PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install ceramic tile and tile setting materials and accessories as described in Contract Documents.

B. Related Sections:
   1. Division 23: Floor drain.

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 cut sheets of materials used in installed system.
   2. Cleaning and maintenance instructions.
   3. Color and pattern selections.

B. Samples:
   1. 24 inch 600 mm square sample on specified tile backer showing all types of tile, grout, and colors specified in this Section. 1/2 of sample board shall show font tile and 1/2 of board shall show wall tile.
   2. One sample of each type of base tile and trim piece to be used on Project.

C. Quality Assurance / Control: Master grade certificate.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in their original unopened containers with labels intact until time of use. Store and handle materials in a manner to prevent damage or contamination by water, freezing, or foreign matter.

B. 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 10 deg C 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. Tile
1. Tile shall be standard quality, white or off-white body, square or cushion edge, graded in accordance with ANSI A137.1.
   a. Field tile shall have two lugs on each edge to assure uniform joint, approximately 0.040 inch one mm.
   b. External and internal corner pieces shall be standard grade.
2. Font Floor And Font Stair Treads:
   a. Furnish font floors and font stair treads in non-slip, non-abrasive surface.
   b. Tile Size: 2 inch 50 mm square nominal.
      1) Color Performance Standards: <Insert Color> by <Insert Manufacturer>.
   c. Type One Acceptable Products:
      1) Unglazed Ceramic Mosaics by American Olean.
      2) Keystone by Dal-Tile.
      3) FTCC Unglazed Mosaics by Winburn Tile.
      4) Equal as approved by Architect before bidding. See Section 01 6000.
3. Wall Tile:
   a. 4-1/4 inches by 4-1/4 inches 108 mm by 108 mm. When base only is installed at painted walls, use one course of standard wall tile and one course of bull-nose wall tile.
   b. Color Quality Standards:
      1) Room Walls And Font Walls Above Waterline: <Insert Color> by <Insert Manufacturer>.
      2) Font Walls Below Waterline: <Insert Color> by <Insert Manufacturer>.
      3) Accent Color: <Insert Color> by <Insert Manufacturer>.
   c. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
      1) Bright Glaze or Matte Glaze Series by American Olean.
      2) Semi-Gloss or Matte by Daltile.
      3) IC Brites Series by Interceramics.
      4) Jerusalem Stone, Dolce Casa, or Renascence by Portobello.
      5) Bright Glaze or Matte Glaze Series by U S Ceramics.

2.2 MANUFACTURERS

A. Contact Information:
2. Dal-Tile - Dallas Ceramics, Dallas, TX www.daltile.com
3. Interceramic USA, Garland, TX www.interceramicusa.com
4. Portobello America, Anaheim, CA www.portobelloamerica.net
5. United States Ceramic Tile, East Sparta, OH www.laufenusa.com

PART 3 - EXECUTION

3.1 APPROVED 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 shall be pre-approved and included in Contract Documents by Addendum.
3.2 EXAMINATION

A. Site Verification of Conditions:
   1. Plane of Vertical Surfaces: 1/8 inch in 8 feet 3 mm in 2 400 mm from required plane. Shall be plumb and true with square corners.
   2. Variation In Slab Grade: Plus or minus 1/8 inch 3 mm in any 10 feet 3 m of floor slab and distance between high point and low point of slab of 1/2 inch 12 mm.
   3. Slab Testing Procedure: Place ends of straightedge on 3/8 inch 9 mm high shims. Floor is satisfactory if 1/4 inch 6 mm diameter steel rod rolled under straightedge will not touch anywhere along 10 foot 3 meter length and 1/2 inch 12 mm diameter steel rod will not fit under straightedge anywhere along 10 foot 3 meter length.
   4. Notify Facilities Manager 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 application of setting bed.

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

3.4 INSTALLATION

A. General
   1. Install in accordance with following TCA installation methods:
      a. Font: TCA F112, S151, and W211.
      b. Walls:
         1) Framed: TCA W222.
         2) Concrete: TCA W211 or W221.
   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. Maintain heights of tilework in full courses to nearest obtainable dimension where heights are given in feet and inches meters and millimeters and are not required to fill vertical spaces exactly.
   5. 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.
   6. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment. Fit tile closely where edges are to be covered by trim, escutcheons, or similar devices.
   7. 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.
   8. Accessories in tilework shall be evenly spaced, properly centered with tile joints, and level, plumb, and true to correct projection.
   9. 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.
   10. 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.
   11. 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.
12. Install so there is 1/8 inch 3 mm 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.

13. Use a 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.

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

B. Application In Font:
1. On Font floor, apply setting bed 3/4 inch 19 mm thick minimum at floor drain to maximum depth equal to depression in slab minus 1/2 inch 13 mm. On Font walls and stairs, apply setting bed 3/4 inch 19 mm thick minimum. Properly cure before installing tile.
2. Clean substrate surface thoroughly. Dampen if very dry, but do not saturate.
3. Install metal font stair nosings.
4. Install tile with 100 percent contact with mortar bed. Obtaining 100 percent contact may require troweling mortar layer on back of each tile before placing on mortar bed.
5. Insert temporary filler in expansion joints.

C. Application to Wall:
1. On Glass Mat Gypsum Tile Backer Over Framing:
   a. Apply glass mat gypsum tile backer to framing. Attach using specified fasteners spaced 6 inches 150 mm on center on edges and into all framing members. Drive screws flush with surface of board.
   b. Shim board to be plumb and flat or level and flat, depending on location.
   c. At joints, embed fiberglass reinforcing tape with mastic or mortar used to adhere tile.
2. Allow for sealant joints full height at room corners in wall tile. Insert temporary filler in expansion joints.

D. Penetrating Sealers:
1. Thoroughly clean tile.
2. Apply on day following installation of Portland cement grout.
3. Wipe two thin coats with white cotton towel or cloth with each coat applied 90 degrees to each other. Allow 30 minutes between coats. Do not allow contact with epoxy grout.

E. Application of Joint Sealants And Grout:
1. Grout Types: Use Portland cement grout with wall tile and with wall and floor tile in font.
2. Firmly set tile before applying grout. 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.
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 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