



## Technical Bulletin # 125

### RE: Post-tensioned structural slabs

DATE REVISED: January 07, 2005

An increasing number of tile installations are taking place on post-tensioned structural concrete. Post-tensioned concrete substrates are subject to bending and deflection. They can be found in residential slab-on-grade construction, parking structures, condominiums, apartments, office buildings, industrial floors and hotels.

The benefits to post-tensioning include: high compressive strength, crack resistance under load, deflection control, improved durability, longer clear spans, thinner slabs and lighter structures. These qualities can help assure a successful and durable tile installation.

A post-tensioned slab consists of anchored steel cables pulled tight in concrete. The cables are typically stressed when the concrete has reached 75% of design strength.

Major design differences occur from system to system. The thickness of the slab and the spacing of the tendons depend largely on the size of the structure and the type of soil the slab is built on. The most common states for post-tension construction are California, Texas, Florida, Nevada, Arizona, and Maryland.

When soil is medium expansive or higher, post-tensioning becomes the method of choice. In southern California and Arizona, most post-tensioned slabs are 5" thick with a 2" sand base over a vapor barrier (sometimes an additional 2" of sand is used under the vapor barrier). In Texas, often a 4" thick post-tensioned slab is poured directly on the vapor barrier. Las Vegas has such poor soil that often 6-8" of gravel

base is put down, then the vapor barrier and sand, then a 5" thick post-tensioned slab.

Many builders build all of their slabs using post-tension slabs for quality reasons, even in cases when poor soil conditions do not exist.

When TCA method F113 is specified, C-Cure recommends the use of one of the following crack isolation membranes which are to be applied over properly prepared concrete:

- ProRed 963 Waterproofing/Anti-Fracture Membrane
- UltraCure 971 Waterproofing/Anti-Fracture Membrane

ThinSet 911 Portland Cement Mortar gauged with undiluted PST 948 Flexible Admixture may then be used to set tile directly to the cured anti-fracture membrane. Installation to comply with ANSI A108.5.

- A one step system over post-tensioned concrete is possible with UniFlex 916 Elastomeric Mortar and Anti-Fracture Membrane. Uniflex is a setting mortar and anti-fracture membrane combined into one step.

Movement Joints shall be specified by the architect and placed per TCA EJ 171 guidelines. Perimeter joints are mandatory. Please see product literature for complete information.

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