

SECTION 09310  
CERAMIC TILE

PART 1 - GENERAL

1.01 PROVISIONS INCLUDED

- A. The general provisions of the Contract, including General and Supplementary Conditions and Division 1 - General Requirements, apply to work specified in this Section.

1.02 SUMMARY

- A. This Section includes the following:
  - 1. Ceramic mosaic tile.
  - 2. Glazed wall tile and base.
  - 3. Stone thresholds installed as part of tile installations.
- B. Related Sections include the following:
  - 1. Sealing of expansion, contraction, control, and isolation joints in tile surfaces: Section 07920, "Joint Sealants."
  - 2. Glass-mat, water-resistant backer board: Section 09250, "Gypsum Board Assemblies."

1.03 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: For tile installed on floors, furnish products with static coefficient of friction of 0.6 or greater, as determined by testing identical products per ASTM C 1028.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of joints in tile substrates and finished tile surfaces.
- C. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.
- D. Samples for Verification:
  - 1. Full-size units of each type and composition of tile and for each color and finish required.
  - 2. Full-size units of each type of trim and accessory.
  - 3. Stone thresholds in 6-inch lengths.
- E. Master Grade Certificates: For tile, signed by tile manufacturer and Installer.
- F. Product Certificates: For each type of product, signed by product manufacturer.
- G. Material Test Reports: For each tile-setting and -grouting product.

## 1.05 QUALITY ASSURANCE

- A. Source Limitations Tile and Stone Thresholds: Obtain each type of product through one source from a single manufacturer.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

## 1.06 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 requirement in ANSI A137.1 for labeling sealed tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store liquid latexes and emulsion adhesives in unopened containers and protected from freezing.

## 1.07 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

## 1.08 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

## PART 2 - PRODUCTS

### 2.01 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for Standard Grade, and for types, compositions, and other characteristics indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.
- C. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless otherwise indicated.

## 2.02 TILE PRODUCTS

- A. Manufacturer: Subject to compliance with requirements, furnish products of one of the following manufacturers:
  - 1. American Olean; Div. of Dal-Tile International Corp.
  - 2. Daltile; Div. of Dal-Tile International Inc.
  
- B. Unglazed Ceramic Mosaic Tile (CT-1, CT-2): Porcelain body tile, unglazed, smooth surface, 2" x 2" module size, 1/4" thick, plain face with cushion edges, factory-mounted, and as follows:
  - 1. Product: American Olean "Unglazed Ceramic Mosaics" or equal by Daltile.
  - 2. Colors: One main color and one accent color, to be selected by Architect from manufacturer's full range.
  
- C. Glazed Wall Tile (CT-3, CT-4, CT-5): Flat tile, 4-1/4 by 4-1/4 module size, 5/16 inch thick, plain face with modified square or cushion edges, finished with bright opaque glaze, factory-mounted, and as follows:
  - 1. Product: American Olean "Bright" or equal by Daltile.
  - 2. Colors: One main color and two accent colors, to be selected by Architect from manufacturer's full range.
  - 3. Glazed Wall Tile Trim Units: Matching characteristics of adjoining flat tile and coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as follows, selected from manufacturer's standard shapes:
    - a. Base for Thin-Set Mortar Installations: Straight, module size 4-1/4 by 4-1/4 inches.
    - b. External Corners for Thin-Set Mortar Installations: Surface bullnose.
    - c. Internal Corners: Field-buttet square corners with coved base and cap angle pieces designed to fit with stretcher shapes.

## 2.03 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
  - 1. Bevel edges at 1:2 slope, aligning lower edge of bevel with adjacent floor finish. Limit height of bevel to 1/2 inch or less, and finish bevel to match face of threshold.
  
- B. Marble Thresholds: Uniform, fine- to medium-grained white stone with gray veining, conforming to ASTM C 503 with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.

## 2.04 SETTING AND GROUTING MATERIALS

- A. Manufacturers:
  - 1. LATICRETE International Inc.
  - 2. MAPEI Corporation.
  - 3. Boiardi Products Corporation.
  - 4. Bostik.
  - 5. DAP, Inc.

- B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, consisting of prepackaged dry-mortar mix combined with acrylic resin liquid-latex additive.
  - 1. For wall applications, provide nonsagging mortar that complies with Paragraph F-4.6.1 in addition to the other requirements in ANSI A118.4.
  - 2. Color: To be selected by Architect from manufacturer's full range of colors.
- C. Polymer-Modified Tile Grout: Acrylic resin in liquid-latex form for addition to prepackaged dry-grout mix, conforming to ANSI A118.7; unsanded.
  - 1. Color: To be selected by Architect from manufacturer's full range of colors.

## 2.05 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Temporary Protective Coating: If recommended by tile manufacturer to protect exposed surfaces of tile against adherence of mortar and grout, treat tile with grout release coating of type recommended by the tile manufacturer. Select a product that is compatible with specific tile, mortar, and grout products with which it will come in contact, and which is easily removable after grouting is completed.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints that does not change color or appearance of grout.
  - 1. Bonsal, W. R., Company; Grout Sealer.
  - 2. Bostik; CeramaSeal Grout Sealer.
  - 3. C-Cure; Penetrating Sealer 978.
  - 4. MAPEI Corporation; KER 004, Keraseal Penetrating Sealer for Unglazed Grout and Tile.

## 2.06 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates, areas, and conditions 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 concrete floor slabs comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
  - 2. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
  - 3. Verify that installation of anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
  - 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

- A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.
- B. Prepare concrete substrates for tile floors by filling cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Remove protrusions, bumps, and ridges by sanding or grinding.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of 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 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.
- B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.
- C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless 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 plates, collars, or covers overlap tile.
- E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. 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.
  - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
- F. Expansion Joints: Locate expansion, control, contraction, and isolation joints at locations indicated. Build in joints during installation; do not saw-cut joints after installing tiles.
  - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
- G. Grout tile to comply with ANSI A108.10.
  - 1. Grout Release Coating: If recommended by tile manufacturer to protect exposed surfaces of tile against adherence of grout, apply grout release coating to face of tile prior to grouting. Keep grout release compound out of tile joints.

### 3.04 TILE INSTALLATION

- A. General: Install floor and wall tile to comply with requirements in the Tile Installation Schedule at the end of this Section.
- B. Joint Widths:
  - 1. Install ceramic mosaic floor tile with 1/4 inch wide joints.
  - 2. Install glazed wall tile with 1/16 inch wide joints.
- C. Stone Thresholds: Install stone thresholds at locations indicated; set in same type of setting bed as abutting field tile.
- D. Grout Sealer: Apply grout sealer to grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer that has gotten on tile faces by wiping with soft cloth.

### 3.05 CLEANING AND PROTECTING

- A. Cleaning: After grouting, clean ceramic tile surfaces to remove foreign matter.
  - 1. Remove latex-portland cement grout residue from tile as soon as possible.
  - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect

metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.
- B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during remainder of the construction period to prevent staining, damage, and wear.
- C. Keep traffic off tiled floors for at least seven days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

### 3.06 TILE INSTALLATION SCHEDULE

- A. Ceramic Mosaic Floor Tile Thin-Set on Concrete Subfloor: TCA F113 and ANSI A108.5.
  1. Tile Type: Unglazed ceramic mosaic tile.
  2. Thin-Set Mortar: Latex-portland cement mortar.
  3. Grout: Polymer-modified unsanded grout.
- B. Glazed Ceramic Tile Thin-Set over Gypsum Board: TCA W243 and ANSI A108.5.
  1. Tile Type: Glazed wall tile or base.
  2. Thin-Set Mortar: Latex-portland cement mortar.
  3. Grout: Polymer-modified unsanded grout.

END OF SECTION 09310