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AVOIDING COSTLY FLOORING FAILURES: REMOVAL OF UNDERLAYMENT AND PATCHING COMPOUNDS TECHNICAL BULLETIN

A common issue encountered on commercial construction remodel projects is partially-/poorly-adhered underlayment “hidden” under an existing floor covering. The existing flooring system may or may not indicate distress related to a concrete moisture control problem. Typical failing underlayment products revealed in the course of remodels include interior-grade, cement-based, or gypsum-based products. Sometimes the products are well-bonded in one area, and poorly-adhered or crumbling in another area.

OBEX preferred installers routinely remove sections of tile, drill through the underlayment to measure depth and then provide an accurate plot to the General Contractor (GC)/Owner. This is done to characterize how much underlayment is down on the slab so an accurate cost for removal and pouring of self-level cementitious back onto the slab in preparation for concrete moisture control installation can be determined. This commonly occurs during the bidding process, or during a job walk, but this preliminary plot can be performed at any point in the construction process where the GC/Owner anticipates sealing the substrate with an ASTM F3010 retrofit concrete moisture control system.

Why can't moisture control products be used to simply seal over the old underlayment?

The cost to demolish failing underlayment can be significant, and the cost to pour back the cementitious self-level adds to total project costs. Ultimately, there are two options: 1) rip and replace the existing concrete slab entirely and utilize a proactive, value-engineered day of pour product such as Creteseal CS2000 over the new concrete pour, or; 2) demolish the partially-adhered underlayment, and seal the mechanically prepared concrete slab with a concrete moisture control retrofit system such as Creteseal MAX, then pour self-level and/or apply a skim topping in conformance with project and flooring flatness/levelness specifications. In any case, failing, crumbling, and partially-adhered underlayment must be removed prior to sealing with an ASTM F3010 retrofit system such as Creteseal MAX. Where moisture testing indicates higher levels of moisture in the slab, the ASTM F3010 retrofit system preparation and sealing process results in a vapor barrier coating at the surface of the concrete slab. It is important to understand any other potential contributions to moisture-related failure of the underlayment or flooring such as a slab with a compromised vapor barrier, or in many cases with older slabs, no vapor barrier at all.

If interior-grade, low-PSI, or gypsum-based underlayment are left layered between the concrete substrate and the ASTM F3010 system, when moisture hits the ASTM F3010 vapor barrier, it will be driven back down into the underlayment and substrate. Over time, this moisture vapor and pressure can cause cement-based and gypsum-based products to weaken and break down. This may also contribute to primer-adhesive bond breakdowns between the substrate and the underlayment, or worse, cause the underlayment to crumble. Gypsum-based, or gypcrete underlayment, is particularly susceptible to moisture-related expansion and contraction resulting in material failure and delamination of the ASTM F3010 moisture control coating. In this scenario, an Owner may be left with a “floating” floor, with deteriorating underlayment, and an epoxy coating that has delaminated from the underlayment. This outcome would represent an extremely costly flooring failure in need of repair. In addition to business interruptions to complete tile removal and replacement, the entirety of the failing underlayment must be removed and poured back with an appropriate cementitious product.



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OBEX recommends removing all old and partially-adhered underlayment that cannot be identified during the construction process, and completing the ASTM F3010 remodel installation in accordance with industry standards. **ASTM F3010 systems such as Creteseal MAX should be installed over clean, bare, properly-profiled concrete substrates or substrates repaired with exterior-grade, moisture-resistant patching and underlayment products.** Common interior-grade cementitious products or patching compounds that are either low-PSI or are not designed to withstand moisture for extended periods of time should not be placed or left underneath the ASTM F3010 system. ASTM F3010 addresses this topic in section 10.3:

Surface depressions or other irregularities shall be filled or smoothed with a patching or leveling material recommended by the membrane-forming moisture mitigation system manufacturer. Patching material shall be moisture-, mildew-, and alkali-resistant, and shall provide a minimum of 3000 psi compressive strength after 28 days, when tested in accordance with Test Method C109/C109M.

Any epoxy manufacturer or moisture control marketing and sales company that recommends skipping generally-accepted construction preparation and moisture control installation standards, including sealing over partially-adhered underlayment, is increasing the risk of an expensive future repair. Poor installation discipline will likely produce a flooring failure resulting in business interruptions, litigation, and potentially a contractor or Owner absorbing the cost of an expensive repair. OBEX recommends carefully reviewing manufacturer warranty provisions prior to selecting a system.

A top-of-the-line ASTM F3010 Moisture Control system can delaminate and fail if the contractor seals over partially-adhered underlayment. OBEX encourages clients to contact our Technical Services Department early in the construction process with any questions regarding old underlayment or patching compounds. OBEX also recommends utilizing an expert moisture control subcontractor to plot slab and underlayment conditions early on in the remodel construction bidding process. By doing so, clients will have all the information required to make an informed-decision regarding their potential risks and options for mitigating those risks at the best compromise of cost and schedule.