

Part 1 General

1.01 RELATED SECTIONS

- .1 Section 07 92 10 - Joint Sealing.
- .2 Section 09 21 16 - Gypsum Board Assemblies.
- .3 Section 09 62 99 - Metal Baseboards.

1.02 REFERENCES

- .1 American National Standards Institute (ANSI).
 - .1 ANSI A108/A118/A136.1-2009. American National Standards for the Installation of Ceramic Tile. Including the following:
 - .1 ANSI A118.3. Specifications for Chemical Resistant, Water Cleanable Tile-Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive.
 - .2 ANSI A118.4. Specifications for Latex Portland Cement Mortar.
 - .3 ANSI A118.6. Specifications for Ceramic Tile Grouts.
 - .4 ANSI A118.10. Load Bearing, Bonded, Waterproof Membrane for Thin-set Ceramic Tile and Dimensional Stone Installations.
 - .2 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C1028-07e1. Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
 - .3 Terrazzo Tile and Marble Association of Canada (TTMAC).
 - .1 TTMAC Specification Guide 09 30 00 - Tile Installation Manual 2016-2017.

1.03 SUBMITTALS

- .1 Provide Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Manufacturers Product Data sheets on specified products. Describe physical and performance characteristics, sizes, patterns and colours available. Include manufacturer's information on:
 - .1 Ceramic tile, marked to show each type, size, and shape required.
 - .2 Edge protection for floors and walls. Transition strip.
 - .3 Levelling compound.
 - .4 Mortar and grout. Grout Sealer.
 - .5 Floor and wall waterproofing membrane.
 - .6 Uncoupling membrane.
- .3 Submit duplicate samples of each product in type, colour, texture and size specified.
 - .1 Floor tile: submit duplicate, 300 x 300 mm sample panels of each tile.
 - .2 Wall tile: submit duplicate, 300 x 300 mm sample panels of each tile.
 - .3 Submit duplicate samples of all tile trim shapes including bullnose cap and base pieces at internal and external corners of vertical surfaces.

.4 Adhere tile samples to 11 mm thick plywood and grout joints to represent project installation.

.5 Submit samples of edge protection and transition strips.

.4 Submit Manufacturer's installation instructions for each specified product. Submit Manufacturer's special installation requirements including special procedures and perimeter conditions requiring special attention.

1.04 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for tiling for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

.3 Submit letter stating that the moisture content of substrates and the ph of the surface is within manufacturer's written guidelines for new tiling.

1.05 QUALITY ASSURANCE

.1 Employ skilled workers trained and experienced in tile work, and registered as members of the Terrazzo Tile and Marble Association of Canada.

.2 Install work in accordance with requirements of TTMAC Specification Guide 09 30 00 Tile Installation Manual.

1.06 MOCK-UPS

.1 Construct Mock-Up as specified in Section 01 45 00 - Quality Control.

.2 Construct a Mock-Up of one completed floor and wall panel for each type and installation pattern of tiling specified. Mock-Up to demonstrate typical installation of tiling including waterproofing membrane, tile, edge trim and accessories. Minimum size: 10 square meters minimum for each type of tile specified.

.3 Construct Mock-Ups where directed by Consultant.

.4 Allow for inspection of Mock-Up by Consultant before proceeding with additional tiling work. When accepted, Mock-Up will demonstrate minimum standard for this work. Approved Mock-Up may remain as part of the finished work.

1.07 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in containers with labels legible and intact and seals unbroken.

.2 Store material so as to prevent damage or contamination. Store materials in a dry area, protected from damage. Store cementitious materials in a dry area, protected from damage.

1.08 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction / Demolition Waste Management.

.2 Unused adhesive, sealant and coating materials must be disposed of at an official hazardous material collections site as approved by the Consultant.

1.09 ENVIRONMENTAL CONDITIONS

.1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 °C for 48 hours before, during, and 48 hours after, installation.

- .2 Do not install tiles at temperatures less than 12 °C or above 38 °C.

Part 2 Products

2.01 FLOOR TILE

- .1 CT1: coloured body porcelain stoneware. Available in a minimum of 6 colours. Designated for commercial application on interior or exterior floors and walls. Size: 60 x120 cm. (24x48").
 - .1 Acceptable Material: Inferno 9 Colour: Pearl, Lap RT. by CIOT.
- .2 CT5: coloured body porcelain stoneware. Special Antiqued visual effect. Available in a minimum of 5 colours. Designated for commercial application on interior or exterior floors and walls. Size: 60 x120 cm. (24x48").
 - .1 Acceptable Material: Blocks 5.0. Colour: White, Lap RT. by CIOT.

2.02 WALL TILE

- .1 CT2. Wall Tile for use in Water Feature. PRODUCT TO BE DETERMINED.
- .2 CT3. Porcelain wall tile. Available in a minimum of 5 colours and 2 different finishes as well as 3 dimensional tile forms. Size: 10 x 30 cm.
 - .1 Acceptable Material: Sistem C Colour: Turchese. Provide in Matte (Citta) series and Glossy (Architectura) finishes. By CIOT.
- .3 CT4: Porcelain wall tile. Available in 5 colours and 2 different finishes as well as 3 dimensional tile forms. Size: 10 x 30 cm.
 - .1 Acceptable Material: Sistem C Colour: Odra. Provide in Matte (Citta) series. By CIOT.
- .4 CT6: coloured body porcelain stoneware. Special Antiqued visual effect. Available in a minimum of 5 colours. Designated for commercial application on interior or exterior floors and walls. Size: 60 x120 cm. (24x48").
 - .1 Acceptable Material: Blocks 5.0. Colour: Dark. Lap RT. By CIOT.
- .5 CT7: glazed wall tile. 4 mm thick. Size 5 x 10 cm per tile, mesh-mounted on 30 x 30 cm sheets.
 - .1 Acceptable Material: Light. Colour: Seta Fumo. By CIOT.
- .6 CT8. glazed wall tile. Size 30 x 60 cm.
 - .1 Acceptable Material: Super Super. Colour: White. By CIOT.

2.03 BASE AND TRIM SHAPES

- .1 When available, provide preformed base and trim shapes to match adjoining floor and wall tile.
- .2 Use trim shapes and sizes matching size of adjoining field wall tile unless specified otherwise.
- .3 Internal and External Corners: Provide trim shapes as follows:
 - .1 Bullnose shapes for external corners including edges.
 - .2 Base to floor external corners to provide bullnose vertical edge with integral coved horizontal joint. Use as stop at bottom of openings having bullnose return to wall.
 - .3 Wall top edge internal corners to provide integral coved vertical joint with bullnose top edge.
 - .4 Wall top edge external corners to provide bullnose vertical and horizontal joint edge.

2.04 MORTAR SYSTEMS

- .1 Wall mortar: latex portland cement mortar: to ANSI A118.4. Two component, commercially prepared, composed of portland cement, selected inert fillers and specially formulated latex additives for increased bond strength and impact resistance. Minimum shear strength 2.6 MPa. Prepare mortar to manufacturer's instructions.
- .2 Floor mortar: latex portland cement mortar: to ANSI A118.4. Two component, commercially prepared, composed of portland cement, selected inert fillers and specially formulated latex additives for increased bond strength and impact resistance. Minimum shear strength 2.6 MPa. Prepare mortar to manufacturer's instructions.
- .3 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

2.05 GROUT

- .1 Wall grout (non-washroom areas): to ANSI A118.6. Commercially prepared, latex portland cement grout. Fast curing, high early strength, polymer modified, stain resistant. Consultant will select a minimum of 2 colours from full range of standard available colours. Unsanded mix. Prepare grout to manufacturer's instructions.
- .2 Floor grout (non-washroom areas): to ANSI A118.6. Commercially prepared, latex portland cement grout. Fast curing, high early strength, polymer modified, stain resistant. Consultant will select a minimum of 2 colours from full range of standard available colours. Sanded mix. Prepare grout to manufacturer's instructions.
- .3 Floor and Wall grout (washroom areas): to ANSI A118.3. Pre-mixed urethane based sanded grout. Chemical, stain and mildew resistant. UV stable. Consultant will select a minimum of 2 colours from full range of standard and extended colours. Prepare grout to manufacturer's instructions.
- .4 Colouring Pigments: pure mineral pigments, limeproof and nonfading. Colouring pigments to be added to grout by manufacturer. Job coloured grout are not acceptable.

2.06 ACCESSORIES

- .1 Floor Waterproofing Membrane: to ANSI A118.10. Premixed ready to use trowel applied, flexible loadbearing membrane. For use in either mortar bed or thin set systems. Two component system consisting of an elastomeric, latex compound and reinforcing fabric. System to obtain the following physical properties when tested to ANSI A118.10.
 - .1 Tensile Strength: 7 day dry / 21 days wet: 3.9 MPa.
 - .2 Elongation: 7 day dry / 21 days wet: 657 %.
 - .3 Permeability: 0.013.
 - .4 Water vapour transfer: 0.085.
 - .5 Hydrostatic resistance: passes.
 - .6 Shear strength (28 days): 2.4 MPa.
 - .7 Dimensional Stability: 0.70% length change.
- .2 Uncoupling Membrane: exceeds ANSI A118.10. 3 mm thick, orange, high density polyethylene HDPE membrane incorporating a grid structure of 12 mm x 12 mm square cavities cut back in a dovetail configuration. Polypropylene fleece backing laminated to underside of HDPE layer. Approved by the Tile Council of America as an uncoupling membrane. Provide seaming membrane for seams and corners: 4 mil thick, orange polyethylene membrane with polypropylene fleece laminated on both sides.
 - .1 Acceptable Material: Ditra By SCHLUTER,

- .3 Mortar bed: premixed, polymer fortified blend of carefully selected polymers, portland cement and graded aggregates. Does not require the addition of latex admixture. Minimum Compressive strength: 27.6 MPa at 28 days. Flexural strength: minimum 7.6 MPa.
- .4 Edge protection Floors: L shaped profile with 3.2 mm wide top edge visible surface. Integrated trapezoid perforated anchoring leg, and integrated grout joint spacer. Provide with straight anchoring leg and special radius anchoring leg for curved applications. Fabricated from Type 304 Stainless Steel. Finish: brushed. Height: as required to match tiles.
 - .1 Acceptable Material: SCHIENE by SCHLUTER.
- .5 Edge Protection Walls: L-shaped profile with 3.2 mm wide top section and vertical wall section that together form the visible surface, integrated trapezoid perforated anchoring leg, and integrated grout joint spacer. Provide with straight anchoring leg and a special radius anchoring leg for radius applications. Fabricated from extruded aluminum. Finish: brushed nickel. Height as required to match tile thickness.
 - .1 Acceptable Material: JOLLY by SCHLUTER.
- .6 Adjustable transition strip: for locations where there is a difference in the height between adjacent floor coverings. Extruded aluminum profile with an adjustable arm for creating stepless transitions between floor coverings of different heights. The profile effectively protects the edges of adjacent coverings. 2 pieces including a movable transition arm, connected through a ball and socket joint to the trapezoid perforated anchoring leg. The hinged transition arm allows adjustment to match the height of the adjacent covering. Provide in maximum lengths. Finish: anodized aluminum.
 - .1 Acceptable Material: RENO-V by SCHLUTER.
- .7 Sealant: in accordance with Section 07 92 10 - Joint Sealing.
- .8 Grout sealer: to tile and grout manufacturer's recommendations.

2.07 PATCHING AND LEVELLING COMPOUND

- .1 Portland cement base, acrylic polymer compound. Manufactured specifically for resurfacing and levelling concrete floors below ceramic tile floors. Products containing gypsum are not acceptable. Have not less than the following physical properties:
 - .1 Compressive strength: 25 MPa.
 - .2 Tensile strength: 7 MPa.
 - .3 Flexural strength: 7 MPa.
 - .4 Density: 1.9.
- .2 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish. Ready for use in 48 hours after application.

2.08 CLEANING COMPOUNDS

- .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and levelling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

Part 3 Execution

3.01 GENERAL

- .1 Schedule all operations so that area of work is safe for access at end of each work shift. Ensure all surfaces are clean and dry, free from dust and debris and that no safety hazards exist. Remove all materials and equipment and employ temporary measures to protect new surfaces to approval of Consultant.
- .2 Perform all operations in accordance with manufacturers written application instructions except where specified otherwise. Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and datasheet.
- .3 Perform all operations in accordance with TTMAC specifications and details. Where TTMAC details vary from manufacturers written instructions, obtain clarification from Consultant prior to commencing installations.

3.02 PREPARATION

- .1 Prepare floor surfaces free from surface obstacles. Remove all obstacles that would impede installation of flooring. Store and reinstall after flooring is completed.
- .2 Protect wall surfaces as well as all mechanical and electrical services in areas of work from damage. If damaged, clean and restore such surfaces as directed by Consultant.
- .3 Protect surrounding work from damage or disfiguration.
- .4 Protect floors and adjacent spaces from damage caused by cleaning and preparation operations. Provide dust tight enclosures as approved by Consultant and take measures to prevent the spread of dirt and dust beyond area of work.

3.03 LEVELLING COMPOUND

- .1 Inspect cleaned slab and remove areas of deteriorated or loose concrete. Identify low areas and out of level sections. Apply leveling coat in accordance with TTMAC details and to correct any defects in the substrate.
- .2 Finished surface to be smooth and level. Maintain slopes to floor drains. Maximum surface tolerance 1:800. Prepare surface ready to receive new application of tiles.
- .3 Install leveling compound as recommended by tile manufacturer to create as much slope as possible to the existing floor drains. Maintain flush intersection with transition strips at entry doorways.

3.04 EXISTING CONDITIONS

- .1 Verify existing conditions are ready to receive work. Notify Consultant in writing of unacceptable substrate conditions. Beginning of installation implies acceptance of existing conditions.
- .2 Thoroughly clean existing surfaces that are to receive tile finish to ensure the removal of all grease, oil or dust film. Ensure substrate surfaces are clean, dimensionally stable and free of contaminants such as oil, sealers and curing compounds. Ensure concrete floors have not been treated with curing compounds.

3.05 UNCOUPLING MEMBRANE

- .1 Install uncoupling membrane wherever ceramic tile is to be installed on the Ground Floor.

- .2 Install uncoupling membrane to concrete subfloor in accordance with Manufacturer's written instructions. Install membrane to concrete slab in full bedding of thin set mortar. Roll membrane to ensure full and continuous adhesion to structure.

3.06 WATERPROOFING MEMBRANE

- .1 Install waterproofing membrane in accordance with manufacturers printed instructions.
- .2 Install waterproofing membrane below all floor tiles in washrooms. Install waterproofing membrane below all floor tiles in shower areas.
- .3 Extend floor membrane up wall surfaces a minimum of 300 mm unless indicated otherwise. Extend membrane over curbs and seal to all penetrations as recommended by manufacturer.

3.07 WORKMANSHIP

- .1 Do tile work in accordance with TTMAC Specification Guide 09 30 00, Tile Installation Manual, except where specified otherwise.
- .2 Apply tile or backing coats to clean and sound surfaces.
- .3 Lay out tiles so perimeter tiles are minimum 1/2 size. Arrange tiles in patterns as indicated in the drawings.
- .4 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
- .5 Maximum surface tolerance: 1:800. Lippage 1.0 mm tolerance or less over a 3 mm joint.
- .6 Make joints between tile uniform, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .7 Prior to installation ensure that the back of each tile is free of contaminants.
- .8 Clean excess bonding material from surface prior to final set.
- .9 Clean backs of tiles and back butter tiles to ensure a 95% bond coverage. Set tiles in place while bond coat is wet and tacky, prior to skinning over. Slide tile back and forth to ensure a proper bond and level surface. Avoid slippage. Bonding material must be evenly dispersed and pressed into the back of the tile.
- .10 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .11 Set and level tile flush with adjacent tile.
- .12 Keep 2/3 of depth of grout joints free of setting material.
- .13 Make internal angles square. Use round or bullnose edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
- .14 Install divider strips at junction of tile and dissimilar materials.
- .15 Clean installed tile surfaces after installation and grouting cured.

3.08 MOVEMENT JOINTS

- .1 Movement Joints: construct expansion joints and control joints in accordance with TTMAC Detail 301MJ-2016-2017. Keep building expansion joints free of mortar and grout.
- .2 Keep all control and expansion joints free of setting materials. Make control joints at 6.0 m in each direction, to match building control joints or where indicated. Make joint widths the same as normal tile joints and as recommended by tile manufacturer. Fill control joints with sealant in accordance with Section 07 92 10 - Joint Sealing.

3.09 GROUTING

- .1 Allow minimum 24 hours after installation of tiles, before grouting. Pre-seal tiles requiring protection from grout staining. Force grout into joints to ensure dense finish.
- .2 Remove excess grout and polish with clean cloths. Clean installed tile surfaces after installation and grouting cured. Apply sealer to grout joints in accordance with manufacturers instructions.
- .3 Use polymer based grout where indicated and for floor and wall tiles in all wet areas

3.010 FLOOR TILE INSTALLATION

- .1 Install ceramic floor tile in accordance with TTMAC Detail 311F-2016-2017. Tile Bonded to Concrete Slab - Thin Set Method, Detail A - Interior Exterior.
 - .1 Where indicated, construct slopes to drains with dry pack cement mortar bed as in accordance with TTMAC 310F 2016-2017. Detail A.
 - .2 Levelling coat: apply slight leveling coat if required to achieve specified surface tolerances.
 - .3 In showers, washrooms and other wet areas apply full covering of waterproof membrane. Detail 311F.
 - .4 On Main Floor, apply full covering of uncoupling membrane. Detail 311F.
 - .5 Bond coat: apply tile to prepared floor surface using a latex-portland cement mortar. Apply tile to bond coat with minimum 95 % surface contact.
 - .6 Grout: install commercial portland cement grout or urethane based grout.

3.011 WALL TILE INSTALLATION

- .1 Install ceramic wall tile in accordance with TTMAC Detail 305W-2016-2017. Tile Installed on Cementitious Backer Unit (CBU) - Thin Set Method / Walls. Detail A - Interior Wet / Dry areas.
 - .1 Levelling coat: apply slight leveling coat if required to achieve specified surface tolerances.
 - .2 Bond coat: apply tile to prepared wall surface using a latex-portland cement mortar. Apply tile to bond coat with minimum 95 % surface contact.
 - .3 Grout: install commercial portland cement grout or urethane based grout.

3.012 TRANSITION STRIPS

- .1 Install adjustable transition strips between adjacent floor coverings as follows:
 - .1 From tile to carpet at doorways.
 - .2 From tile to Linoleum at doorways.
 - .3 From tile to Safety Flooring at kitchen doorway.
 - .4 Where there is a difference in height exceeding 6 mm.

3.013 CORNER AND EDGE STRIPS

- .1 At all vertical and wall tile corners and edges, install bullnosed tile in matching colour or continuous wall edge protection. Refer to details.

3.014 CLEANING

- .1 Upon completion of the installation, remove all surplus materials, dirt and debris caused by the work of this section. Leave the premises clean and ready for use.

3.015 PROTECTION

- .1 Protect finished areas from traffic until setting materials have sufficiently cured. Refer to TTMAC Tile Specification Guide 09 30 00. Protect grouted areas from traffic for 24 hours after grouting. Provide protective covering in traffic areas until substantial completion of the work. Protect wall tiles and bases from impact, vibration, heavy hammering on adjacent and opposite walls for at least 14 days after installation.

END OF SECTION