SECTION 09300

TILE

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section describes the requirements for furnishing and installing the following:

1. Wall tile.
2. Floor tile.
3. Stone thresholds.
4. Interior cement backer board.

B. Related Sections:

1. Joint sealants are specified in Section 07920.
2. Epoxy wall coatings (ERC-2) are specified in Section 09965.

1.02 SUBMITTALS

A. Product Data: Furnish manufacturer's product data for each specified product.

1. Recycled Content: Furnish product data on post-consumer recycled content and post-industrial recycled content as a percentage of the full product composite.
2. Regional Materials: Furnish product data or letter stating the location (closest city, state) where product was manufactured (final processing or assembly) and, if available, the location where raw materials were harvested, extracted or recovered (mine, quarry, plantation, forest, recycling recovery center, etc.).

B. Shop Drawings: Show tile patterns and locations and widths of expansion, contraction, and isolation joints in tile substrates and finished tile surfaces.

C. Samples for Verification: Furnish samples of the following items. Where products involve color and texture variations, furnish sets showing full range of variations expected.

1. Each type and composition of tile for each color and texture required, at least 12-inches square, mounted on plywood or hardboard backing and grouted.
2. Full-size units of each type of trim and accessory for each color required.
3. Stone thresholds in 6-inch lengths.

1.03 QUALITY ASSURANCE

A. Single-Source Responsibility for Tile: Obtain each color, grade, finish, type, and variety of tile from a single source with resources to provide products of consistent quality in appearance without delaying progress of the work.

B. Single-Source Responsibility for Setting and Grouting Materials: Obtain ingredients of a uniform quality from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate.

C. Installer's Qualifications: A minimum of 3-years experience installing tile of the types specified, and a minimum of 5 installations of a magnitude similar to or larger than the work of this Section.

D. Floor tile shall have a minimum coefficient of friction of 0.6 determined in accordance with ASTM C1028.

1.04 ENVIRONMENTAL QUALITY ASSURANCE

A. Applicable LEED Credits – Refer to Section 01352:

1. Credit MRc2.1 / 2.2 – Construction Waste Management.

2. Credit MRc4.1 / 4.2 – Recycled Content.

3. Credit MRc5.1 / 5.2 – Regional Materials.

4. Credit EQc4.1 – Adhesives and Sealants.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

1.06 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Maintain temperatures at 50-deg. F. or more in tiled areas during installation and for 7-days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

C. Provide temporary ventilation of building areas where grouting of tile is done.

1.07 EXTRA MATERIALS

A. Furnish additional tile for replacement and maintenance, at the rate of approximately 3-percent, to the nearest full carton, for each size, color, pattern, and type installed. Identify each carton as to contents.

PART 2 - PRODUCTS

2.01 TILE MATERIALS

A. Recycled Floor Tile: Size, colors and patterns not indicated or scheduled on the drawings will be selected by the Architect from manufacturer's complete range of colors and patterns, including premium colors and patterns.

1. Refer to drawings for tile patterns.

B. Recycled Wall Tile: Recycled ceramic tile, glazed finish; colors not indicated or scheduled on the drawings will be selected by the Architect from manufacturer's complete range of colors and patterns, including premium colors and patterns.

1. Refer to drawings for tile patterns.

C. Trim Units: Provide trim units to match adjoining flat tile.

1. Size: Coordinate with sizes and coursing of adjoining flat tile.

2. Shapes:

a. Base for Thin-Set Tile: Straight.

b. Wainscot Cap for Thin-Set Tile: Surface bullnose.

c. External Corners for Thin-Set Tile: Surface bullnose.

d. Internal Corners: Field-butted square corners.

2.02 STONE THRESHOLDS

A. General: Provide stone that is uniform in color and finish, fabricated to sizes and profiles indicated or required to provide transition between tile surfaces and adjoining finished floor surfaces.

B. Marble Thresholds: ASTM C503, white honed marble.

2.03 SETTING MATERIALS

A. Portland Cement: ASTM C150, Type I.

B. Sand: ASTM C144.

C. Hydrated Lime: ASTM C206 or C207, Type S.

D. Water: Clean, clear, potable.

E. Mortar:

1. Cement Mortar: Job mixed, portland cement, sand, water, and hydrated lime at Contractor's option, proportions specified in ANSI A108.1.

2. Dry-Set Mortar: ANSI A118.1.

3. Latex Portland-Cement Mortar: ANSI A118.4.

F. Bond Coat: Portland cement paste on a plastic setting bed, or dry-set or latex-portland cement mortar on a cured setting bed, except where any one type is specified in referenced TCA installation method.

G. Cement Board Backing: USG "Durock", FinPan "Util-A-Crete", James Hardie "Hardibacker", Custom Building Products "Wonderboard" or approved equal, ½-inch thick unless otherwise indicated.

2.04 GROUTING MATERIALS

A. Commercial Portland Cement Grout: ANSI A118.6.

B. Dry-Set Grout: ANSI A118.6.

C. Latex-Portland Cement Grout: ANSI A118.6.

D. Chemical-Resistant Epoxy Grout: ANSI A118.3.

E. Grout Schedule:

1. Wall Tile: Commercial portland cement, dry-set, or latex-portland cement.

2. Floor Tile: Commercial portland cement, sand-portland cement, dry-set, latex-portland cement or epoxy.

3. Toilet Room Floors: Epoxy.

F. Grout Colors: To be selected by the Architect from manufacturer's complete color range, including premium colors.

2.05 SEALER MATERIALS

A. Tile and Grout Sealer: Aquamix "Sealer's Choice" or approved equal complying with local VOC limitations.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine substrates and areas where tile will be installed, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.

2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

3.02 PREPARATION

A. Blending: For tile exhibiting color variations within the range selected, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.03 CEMENT BOARD INSTALLATION

A. Before installation, cut cement boards to required sizes, make necessary cut-outs for penetrations, and grind or drill to provide relief at bolts and screw heads which project beyond face of substrate.

B. Install over metal studs as indicated. Install blocking to support plumbing fixtures and other accessories and hardware.

C. Apply cement boards to framing with long dimension parallel to or across framing. Fit ends and edges closely but not forced together. Center end or edge joints on framing and stagger joints in adjacent rows.

D. Fasten cement board to framing. Locate screws at least 3/8-inch from edge of board spaced at 8-inches on center.

E. Joint Treatment:

1. Un-Tiled Exposed or Painted Surfaces: Install cement board with smooth side exposed. Seal cement board with sealer. Apply tape over joints. Embed joint tape and treat fasteners with joint compound. Flat trowel a skim coat of joint compound over cement board to fill voids. Sand to provide a smooth surface except where a textured finish is indicated. Finish joints with at least two coats of finishing compound. Install corner beads at outside corners.

2. Surfaces to Receive Epoxy Wall Coatings (ERC-2): Apply tape over joints. Embed joint tape and treat fasteners with joint compound. Installed cement board shall be acceptable to installer of epoxy wall coatings specified in Section 09965.

3.04 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard: Comply with referenced parts of ANSI 108 series of tile installation standards.

B. TCA Installation Guidelines: Comply with TCA "Handbook for Ceramic Tile Installation" installation methods referenced.

C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars or covers overlap tile.

E. Jointing Pattern: Unless otherwise indicated, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise indicated.

F. Lay out tile wainscots to next full tile beyond dimensions indicated.

G. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.

1. Locate joints in tile surfaces directly above joints in concrete substrates.

2. Prepare joints and apply sealants as specified in Section 07920.

3.05 TILE INSTALLATION METHODS

A. Interior Floors:

1. Mortar-set over concrete slab on grade in accordance with ANSI A108.1 using TCA Method F112.

B. Interior Walls:

1. Thin-set over cement backing board in accordance with ANSI A108.5 using TCA Method W244.

C. Expansion Joints: Comply with TCA Method EJ171. Proposed joint locations shall be approved by the Architect.

1. Interior: Provide expansion joints at 24- to 36-feet on center in both directions, over cold joints and saw-cut control joints, and where tile abuts restraining surfaces. Joint spacing for tile exposed to direct sunlight or moisture shall be 12-to 16-feet on center. Joint width for paver tile shall be minimum 1/4-inch wide; ceramic mosaic tile and glazed wall tile shall be minimum 1/8-inch.

2. Sealant Materials: As specified in Section 07920.

3.06 CLEANING

A. Upon completion of placement and grouting, clean tile surfaces so they are free of foreign matter.

1. Remove latex-portland cement grout residue from tile as soon as possible.

2. Do not use acid or acid cleaners to clean tile.

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

3.07 CURING

A. Damp cure tile installations for a minimum of 72-hours.

1. Cover with clean non-staining kraft paper.

2. Do not use polyethylene sheets directly over tile on horizontal surfaces.

3.08 PROTECTION

A. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures tile is without damage or deterioration at time of Substantial Completion.

1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

2. Prohibit foot and wheel traffic from tiled floors for at least 7-days after grouting is completed.

B. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

C. Sealer: Apply sealer to floor tile, wall tile, and grout in accordance with manufacturer's instructions.

3.09 WASTE MANAGEMENT

A. Separate waste in accordance with the Waste Management Plan and place in designated areas in the following categories for recycling:

1. ½ tiles and larger, set aside for reuse by Owner, non-profit organizations such as Habitat for Humanity, etc.

2. Broken tile and cut offs smaller than ½ tile, excess mortar and grout, crush for use as mosaic, sub-base or fill.

3. Separate metal waste and place in designated areas for recycling or reuse.

4. Separate cardboard waste and place in designated areas for recycling.

END OF SECTION