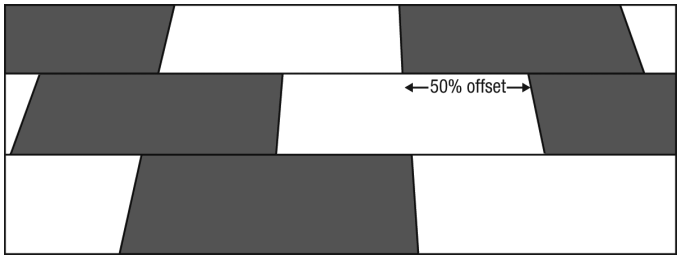
March 2009

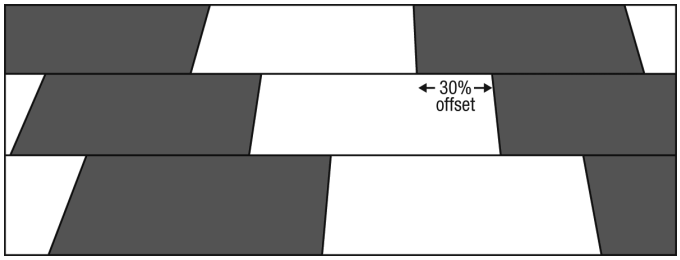
Re: Pressed Rectangular Tile-Large Format (18 inch plus)

Pressed rectangular tile by virtue of their size and shape offer new and interesting design possibilities. They also create their own unique demands related to workable patterns, grout joint size and possible lippage issues. It is hoped that this candid review of the product is helpful in understanding when and how these tiles can best be utilized on a project.

Large rectangular tiles are pressed with inherent tension, this strengthens the tiles irregular shape, similar to tensioned concrete slabs or flat heavy haul trailers. This strengthening begins to develop during the pressing of the tiles and continues to develop in the tile as it passes on to the drying oven. The resulting tension in *pressed rectangular tiles* can show up in the form of an arc or crown on the surface of the tile. While completely within Crossville and ANSI 137.1 specifications, these large rectangles can require the following:



Re-arrange the offset in the previous and following rows to meet the lower point.



Finally of course the substrate itself and its variations can aggravate the precision of the installation and width of the grout joints.

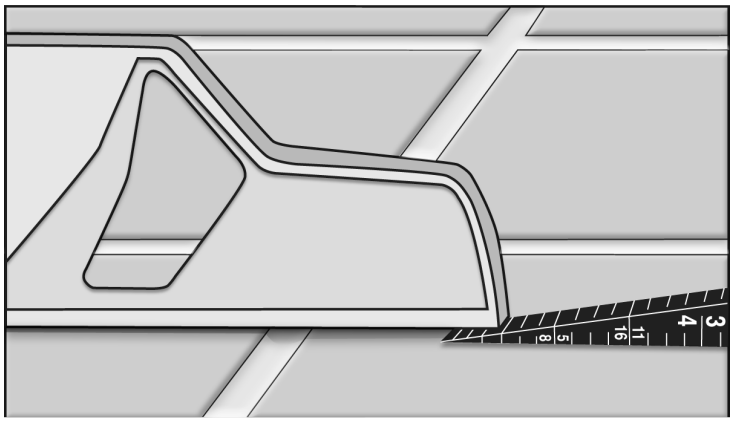
Citing recent TCNA recommendations, if narrow grout joints with large format tiles or large modular patterns are desired, there are some layouts that should be avoided:

- Whenever the center of one tile is beside the end of another, minimal tile warpage can result in lippage.
  - *Examples: running bond; staggered "brick" patterns; pinwheel patterns.*
- shifting the tile pattern (see examples to left)
- change in installation method and setting mortar
- both may be necessary, particularly if a very narrow grout joint is expected

Accepting the physical aspect of these tiles, shifting the typical brick pattern commonly used from a 50% offset to a 25-30% offset does much to resolve any possible lippage from one tile row to the next, without compromising the overall appearance of the installation.

The use of a larger notch trowel, in conjunction with a medium bed or full contact mortar is recommended.

Gently opening up the grout joint will also improve transitions from tile to tile.



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

In order to accomplish grout joints 1/8" or less, variation in the substrate must also be minimal. The Tile Council of North America Handbook 2008 on page 12 specifically states:

"Subsurface Tolerance: Thin-set tile installations have a specified subsurface tolerance, for instance 1/4" in 10', and 1/16" in 1'-0, to conform to ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others (see page 7), the subsurface typically should not vary by more than 1/16" over 1'-0", nor more than 1/32" between adjoining edges. Should the Architect /designer require a more stringent tolerance (e.g., 1/8" in 10'), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the 1/4" subsurface tolerance into compliance with the 1/8" tolerance desired."

<u>This alteration of the specification should be noted in CSI Section 03100 Concrete Formwork.</u>

If variations in the substrate exist or are allowed beyond the tolerances defined above, wider grout joints from 1/8" to 1/4+"will become necessary in order to visibly hide the transition from one tile to another. If a uniform grout joint appropriate to the condition of the substrate is not employed, "lippage" of the tile will occur.

Again, citing the Tile Council of North America Handbook: *"Lipppage is a condition where one edge of a tile is higher than the adjacent tile, giving the finished surface an uneven appearance and potentially causing a trip hazard."*

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