

TILE FIXING INSTRUCTIONS- (CEMENT TILES FOR INDOOR APPLICATION)

Specification for Cement mosaic floor tile installed over concrete floor slabs using thin set method (adhesives) and latex Portland cement grout joints

PART 1 – BEFORE WE BEGIN- GENERAL

1.1 QUALITY ASSURANCE

- A. Tile Manufacturer (single source responsibility): Company specializing in Cement tile, mosaics, pavers, trim units and/or thresholds with with ten (10) years minimum experience and ISO 9001 certification. Obtain tile from a single source with resources to provide products of consistent quality in appearance and physical properties.
- B. Installation System Manufacturer (single source responsibility): Company specializing in adhesives, mortars, grouts and other installation materials with ten (10) years minimum experience and ISO 9001 certification. Obtain installation materials from single source manufacturer to insure consistent quality and full compatibility.
- C. Submit laboratory confirmation of Tiles, adhesives, mortars, grouts and other installation materials to compare received quality against the same as declared by manufactures:
- D. Installer qualifications: company specializing in installation of Cement tile, mosaics, pavers, trim units and thresholds with five (5) years documented experience with installations of similar scope, materials and design.

1.2 MOCK-UPS

- A. Provide mock-up of each type/style/finish/size/color of Cement tile, mosaics, pavers, trim unit and threshold, along with respective installation adhesives, mortars, grouts and other installation materials.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Store Cement tile and installation system materials in a dry location, Covered and away from Direct sunlight for extended periods; handle in a manner to prevent chipping, breakage, and contamination. Avoid frequent handling.
- B. Protect latex additives, organic adhesives, epoxy adhesives and sealants from freezing or overheating in accordance with manufacturer's instructions; store at room temperature when possible.
- C. Store Portland cement mortars and grouts in a dry location.

1.4 PROJECT/SITE CONDITIONS

- A. Provide ventilation and protection of environment as recommended by manufacturer.
- B. Maintain ambient temperatures not less than 10°C or more than 38°C during installation and for a minimum of seven (7) days after completion. Setting of Portland cement is retarded by low temperatures. **Protect work for extended period of time and from damage by other trades/agencies. This can be done by using plastic sheets to cover the flooring.** Installation with Latex Portland cement mortars requires substrate, ambient and material temperatures at least 3°C. Freezing after installation will not damage Latex Portland cement mortars. Protect Portland cement based mortars and grouts from direct sunlight, radiant heat, forced ventilation (heat & cold) and drafts until cured to prevent premature evaporation of moisture. Epoxy mortars and grouts require surface temperatures between 16°C and 32°C at time of installation.

1.5 SEQUENCING AND SCHEDULING

- A. Coordinate installation of tile work with related work.
- B. Proceed with tile work only after curbs, vents, drains, piping, and other projections through substrate have been installed and when substrate construction and framing of openings have been completed.

1.6 EXTRA MATERIALS STOCK

Upon completion of the work of this Section, deliver to the Owner 2% minimum additional tile and trim shape of each type, color, pattern and size used in the Work, as well as extra stock of adhesives, mortars, grouts and other installation materials for the Owner's use in replacement and maintenance. Extra stock to be from same production run or batch as original tile and installation materials.

PART 2 - EXECUTION

2.1 SUBSTRATE EXAMINATION

- A. Verify that surfaces to be covered with Cement tile, mosaics, pavers, brick, stone, trim or waterproofing are:
 - 1. Sound, rigid and conform to good design/engineering practices;
 - 2. With maximum deflection under all live, dead and impact loads, including concentrated loads, of $L/360$ (where L is the length of the tile) for Cement tile, mosaics, pavers or brick and $L/480$ for stone;
 - 3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil or loose plaster, paint and scale;
 - 4. Level and true to within $1/4"$ in $10'$ (6 mm in 3 m), and no more than $1/16"$ in $1'$ (1.5 mm in 0.3 m) variation from substrate high points, for applications by the thin bed method over substrate, thin waterproof membrane or thin crack suppression membrane;
 - 5. Not leveled with gypsum or asphalt based compounds;
 - 6. Dry and not damp.
- B. Concrete surfaces shall also be:
 - 1. Cured a minimum of 28 days at 70°F (21°C), including an initial (7) day period of wet curing;
 - 2. Wood float finished, or better, if the installation is to be done by the thin bed method;
- C. Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. ***Beginning of work constitutes acceptance of substrate or surface conditions.***

Before any tile or stone installed by the “adhesive”, “thin-bed”, or “thin-set” method, the surface must be clean and free of any grease, wax, oil, dust, dirt and any other material that can act as a bond breaker. The best thin-set tile or stone installation is only as good as its bond to the substrate. Therefore, it is very important that the substrate be carefully cleaned and prepared to assure maximum bonding properties.

NEW CONCRETE SLABS:

New concrete slabs should have a wood float finish. The surface should be true, flat and pitched to drains where required. Concrete sealers or curing compounds should not be applied to the surface of concrete slabs that are to receive finished flooring. If the concrete surface does have a sealer or curing compound present it must be removed by bead-blasting or shot-blasting. Also note that a concrete slab with a very smooth shiny surface, due to over-trowelling, should be mechanically scarified to ensure that the thin-set mortar can achieve a suitable bond to the concrete. Prior to the application of the finished flooring, the slabs should be thoroughly cleaned to remove loose plaster, soil and other foreign material.

OLD CONCRETE SLABS:

Oil, grease and wax must be removed from old concrete slabs to insure a good bond. A mechanical scarifier, such as a Tennant® or Blastrac, will remove oil, grease or wax, as well as paint, adhesives, and even layers of asphalt tile from the surface. If a mechanical scarifier is not used it will be necessary to remove oil, grease, or paint by chemical means. This can be accomplished by using a strong detergent solution such as tri-sodium phosphate or a solution of lye and hot water. The solution is mopped on the surface and allowed to stand 10 or 15 minutes or until it loosens the paint or grease. The solution is then squeegeed or mopped off and the treatment repeated. When all of the material has been removed from the floor, the surface should be flushed thoroughly with water to remove any remaining cleaning solution, and then vacuumed to remove any residual water.

CAUTION: STRONG DETERGENT SOLUTIONS, SUCH AS TRISODIUM PHOSPHATE OR LYE, MAY IRRITATE EYES AND SKIN. WEAR PROTECTIVE CLOTHING AND GOGGLES WHEN PREPARING OR USING SUCH MATERIALS. ALWAYS READ MANUFACTURER’S INSTRUCTIONS BEFORE USING.

In case the existing substrate is not satisfactory or is likely to cause excessive movement or deflection, it is recommended to add an additional separation layer of Concrete, with specification as under is recommended:

LAYING OF A NEW CONCRETE SLAB OVER AN EXISTING CONCRETE SLAB:

Install cleavage membrane on the existing floor. Lay 2" x 2" (50 mm x 50 mm), 16 gauge (1.5 mm), galvanized, welded reinforcing wire fabric so that it is approximately placed at the centre of the thickness of the concrete. Place M20 grade Cement Concrete mortar (Ideally ready mixed) to a depth approximately 70 mm. Compact mortar by tamping with flat trowel. Screed mortar bed level and provide correct slopes to drains. For economy the surfaces should be level and true within : 1.5mm in 1.0m

2.2 WATERPROOFING:

Adhesives/mastics, mortars and grouts for Cement tile, mosaics, pavers, brick and stone are not replacements for waterproof membranes and will not prevent water penetration into occupied or storage spaces below. Proper waterproofing treatment as specified separately is necessary.

Waterproofing Membrane to be thin, cold applied, single component liquid and load bearing. Reinforcing fabric to be non-woven rot-proof specifically intended for waterproofing membrane.

2.3 CRACKS:

Non-structural cracks that occur in slabs can transmit through any thin bed tile work. It is possible to prevent these cracks from coming through the finished flooring by applying a Anti-Fracture Membrane or Waterproofing Membrane over these cracks.

General: Install in accordance with good tile laying practices, Cut and fit Cement tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/- 1/16" over 8' (1.5 mm in 2.4 m). Install divider strips at junction of flooring and dissimilar materials

PART 3- TILE FIXING

3.1 Thin Bed Method:

Install latex Portland cement mortar using the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex Portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex Portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format (>8" x 8"/200 mm x 200 mm) tiles spread latex Portland cement mortar onto the back of (i.e. 'back-butter') each piece in addition to troweling latex Portland cement mortar over the substrate. **The most important standard to keep in mind is to insure that the piece of tile is completely bedded in the mortar or adhesive with 100% coverage.** Beat each piece into the latex Portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex Portland cement mortar from tile or stone face and joints between pieces.

3.2 Grouting or Pointing:

Polymer Modified Cement Grout : Allow Cement tile, installation to cure a minimum of 24 hours @ 21C). Verify grout joints are free of dirt, debris or tile spacers. Sponge or wipe dust/dirt off veneer face and remove any water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured Cement tile. Surface temperature must be between 4-32°C. Please follow suppliers instructions for method of preparation and application of grouts. Normally the application will include the following: Dampen dry surfaces with clean water. Spread using a sharp edged, hard rubber float and work grout into joints. Using diagonal (at 45° angle to direction of grout line) strokes, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin as soon as grout has become firm, typically 20-30 minutes after grouting depending on temperature. Drag a clean towel dampened with water, or wipe a clean, dampened sponge, diagonally over the veneer face to remove any grout haze left after "squeegeeing." Rinse towel/sponge frequently and change rinse water at least every 200 ft² (19 m²). Repeat this cleaning sequence again if grout haze is still present. Allow grout joints to become firm. Buff surface of grout with clean coarse cloth. Inspect joint for

pinholes/voids and repair them with freshly mixed grout. Within 24 hours, check for remaining haze and remove it with warm soapy water and a nylon scrubbing pad, using a circular motion, to lightly scrub surfaces and dissolve haze/film. **Do not use acid cleaners on Cement Tiles/latex Portland cement mortar grout.**

3.3. EXPANSION AND CONTROL JOINTS

Provide control or expansion joints as located in contract drawings (Interior installations shall have movement joint spaced a maximum of 10m X 10m) and in full conformity, especially in width and depth, with architectural details.

1. Substrate joints must carry through, full width, to surface of tile, brick or stone.
2. Install expansion joints in tile, brick or stone work over construction/cold joints or control joints in substrates.
3. Install expansion joints where tile, brick or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
4. Joint width and spacing depends on application - consult sealant manufacturer for recommendation based on project parameters.
5. Joint width: $\geq \frac{1}{8}$ " (3 mm) and ≤ 1 " (25 mm).
6. Joint width: depth ~2:1 but joint depth must be $\geq \frac{1}{8}$ " (3 mm) and $\leq \frac{1}{2}$ " (13 mm).
7. Layout (field defined by joints): 1:1 length: width is optimum but must be $\leq 2:1$.

Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, setting/grouting materials, sealers etc. Install appropriate Backing Material (e.g. closed cell backer rod) based on expansion joint design. Apply masking tape to face of tile, brick or stone veneer. Use caulking gun, or other applicator, to completely fill joints with sealant. Within 5-10 minutes of filling joint, 'tool' sealant surface to a smooth finish. Remove masking tape immediately after tooling joint. Wipe smears or excess sealant off the face of non-glazed tile, brick, stone or other absorptive surfaces immediately.

3.4. CLEANING

Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.5. PROTECTION

- A. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal Portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C). Use kneeling boards, or equivalent, to walk/work on newly tiled floors.

PART 4 – HEALTH AND SAFETY

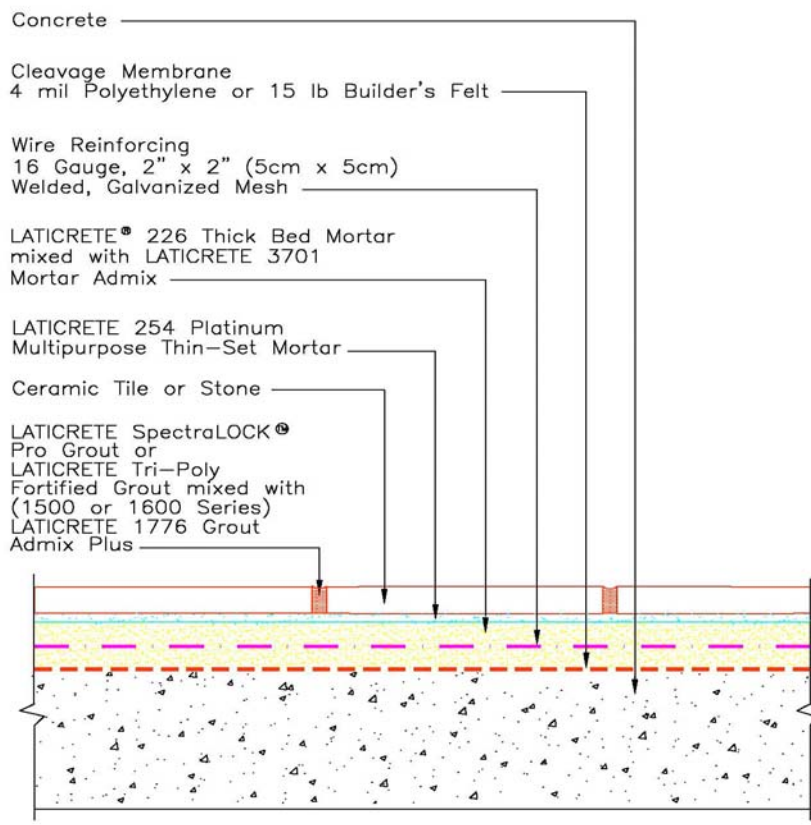
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