



**CERAMIC TILE INSTITUTE OF AMERICA, INC.**  
12061 Jefferson Blvd., Culver City, CA 90230-6219

## **CTI FIELD REPORT 64-1-4 (R84)**

### **SUBJECT: Marble Tile... You Must Understand It! Field Report**

#### **Discussion**

- A. The increased use of tile-sized units of marble make it mandatory for tile contractors and their tile setters to know the successful way to bond it.
- B. In years past it had been traditional for building inspectors to place restrictions on large (18" x 24" x  $\frac{1}{4}$ " thick) units of glass. They required that the glass be bonded to the surface with large spots of adhesive, much of which failed. Restrictions to a low height above ground level resulted.
- C. Restrictions will not be necessary on marble tile if the tile setter understands that it is difficult to bond and takes special precautions when installing it.
- D. After unpackaging a piece of marble tile from the carton, it should be turned over on the unpolished side, and the installer's fingers rubbed over it. Dust will be noted. This can be a detriment to obtaining a good bond unless properly compensated for.
  1. The preferred method, using a trowel, is to hard press the bond coat into the back of the tile after using the trowel to thoroughly mix the marble dust and bond coat together.
  2. The marble dust can be completely washed off prior to hard pressing the bond coat onto the back of the tile.
  3. The above information has been verified by laboratory tests.
  4. The dust-covered marble tile should not be placed directly against the bonding coat which has been troweled onto the surface. This is certain to result in an inadequate bond.
  5. A brush should not be used to apply the pure coat to the back of the tile. Improper application of the backbutter will cause a loss of bond.
- E. Laboratory tests indicate that the bond of marble tile can be improved by the use of certain materials applied as above.
  1. Portland cement with latex or acrylic has shown the highest bond strength.
  2. Thinset portland cement mortars have shown the next highest bond strength.
  3. Pure portland cement used on a conventional plastic mortar bed also will result in a high bond strength.
  4. Setting mortars should only be used if they are on the Ceramic Tile Institute Tested Materials list.
- F. Good materials deserve proper use and the following procedures are necessary.
  1. There should be 100 percent coverage of bond coat and mortar between the marble tile and the surface to be covered. This includes closing up the grooves left by trowel teeth.
  2. Surfaces of concrete must be heavily sandblasted or bushhammered before installations are made.

3. Expansion (control joints) are needed 16' to 20' in each direction. The expansion joints should be the full depth of the installation.
4. Shelf anchors should be used every 12' to 14' to help hold the weight of this heavy material on large sheer walls. Dependent upon the building code, shelf anchors may not be necessary. The Uniform Building Code requires that adhered units not exceed 720 square inches in surface area and not weigh more than 15 lb. per square foot.

G. The following items have been observed as having caused trouble and should be avoided:

1. Only spots of bonding mortar placed on the back of the marble tile or grooves from troweling not being filled. These conditions result in as low as 30 percent to 50 percent contact or bond strength. Moisture accumulates in the voids and causes leaching and other trouble.
2. Marble tile placed directly onto the bond coat without backbuttering the unit or eliminating the dust from the backside of the marble.
3. Use of pure coats of polyvinyl acetates or other water soluble bonding materials to bond mortar to concrete surfaces.
4. Improperly brushing a bond coat or wet slurry instead of troweling the bond coat on the back of the tile before installation.
5. Stacking large loads of marble tile, a very heavy material, on insecure bridges or supports. Collapse of such stacks could result in injury and extensive damage.

H. When in doubt, call the Ceramic Tile Institute and check your installation procedure with us.