

## SECTION 09 30 00

### TILING

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Section Includes:
  - 1. Tile for floor applications.
  - 2. Tile for wall applications.
- B. Related Sections:
  - 1. Section 07 92 00 - Joint Sealants.

##### 1.02 REFERENCE STANDARDS

- A. American National Standards Institute Inc.'s:
  - 1. ANSI A108.4 - Ceramic Tile Installed with Organic Adhesives or Water-Cleanable Tile Setting Epoxy Adhesive.
  - 2. ANSI A108.5 - Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
  - 3. ANSI A108.10 - Installation of Grout in Tilework.
  - 4. ANSI A118.1 - Dry-Set Portland Cement Mortar.
  - 5. ANSI A118.4 - Latex-Portland Cement Mortar.
  - 6. ANSI A118.6 - Ceramic Tile Grouts.
  - 7. ANSI A118.10 - Specification for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation.
  - 8. ANSI A136.1 - Organic Adhesives for Installation of Ceramic Tile.
  - 9. ANSI A137.1 - Ceramic Tile.
- B. ASTM International (ASTM).
  - 1. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster.
  - 2. ASTM C1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
- C. South Coast Air Quality Management District:
  - 1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.
- D. Tile Council of America, Inc.
  - 1. TCA - Handbook for Ceramic Tile Installation.

##### 1.03 ADMINISTRATIVE REQUIREMENTS

- A. [Coordination:]
- B. [Preinstallation Meeting:]
- C. [Sequencing:]
- D. Scheduling: Allow tile to set for a minimum of 48 hours prior to grouting]

##### 1.04 [SUSTAINABLE CHARACTERISTICS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design compliance.

B. Materials and Resources Characteristics:

1. [Recycled Content Materials: Furnish materials with maximum available recycled content including:

**SPEC NOTE** *List materials specified in this section required to have recycled content.*

a. [\_\_\_\_\_].]

2. [Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project site.]

**SPEC NOTE** *List materials specified in this section required to be regional materials.*

a. [\_\_\_\_\_].]

C. Indoor Environmental Quality Characteristics:

1. [Interior] Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

### 1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.

D. Samples: Mount tile and apply grout on 4 plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

### 1.06 [SUSTAINABLE DESIGN SUBMITTALS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design submittals.

B. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.

1. Materials Resources Certificates:

a. Certify source and origin for [salvaged] [and] [reused] products

b. Certify recycled material content for recycled content products.

c. Certify source for regional materials and distance from Project site.

2. Indoor Air Quality Certificates:

a. Certify volatile organic compound content for each interior [adhesive][ and ][sealant] and related primer.

1) Provide product data for adhesives, sealants, sealants primer and aerosol adhesives used in the interior of the building highlighting VOC content of each product used. Adhesives and sealants must meet or exceed the VOC limits of SCAQMD Rule #1168. Refer to the LEED 2009 for New Construction and Major Renovations for acceptable VOC limits

- 2) Provide a listing of each indoor adhesive, sealant, sealant primer and aerosol adhesive product used in the interior of the project. Include manufacturer's name, product name, specific VOC data (g/L less water) for each product, and the corresponding allowable VOC from the referenced standard.
- C. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.
  1. Provide cost data for the following products:
    - a. [Salvaged products.]
    - b. [Reused products.]
    - c. Products with recycled material content.
    - d. Regional products.

## 1.07 QUALITY ASSURANCE

- A. Maintain one copy of TCA Handbook and ANSI A108 Series/A118 Series on site.
- B. Material Source: Furnish each type, finish, and color of tile product and accessory materials from one manufacturer
- C. Installer Qualifications: Company specializing in performing tile installation, with minimum of 5 years of documented experience.

## 1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use.
- B. Store and protect materials in compliance with manufacturer's printed instructions.
- C. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.
- D. Do not open containers or remove labels until materials have been inspected and accepted.

## 1.09 SITE CONDITIONS

- A. Ambient Conditions:
  1. Do not install adhesives in an unventilated environment.
  2. Maintain ambient and substrate temperature of 50 degrees F during installation of mortar materials.

## PART 2 PRODUCTS

### 2.01 TILE MATERIALS

- A. Standard for Ceramic Tile:
  1. Comply with ANSI A 137.1 for types, compositions, and grades of tile indicated.
  2. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- B. [Ceramic Wall Tile, Glazed:]
  1. Description:
    - a. Type: Dust-pressed, natural or white clay, non-vitreous.
    - b. Face Size: 4-1/4 by 4-1/4.

- c. Thickness: 5/16 or 3/8 inch nominal.
    - d. Edge: Square or modified square.
  2. Product: Dal Tile Corp.'s "Semi-Gloss Glazed Ceramic Wall Tile"; American Olean Tile Co.'s "Bright"; or equal.
  3. Color and Pattern]: As indicated on Drawings.
- C. [[Mosaic Tile, Unglazed:]]
  1. Description:
    - a. Type: Dust-pressed method, porcelain or natural clay composition, impervious with less than 0.5 percent absorption; stainproof, dentproof, and frostproof.
    - b. Face Size: 2 by 2 inches, nominal.
    - c. Thickness: 1/4 inch nominal.
    - d. Finish: Unglazed.
    - e. Edge: All-purpose.
    - f. Provide floor tile with surfaces that have a skid resistant surface with a coefficient of friction of [0.60] or greater, when tested in accordance with ASTM C1028.
  2. Product: Dal-Tile Corp.'s "Mosaics Floor Tile, Keystone"; or equal.
  3. Color and Pattern]: As indicated on Drawings.
- D. Trim: Same type, color, thickness, face size, and finish as tile specified.
  1. Base: Cove type, unless otherwise indicated, with bullnose top.
  2. Inside Corners: Cove.
  3. Outside Corners: Surface bullnose, unless otherwise noted.

## 2.02 SETTING MATERIALS

- A. [Underlayment:
  1. Description: Trowel grade latex mastic underpayment of polymer modified cementitious filler.
  2. Product: Mer-Kote Products, Inc.'s "Mer-Krete Underlayment-C"; or equal.]
- B. Latex-Portland Cement Mortar, Dry-Set:
  1. Description: Latex additive to dry-set mortar, meeting requirements of ANSI A118.4.
  2. Product: MAPEI Corp.'s "Planicrete 50 and Kerabond"; Laticrete International, Inc.'s "Laticrete 4237 and Laticrete 211"; Mer-Kote Products, Inc.'s "Mer-Krete Thin-Set 700"; or equal.
- C. Adhesive Materials:
  1. Organic Adhesive:
    - a. ANSI A136.1; water-resistant type; certified by manufacturer as proper for purpose intended.
    - b. [Sealant to have VOC content of less than or equal to 35 g/L.]
    - c. [Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.]
  2. Neutralizers, Primers, Sealers: As recommended by adhesive manufacturer.

## 2.03 GROUTING MATERIALS

- A. [For Glazed Wall Tile:]
  1. Description:
    - a. Type: Non-staining, self curing, non-sanded, dry tile grout composed of high quality cement and special additives.
    - b. Standard: Meet requirements of ANSI A118.6.
  2. Product: MAPEI Corp.'s "Kera 800"; Bostik's "Dry Tile Grout With Hydroment Multi-Purpose Acrylic Latex No. 425"; Laticrete International, Inc.'s "Laticrete 600 Series with 1776 Latex Grout Admix Plus"; or equal.

3. Color and Pattern]: As indicated on Drawings.
- B. [For Mosaic Tile:]
  1. Description:
    - a. Type: Commercial grout requiring only addition of water; composed of quartz aggregate, Portland cement, water retaining agents, and color fast pigments.
    - b. Standard: Meet requirements of ANSI A118.6.
  2. Product: MAPEI Corp.'s "Kera 200"; Bostik's "Hydroment Ceramic Tile Grout With Hydroment Multi-Purpose Acrylic Latex No. 425"; Laticrete International, Inc.'s "Laticrete 1500 Series with 1776 Latex Grout Admix Plus"; or equal.
  3. Color and Pattern]: As indicated on Drawings.

## 2.04 MISCELLANEOUS MATERIALS

- A. Expansion Joint Filler: Preformed closed-cell foam polyethylene or butyl rubber; minimum 1/8 inch to maximum 1/4 inch width.
- B. Expansion Joint Sealant: Multi-part polyurethane or mildew-resistant sealant including back-up and bond-breaker materials necessary; certified by manufacturer as proper for purpose intended.
- C. Acoustical Caulking:
  1. Description: Permanently resilient, nonstaining type.
  2. Product: The Tremco Mfg. Co.'s "Tremco Acoustical Sealant"; Pecora Corp.'s "AC-20 FTR Acoustical Sealant"; or equal.
- D. Water: Clean and potable, free from impurities detrimental to tile work.
- E. Divider Strips:
  1. Product: [Plastic,]—~~or~~—[Brass,]—~~or~~—[\_\_\_\_\_], types as noted.
  2. Manufacturer: Schluter Systems; Manhattan American Terrazzo Strip Co.; Rudel Floor Strip Co.; or equal.

## 2.05 MIXES

- A. Setting Bed Materials: Mix in accordance with applicable TCA or ANSI Standards, or, where manufacturer is cited, its recommendations.
- B. Grouting Materials: Mix in accordance with manufacturer's printed instructions.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Examine surfaces to receive tile and verify that:
  1. Surfaces are free of defects that would adversely affect tile work.
  2. Surfaces are firm, level or plumb, dry, clean and free of oily or waxy film.
  3. Inserts, accessories, plumbing, membranes, and similar items are placed or provided for.
- B. Do not start work until unsatisfactory conditions are corrected.

### 3.02 PREPARATION

- A. Protection of In-Place Conditions: Protect surrounding work from damage before tile work begins.
- B. Lay-Out:
  - 1. Lay tile to pattern indicated.
  - 2. Center fields and patterns on areas so that no tile is less than half size; locate cuts where least conspicuous.
  - 3. Unless noted otherwise, make joints in wall tile vertical and horizontal. Precisely locate expansion joints and accessories before tile is installed.
  - 4. Coordinate jointing in floor and wall tile whenever possible.
  - 5. Do not interrupt tile pattern through openings.
  - 6. Where heights of tile are stated in feet and inches and unless otherwise noted, maintain full courses to nearest attainable height.
  - 7. Lay out tile wainscots to next full tile beyond dimension indicated.
- C. Preparation of Surfaces:
  - 1. Vacuum clean surfaces and damp clean.
  - 2. Seal substrate surface cracks with filler.
  - 3. Otherwise conform to requirements corresponding to tile installation method specified below.
  - 4. [Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer' printed instructions.]
  - 5. [Level existing substrate surface to acceptable flatness tolerances.]
- D. Illuminate the work area during installation, providing the same level and angle of illumination as will be available for final inspection.

### 3.03 INSTALLATION - GENERAL

- A. Set tile with uniform joints. Align joints both vertically and horizontally; no staggered joints will be permitted. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
  - 1. Set ceramic wall tile with 1/16 inch wide joint unless otherwise indicated.
  - 2. Set mosaic tile with 1/8 inch wide joint unless otherwise indicated.
- B. Cut and drill tile and trim shapes accurately without damage. Rub exposed cut edges smooth to bring edge of glaze slightly back from body of tile.
- C. Grind and fit tile carefully at intersections against trim finish and at built-in fixtures and accessories. Fit tile closely around outlets, pipes, fixtures, and fittings so that plates, escutcheons, and collars overlap cuts.
- D. Form internal angles coved and external angles bullnose unless otherwise indicated.
- E. Extend tile work into recesses and under equipment and fixtures, to form a complete covering without interruptions.
  - 1. Terminate work neatly at obstructions, edges, and corners without disruption of pattern or joint alignment.
  - 2. Terminate tile at centerlines of doors unless otherwise indicated on the Drawings.
- F. Sound tile after setting. Replace hollow sounding units.

### 3.04 [TILE BACKER BOARD

- A. [Glass Mat Tile Backer Board:

1. Fill all joints and corners with tile setting mortar or adhesive and then immediately embed joint tape and level the joints.
2. Allow joints and corners to dry prior to installing tile systems.]

B. [Cementitious Backer Units:

1. Apply joint tape to both joints and corners and butt-bond with latex Portland cement bond coat.
2. Fill all joints with tile setting mortar or adhesive and then immediately embed joint tape and level the joints.]

**3.05 [INSTALLATION OF TILE IN DRY-SET PORTLAND CEMENT MORTAR]**

- A. Meet requirements of ANSI A108.5.
- B. Walls: Apply brown or float leveling coat of Portland cement plaster over scratch coat in accordance with ASTM C926. Make total thickness of brown and scratch coats 3/4 inch.
- C. Finish surface true, even, without waves, cracks, or imperfections. Limit surface tolerance to 5/16 inch in 10 feet with maximum inward and maximum outward allowance not occurring in less than 20 feet.
- D. Do not add lightweight aggregates to dry-set mortar. Follow manufacturer's directions exactly. Do not dilute or extend mix with cement, admixtures, lime, flour, marble dust, or other fillers. Do not use any more water than manufacturer recommends.
- E. Firmly embed tile into dry-set mortar with finished surfaces brought to true and level planes. Use proper size notched trowel to obtain nominal 1/8 inch bed thickness.

**3.06 [INSTALLATION OF WALL TILE IN ADHESIVE]**

- A. Meet requirements of ANSI A108.4.
- B. Thoroughly neutralize, prime, and seal base conditions.
- C. Apply adhesive with trowel of type recommended by adhesive manufacturer and in accordance with recommendations for application of adhesive manufacturer.
- D. Cover surface completely and evenly with thin layer of adhesive. Do not allow area covered in one application to exceed maximum working area recommended by manufacturer. If adhesive film dries before tile is applied, scrape off and apply fresh adhesive.
- E. During installation, provide safely operating sparkproof fans where natural ventilation is inadequate; prohibit smoking where flammable adhesives are used.

**3.07 JOINT TREATMENT**

- A. Grouting of joints to meet requirements of ANSI A108.10.
- B. Sealant-Filled Joints: Provide expansion, control, and isolation joints where indicated on Drawings. Saw-cut joints are unacceptable.
  1. Keep joints free of adhesive or grout.
  2. Locate joints to coincide with control joints in substrate.
- C. Allow at least 24 hours to elapse before grouting to permit solvents of adhesive material to escape.

- D. Thoroughly brush and wash out joints; saturate with clean water before grouting where required.
- E. Fill entire depth of joints with grout.
- F. Grout square edge tile joints flush with face of tile making neatly finished smooth surface.
- G. Grout joints of other than square edge tiles to full depth; then remove grout to expose modified edges.
- H. Take precautions to prevent staining of grouted joints.
- I. At wall outlets, pipes, and fittings, caulk with acoustical caulking. Do not grout.
- J. Use expansion joint sealant at perimeter of tile field, at intersections with columns and posts, at maximum dimension as indicated TCA in both directions in large field areas, where noted, and where obstructions occur; match color of sealant to pointing grout.
- K. In all other respects, follow grout manufacturer's recommendations exactly.

### **3.08 CLEANING**

- A. Remove latex-portland cement grout residue from tile as soon as possible.
- B. Remove cement and grout stains in accordance with manufacturer's recommendations.
- C. Clean entire tile installation with neutral, non-alkaline chemical cleaner free from lye or caustics.
  - 1. Use of acid or acid containing cleaners will not be permitted.
  - 2. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from the cleaning solvent.
- D. Thoroughly scrub with water and burlap sacks; remove cement and grout stains in accordance with manufacturer's recommendations.
- E. Polish tile surfaces with soft cloth.

### **3.09 PROTECTION OF INSTALLED WORK**

- A. Protect installed Work under provisions of Section 01 76 00 - Protecting Installed Work.
- B. Protect adjoining work surfaces before tile work begins.
  - 1. Prohibit traffic over floors for a minimum of seven days.
  - 2. Remove protection, rinse, and dry tile installations before final review and acceptance.
- C. Provide protection and maintain in an acceptable manner until Substantial Completion.
- D. Prior to final acceptance, remove protective coverings and clean as specified herein.

**END OF SECTION**