



An “Expanded” Look into Large Format Tile (Part 2)

This is the second article of a two-part series pertaining to large format tile. In the December 2008 article, we provided a brief background of large format tile, and discussed its increasing popularity. In this article, we will discuss the extra precautions that should be taken when considering and installing large format tile.

What extra precautions are required when installing large format ceramic tile?

A successful large format tile project requires appropriate substrate preparation and correct mortar selection, and there are some special considerations that should be given if a narrow grout joint is desired.

Substrate Preparation

Perhaps the most critical component to consider when installing large format

tile is the substrate. It is important to make sure that the substrate is sufficiently flat. The TCA Handbook calls for 1/4” maximum deviation from planarity every 10 feet, 1/16” deviation in every foot, and 1/32” deviation between adjoining edges (sheets of plywood,

masonry block, etc.). However, one should consider even stricter tolerances when working with large format tile for a number of reasons.

With larger tiles, the effects of an uneven substrate on the installation are magnified, making it harder to avoid lippage or misalignment. Smaller tiles can better accommodate variation in the subfloor. With larger pieces, layouts contain fewer tiles, and therefore fewer opportunities to make gradual adjustments when compensating for the effects of an uneven substrate.

Uneven substrates can also lead to failures. In low points, mortar coverage may be poor. This can result in hollow spots that are not supported



Right: “Poor mortar coverage can result in unsupported hollow spots that make tile susceptible to cracking from concentrated weight.” Photo courtesy Ceramic Tile and Stone Consultants.

by mortar, making the tile susceptible to adhesion failures or cracking from concentrated weight.

It is critical that customers be aware of the extra time and money required to flatten substrates for any tile installation, but especially with large format tile. When dealing with an uneven floor, an installer can grind down high spots, fill in low spots, or utilize a combination of both to achieve the necessary degree of

Mortar selection is a critical component in achieving a successful large format tile installation.

flatness. Self-leveling underlayments (SLU's) are also a convenient option to consider.

Mortar Selection

Mortar selection is a critical component in achieving a successful large format tile installation. A thick set mortar bed, common in a natural stone installation, can be used when installing large format tile. More commonly, a medium-bed (thin-set) method with a large notch trowel of 1/2-inch or greater is used.

These mortars are formulated with coarser aggregate to provide anti-slump characteristics that resist larger, heavier tile sinking in the mortar. Some medium bed thin-set mortars also utilize

innovative technology, such as hollow ceramic micro-spheres, to improve trowelability while maintaining anti-slump properties.

With flat floors, a full contact mortar can also be considered. These innovative mortars change viscosity as the tile is moved back and forth allowing full

contact to be made between the tile and the floor.

Narrow Grout Joints and Tile Selection

A narrow grout joint is generally considered to be less than one-eighth of an inch. For all tile installations, and



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Katelyn Simpson
Laboratory Engineer



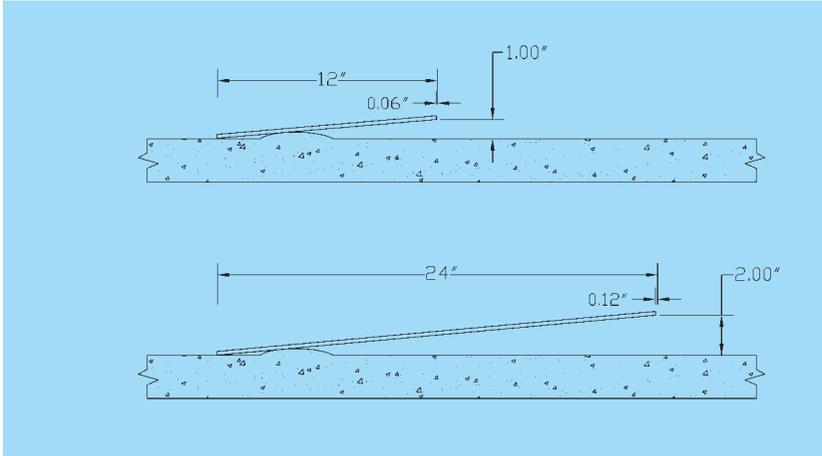
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Bill Griese
Laboratory Engineer

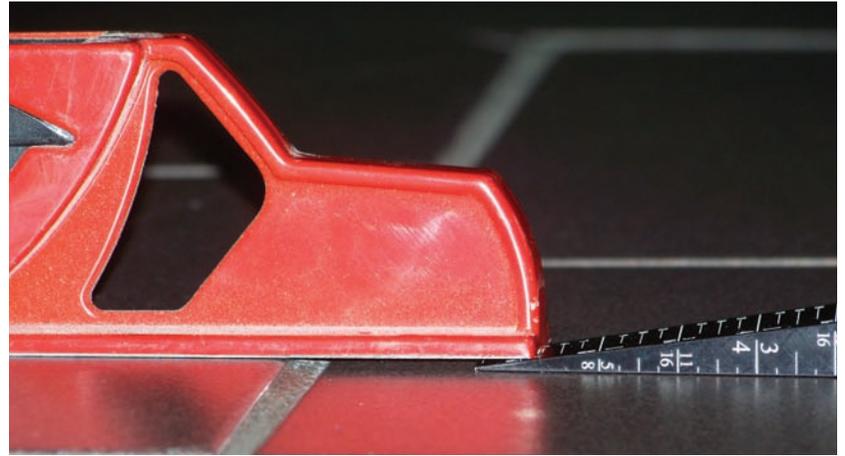


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Above: "If the substrate is not sufficiently flat, doubling the tile size can result in lippage that is twice as severe, and the tile can fall two times shorter of its projected horizontal layout."



Above: "Widening the grout joint does not eliminate lippage, but can make it much less apparent." Photo courtesy Ceramic Tile and Stone Consultants.

especially ones with large format tile, extra precautions should be taken if a narrow grout joint is desired. A successful narrow grout joint installation with large format tile is achievable as long as a few necessary steps are taken.

First, one should consider the use of rectified tile. Narrow grout joints allow very little opportunity to make layout adjustments when compensating for any dimensional variation in the tile. Rectified tile has less dimensional variation, because the edges are ground to achieve more precise facial dimensions than traditional calibrated tile has. This is clearly shown in the 2008 ANSI accredited standard A137.1, American National Standard Specifications for Ceramic Tile, which lists the dimensional requirements for rectified tile, calibrated tile, and natural tile (tile that has not passed through a sorting/calibrating machine).

When considering narrow grout joints, it should be noted that section 4.3.8 of the ANSI accredited standard A108.02 states that "the actual grout joint size shall be at least 3 times the actual variation of facial dimensions of the tile supplied." This does not permit the use of narrow grout joints with tiles exhibiting much variation in their sizing.

Prior to the passage of the 2008 ANSI accredited A137.1 standard for ceramic tile, there was no standard sizing requirement for rectified tile, and even today the international standard for tile (ISO 13006) does not have such a requirement. Unfortunately, some large format tiles on the market promoted as "rectified" do not meet the A137.1 standard, and are only as dimensionally precise as calibrated tile.

Inherent tile warpage must also be considered when considering narrow grout joints. Though such warpage is usually slight, lippage can result when the low spot in one tile is next to the high spot in another. This becomes more noticeable as grout joints become smaller or where wall wash lighting is used.

There are some designs that should simply be avoided

if narrow grout joints are desired with large format tile. Examples include running bond, brick, and pinwheel patterns, or wherever the center of one tile is near the end of another. When opting for these patterns with large format tile, it is important to consider a wider grout joint to reduce noticeable lippage.

In summary, the successful installation of large format tile requires more precautions than necessary with smaller tile. Proper steps should be taken with substrate preparation, setting procedures, and materials selection. One must also give special consideration to the grout joint size and layout; when narrow grout joints are desired, pay additional attention to selecting tile both flat and consistent in its sizing. **TILE**



Bill Griese

About the Author

Bill Griese, Standards Development and Green Initiative Manager for the Tile Council of North America, is involved in the development and revision of ASTM, ANSI, ISO, and other industry-specific standards, and the coordination of TCNA's environmental efforts. He serves as Chairman for the ASTM C21 Committee on Ceramic Whitewares and Related Products, and also works closely with TCNA's Product Performance Testing Laboratory. Griese earned a Bachelor of Science degree in Ceramic and Materials Engineering from Clemson University in Clemson, SC.