PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install porcelain paver tile as described in Contract Documents.

1.2 REFERENCES

   A. American National Standards Institute:
      1. ANSI A137.1-1988, 'Ceramic Tile.'

   B. Tile Council of America:
      1. TCA Handbook, 'Handbook for Ceramic Tile Installation.'

1.3 SUBMITTALS

   A. Product Data:
      1. Manufacturer's literature for each component of system.
      2. Cleaning and maintenance instructions.
      3. Color and pattern selections.

   B. Samples:
      1. 24 inch by 12 inch 600 mm by 300 mm sample on cement board showing all types of paver tile,
         grout, and colors specified in this Section.
      2. One sample of each type of base tile and trim piece to be used on Project.

   C. Quality Assurance / Control:
      1. Master grade certificate.
      2. Test reports confirming performance characteristics

1.4 DELIVERY, STORAGE, AND HANDLING

A. Keep grade seals intact and cartons dry until tile are used.

1.5 PROJECT CONDITIONS

A. Project Environmental Requirements: Keep ambient temperatures of area to receive tile work and
   surface temperatures of substrates at 50 deg F minimum during preparation of mortar bed, laying of
   tile, and for 72 hours after completion of tile work. Use electric heat to prevent discoloration of grout.

PART 2 - PRODUCTS

2.1 COMPONENTS

A. Porcelain Paver Tile:
2. Meet following performance criteria:
   a. Water Absorption when tested in accordance with ASTM C 373: 0.1 to 0.5 percent.
   b. Abrasive Wear Resistance when tested in accordance with ASTM C 501: 275 minimum.
   c. Breaking Strength when tested in accordance with ASTM C 648: 300 lbs minimum.
   d. Bond Strength when tested in accordance with ASTM C 482: 200 psi minimum.
   e. Coefficient of Friction when tested in accordance with ASTM C1028: 0.6 COF minimum.
3. Tile Sizes:
   a. Vestibules And Serving Areas: 12 inches 300 mm square minimum.
   b. Rest Rooms: 8 inches 200 mm square maximum.
4. Series And Color Performance Standards:
   a. Vestibules: <Insert Series & Color> by <Insert Manufacturer>.
   b. Vestibule Accent: <Insert Series & Color> by <Insert Manufacturer>.
   c. All Other: <Insert Series & Color> by <Insert Manufacturer>.
   d. All Other Accent: <Insert Series & Color> by <Insert Manufacturer>.
5. Category Four Approved Manufacturers: See Section 01 6000 for definitions of Categories.
   g. Portobello America, Anaheim, CA  www.portobelloamerica.net.

2.2 SOURCE QUALITY CONTROL

A. Verification of Performance:
   1. Performance characteristics shall be confirmed by tests performed by:
      a. TCA, Thousand Oaks, CA
      b. Testing Engineers International - Stone & Tile Services, Salt Lake City, UT
      c. Equivalent independent testing laboratory approved by Architect.

PART 3 - EXECUTION

3.1 INSTALLERS

A. Category Four Approved Installers. See Section 01 6000 for definitions of Categories.
   1. <Insert Approved Tile Installer>.
   2. <Insert Approved Tile Installer>.
   3. <Insert Approved Tile Installer>.

B. Tile installers will be pre-approved and included in Construction Documents by Addendum.

3.2 EXAMINATION

A. Site Verification of Conditions:
   1. Variation In Grade: Plus or minus 1/8 inch3 mm in any 10 feet3 m of floor slab and distance
      between high point and low point of slab of 1/2 inch12 mm.
   2. Testing Procedure: Place ends of straightedge on 3/8 inch9 mm high shims. Floor is satisfactory
      if 1/4 inch6 mm diameter steel rod rolled under straightedge will not touch anywhere along 10
      foot3 meter length and 1/2 inch12 mm diameter steel rod will not fit under straightedge anywhere
      along 10 foot3 meter length.
   3. Notify Architect in writing if floor surface is not acceptable to install tile. Do not lay tile over
      unsuitable surface. Commencing installation constitutes acceptance of floor and approval of
      existing conditions.
3.3 PREPARATION

A. Allow concrete to cure for 28 days minimum before installation of setting bed.

B. Grounds, anchors, plugs, hangers, door frames, electrical, mechanical, and other work in or behind tile shall be installed before tiling work is started.

3.4 INSTALLATION

A. General:

1. Install in accordance with following TCA installation methods:
   a. Flush Concrete Slabs: TCA F115.
   b. Framed Floors: TCA F141 or F144 at installer’s option.
   c. Setting Bed on Concrete Slab: TCA F111.
   d. Base in Vestibules: TCA square style.

2. Install tile in pattern indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Adjust to minimize tile cutting and to avoid tile less than half size. Center and balance areas of tile if possible.

3. Extend tile into recesses and under equipment and fixtures to form a complete covering without interruption.

4. Install cut tile with cuts on outer edges of field. Provide straight cuts that align with adjacent materials. When possible, smooth cut edges of tile or use appropriate cutter or wet saw to produce smooth cuts. Do not install tile with jagged or flaked edges.

5. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment. Fit tile closely where trim, escutcheons, or similar devices will cover edges.

6. Provide straight tile joints of uniform width, subject to variance in tolerance allowed in tile size. Make joints smooth and even, without voids, cracks, or excess mortar or grout.

7. Install tile before mortar has started initial cure. For thin set mortar application, use a notch trowel that will achieve the recommended coverage of mortar after tiles have been installed.

8. Do not spread more mortar than can be covered within 10 to 15 minutes. If 'skinning' occurs, remove mortar and spread fresh material. Spread mortar with notches running in one direction, perpendicular to pressing, pushing and pulling of tile during placement.

9. Place tile in fresh mortar, press, push and pull tile slightly to achieve as near 100 percent coverage and contact of tile with setting material and substrate as possible. Coverage shall be 85 percent minimum and be sufficiently distributed to give full support of the tile. Support corners and edges with mortar leaving no hollow corners or edges.

10. Install so there is 1/8 inch 3 mm minimum of mortar between tile and substrate after proper bedding. Periodically remove sheets or individual tiles to assure proper bond coverage consistent with industry specifications. If coverage is found to be insufficient, use a larger size notch trowel.

11. Use beating block and hammer or rubber mallet so faces and edges of individual tiles are flush and level with faces and edges of adjacent tiles, and to reduce lippage.

12. Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

B. Application

1. On Cement Board Sheathing:
   a. Install vapor retarder over floor before installing cement board.
   b. Install cement board in accordance with Manufacturer's recommendations.
   c. Attach board through subfloor into framing with screws spaced 8 inches 200 mm on center.
      Pre-drill holes in cement board for screws if required by Cement Board Manufacturer.
   d. Tape and fill joints as required by Cement Board Manufacturer.

2. On Setting Bed: Apply setting bed to depth equal to depression in slab minus 1/2 inch 13 mm. Properly cure before installing tile.


4. Insert temporary filler in expansion joints.

5. Install base by topset method. Allow for expansion joint directly above any expansion or control joints in slab. Insert temporary filler in tile expansion joints.
C. Applying Sealants And Grouting of Tile:
1. Grout Type: Use epoxy grout.
2. Firmly set tile before applying sealants or grouting. This requires 48 hours minimum.
3. Remove spacers or ropes before grouting.
4. Firmly set tile before applying joint sealants or grout. This requires 48 hours minimum.
5. Remove spacers or ropes before applying joint sealants or grouting. Apply sealants before applying grout.
6. Apply backer rod and joint sealants at expansion joints. Apply bead of sealant at junction of base and floor tile.
7. Before grouting entire area, do a test area to assure there will be no permanent staining or discoloration of tile and to verify that excess grout can be easily removed from tile surface. If necessary, pre-coat exposed surfaces of tile with a grout release recommended by Grout Manufacturer to facilitate removal of excess grout.
8. Use clean buckets and mixing tools. Use sufficient pressure and flow grout in progressively to avoid air pockets and voids.
9. Apply grout to produce full, smooth grout joints of uniform width, and free of voids and gaps. Fill joints of cushion edge tile to depth of cushion. Fill joints of square edge tile flush with surface.
10. Remove excess grout from surface of tile before it loses its plasticity or begins to set.
11. Finished grout shall be uniform in color, smooth, and without voids, pin holes, or low spots.

D. Curing: Keep installation at 65 to 85 deg F 18 to 30 deg C during first 8 hours of cure. Shade area completely from sun during this period.

3.5 CLEANING
A. If one has been used, remove grout release and clean tile surfaces so they are free of grout residue and foreign matter. If a grout haze or residue remains, use a suitable grout haze remover or cleaner. Flush surface with clean water before and after cleaning.

3.6 PROTECTION
A. Close to traffic areas where tile is being set and other tile work being done. Keep closed until tile is firmly set. Before, during, and after grouting, keep area clean, dry, and free from foreign materials and airflow that will interfere with setting and curing of grout.
B. Newly tiled floor floors shall not be walked on nor worked on without using kneeling boards or equivalent protection of tiled surface.
C. After cleaning, provide protective covering and maintain conditions protecting tile work from damage and deterioration. Where tiled surfaces will be subject to equipment or wheel traffic or heavy construction traffic, cover protective covering with 1/4 inch 6 mm hardboard, plywood, or similar material.

END OF SECTION