

SECTION 09 3033

STONE TILING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Dimension stone tile.
2. Waterproof membrane for tile installations.
3. Crack-suppression membrane for thin-set tile installations.

B. Related Documents and Sections: Examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Other Documents and Sections that directly relate to work of this Section include, but are not limited to:

1. General provisions of the Contract, including General and Supplementary Conditions, and Division 01 General Requirements Specification Sections.
2. Section 07 9000 - JOINT SEALANTS.
3. Section 09 2116 - GYPSUM BOARD ASSEMBLIES.
4. Section 09 3000 – TILING.

1.2 DEFINITIONS

A. Dimension Stone Tile: Modular stone units less than 3/4 inch (19 mm) thick.

B. Module Size: Actual tile size plus joint width.

C. Polished Finish: Smooth surface that produces sharp, mirrorlike reflections. Reflected images of overhead fluorescent tubes have straight lines without visible distortion when viewed at arm's length.

D. Honed Finish: Smooth, nonreflective surface similar to that produced by grinding with a 400- to 1200-grit abrasive; with a gap not exceeding 0.005 inch when faces are tested for flatness with a 24-inch straightedge.

E. Sand-Rubbed Finish: Uniform, fine-textured surface similar to that produced by grinding with a 40-grit abrasive; with a gap not exceeding 1/32 inch when faces are tested for flatness with a 24-inch straightedge.

F. Thermal Finish: Uniform, coarse-textured surface produced by thermal shock; with a gap not exceeding 3/16 inch when faces are tested for flatness with a 24-inch straightedge.

G. Natural-Cleft Finish: Uneven surface produced by splitting stone along a natural cleavage plane; without visible tool marks and with a gap not exceeding 3/16 inch (5 mm) when faces are tested for flatness with a 24-inch (600-mm) straightedge.

1.3 SUBMITTALS

A. Submittal Compliance Form: In lieu of product data and samples, for products where Specifications or Drawings indicate product name/number and color, texture, pattern, and other complete selection information, Contractor may certify using Document 01 3330 "Submittal Compliance Form" included in this Project Manual, that the product is being submitted exactly as

indicated and that no substitution or comparable product will be used, not even from another listed manufacturer.

1. Fill in the information required for the "Submittal Compliance Form" and include as a line-item on the Submittal Cover Sheet for each applicable Submittal.
2. Upon receipt, the Architect will complete the form in the space below "Architect Action" and indicate the Action on the Submittal Cover Sheet.
3. Procedures and processing time are the same as indicated for other Action submittals.

B. Product Data: For each type of product indicated.

C. Samples:

1. 4" x 4" sample of each tile.
2. Full-size units of each type of trim and accessory for each color and finish required.
3. Metal edge and transition strips in 6-inch lengths.
4. Grout samples in aluminum channels, minimum 6 inch length.

1.4 QUALITY ASSURANCE

A. The following items are required for quality assurance, and shall be made available to the Architect if requested:

1. Qualification Data: For Installer.

B. Supplier Qualifications: A firm experienced in supplying products similar to those indicated for the Project and with a record of successful in-service performance.

C. Source Limitations for Stone Tile: Obtain each stone product type through single source from single producer.

1. For each stone product type, provide one stone variety.
2. Where two or more stone product types are identical except for size or finish, provide same variety for each type.
3. Obtain each variety of stone from same location in a single quarry with resources to provide materials of consistent quality in appearance and physical properties.

D. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of stone wall tile installation.
2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 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 stone tile and cementitious materials on elevated platforms, under cover, and in a dry location.

- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install stone 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.

PART 2 PRODUCTS

2.1 STONE PRODUCTS

- A. Provide stone products that are free of defects impairing their function for use indicated, including cracks, seams, and starts.
- B. Stone Tile Types:
 - 1. Refer to Section 09 0600.

2.2 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.

2.3 FLUID-APPLIED WATERPROOFING MEMBRANE

- A. Waterproofing / Crack Isolation Membrane: ANSI A118.10 and ANSI A118.12.
 - 1. Liquid-Applied: ASTM C627 Performance Rating: Extra Heavy.
 - a. Product: Laticrete / Hydroban.

2.4 SETTING MATERIALS

- A. Factory-Blended Mortar Mixes, for Thin-set Mortar:
 - 1. Description:
 - a. Factory blended mortar mixes consisting of portland cement, sand and additives, complying with ANSI 118.4.
 - b. Provide with latex additive in lieu of water.
 - 2. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following.
 - a. Bostik; Hydroment Tile-Mate.
 - b. Laticrete International, Inc.; Laticrete 272.
 - c. Mapei; Kerabond.
 - d. TEC; Full Set or Full Set Plus Premium.
- B. Portland Cement: ASTM C150, Type I.
- C. Sand: ASTM C144.
- D. Liquid Latex Additives:

1. General:
 - a. Acrylic or SBR latex additives to be mixed with mortar or grout in lieu of all or part of water.
 - b. Grout and latex additive shall be products of same manufacturer.

E. Water: Clean and potable, free from injurious impurities.

F. Cementitious Grout: ANSI A118.7:

G. Standard Cement Grout: ANSI A118.6.

2.5 ELASTOMERIC SEALANTS

A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Section 07 9200 - JOINT SEALANTS and that do not stain stone.

1. Sealants shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D.
2. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.
3. Colors: Provide colors of exposed sealants to match colors of grout in stone tile adjoining sealed joints unless otherwise indicated.

B. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior stone tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. GE Silicones, a division of GE Specialty Materials; Sanitary 1700.
 - b. Laticrete International, Inc.; Latasil Tile & Stone Sealant.
 - c. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.

2.6 MISCELLANEOUS MATERIALS

A. Cleaner: A neutral cleaner capable of removing soil and residue without harming stone tile and grout surfaces, specifically approved for materials and installations indicated by stone tile producers and grout manufacturers.

B. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

2.7 FABRICATION

A. Facial Dimensions of Stone Tiles with Natural-Cleft Faces: Do not vary facial dimensions from specified dimensions by more than plus or minus 1/32 inch.

B. Thickness of Stone Tiles with Natural-Cleft Finish: Do not vary average thickness of each stone tile from specified thickness by more than plus or minus 1/16 inch.

C. Joint Surfaces: Except for specified beveled or eased edges if any, dress joint surfaces square for full depth of stone tile.

D. Backs of Pieces: Gage units by dressing backs of pieces smooth and flat. When tested with a 24-inch straightedge, gap shall not exceed 1/32 inch.

1. Natural-cleft stone need not be gaged if gap does not exceed 1/16 inch when tested with a 24-inch straightedge on backs of units.

2.8 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and with mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. 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

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where stone tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed stone tile.
 1. Verify that substrates for setting stone tile are firm, dry, clean, and free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone, and that they comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind stone tile has been completed.
 3. Verify that joints and cracks in stone tile substrates are coordinated with stone tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Lay out stone tile patterns by marking joint lines on substrates to verify joint placement at edges, corners, doors, and other critical elements.
 1. Notify Architect seven days in advance of dates and times when layout will be done.
 2. Obtain Architect's approval of layout before starting stone tile installation.

3.3 WATERPROOFING AND CRACK-SUPPRESSION MEMBRANE INSTALLATION

- A. Install waterproofing to comply with ANSI A108.13 and waterproofing manufacturer's written instructions to produce waterproof membrane of uniform thickness bonded securely to substrate.
- B. Install crack-suppression membrane to comply with manufacturer's written instructions to produce membrane of uniform thickness bonded securely to substrate.
- C. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.4 STONE TILE INSTALLATION

- A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in stone tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for

Installation of Ceramic Tile" that are referenced in TCA installation methods specified in stone tile installation schedules, and apply to types of setting and grouting materials used.

- B. Wipe backs of stone tiles with a damp cloth to remove dirt and dust before units are installed.
- C. Accurately form intersections and returns. Perform cutting and drilling of stone tile without marring visible surfaces. Carefully grind cut edges of stone tile abutting trim, finish, or built-in items for straight aligned joints. Fit stone tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap stone tile.
- D. Finish cut stone tile edges that will not be concealed by other construction by grinding and honing cut surfaces and easing edges to match factory-fabricated edges unless otherwise indicated.
- E. Mix stone tiles to achieve a uniformly random distribution of color shadings and patterns.
- F. Pattern Orientation: For stone varieties with directional pattern, orient pattern as directed by Architect.

3.5 INSTALLATION TOLERANCES

- A. Variation from Plumb: For vertical joints, external corners, and other conspicuous lines, do not exceed 1/8 inch in 8 feet.
- B. Variation in Level: For horizontal joints and other conspicuous lines, do not exceed 1/8 inch in 10 feet, or 1/2 inch maximum.
- C. Variation in Joint Width: Do not vary joint thickness more than 1/16 inch or one-fourth of nominal joint width, whichever is less.
- D. Hand-Tight Joints: Do not exceed 1/32 inch.

3.6 ADJUSTING AND CLEANING

- A. Remove and replace material that is stained or otherwise damaged or that does not match adjoining stone tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean stone tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from stone tile as soon as possible.
 - 2. Clean grout smears and haze from stone tile according to stone tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by stone tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of stone 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.

END OF SECTION