

PRECAST CONCRETE TILE INSTALLATION & MAINTENANCE

IMPORTANT NOTE: Before installing any tile, it is the responsibility of the installer to read and follow the manufacturer's printed instructions.

THE FOUR -"C's" CHECKLIST WHEN INSTALLING CONCRETE TILE:

CLEAN: Make sure the concrete slab is clean and bondable.

COOL: Tile & slab must be moist when mortar is applied. **MOISTEN**, do not saturate with water.

COVERAGE: A 100% tile bonding coverage is desirable, with a minimum of 95% on exterior and 80% on interior bonding coverage within the tile assembly. (Refer ANSI* specs.) Extremely important that all corners and tile edges have a 100% bonding coverage.

CURE: Allow to cure a minimum of 24 hours before grouting or subjecting to light foot traffic.

*ANSI = American National Standard Institute for Ceramic Tile**

PRECONSTRUCTION AND PREPARATION

A. Examine and verify that job conditions are satisfactory for speedy and acceptable work.

B. Tile should be ordered and manufactured four to eight weeks prior to installation for optimum curing and color consistency as well as minimizing the risk of warping.

C. Confirm there are no conflicts between this work and work of other trades, and that the work of other trades that must precede this work has been completed.

D. Cold-weather protection: Do not use frozen materials subjected to ice, frost or in temperatures below 50 degrees. Do not build on frozen sub grade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

E. Lay out floor in advance to predetermine tile cuts.

F. Design fixtures and furniture should incorporate non-metallic glides and casters to avoid floor damage by point loads, and discoloration.

PROJECT CONDITIONS

A. Maintain minimum temperature of 70 degrees in spaces to receive precast tile for at least 48 hours before, during and after installation. Store materials in space where they will be installed for at least 48 hours or as required to ensure that the materials have reached 70 degrees before starting installation.

B. Do not install tile on concrete slabs until they have been cured and are sufficiently dry to achieve bond with adhesive, as determined by manufacturer's recommended bond and moisture test.

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MATERIALS

Dimensional tolerances for tile shall be as follows:

1. Length +/- 1/8"
2. Width +/- 1/8"
3. Thickness +1/16", -1/8"

ACCESSORIES

A. Floor Adhesives

1. "Thin-set" latex modified portland cement mortar for use in all areas except as specified in line 2 below.
2. Two-part component wet-set hard-curing type used at all areas subject to excessive moisture.

B. Wall Adhesive

1. "Thin-set" latex modified portland cement mortar.
2. Type II acrylic adhesive.

C. Sealer and Finish

1. Silicate based penetrating sealer/hardener as recommended by tile manufacturer.
2. Silane based finish coat as recommended by tile manufacturer.

CONSTRUCTION AND INSTALLATION

A. Do not use tile with chips, cracks, voids, discoloration, and other defects that might be visible or cause staining in finished work.

B. Mix tile from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.

C. Cut tile with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut tile to provide pattern indicated and to fit adjoining work neatly. Use full tile without cutting where possible. Hammer cutting is not acceptable.

D. Joint pattern as indicated; 3/8" wide joints; allow for adequate expansion, control, cold and isolation joints per TCA Handbook.

E. Tolerances: do not exceed 3/32-inch (2.38-mm) unit-to-unit offset from flush (lippage) nor 1/8 inch in 10 feet (3 mm in 3 m) from level, or indicated slope, for finished surface of paving.

F. Always follow manufacturers instructions for mixing and application of thin-set.

G. TILE AND SLAB MUST BE MOIST, BUT NOT SATURATED, WITH WATER WHEN MORTAR IS APPLIED.

H. Start of work constitutes acceptance that all conditions are satisfactory.

CONCRETE SUBFLOOR

A. Installer shall inspect subfloor surfaces to ensure that they are clean, dry, flat, smooth, level and free from cracks, holes, ridges, coatings preventing adhesion and other defects impairing performance or appearance. Do not proceed with installation until defective conditions have been corrected.

**From Concrete Manufacturer's Tile Association Handbook for Concrete Tiles. www.concretetile.org

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B. Perform bond and moisture tests on subfloor to determine if surfaces are sufficiently cured and dry as well as to ascertain presence of curing, sealing, hardening or any other compounds.

1. Moisture vapor transmission shall not exceed 3 pounds per 1,000 square feet in 24 hours. Test shall be in accordance with ASTM F1869.

WOOD SUBFLOOR

A. No tile shall be bonded directly to wood. Acceptable methods are as follows:

1. Cement backer board installer per manufacturer's instructions.
2. Pre-floated 1-1/4" – 2" mortar bed with slip sheet membrane (asphalt felt or polyethylene sheeting).

B. Verify that underlayment surface is free of irregularities and substances that may interfere with adhesive bond, show through surface or stain flooring.

C. Substrate shall be a minimum (2) layers 3/4" plywood with staggered seams.

PREPARATION

A. Remove deleterious coatings from sub-floor which would prevent a positive adhesive bond.

B. Level subfloor as required with self-leveling or patching compound.

C. General contractor shall mechanically abrade (either by grinding or shot-blasting) concrete slabs to roughen smooth surfaces or remove carbonation or foreign substances as required.

THIN-SET:

Method normally preferred by C-54 tile installers when installing ceramic tiles.

1. Always first review and then follow the instructions printed on each bag of thin-set.
2. Mix the thin-set and clean cool water (or latex additive) together by hand or use a variable-speed electric drill at slow speed (150 to 200 rpm) to a smooth, paste consistency. Let slake or stand 5 - 10 minutes, stir again and use. Stir occasionally to keep fluffy, BUT DO NOT RETEMPER (add more water). When properly mixed, troweled ridges on slab will stand with little or no slump.
3. To avoid entraining air in the mix, use a bird cage rather than a paddle mixing attachment.
4. Spread thin-set with the trowel's flat side to skin the substrate and break the 'surface tension'.
5. Run grooves in one direction under each individual tile, which allows air to escape.
6. Hold the 1/2" square notched trowel in a near vertical position and finish combing in one direction.
7. Do not allow thin-set to 'skin-over' as that will inhibit bonding of the tile.
8. Backbuttering each tile is recommended in all applications; however, on exterior applications with tiles 8" x 8" or larger, It is mandatory to obtain a minimum of 95% coverage! Thin-set should be spread onto the back of individual tiles with the flat side of the trowel.

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MEDIUM-BED:

Highly recommended for the installation of concrete tiles

1. Ideal for setting concrete tiles and large formatted tiles.
2. Typically used with a 1/2" x 1/2" x 1/2" square notch or 3/4" rounded notch trowel.
3. Most can be used from 1/8" thick to 3/4" thick after tiles are beaten into place.
4. Most are formulated with additional larger sand gradation to minimize shrinkage.
5. Available in white and gray, modified and non-modified, normal set and fast set.
6. Spread mortar and set concrete tiles in the same basic way as a ceramic tile or natural stone.
7. Backbuttering tiles on the interior recommended, It is mandatory on exterior applications.

MORTAR-SET:

Method preferred by C-8 masonry contractors.

IMPORTANT NOTE: This method not recommended by all concrete tile manufacturers.

1. Available in bags premixed dry or can be mixed on job sites. When mixed on site, use 2-1/2 to 3 parts washed plaster sand to 1 part Portland cement. Use of latex & acrylic concrete additives is strongly recommended. Mortar too rich with cement has a tendency to shrink and crack.
2. Mortar-Set application can be used at a minimum of 1/2" thick to a maximum of 1" thick.
3. Do not allow mortar to lose plasticity and become stiff, as that will inhibit bonding of the tile.
4. Extreme hot or cold weather affects the mortar's open time. Consider both the air & slabs' temperature & do not spread too much at one time, as heat affects open time.
5. It is recommended to slurry coat (backbutter) the back of each individual tile for all applications; however, on exterior applications with tiles 8" x 8" or larger, it is mandatory! This ensures ultimate bonding through wet-to-wet mortar contact.
6. Do not use a rubber mallet directly on tile. Instead use beating block to adjust tile if needed.

MANDATORY FOR SETTING TILE WITH EITHER METHOD:

1. Extreme hot or cold weather affects the thin-sets' open time. Always check first the instructions printed on the thin-set sack or package mortars regarding temperature & open time.
2. Press tiles into grooved thin-set or mortar bed, moving back and forth to level and ensure a complete bond. If necessary, use a beating block to adjust the tile.
3. Under no circumstances allow voids in the thin set or mortar set at the corners or edges of the tiles. If that occurs, it will contribute both to the tiles debonding and cracks in the grout joints.

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CLEAN TILE'S SURFACE AS YOU INSTALL:

1. Clean any thin-set or mortar off the face of the tiles ASAP, as the longer it stays on the more difficult it becomes to clean off the tile's surface. The length of time you will be able to do this varies with the concrete tile's surface temperature.
2. Never leave a "cement haze" on the concrete tile's surface overnight which is often done when installing ceramic tiles, because you will be unable to remove it the next day.
3. NEVER USE ACIDS when cleaning concrete tiles or grout, as they will detrimentally affect the colors and finish FOREVER!**

GROUTING

- A. Use "Saltillo" type course, sanded grout for joints up to 1/2" wide.
- B. If mixing own grout, use a mixed gradation of 30/60/90 silica sand in a 2 to 2-1/2 ratio to 1 cement.
- C. Do not use excessive water.
- D. Do not under any circumstances use acids to clean tile after grouting.
- E. If bag grouting (recommended) fill joints higher than tile surface and tool when grout starts to set up.
- F. If spread grouting, clean tile surface frequently with clean water. Installation and material shall comply with ANSI A108 and TCA Handbook (current edition).
- G. Damp cure entire installation when finished.

SEALING

- A. For permanent chemical, stain and wear resistance tile shall be sealed by tile manufacturer prior to shipping (unless otherwise specified).
- B. Seal grout as per manufacturer's recommendation.

CLEANUP

- A. Seal all tile per manufacturer's recommendations.
- B. Thoroughly clean all surfaces of dirt and debris. Protect all tile from abrasion and avoid as much traffic as possible until construction is complete.

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CARE & MAINTENANCE

A. Routine cleaning

1. Sweep or vacuum floors frequently to remove dirt which might scratch the tile surface.
2. Promptly wipe spills to minimize risk of staining.
3. Place protective pad on legs of moveable furniture.
4. Damp mop with a neutral pH cleaner.

B. If surfaces begin to show wear, contact manufacturer for recommended maintenance.

*Heavily soiled areas can be cleaned by scrubbing with a floor machine equipped with a scrubbing brush and a high quality commercial floor cleaning detergent (such as TileLab® Heavy Duty Cleaner & Stripper).

*A commercial paste wax can be applied to penetrating sealers to maintain stain resistance and appearance. Wax should be stripped semiannually, or as required, with a neutral stripper and reapplied.

*Do not use cleaners containing ammonia, acids or bleach.

PROACTIVE PROTECTION FOR YOUR FLOOR

A. When moving appliances or heavy furniture, lay a plywood panel on your floor and "walk" the item across it. This protects your floor from scuffing and tears.

B. Use floor protectors on furniture to reduce indentation. As a general rule of thumb, the heavier the item, the wider the floor protector needed.

C. Be careful with rolling casters. They can damage the floor. Therefore, we do not recommend them. If you choose to use them, the double wheel type are the best option.

D. Place a walk-off mat at outside entrances to reduce the amount of dirt brought into the site. We do not recommend the use of rubber- or latex-backed mats because the chemical (antioxidant) used to keep the backing from becoming brittle can permanently stain your floor. We suggest a non-staining vinyl-backed mat or a woven rug that is colorfast. Most of these products are identified "colorfast" by the manufacturer

SCUFF MARK REMOVAL

A. Use a Scotchbrite® pad with a low-ph cleaner like Tile Lab Grout and Tile cleaner® or Kemiko Nutra-Clean® and gently buff the scuff marks away.

* Use non-metallic guides and casters to move furniture across floor to avoid scratching and discoloration of tile surface.

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