



Installation of Tile or Stone In Elevator Cabs

TDS 134

Elevator cabs, especially in high end hotels and commercial buildings, are being dressed up with the addition of tile and stone. While it is possible to set tile or stone in an elevator, there are certain factors that must be taken into account.

Deflection is a concern for any tile or stone installation. However, an elevator floor is frequently exposed to excessive live loads, including point loading (heavily loaded baggage carts). The change in live loads and the vibration of the elevator cab make meeting deflection requirements and proper placement of movement joints critical. Substrates must meet minimum deflection standards under total anticipated load (see [TDS 123](#) “Deflection”). Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials. In addition to deflection considerations, above-ground installations (including elevator cabs) are inherently more susceptible to vibration. Consult grout, mortar, and membrane manufacturer to determine appropriate installation materials for above-ground installations. A crack isolation and higher quality setting materials can increase the performance capabilities of above-ground applications. However, the upgraded materials cannot mitigate structural deficiencies including floors not meeting code requirements and/or over loading or other abuse of the installation in excess of design parameters.

For thin-bed ceramic tile installations when a cementitious bonding material will be used, including medium bed mortar: maximum allowable variation in the tile substrate – for tiles with edges shorter than 15” (375mm), maximum allowable variation is 1/4” in 10’ (6mm in 3m) from the required plane, with no more than 1/16” variation in 12” (1.5mm variation in 300mm) when measured from the high points in the surface. For tiles with at least one edge 15” (375mm) in length, maximum allowable variation is 1/8” in 10’ (3mm in 3m) from the required plane, with no more than 1/16” variation in 24” (1.5mm variation in 600mm) when measured from the high points in the surface. For modular substrate units, such as exterior glue plywood panels or adjacent concrete masonry units, adjacent edges cannot exceed 1/32” (0.8mm) difference in height. Should the architect/designer require a more stringent finish tolerance (e.g. 1/8” in 10’ [3mm in 3m]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the subsurface tolerance into compliance with the desired tolerance. For thick bed (mortar bed) ceramic and stone tile installations and self-leveling methods: maximum allowable variation in the installation substrate to be 1/4” in 10’ (6mm in 3m).

Expansion joints along the perimeter of the floor are essential to avoid grout cracking and tile delaminating due to the movement and twisting (racking) action of the elevator cab. Consult the Tile Council of North America, Inc. (TCNA) Handbook for Ceramic, Glass, and Stone Tile Installation (EJ171) for additional information on the design and placement of movement joints. Use LATASIL™ to treat movement joints.

Most elevator floors have common substrates. They are either steel that makes up the structural framework of the elevator cab or they are the steel substrate covered by a layer of exterior glue plywood or cement backer board. All three substrates are acceptable for installation of tile or stone using LATICRETE International, Inc. products.

Tile and stone can be installed directly to cement backer board or exterior glue plywood substrates using 254 Platinum, 257 TITANIUM™ or 125 Sound & Crack Adhesive (horizontal only). Glass tile can be installed using Glass Tile Adhesive Mortar (please consult glass tile manufacturer and [TDS 145](#) “Installation of Glass Mosaic Tile”, available at <https://laticrete.com>, prior to installing glass mosaic tile). Cement backer board and exterior glue plywood should be installed in accordance with industry standards and the board manufacturers written installation instructions. Grout tile with SPECTRALOCK®* PRO Premium Grout, SPECTRALOCK PRO Premium Translucent Grout; SPECTRALOCK 1; PERMACOLOR® Select^, PERMACOLOR Grout, or, PERMACOLOR Select NS. Check with the manufacturer of the glass tile for grout type compatibility with their glass product.

An alternative installation method would be to bond STRATA_MAT™ or STRATA_MAT XT to the steel elevator floor using LATAPOXY® 300 Adhesive or LATAPOXY BIOGREEN™ 300 and allow it to dry. Install tile or stone onto the STRATA_MAT or STRATA_MAT XT using 254 Platinum or 257 TITANIUM™, and grout using SPECTRALOCK® PRO Premium Grout; SPECTRALOCK PRO Premium Translucent Grout; SPECTRALOCK 1; PERMACOLOR® Select^, PERMACOLOR Grout, or, PERMACOLOR Select NS. Ensure that space is left for perimeter movement joints and use LATASIL™ and flexible foam backer rod to treat these joints.

In cases where the tile is directly bonded to the steel substrate, the tile or stone can be installed using LATAPOXY® 300 Adhesive. Grout tile or stone with SPECTRALOCK PRO Premium Grout; SPECTRALOCK PRO Premium Translucent Grout; SPECTRALOCK 1; PERMACOLOR Select^, PERMACOLOR Grout, or, PERMACOLOR Select NS.

The elevator can be opened for service when cement based grouts and epoxy grouts have cured for a minimum of 48 hrs. at a surface temperature of 70°F (21°C). Longer time may be required at lower temperatures. For SPECTRALOCK PRO Premium Grout, SPECTRALOCK PRO Premium Translucent Grout and SPECTRALOCK 1, maximum stain resistance is reached in 7 full days at a surface temperature of 70°F (21°C) or higher. See product data sheets for the grouts for more information.

* United States Patent No.: 6,881,768 (and other Patents)

^ United States Patent No.: 6,784,229 (and other Patents)

Technical Data Sheets are subject to change without notice. For latest revision, check our website at <https://laticrete.com>
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