're forced to work without air conditioning and in some cases without the lobby even fully enclosed. It's taking forever for our plaster spots to dry out. Is there an MIA standard that mandates conditioned air for interior stone setting?

A: There is no standard, but the number of calls that I receive regarding residual spots from plaster setting methods suggests that you are not alone in having this issue. It all stems from the current practices in construction scheduling. When I got in the industry back in the early '80s, a lot of projects were said to have been on "fast track" schedules. If what we were doing back then was truly fast track, then what is being done today must be "hyper-track," and I'm hoping to be retired before we're forced into "negative time warp" scheduling. One of the ways to trim time off of the overall construction schedule is to replace sequential, consecutive mobilization of different trades with concurrent mobilization. And in doing so, the HVAC contractor is still installing their equipment while you're installing your stone, so the HVAC system isn't yet operable. In some climates, this is not a big issue. But in humid climates during the summer time, the relative humidity is so close to the dew point that there is essentially no drying of the plaster. One gypsum manufacturer's product literature states that the optimum drying temperature is 110° to 120°F (~45° to 50°C). If you have indoor air with a temperature of 70°F (~20°C) and a relative humidity of 50%, it would have a dew point of about 50°F (~10°C). And if you took that air with a 50°F (~10°C) dew point and raised the temperature to 120°F (~50°C), the relative humidity would now be less than 20%! So if that's the optimum drying conditions for plaster, it should be no surprise that effectively no drying is going to occur in saturated air of say, 90% or higher relative humidity. The MIA's *Dimension Stone Design Manual* states that setting spots may be visible for up to 8 months, but I have seen them take in excess of a year to fully dry out. In some cases, I've seen extended drying times result in permanent staining, as the water has had ample opportunity to transport contaminants to the stone's surface. The concern about drying conditions would not be limited to walls, since thick-bedded stone flooring, particularly when a membrane occurs below the bedding, also requires evacuation of the excess moisture through the stone surface. And whether the installation is vertical or horizontal, grouting, and especially caulking of the joints, reduces the transmissibility of the system greatly. Leaving the joints open for as long as possible will accelerate the drying process.

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