The Trouble with Tile Installation

by Scott Cohen

If you're like me, you probably love tile on water features. Tiled waterlines, tiled spillways, tiled fountains, and even all-tile finishes on pools and spas offer both greater financial rewards and an opportunity to create beautiful designs filled with color and a sense of luxury. Plus, tile is one of the most durable materials used to finish structures that contain water.

As much as I appreciate those benefits, there are a couple of problems related to tile installations that are proving to be really nasty for builders. These stem from apparent conflicts between tile installation standards and common practice in the field.

Let's get specific on just two fronts. (There are more issues with these standards to discuss another time.)

First, according to the ANSI Standard Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar ANSI A108.5, 2.5.3, average contact shall be no less than 95 percent for exterior or shower installations.

That standard is echoed by the Tile Council of North America, which also states in its handbook, Pools and Waterfeatures: Tile bond coat coverage – 95 percent contact with the substrate.

At a glance, those standards might seem to make sense, that is until you look at industry practice, specifically the use of mesh-mounted tile products, which covers a wide range of tiles, especially those under two inches in size. The fact is, a majority of tile products marketed for use in pools are mesh-mounted, even though the mesh covers 15-20 percent (or more) of the back of the tile. And when you factor in the glue used to mount the mesh to the tile, the actual coverage is even less. As a standard practice in the industry, mesh-mounted tiles are used often in spillways, water lines, weir walls, and vanishing edges.

In effect, that means anytime we use a mesh-mounted product, we are in violation of both ANSI standards and TCNA recommendations. Yet tile manufacturers — and I won't name names — openly market their mesh-mounted products for use in pools and spas in spite of these documented industry standards, which in this case they conveniently fail to acknowledge. The problem is that when tile surfaces fail and lawsuits result, plaintiff's attorneys can, and do, point to these standards as proof of negligence on the part of the builder or tile installer.

I've done a fair bit of research on this issue, and no one I've contacted can explain the disconnection here. Certainly the use of mesh-mounted tile makes sense in that it makes installation much easier than the alternative paper-faced or tape mounted tile, which allow easier compliance with these standards but require far greater skills to install. Yet, the standards are clear in that they call for 95 percent substrate contact, which you cannot possibly achieve using mesh-mounted products.

Suffice to say, the status quo needs to change. Either the standards need to change or product manufacturers need to stop selling mesh-mounted tile for installations in pools. As it is, builders and tile installation subcontractors are being led into trouble using these products. I'm an advocate for rewriting the standard to allow for mesh mounted products when manufacturers can demonstrate, through testing, that their tile and mesh system won't dilute in water or allow mold to grow on the mesh itself (Yes, these have been real problems in the field).

That's bad enough on its own, but there's a second part to this standard that is causing considerable trouble, and it makes even less sense.

According to the same ANSI standard and TCNA handbook, tile surfaces must include " movement joints" installed 8 to 12 feet on center.

This one really mystifies me. In all my years designing and building custom pools and acting as an expert witness for California's Contractor State License Board, I have never once, not once, seen or heard of an all-tile surface in a swimming pool installed with movement joints. It just doesn't happen.

Frankly, I wouldn't even know how you would install such a thing. We know about expansion joints in decks, sure, but there the joint goes all the way through the slab down to the substrate. Pool shells don't work that way; they're monolithic and no one installs movement joints in residential pools shells. And furthermore, how would you install such a joint with offset tile patterns?

The whole thing is completely unrealistic. It's a standard that exists on paper but no one follows it in the field. I have talked with many of the top designers and tile installers in our industry and none of them install movement joints every 8-10 feet in their tile work. Again, in studying this issue, I've yet to hear an explanation from anyone as to why this standard exists in the first place, nor where it came from originally, or how we go about getting it changed.

Maybe there is a place for movement joints on the exterior of the pool, like on the outside wall of a vanishing edge, or with some sensitive glass tiles, but on the inside of a pool? On the waterline of a pool? Has anyone ever seen a pool tile catalog that shows these "properly installed joints" ?

In general, standards exist to reflect sound industry practices and assure compliance with those practices. A standard that no one follows is in effect not a standard at all – it's a fiction. That's the case here; yet, there certainly have been numerous lawsuits where failed tile or waterproofing jobs are blamed on lack of compliance with this standard. Builders and their installers are in essence on the hook for not complying with a standard that no one follows.

The problem is that the "one size fits all" standard just doesn't work for pools and wet applications. There needs to be a more clearly defined standard that takes into account the differences between dry, wet/dry, and always wet installations. For instance, between the interior of a pool, where temperatures don't change much, and the exterior of a south facing weir wall.

The closest thing to an improved standard for pool tile installations that I have seen is a report by the Ceramic Tile Institute of America (CTIOA Report 2011-4-11) released last year and available to read free online at www.ctioa.org. In my opinion it is a great first step in better defining the “proper” way to install pool tiles and it should be embraced by ANSI and the TCNA as an outline to help rewrite their standards.

Pool and Tile Contractors are being hurt by these standards because any time there is a failure with tile or waterproofing, these documents get placed out on the table and the installer gets “thrown under the bus” by tile installation experts and lawyers that point to the standards and say, “You built it wrong.” The real problem may have been poor water chemistry, bond strength of a waterproof coating, a thin-set failure, water-soluble mesh on tiles, or any other of a dozen possibilities.

Again, something’s got to change and in this case, I believe the standard should be rewritten to reflect a realistic installation practice.

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