

Part 1 GENERAL

1.1 SECTION INCLUDES

- .1 Porcelain Tile
- .2 Tile Accessories
- .3 Mortar and Grout.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
 - .1 ANSI A108/A118/A136.1-2009, Specification for the Installation of Ceramic Tile
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 71-GP-30M-[79], Adhesive, Epoxy and Modified Mortar Systems, for Installation of Quarry Tiles.
 - .2 CAN/CGSB-75.1-[M88], Tile, Ceramic.
- .3 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .4 American Society for Testing and Materials (ASTM)
 - .1 ASTM C144, Standard Specification for Aggregate for Masonry Mortar.
- .5 Terrazzo, Tile and Marble Association of Canada (TTMAC)
 - .1 Tile Specification Guide 09 30 00 Tile Installation Manual, 2012-2014
 - .2 Tile Maintenance Guide, latest edition.

1.3 ACTION/ INFORMATIONALSUBMITTALS

- .1 Product data: include manufacturer's information on:
 - .1 Porcelain tile, marked to show each type, size, and shape required.
 - .2 Mortar and grout.
 - .3 Divider strip and metal trim.
 - .4 Leveling compound.
- .2 Samples: provide samples of the following materials provided for project.
 - .1 Porcelain tile: one full size tile of each type and colour.
 - .2 Metal edge strips: one piece of each type, sized, and colour.
- .3 Manufacturer's Instructions: manufacturer's installation instructions.

1.4 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Data: Submit TTMAC Maintenance Guide and additional information as follows.
 - .1 Manufacturer's maintenance data sheets for grout, floor sealers and other non-tile maintenance materials and accessories.
 - .2 Warning of maintenance practices or materials that may damage or disfigure finished Work.
 - .3 Provide recommended maintenance materials and procedures including stain removal.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- .1 For maintenance use: Provide 2% of each size, color, and surface finish of tile specified.
 - .1 Porcelain tile – All floor tile: 5% (not less than 1 box) to match colour, texture and accessories.
 - .2 Metal edge strips: 10% of each type and colour installed on project.
 - .3 Provide one (1) bag of each colour and type of grout.
- .2 Extra materials to be of same production run and dye lot as installed materials.
- .3 Wrap each separately and protect with plastic or heavy-duty craft paper. Identify contents. Leave unopened packages in original condition.
- .4 Deliver to site and store where directed. Provide written receipt, signed by Contractor, verifying delivery.
- .5 Unused tiles from open cartons remain the property of the City of Winnipeg.

1.6 QUALITY ASSURANCE

- .1 Installer Qualifications: Company specializing in performing the Work of this section with minimum 5-7 years documents experience and having completed tile installations similar in material, design and extent to this Project. Must be familiar and have experience with Epoxy grout installations.
- .2 Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
- .3 Conform to TTMAC Manual.
- .4 Applicable Standards: Except as otherwise specified herein, materials shall be in accordance with CAN/CGSB 75.1.
- .5 Reference Standards and Workmanship: all work shall be done by a Tiling Contractor employing skilled tradesmen, the TTMAC and reference details, manufacturer's recommendations and details and customs of best trade practices; true to lines, planes and dimensions of building.

- .6 The setting material manufacturer's representative shall review the details with the Contractor prior to the start of work. Instruct the Contractor on the proper installation procedures to ensure compliance with the guarantee requirements.
- .7 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.

1.7 MOCK-UP

- .1 Construct mock-up of porcelain tile work using same materials as specified for finished work.
- .2 Construct mock-up on site over building substrate of approximately 100 ft² in size in an area designated by the Contract Administrator. Include typical tile patterns, control joint, edge strips.
- .3 Allow one (1) week for Contract Administrator's review and approval.
- .4 Mock-up, if accepted, may remain a part of the finished work, and shall establish the minimum standard of quality for remainder of project.

1.8 DELIVERY, STORAGE AND PROTECTION

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store packaged materials in original cartons with labels intact and seals unbroken.
 - .2 Deliver, store and handle products in manner to avoid damage or contamination.
 - .3 Have materials delivered to job site just prior to installation.
 - .4 Keep cartons dry and protected from vandalism and away from heavy traffic areas. Store Cementitious materials in a dry area and raised off floor.
 - .5 Store cartons in upright position.
 - .6 Handle furan resin mortar and grout with care and abide by safety labels found on each unit and product MSDS's.
- .2 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.

1.9 SITE CONDITIONS

- .1 Ventilation:
 - .1 Provided continuously during and after installation. Run system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of installation.
- .2 Temperature:
 - .1 Maintain air temperature and structural base temperature at porcelain tile installation area above 10°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 TILES

- .1 Quarry tile: QT-1- C&S Tile Ceramstone Collection- Icon Collection; Color: # 5224 Jet Black; Size: 12"x24" Rectified. Installation pattern as per Floor Finish drawings.

2.2 MORTAR AND ADHESIVE MATERIALS

- .1 Cement: to CAN/CSA-A3000, Type GU.
- .2 Sand:
 - .1 Crushed or pit run consisting of hard durable particles free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
 - .2 Gradations to be within limits specified when tested to ASTM C136. Sieve sizes to CAN/CGSB-8.1.
 - .3 Table:

Sieve Designation	% Passing
4.75 mm	100
2.36 mm	95-100
1.18 mm	60-100
0.600 mm	35-80
0.300 mm	15-50
0.150 mm	2-15
0.075 mm	0-5
 - .4 Hydrated lime: to ASTM C207.
 - .5 Latex additive: formulated for use in cement mortar.
 - .6 Water: potable and free of minerals which are detrimental to mortar and grout mixes.
 - .7 Dry set mortar:
 - .1 To ANSI A108.1
 - .2 Latex additive: formulated for use in Portland cement leveling coat.
Acceptable material: Mapei Keralastic, Custom Building Product
Customcrete
 - .8 Elastomeric adhesive: to CGSB 71-GP-29M.
 - .9 Epoxy adhesive: to CGSB 71-GP-30M, Type 1.
 - .10 Modified Mortar adhesive: to CGSB 71-GP-30M, Type 2.
 - .11 Adhesives:
 - .1 Maximum VOC limit [65] g/L [to SCAQMD Rule 1168].
 - .12 Latex-Portland cement mortar to ANSI A108.1, premixed polymer modified mortar requiring only the addition of water. Acceptable materials:
 - .1 Mapei GraniRapid, Custom Building Products Complete LFT Rapid Setting Mortar.
 - .13 Colour pigment: non fading mineral oxides, unaffected by lime or cement and which will not stain tile.

2.3 GROUT

- .1 Epoxy grout: GR-1 to ANSI A118.3, 100% solids, two-component, stain resistant, water-soluble, two-component epoxy grout. Having colour and characteristics to match epoxy bond coat. Suggested Grout line width of 1/4" thick.

Acceptable materials:

Product: Laticrete SpectraLock Pro Epoxy Grout

Color: #45 Raven

Product: Custom Building Products-Epoxy CEG Lite 100% Solids Commercial Epoxy Grout.

Color as selected from Manufacturer's running line.

2.4 ACCESSORIES

- .1 **TR-1** Coved tile profile trim at Porcelain floor tile to wall tile transitions: anodized aluminum
 - .1 Acceptable material: Schluter Dilex-AHK
- .2 **TR-2** Transition profile from Floor tile to Epoxy Flooring/ Sheet Vinyl Flooring transitions.
 - .1 Acceptable material: Schluter Reno V; anodized aluminum finish
- .3 **TR-3** Metal profile trim at vertical Porcelain floor tile edges: anodized aluminum finish.
 - .1 Acceptable material: Schluter Schiene
- .4 Mesh tape: glass fibre mesh tape, 50 mm wide, purpose made, for taping joints and corners in tile backer board.
- .5 Floor sealer and protective coating: to tile and grout manufacturer's recommendations.
- .6 Grout sealer: silicone based, clear, low viscosity penetrating sealer of type recommended by grout manufacturer as required.
- .7 Soft control joint: hybrid adhesive and sealant caulk
 - .1 Acceptable material: FlexTile Ultra-Performance Caulk, Mapei Mapesil T, CBP Commercial 100% Silicone Caulk or equal.
- .8 All tile installation materials to be part of the same manufacturer's system.
- .9 **TR-4** Metal control joint for floor tile (as required): Schluter Dilex AKWS anodized aluminum finish. Contractor to confirm if control joints required.

2.5 MORTAR AND LEVELLING COAT MIXES

- .1 Levelling coat: 1 part cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water, including latex additive. Premixed mortar may be used per manufacturer's instructions.
- .2 Mortar ingredients: measured by volume.
- .3 Dry set mortar: mixed to manufacturer's instructions.

2.6 PERFORMANCE CRITERIA

- .1 Do tile work in accordance with TTMAC Tile Installation Manual, except use more stringent requirements of manufacturer or these specifications.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify existing conditions are ready to receive work.
- .2 Examine surfaces and verify that surfaces are ready to receive tile installation.
 - .1 Concrete substrates have cured minimum of ninety (90) days to TTMAC requirements.
 - .2 Substrates are dry; clean; free from oil, waxy films, and curing compounds; and within starting flatness tolerances, and are ready for application of leveling materials.
 - .3 Grounds, anchors, recessed frames, electrical and mechanical units of Work in or behind tile have been installed.
 - .4 Joints and cracks in tile substrates are coordinated with tile joint locations.
- .3 Verify tile subject to colour variations has been factory blended and packaged. If not factory blended, blend tiles at site before installing.

3.2 WORKMANSHIP

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007.
- .2 Apply mortar bed [or bond coat] to clean and sound surfaces.
- .3 Fit tile units around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Make cut edges smooth and even.
- .4 Maximum surface tolerance: 1:800.
- .5 Make joints between [tiles] [pavers] uniform and approximately [6] mm wide, plumb, straight, true, even and with adjacent units flush. Align patterns.
- .6 Lay out units 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.
- .9 Construct base as indicated on drawings with square top edge.
- .10 Install divider strips at junction of [tile] [paver] flooring and dissimilar material.
- .11 Clean installed tile surfaces after installation cured. Keep building expansion joints free of mortar or grout.

3.3 TILE APPLICATION

- .1 Install tile and bases on substrate in accordance with TTMAC installation method.
- .2 Spread setting materials using properly sized trowels matched to tile sizes and setting materials, as recommended in TTMAC Tile Installation Manual. Spread setting materials in a manner to avoid air pockets, and ensure full coverage of edges and corners.
- .3 Back butter large format tiles, natural stone tiles, exterior tiles, and tiles in wet areas with setting material to ensure proper coverage.
- .4 For ungauged tile back butter with push box or box screed immediately prior to setting to achieve a uniform thickness of tile and mortar combined.
- .5 Ensure bond material coverage of at least 95% and that material is evenly disbursed over back of tile. Ensure corners and edges are fully supported by bonding material.
- .6 Twist and slide tile firmly into position to ensure proper bond.
- .7 Sound tiles after setting. Replace hollow-sounding units to obtain full bond.
- .8 Keep 2/3 of depth of grout joints free of setting material.
- .9 Allow minimum 24 h after installation of tiles, before grouting.
- .10 Force grout into joints to ensure dense finish.
- .11 Protect all tiles from grout staining. Test in advance and pre-seal if required. Preseal or pre-wax rough textured or irregular surface tile prior to grouting.
- .12 Clean installed tile surfaces after installation and grout has cured. Follow manufacturer's recommendations for grout and residue removal.
- .13 Apply grout sealer to grouted joints of bright glazed porcelain tile after grout is cured and dry.
- .14 Protect installed areas from traffic until setting materials have cured for periods specified in TTMAC Tile Installation Manual.
- .15 Barricade grouted areas to prevent foot traffic for 24 hours after grouting.
- .16 Protect wall tiles and bases from impact, vibration, heavy hammering on adjacent and opposite walls for at least 14 days after installation.
- .17 Spread setting materials using properly sized trowels matched to tile sizes and setting materials, as recommended in TTMAC Tile Installation Manual. Spread setting materials in a manner to avoid air pockets, and ensure full coverage of edges and corners.

3.4 MOVEMENT JOINTS

- .1 Provide expansion joints and control joints in porcelain tile where indicated and at locations specified in TTMAC Tile Installation Manual, whether or not they are indicated on the drawings.
- .2 Make expansion and control joints in accordance with TTMAC Detail 301MJ.

- .3 Keep joints free of mortar and grout. Fill movement joints with sealant.
- .4 Locate control joints in porcelain tile in accordance with TTMAC Tile Installation Manual.
- .5 Provide control joints around perimeter of large areas, around columns, in locations where area changes direction and where tile abuts other hard material. Place movement joints directly over subfloor expansion/control joints.

3.5 FLOOR SEALER AND PROTECTIVE COATING

- .1 Apply 2 coats in accordance with manufacturer's printed instructions.

END OF SECTION 093015