

TILES

1. GENERAL

1.1 Quality Control

- .1 Perform work of this Section by a company that is a member in good standing of the Terrazzo Tile and Marble Association of Canada with proven, acceptable experience on installations of similar complexity and scope.
- .2 Materials and installation: To requirements of TTMAC 2006-2007 Specification Guide 09300 Tile Installation Manual.
- .3 Maintenance Seminars: Provide, to the City, training seminars, and recommendations on product maintenance procedures.
- .4 Pre-Installation Meeting: Two weeks prior to commencing work of this Section, arrange for Manufacturer's technical representative to visit the Site and review preparatory and installation procedures to be followed, conditions under which the work will be done, and inspect the surfaces to receive the work of this Section. Advise the Contract Administrator of the date and time of the meeting.
- .5 Manufacturer's Site Inspection: Have the Manufacturer's technical representative inspect the work at suitable intervals during application and at conclusion of the work of this Section, to ensure the work is correctly installed. When requested, submit manufacturer's inspection reports and verification that the work of this Section is correctly installed.
- .6 Source Limitations: Obtain each type of product from a single manufacturer.
- .7 Products: Provide like products from same production run. Install products in sequence from sequentially numbered dye lots.

1.2 Submittals

- .1 Product Data: Submit copies of manufacturer's product data for inclusion in the operating and maintenance manual.
 - .1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations and warranties.
 - .2 Product transportation, storage, handling, and installation requirements.
- .2 Shop Drawings: Submit Shop Drawings in accordance with Division 1 Section Submittal Procedures.
 - .1 Tile layout, patterns, colour arrangement.
 - .2 Perimeter conditions, junctions with dissimilar materials.
 - .3 Setting details.

TILES

- .3 Certificates:
 - .1 Submit Manufacturer's certificates stating that materials supplied are in accordance with this Specification.
 - .2 Submit Manufacturer's installation procedures.
- .4 Samples: 600 mm x 600 mm (24" x 24") size panel complete with approved grout colour; mounted to a 19 mm thick plywood backer.

1.3 Site Conditions

- .1 Do not install work of this Section outside of the following environmental ranges without the Contract Administrator's and product manufacturer's written acceptance:
 - .1 Mortars and Grouts, General: Ambient air and substrate temperature below 12°C or above 38°C.
 - .2 Install temporary protection and facilities to maintain the manufacturer's, and specified environmental requirements for 7 days before, during, and 7 days after installation.

1.4 Extra Materials

- .1 Provide 3% of each type and colour of tiles and accessories installed. Store the extra materials at locations as directed by the City. Extra stock shall be of same production run as installed materials. Include cost of extra stock in the Contract Price.

1.5 Sample Installation

- .1 Provide a 3 m x 3 m (10' x 10') representative installation of work of this Section on Site at location directed by Contract Administrator to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation. Remove rejected sample installation and provide additional sample installations until acceptance is given. Do not commence work until sample installation has been accepted. Accepted sample installation may form part of the completed work if undisturbed at time of Substantial Performance.
 - .1 Acceptance of sample installations does not constitute approval of deviations from the Contract Documents contained in sample installations unless such deviations are specifically approved by Contract Administrator in writing.

2. PRODUCTS

2.1 Tiles

- .1 Tiles:
 - .1 CT-1: 18" x 18", Atlas Concorde Extrema Trekking by Carrara Tile.

TILES

- .2 CT-2: 12" x 12" sheets, Botticino Versailles by Carrara Tile.
- .3 CT-3: 12" x 24", Refin Olympia Avant Garde White by Carrara Tile.
- .4 CT-4: 2" x 6", Refin Olympia Avant Garde Green by Carrara Tile.
- .5 Slate Tiles: 16" x 16" San Francisco Gold by Carrara Tile.

2.2 Mortars And Grouts

- .1 Cement: CSA A3000, Type GU.
- .2 Sand: ASTM C144.
- .3 Polymer Additive: Keralastic by Mapei, 3701 by Laticrete International or Full Bond Additive TA867 by TEC Inc.
- .4 Thinset Mortar: ANSI A118.4, full strength adhesive, Kerabond/Keralastic by Mapei Inc., 4237/211 by Laticrete International, or Full Set TA370/XtraFlex TA872 by TEC Inc.
- .5 Medium Bed Mortar: Full strength additives, Granirapid/318 by Mapei Inc., 220/3701 by Laticrete International, or Medium Bed TA372/Acrylbond TA862 by TEC Inc.
- .6 Organic Adhesive: CGSB 71-GP-22M, Type 1.
- .7 Water: Potable and free of minerals and other contaminants which are detrimental to mortar and grout mixes.
- .8 Grout for Joints 3 mm and Less, Unsanded: ANSI A118.6, standard colours, Ker 800 by Mapei Inc., 600 Series by Laticrete, or AccuColour TA620 by TEC Inc.
- .9 Grout for Joints 3 mm and Over, Sanded: ANSI A118.6, standard colours, Ker 200 by Mapei Inc.; 500 Series by Laticrete, or AccuColour TA650 by TEC Inc.
- .10 Grout Colours:
 - .1 For Tile Type CT-1: To match Smoke by Flextile.
 - .2 For Tile Types CT-2 and Type-3: To match Beige by Profix.
 - .3 For type Type CT-4: To match Anthracite 16 by Profix.
 - .4 For Slate Tile: To match Foseal by Profix.

2.3 Waterproofing Membrane

- .1 Waterproof Membrane: Polyurethane based, Mapelastic by Mapei Inc., 9235 by Laticrete, or Triple Flex TA324 by TEC Inc.

TILES

- .2 Waterproofing Reinforcement: Woven glass fabric weighing 203 gm/sq.m.

2.4 Accessories

- .1 Joint Backing: Round, closed cell, foam rod, oversized by 30% to 50%, Shore A hardness of 20, tensile strength 140 to 200 kPa.
- .2 Tile Sealant Floor Joints: CAN/CGSB-19.24-M; THC 900 and primer by Tremco Ltd, colour to match adjacent grout.
- .3 Tile Sealant Remainder Of Work: CAN/CGSB-19.22-M; One-part mildew-resistant silicone; standard colours.
 - .1 786 Mildew Resistant Silicone Sealant by Dow Corning Inc.
 - .2 Tremsil 600 silicone sealant by Tremco Ltd.
- .4 Tile Edge Trims: Depths of trims to suit tile installation, by Schluter.
 - .1 Floor tile termination strips: Satin anodized aluminium, Schiene-AE
 - .2 Floor tile transition strips: Satin anodized aluminium, Reno-AEU.
 - .3 Inside wall corner: Vinyl finish, colour to match tile grout, Dilex-EKE.
 - .4 Outside wall corner and wall termination strips: Colour coated aluminium, colour to match tile grout, Jolly-AC.
 - .5 Stair Nosing: Extruded aluminium with slip resistant inserts, Trep-B.

2.5 Mixes

- .1 Levelling Coat, By Volume: 1 part Portland cement, 4 parts sand, and latex additive. Premixed mortar may be used in accordance with manufacturer's instructions.
- .2 Mortar Bed For Floors, By Volume: 1 part Portland cement, 4 parts sand, 1 part water and 1/10 part latex additive. Adjust water volume depending on moisture content of sand to obtain consistency and workability that will allow maximum compaction during tamping of the mortar bed, and achieve a minimum compressive strength of 15 MPa (2000 psi) after 28 days. Premixed mortar may be used in accordance with manufacturer's instructions.

3. EXECUTION

3.1 Examination

- .1 Verify condition and dimensions of previously installed work upon which this Section depends. Report defects to Contract Administrator. Commencement of work means acceptance of existing conditions.

TILES

- .2 Ensure concrete floors are free of sealing and curing compounds.

3.2 Surface Preparation

- .1 Clean and dry surfaces thoroughly. Remove oil, wax, grease, dust, dirt, paint, tar, primers, form release agents, curing compound, and other foreign material from substrate surfaces which may prevent or reduce adhesion.
- .2 Neutralize any trace of strong acids or alkali from the substrate.
- .3 Ensure concrete floors scheduled to receive thin-set applied tile are steel trowelled to a fine broom finish. Ensure concrete slabs have been finished with a maximum permissible variation of 3 mm in 3000 mm (1/8" in 10') from the required plane and not more than 1.6 mm in 300 mm (1/16" in 12") when measured from high points in the surface.
- .4 Ensure concrete floors scheduled to receive tile applied over a bonded mortar bed have been screed finished. Verify substrate surface variation does not exceed 6 mm in 3000 mm (1/4" in 10').
- .5 Apply latex levelling coat as required to provide level and plumb surfaces to receive waterproofing membrane and tile, and to provide slope to drains.
 - .1 Vertical Surfaces: 3 mm in 3000 mm maximum.
 - .2 Horizontal Surfaces: 6 mm in 3000 mm from finished levels of the surface, or better.
 - .3 Slope to Drain: Minimum 2%.
- .6 Seal control joints in accordance with Section 7900 – Joint Sealants.

3.3 General Installation Requirements

- .1 Mix and install thin set mortar, adhesive, and grout components in accordance with manufacturer's recommended proportions and methods, to achieve maximum bond strength.
- .2 Install work to requirements of TTMAC 2006-2007 Specification Guide 093000 Tile Installation Manual.
 - .1 Wall And Floor Tile Expansion And Control Joints: 301MJ-2006.
 - .2 Wall Tile On Masonry Or Concrete – Thin-Set Method: 303W-2006.
 - .3 Floor Tile On Concrete Slab – Thin-Set Method: 311F-2006.
 - .4 Tile On Stairs: 318S-2006.
- .3 Lay out work to produce a symmetrical pattern with minimum amount of cutting. Ensure cut tile at room perimeter is not less than 1/2 full size.

TILES

- .4 Lay tiles with minimum 95% coverage with setting materials. Ensure corner and edges are fully supported by setting material. Avoid lippage. Set tile in place while mortar is wet and tacky, prior to skinning over.
- .5 Back butter tiles with raised or textured backs in notched straight lines. Lay tile on mortar, slide tile back and forth at 90 degree to the notches.
- .6 Keep two-thirds of the depth of grout joints free of setting material.
- .7 Set tiles in place and rap or beat with a beating block as necessary to ensure a proper bond and to level surface of tile. Align tile for uniform joints and allow to set until firm. Clean excess mortar from surface of tile with a wet cloth or sponge while mortar is fresh.
- .8 Adjust joints between tile uniform, plumb, straight, even, and true, with adjacent tile flush. Align grout joints in both directions unless indicated otherwise.
- .9 Align floor, base, and wall tile grout joints.
- .10 Install tile accessory fittings for a complete and fully coordinated tile assembly.
- .11 Install wall tile full height unless indicated otherwise.
- .12 Cut and fit tile neatly around piping, fittings, projections and around recesses items e.g. washroom accessories. Where surface mounted equipment and accessories are installed on tiled surfaces, extend tile over surfaces. Cut edges smooth, even, and free from chipping; chipped and broken edges are not acceptable.
- .13 Do not proceed with grouting until minimum 48 hours after tile has set, to prevent displacement of tiles.
- .14 Apply grout in accordance with grout manufacturer's directions to produce watertight, filled joints without voids, cracks, and excess grout. Thoroughly compact and tool floor grout. Finish grout flush to edge thickness of tile and remove excess grout with soft burlap or sponge moistened with clean water.
- .15 Provide reducer strips where uneven transitions between 6 mm and 12 mm ($\frac{1}{4}$ " and $\frac{1}{2}$ "") occur. Set trims in mortar.
- .16 Provide appropriately sized edge trims at inside corners, outside corners, exposed edges of tiles, transitions, and terminations. Set trims in mortar.

3.4 Waterproofing Membrane

- .1 Prepare substrates for waterproofing in accordance with tile waterproofing manufacturer's written directions and standards.
- .2 Have work supervised during installation by a qualified representative of the manufacturer supplying the waterproofing materials.

TILES

- .3 Conform to manufacturer's instructions for installation of waterproofing system.
- .4 Over levelling coat, apply waterproofing in 2 coat application.
- .5 Reinforce all corners and changes in plane with 150 mm (6') wide strips of reinforcement and a second membrane application to completely seal the fabric. Let dry overnight.
- .6 Recoat membrane with third application of waterproofing paste where required to cover pinholes and any uncovered areas of reinforcement.
- .7 Work membrane carefully around all fixtures, drains and other openings and recesses to provide a complete waterproof seal.
- .8 Extend waterproof membrane over top of curbs and full height of curbs, on both sides.

3.5 Control Joints

- .1 Continue control, construction, and cold joints in the structural substrate up through the tile finish, and align with mortar joints where possible. Review joint locations on-site with the Contract Administrator.
- .2 Install joint widths to match grout joint widths, except where a minimum width is indicated.
- .3 Install control joints in the following typical locations:
 - .1 Aligned over substrate control joints.
 - .2 Aligned over changes in type of substrate.
 - .3 At the restraining perimeters such as walls and columns.
 - .4 Interior areas (not subject to sunlight): 6 mm minimum width, at 4800 mm o.c. maximum.
 - .5 Interior areas (subject to sunlight): 6 mm minimum width, at 3660 mm o.c. maximum.
 - .6 Exterior areas: 10 mm minimum width, at 3660 mm o.c. maximum.
 - .7 As indicated on the Contract Drawings.

3.6 Cleaning

- .1 Clean and polish floor and wall tile after grout has cured in accordance with TTMAC recommendations in the Maintenance Guide; do not use acid for cleaning.
- .2 Re-point joints after cleaning as required to eliminate imperfections, then re-clean as necessary. Avoid scratching tile surfaces.

TILES

3.7 Joint Backing And Tile Sealant

- .1 Install joint backing under sealant as necessary.
- .2 Install tile sealant around piping and fittings extending through tiled surfaces.
- .3 Seal tile control joints.
- .4 Seal internal tile to tile junctions. Tool to a smooth, flush surface, free from air bubbles and contamination.

3.8 Protection

- .1 Prevent traffic over tiled areas, and protect tiled assemblies from weather, freezing, and water immersion, for 72 hours minimum, after final installation.
- .2 Prevent direct impact, vibration and heavy hammering on adjacent and opposite walls for 24 hours minimum, after final installation.

END OF SECTION