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**PART 1 GENERAL**

**1.1 REFERENCE STANDARDS**

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1 ANSI A108.1-2017, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
- .2 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C 144-11, Specification for Aggregate for Masonry Mortar.
  - .2 ASTM C 207-2011, Specification for Hydrated Lime for Masonry Purposes.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
  - .2 CGSB 71-GP-22M-78(AMEND.), Adhesive, Organic, for Installation of Ceramic Wall Tile.
  - .3 CAN/CGSB-75.1-M88, Tile, Ceramic.
- .4 Canadian Standards Association (CSA International)
  - .2 CAN/CSA-A3000-13, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .5 Terrazzo Tile and Marble Association of Canada (TTMAC)
  - .1 Tile Specification Guide 09 30 00 [2016/2017], Tile Installation Manual.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Include manufacturer's information on:
    - .1 Ceramic tile, marked to show each type, size, and shape required.
    - .2 Chemical resistant mortar and grout (Epoxy and Furan).
    - .3 Cementitious backer unit.
    - .4 Dry-set cement mortar and grout.
    - .5 Divider strip.
    - .6 Elastomeric membrane and bond coat.
    - .7 Reinforcing tape.
    - .8 Levelling compound.
    - .9 Latex cement mortar and grout.
    - .10 Commercial cement grout.
    - .11 Organic adhesive.
    - .12 Slip resistant tile.
    - .13 Waterproofing isolation membrane.
    - .14 Fasteners.
- .3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Floor tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
  - .2 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at

internal and external corners of vertical surfaces, each type, colour, and size.

### **1.3 QUALITY ASSURANCE**

- .1 Quality Assurance Submittals:
  - .1 Manufacturer's Instructions: manufacturer's installation instructions.
  - .2 Manufacturer's Field Reports: manufacturer's field reports specified.

### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

### **1.5 AMBIENT CONDITIONS**

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation.
- .2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.
- .3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

## **PART 2 PRODUCTS**

### **2.1 FLOOR TILE**

- .1 Porcelain tile: to CAN/CGSB-75.1, Type 4, Class MR 2, 300 x 300 x 9.5 mm size, cushion edges, slip resistant surface, plain pattern, colour as selected by Departmental Representative. Matching covered base, 9.5 x 100 mm high.

### **2.2 WALL AND CEILING TILE**

- .1 Ceramic tile: to CAN/CGSB-75.1, Type 5, Class MR 4, cushion edges, glazed surface, plain pattern, colour as selected by Departmental Representative. Matching bullnose edge trim to suit application.
  - .1 CT1 (Washroom): 150 x 150 x 6 mm size.
  - .2 CT2 (Kitchen): 100 x 300 x 6 mm size.

### **2.3 TRIM SHAPES**

- .1 Conform to applicable requirements of adjoining floor and wall tile.
- .2 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.
- .3 Internal and External Corners: provide trim shapes as follows where indicated.
  - .1 Bullnose shapes for external corners including edges.
  - .2 Coved shapes for internal corners.
  - .3 Special shapes for:
    - .1 Base to floor internal corners to provide integral coved vertical and

- horizontal joint.
- .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.
- .4 Provide cove and bullnose shapes for counter tops, and where indicated and required to complete tile work.

## **2.4 MORTAR AND ADHESIVE MATERIALS**

- .1 Cement: to CSA-A5, type 10.
- .2 Sand: to ASTM C 144, passing 16 mesh.
- .3 Hydrated lime: to ASTM C 207, Type N.
- .4 Latex additive: formulated for use in cement mortar and thin set bond coat.
- .5 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.
- .6 Adhesives: as recommended by tile manufacturer.
  - .1 Maximum VOC limit 65 g/L.

## **2.5 BOND COAT**

- .1 Epoxy bond coat: non-toxic, non-flammable, non-hazardous during storage, mixing, application, and when cured. To produce shock and chemical resistant mortars having the following physical characteristics:
  - .1 Compressive Strength: 246 kg/cm<sup>2</sup>.
  - .2 Bond Strength: 53 kg/cm<sup>2</sup>.
  - .3 Water Absorption: 4.0% Max.
  - .4 Ozone Resistance, 200 hours @ 200 ppm: no loss of strength.
  - .5 Smoke Contribution Factor: 0.
  - .6 Flame Contribution Factor: 0.
  - .7 Finished mortar and grout to be resistant to urine, dilute acid, dilute alkali, sugar, brine and food waste products, petroleum distillates, oil and aromatic solvents.
  - .8 Bond Coat: maximum VOC limit 65 g/L.

## **2.6 GROUT**

- .1 Chemical-Resistant Grout:
  - .1 Epoxy grout: to ANSI A108.1, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.
  - .2 Furan grout: to CTI A118.5.

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## **2.7 ACCESSORIES**

- .1 Sealant: in accordance with Section 07 92 00 - Joint Sealants.
  - .1 Sealants: maximum VOC limit 250 g/L.
- .2 Floor sealer and protective coating: to tile and grout manufacturers recommendations.
- .3 Ceramic Accessories: soap holder; semi-recessed, 150 x 150 mm face dimension combination soap holder and grab bar, colour shall match surrounding wall tile.

## **2.8 PATCHING AND LEVELLING COMPOUND**

- .1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
- .2 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.
- .3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.
- .4 Ready for use in 48 hours after application.

## **2.9 CLEANING COMPOUNDS**

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

## **PART 3 EXECUTION**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

### **3.2 WORKMANSHIP**

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2016/2017, "Ceramic Tile", except where specified otherwise.
- .2 Apply tile to clean and sound surfaces.
- .3 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.

- .4 Maximum surface tolerance 1:800.
- .5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .6 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .8 Make internal angles square, external angles bullnosed.
- .9 Use bullnose edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
- .10 Install divider strips at junction of tile flooring and dissimilar materials.
- .11 Allow minimum 24 hours after installation of tiles, before grouting.
- .12 Clean installed tile surfaces after installation and grouting cured.
- .13 Make control joints where indicated. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07 92 00 - Joint Sealants. Keep building expansion joints free of mortar and grout.

### **3.3 WALL TILE**

- .1 Install in accordance with TTMAC detail 302W, 303W, 305W.

### **3.4 FLOOR TILE**

- .1 Install in accordance with TTMAC detail 311F.

### **3.5 FLOOR SEALER AND PROTECTIVE COATING**

- .1 Apply in accordance with manufacturer's instructions.

### **3.6 FIELD QUALITY CONTROL**

- .1 Manufacturer's Field Services:
  - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

### **3.7 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.

**END OF SECTION**