DELAMINATION OF TROWELED CONCRETE SURFACES

Delamination occurs when the top 1/8” densifies and separates from the base slab after placement. Delaminations may range in size from several square inches to several square feet and can be detected by tapping with a hammer or with a heavy chain drag. Traffic or freezing may cause the surface to break away in large sheets.

Why Delamination Occurs

Delaminations occur when a fresh concrete surface is sealed by troweling while the underlying concrete is still plastic and bleeding water or releasing air. They form fairly late in the finishing process after floating and after the first troweling. Rapid evaporation of bleed water due to surface drying makes the surface appear ready to trowel while the underlying concrete is plastic. The problem can be compounded by the use of vapor barriers under the slab, which forces bleed water to rise to the surface. And delaminations occur most frequently in early spring and late fall when concrete is placed on a cool sub-grade with rising daytime temperatures. Other factors that can contribute to the problem include:

- Set time is delayed by the use of retarders and/or fly ash.
- Use of entrained air.
- Concrete is sticky from higher cementitious material or sand content.

What to Do About It

- Be wary of a concrete surface that appears to be ready for troweling before it would normally be expected.
- Emphasis should be placed on screeding, straight edging and floating the concrete as quickly as possible without working up an excessive layer of mortar. Further finishing should be delayed as long as possible and the surface covered with polyethylene or otherwise protected from evaporation.
- Keep float blades flat during initial floating to avoid densifying the surface too soon.
- Accelerators or heated concrete often prevent delamination in cool weather.
- If delamination is detected during finishing, try to flatten the trowel blades or tear the surface with a wood float and delay finishing for as long as possible.