

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Not used

**1.2                REFERENCE STANDARDS**

- .1            American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1            ANSI A108.1-99, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
  - .2            CTI A118.3-92, Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).
  - .3            CTI A118.4-92, Specification for Latex Cement Mortar (included in ANSI A108.1).
  - .4            CTI A118.5-92, Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).
  - .5            CTI A118.6-92, Specification for Ceramic Tile Grouts (included in ANSI A108.1).
- .2            American Society for Testing and Materials International (ASTM)
  - .1            ASTM C144-04, Specification for Aggregate for Masonry Mortar.
  - .2            ASTM C207-06, Specification for Hydrated Lime for Masonry Purposes.
  - .3            ASTM C847-06, Specification for Metal Lath.
  - .4            ASTM C979-05, Specification for Pigments for Integrally Coloured Concrete.
- .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            CAN/CGSB-25.20-95, Surface Sealer for Floors.
- .4            Canadian Standards Association (CSA International)
  - .1            CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
  - .2            CAN/CSA-A3000-F03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .5            South Coast Air Quality Management District (SCAQMD), California State
  - .1            SCAQMD Rule 1168-05, Adhesives and Sealants Applications.
- .6            Terrazzo Tile and Marble Association of Canada (TTMAC)
  - .1            Tile Specification Guide 09 30 00 2006/2007, Tile Installation Manual.
  - .2            Tile Maintenance Guide 2000.

### **1.3 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

### **1.4 QUALITY ASSURANCE**

- .1 Quality Assurance Submittals:
  - .1 Manufacturer's Instructions: manufacturer's installation instructions.

### **1.5 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.

### **1.6 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.

### **1.7 MAINTENANCE**

- .1 Extra Materials:
  - .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

- .2 Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
- .3 Maintenance material same production run as installed material.

## **1.8 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Extra Materials:
  - .1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Provide a quantity of replacement tiles equal to at least two percent (2%) of the total number of each type and color of tile required for the Infirmary bathroom, wall and floor work (Room A-545-B), and store them at the location indicated.
  - .3 Supply a quantity of replacement tiles corresponding to at least twenty-five percent (25%) of the total number and color of floor covering tiles required for reception area work (room A-544) and store them where indicated.
  - .4 The replacement materials / materials supplied must come from the same production lot as those used.

## **Part 2 Products**

### **2.1 TILES**

- .1 Floor ceramic tiles
  - .1 Commercial application - high traffic;
  - .2 Porcelain with ground tiles 10mm thick;
  - .3 Abrasion resistance:  $\leq 175 \text{ mm}^3$ ;
  - .4 Color variation: V2;
  - .5 Slip resistance:  $\geq 0.42$ ;
  - .6 Water absorption:  $<0.5\%$ ;
  - .7 Size: 60cm x 60cm;
  - .8 Plinth tile identical to 100mm height floor tiles
  - .9 Refer to architectural plans for location.
  - .10 Choice of color and finish at the designer's choice.
- .2 Ceramic wall tiles
  - .1 Double-fired white porcelain;
  - .2 Gloss finish
  - .3 Dimension: 10cm x 10cm;
  - .4 Refer to architectural plans for location.
  - .5 Choice of color at the choice of the designer.

## 2.2 PLINTHS

- .1 Plinths: tiles of type, size, color and texture corresponding to the adjacent floor tile (if no wall ceramic is prescribed). The new ceramic baseboards will have a height of 100mm. Use a brushed aluminum finish.

## 2.3 MORTAR AND ADHESIVE MATERIALS

- .1 Cement: to CSA-A5, type 10.
- .2 Sand: to ASTM C144, passing 16 mesh.
- .3 Hydrated lime: to ASTM C207, 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: type suitable for use and according to the manufacturer's recommendations.

## 2.4 BOND COAT

- .1 Dry set cement mortar: to ANSI A108.1.
- .2 Organic adhesive: to CGSB 71-GP-22M
- .3 Latex Cement mortar: to ANSI A108.1, two-component universal dry-set mortar.
- .4 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.
- .5 Chemical-Resistant Bond Coat:
  - .1 Epoxy Resin Type: CTI A118.3.
  - .2 Furan Resin Type: CTI A118.5.

## 2.5 GROUT

- .1 Latex Cement Grout: to ANSI A108.1, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for walls and floors with polished tiles commercial tile grout.
- .2 Epoxy grout: to ANSI A108.1, quality, color, and characteristics consistent with epoxy bonding. Adhesive and grout must be supplied by the same manufacturer.
  - .1 Latex based grout: Color chosen by the designer.

- .2 Grout preparation: as recommended by the manufacturer

## **2.6 ACCESSORIES**

- .1 Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.
- .2 Cleavage plane: polyethylene film to CGSB 51-34.
- .3 Metal lath: to ASTM C847 galvanized finish, 10 mm rib at 2.17 kg/m<sup>2</sup>.
- .4 Transition Strips: purpose made metal extrusion; anodized aluminum type.
- .5 Reducer Strips: purpose made metal extrusion; anodized aluminum type; maximum slope of 1:2.
- .6 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.
- .7 Sealant: in accordance with Section 07 92 00 - Joint Sealants.
- .8 Floor sealer and protective coating: to tile and grout manufacturers recommendations

## **2.7 MIXES**

- .1 Cement:
  - .1 Scratch coat: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water, and latex additive where required. Adjust water volume depending on water content of sand.
  - .2 Slurry bond coat: cement and water mixed to creamy paste. Latex additive may be included.
  - .3 Mortar bed for floors: 1 part cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.
  - .4 Mortar bed for walls and ceilings: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.
  - .5 Levelling coat: 1 part cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.
  - .6 Bond or setting coat: 1 part cement, 1/3 part hydrated lime, 1 part water.
  - .7 Measure mortar ingredients by volume.
- .2 Dry set mortar: mix to manufacturer's instructions.
- .3 Organic adhesive: pre-mixed.
  - .1 Adhesives: maximum VOC limit 65 g/L to SCAQMD Rule 1168.
- .4 Mix bond and levelling coats, and grout to manufacturer's instructions.
- .5 Adjust water volumes to suit water content of sand.

## **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 2006/2007, "Ceramic Tile", except where specified otherwise.
- .2 Apply tile or backing coats 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.

**3.3 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.

**3.4 CLEANING**

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

**END OF SECTION**