

SECTION 09385 - DIMENSION STONE TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Dimension stone tile and related setting materials applied to floors and walls.
2. Stone thresholds.
3. Cementitious backer units installed as part of dimension stone tile installation.
4. Sealants for sealing joints in stone tile with elasometric substrates.

- B. Related Sections include the following:

1. Division 3 Section "Cast-in-Place Concrete" for monolithic slab finishes specified for tile substrates.
2. Division 9 "Ceramic Tile" for waterproof / crack-suppression membrane for thin set installation.

1.3 DEFINITIONS

- A. Dimension Stone Tile: Modular stone units less than 3/4 inch thick.
- B. Module Size: Actual tile size plus joint width.
- C. 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, when faces are tested for flatness with a 24-inch straightedge.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show locations of each type of stone tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in substrates and finished stone tile surfaces. Show stone thresholds.

- C. Samples for Initial Selection: For each type of grout indicated and accessories involving color selection.
- D. Samples for Verification:
 - 1. Full-size units of each type of stone tile in each finish required.
 - 2. Assembled Samples with grouted joints for each type of stone tile and for each finish required, at least 36 inches square and mounted on a rigid panel. Use grout of type and in color(s) approved for completed Work.
 - 3. Range Samples consisting of at least four full-size units of each type of stone tile, exhibiting extremes of the full range of color and other visual characteristics expected. Range Samples establish the standard by which individual tiles and thresholds will be judged.
 - 4. Stone thresholds in 6-inch lengths.
- E. Qualification Data: For Installer.
- F. Maintenance Data: For dimension stone tile to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Supplier Qualifications: A firm experienced in supplying products similar to those indicated for the Project and with a record of successful in-service performance.
- B. Source Limitations for Stone Tile and Thresholds: Obtain each type of stone product through one source from a single producer.
 - 1. Obtain each variety of stone, regardless of product, size, and finish, from same location in a single quarry with resources to provide materials of consistent quality in appearance and physical properties.
- C. Source Limitations for Setting and Grouting Materials: Obtain each type of manufactured product through one source from a single manufacturer.
 - 1. For aggregates added at Project site, obtain from one source or producer.
- D. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer:
 - 1. Joint sealants.
 - 2. Cementitious backer units.
 - 3. Metal edge strips.
- 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 each type of floor tile installation.
 - 2. Build mockup of each type of wall tile installation.

3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in factory wrappings, clearly labeled with identification of manufacturer and lot number.

B. Store 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 avoided.

D. Store liquid latexes and emulsion adhesives in unopened containers and protected from freezing.

1.7 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.

1.8 SEQUENCING AND SCHEDULING

A. Sequence stone tile installation with other work to minimize possibility of damage and soiling during remainder of construction period.

B. Install stone tile and accessories only after other finishing operations, including painting, have been completed.

1.9 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. Dimension Stone Tile: 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

2.1 STONE PRODUCTS

- A. Available Varieties and Sources: Subject to compliance with requirements, stone varieties that may be incorporated into the Work include, but are not limited to, those indicated.
- B. Varieties and Sources: Subject to compliance with requirements for each stone product type, provide one of the stone varieties indicated.
 - 1. Where two or more stone product types listed in the paragraphs below are identical except for size or finish, provide same variety from same source for each type.
 - 2. Where threshold types are identical to tile types except for size or finish, provide same variety from same source for each type.
- C. Varieties and Sources: Subject to compliance with requirements, provide stone varieties from sources indicated.
- D. Abrasion Resistance: Provide stone with a value of not less than 10, as determined per ASTM C 1353 or ASTM C 241.
- E. Provide stone products that are free of defects impairing their function for use indicated, including cracks, seams, and starts.
- F. Pattern Orientation: For stone varieties with a directional pattern, provide tile with pattern oriented parallel to one side of tile.
 - 1. For stone varieties that exhibit a directional pattern, provide thresholds with pattern oriented parallel to long edges of thresholds.
- G. Stone Tile:
 - 1. Basis of Design Product: The design for each stone tile is based on the product named on the Drawings.
- H. Stone Threshold:
 - 1. Stone Type:Slate, complying with ASTM C 629, Classification II, Interior.

2.2 SETTING AND GROUTING MATERIALS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Atlas Minerals & Chemicals, Inc.
 - 2. Boiardi Products Corporation.
 - 3. Bonsal, W. R., Company.

4. Bostik Findley.
5. C-Cure.
6. Custom Building Products.
7. DAP Inc.
8. Jamo Inc.
9. Laticrete International, Inc.
10. MAPEI Corp.
11. SGM.
12. Summitville Tiles, Inc.
13. TEC Incorporated; H. B. Fuller Company.

B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, consisting of the following:

1. Prepackaged dry-mortar mix containing dry, redispersible, ethylene vinyl acetate additive to which only water must be added at Project site.
2. Prepackaged dry-mortar mix combined with acrylic-resin or styrene-butadiene-rubber liquid-latex additive.
 - a. For wall applications, provide nonsagging mortar that complies with Paragraph F-4.6.1 in addition to other requirements in ANSI A118.4.

C. Polymer-Modified Tile Grout: ANSI A118.7.

1. Polymer Type: Ethylene vinyl acetate, in dry, redispersible form, prepackaged with other dry ingredients.
2. Polymer Type: Acrylic resin or styrene-butadiene rubber in liquid-latex form for addition to prepackaged dry-grout mix.

2.3 ELASTOMERIC SEALANTS

- A. Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated below that comply with applicable requirements in Division 7 Section "Joint Sealants."
 1. Multicomponent, pourable urethane sealant.
 2. Single-component, nonsag urethane sealant.
- B. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

2.4 CEMENTITIOUS BACKER UNITS

- A. Provide cementitious backer units complying with ANSI A118.9 in maximum lengths available to minimize end-to-end butt joints.

1. Thickness: Manufacturer's standard thickness, but not less than 5/8 inch.
 2. Width: Manufacturer's standard width, but not less than 32 inches.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
1. C-Cure; C-Cure Board 990.
 2. Custom Building Products; Wonderboard.
 3. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
 4. USG Corporation; DUROCK Cement Board.

2.5 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. Protective Coating: Liquid grout-release coating that is formulated to protect exposed surfaces of stone tile against adherence of mortar and grout; compatible with stone, mortar, and grout products; easily removable after grouting is completed without damaging grout or stone tile; and recommended for use as temporary protective coating for stone tile.
1. Floor sealer, complying with "Floor Sealer" Paragraph below, may be used provided it is recommended by manufacturer for use as a grout release.
- C. 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.
- D. Floor Sealer: Colorless, slip- and stain-resistant sealer, not affecting color or physical properties of stone surfaces as recommended by stone tile producers for application indicated.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Bostik Findley.
 - b. Custom Building Products.
 - c. Hillyard, Inc.
 - d. HMK Stone Care System.
 - e. Summitville Tiles, Inc.

2.6 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 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 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.
- E. Thresholds: Fabricate to size and profile as indicated or required to provide transition between adjacent floor finishes.
 - 1. Bevel edges of thresholds 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.

2.7 MIXING MORTARS AND GROUTS

- 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

3.1 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 tile.
 - 1. Verify that substrates for setting tile are firm, dry, and 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.

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. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, consult Architect to adjust joint locations.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove surface-applied finishes and adhesives from substrates.
- B. Remove coatings that are incompatible with tile-setting materials from substrates, including curing compounds and other substances that contain soap, wax, oil, or silicone.
- C. For concrete substrates for tile floors installed with thin-set mortar, correct conditions that do not comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
 1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
 2. Remove protrusions, bumps, and ridges by sanding or grinding.
- D. Lay out 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 tile installation.
- E. Lay out tiles on substrates or on an adjacent surface to establish placement of individual tiles for balance of color and pattern variations.
 1. Notify Architect seven days in advance of dates and times when layout will be done.
 2. Architect may relocate specific stones with other stones of same type and will determine final location of each tile within indicated patterns.
 3. Identify each tile with a temporary number marked on face of tile that corresponds with an identical number marked on a layout drawing, and obtain Architect's approval before starting tile installation.
- F. Field-Applied Temporary Protective Coating: Where indicated or needed to prevent grout from staining or adhering to exposed stone tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standards: Comply with requirements of ANSI A108 that apply to types of setting and grouting materials and to methods indicated.

1. For tile floors, follow procedures in ANSI A108 for providing 95 percent mortar coverage.
- B. TCA Installation Guidelines: Comply with TCA's "Handbook for Ceramic Tile Installation" and TCA installation methods indicated.
- C. Wipe backs of tiles with a damp cloth to remove dirt and dust before units are installed.
- D. Where indicated, install cementitious backer units and treat joints to comply with ANSI A108.11 and manufacturer's written instructions for type of application indicated.
- E. 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.
- F. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- G. Finish cut 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.
- H. 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.
- I. Match tiles within each space by selecting tiles to achieve uniformity of color and pattern. Reject or relocate tiles that do not match color and pattern of adjacent tiles.
- J. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 1. Locate joints in tile surfaces directly above joints in concrete substrates.
 2. Prepare joints and apply elastomeric sealants to comply with requirements in Division 7 Section "Joint Sealants."
 3. Use single-component, nonsag urethane sealant for joints in walls.
 4. Use multicomponent, pourable urethane sealant for joints in floors.

3.4 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 1/4 inch in 20 feet, or 1/2 inch maximum.

- C. Variation in Surface Plane of Flooring: Do not exceed 1/8 inch in 10 feet from level or slope indicated when tested with a 10-foot straightedge.
- D. Variation in Plane between Adjacent Units (Lipping): Do not exceed the following differences between faces of adjacent units as measured from a straightedge parallel to tiled surface:
 - 1. Units with Polished Faces: 1/64 inch.
 - 2. Units with Honed Faces: 1/64 inch.
 - 3. Units with Sand-Rubbed Faces: 1/32 inch.
 - 4. Units with Thermal-Finished Faces: Depth of thermal finish or 3/16 inch, whichever is less.
 - 5. Units with Natural-Cleft Faces: Depth of natural-cleft finish or 3/16 inch, whichever is less.
- E. Variation in Joint Width: Do not vary joint thickness more than 1/16 inch or one-fourth of nominal joint width, whichever is less.
- F. Hand-Tight Joints: Do not exceed 1/64 inch.

3.5 ADJUSTING AND CLEANING

- A. Remove and replace material that is stained or otherwise damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Clean stone tiles after setting and grouting is complete; use procedures recommended by stone producer and manufacturer for types of application indicated.
- C. Apply sealer to cleaned stone tile flooring, according to sealer manufacturer's written instructions.

3.6 PROTECTION

- A. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- B. Protect stone tile flooring during construction period with kraft paper or other heavy covering of type that will not stain or discolor stone.
- C. Before inspection for Substantial Completion, remove protective covering and clean surfaces using procedures and materials recommended by grout and stone manufacturers.

3.7 STONE FLOOR TILE INSTALLATION SCHEDULE

- A. Stone Floor Tile Installation: Interior floor installation on concrete; thin-set mortar with crack-suppression membrane; TCA F125A-05 and ANSI A108.5.

1. Stone Tile Type: as indicated on the Drawings.
2. Thin-Set Mortar: Latex- portland cement mortar.
3. Grout: Polymer-modified sanded grout.
4. Grout Color: As selected by Architect from manufacturer's full range.

3.8 STONE WALL TILE INSTALLATION SCHEDULE

- A. Stone Wall Tile Installation: Interior wall installation over cementitious backer units; thin-set mortar; TCA W244 and ANSI A108.5.

1. Stone Tile: as indicated on the Drawings.
2. Thin-Set Mortar: Latex portland cement mortar.
3. Grout: Polymer-modified sanded grout.
4. Grout Color: As selected by Architect from manufacturer's full range.

3.9 STONE THRESHOLD INSTALLATION SCHEDULE

- A. Stone Threshold Installation: Interior installation on concrete; thin-set mortar; TCA F113 and ANSI A108.5.

1. Stone Threshold Type: Marble, as selected by Architect.
2. Thin-Set Mortar: Latex portland cement mortar.

END OF SECTION 09385