SECTION 093013 - CERAMIC TILING

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
	* + 1. RELATED DOCUMENTS
				1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
			2. SUMMARY
				1. Section Includes:

Ceramic mosaic tile.

Quarry tile.

Pressed floor tile.

Porcelain tile.

Glazed wall tile.

Stone thresholds.

Tile backing panels.

Waterproof membrane[**for thinset applications**].

Crack isolation membrane.

Metal edge strips.

* + - * 1. Related Requirements:

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

[**Section 071326 "Self-Adhering Sheet Waterproofing"**] [**Section 071353 "Elastomeric Sheet Waterproofing"**] [**Section 071354 "Thermoplastic Sheet Waterproofing"**] [**Section 071416 "Cold Fluid-Applied Waterproofing"**] for waterproofing under thickset mortar beds.

Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.

Section 090561.13 “Moisture Vapor Emission Control” for membranes that reduce concrete moisture vapor emissions.

Delete first subparagraph below if scratch coat is specified in this Section.

Section 092400 "Cement Plastering" for scratch coat for thickset mortar setting-bed installations.

Delete first subparagraph below if cementitious backer units are specified in this Section. See the Evaluations.

Section 092613 "Gypsum Veneer Plastering" for cementitious backer units.

Delete first option in first subparagraph below if cementitious backer units are specified in this Section. See the Evaluations.

Section 092900 "Gypsum Board" for glass-mat, water-resistant backer board.

Section 093023 "Glass Mosaic Tiling."

Section 093033 "Stone Tiling."

Section 093500 "Chemical-Resistant Tiling."

Delete subparagraph below if stone thresholds are specified in this Section.

Section 096340 "Stone Flooring" for stone thresholds.

* + - 1. DEFINITIONS
				1. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
				2. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."

Retain terms that remain after this Section has been edited for a project. Coordinate with tile sizes used in "Tile Products" Article.

* + - * 1. Face Size: Actual tile size, excluding spacer lugs.
				2. Module Size: Actual tile size plus joint width indicated.
			1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" paragraph below if Work of this Section is extensive or complex enough to justify a conference

Before the work of this Section is scheduled to begin, a conference will be called by the Director's Representative at the site for the purpose of reviewing the Drawings and the Specifications and discussing the requirements for the Work. The conference shall be attended by the Contractor, designer and the tile installerPreinstallation Conference: Conduct conference at Project site.

Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

Required Attendees:

Construction Contractor.

Tiling Subcontractor.

Representative for the Designer of Record.

Director’s Representative.

* + - 1. SUBMITTALS
				1. General: Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Product Data: For each type of product.
				5. Sustainable Design Submittals:

Retain "Shop Drawings" paragraph below if tile installations are complex enough to justify Shop Drawings.

* + - * 1. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
				2. Samples for Initial Selection: For tile, grout, and accessories involving color selection.

Delete "Samples for Initial Selection" paragraph above if colors and other characteristics are preselected and specified or scheduled. Retain "Samples for Verification" paragraph below with or without above. Revise list of Samples below to correspond with products specified.

* + - * 1. Samples for Verification:

Retain one of first two subparagraphs below.

Full-size units of each type and composition of tile and for each color and finish required.[**For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.**]

Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least [**12 inches square**] [**36 inches square**], but not fewer than four tiles. Use grout of type and in color or colors approved for completed Work.

Full-size units of each type of trim and accessory[**for each color and finish required**].

Stone thresholds in 6-inch lengths.

Metal edge strips in 6-inch lengths.

Coordinate "Qualification Data" paragraph below with qualification requirements in "Quality Assurance" Article.

* + - * 1. Qualification Data: For Installer.

Name of each person who will be performing the work, trade certificates, and their employer’s name, business address, and telephone number.

Names and addresses of 3 similar projects that each person has worked on during the past 5 years.

Certificates in "Master Grade Certificates" paragraph below are issued by manufacturers, indicating type and grade of tile according to ANSI A137.1 and that tile complies with this standard. Delete if not required or not available, as may be the case with imported tile.

* + - * 1. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

Retain "Product Certificates" paragraph below to require submittal of product certificates from manufacturers.

* + - * 1. Product Certificates: For each type of product.

 Retain option if needed to establish compliance of products with characteristics specified.

* + - * 1. Product Test Reports: For tile-setting and -grouting products[**and certified porcelain tile**].
				2. Field Quality Control Reports: Results of moisture testing for slabs on grade.
			1. MAINTENANCE MATERIAL SUBMITTALS
				1. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

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.

Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

* + - 1. QUALITY ASSURANCE
				1. Installer Qualifications:

Installer employs only Ceramic Tile Education Foundation Certified Installers or installers recognized by the U.S. Department of Labor as Journeyman Tile Layers for Project.

Installer employs at least one installer for Project that has completed the Advanced Certification for Tile Installers (ACT) certification for installation of [**mud floors**] [**mud walls**] [**membranes**] [**shower receptors**] [**gauged porcelain tile/gauged porcelain tile panels and slabs**] [**and**] [**large format tile**].

* + - * 1. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

Build mockup of each type of floor tile installation.

Build mockup of each type of wall tile installation.

Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

* + - 1. DELIVERY, STORAGE, AND HANDLING
				1. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
				2. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
				3. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
				4. Store liquid materials in unopened containers and protected from freezing.
			2. FIELD CONDITIONS
				1. 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. PRODUCTS

Manufacturers and products listed in SpecAgent and MasterWorks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. MANUFACTURERS
				1. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.

Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

* + - * 1. 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.

Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.

Obtain waterproof membrane and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.

* + - * 1. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:

Stone thresholds.

Waterproof membrane.

Crack isolation membrane.

Cementitious backer units.

Metal edge strips.

* + - 1. PRODUCTS, GENERAL

Revise or delete "ANSI Ceramic Tile Standard" paragraph below if another standard is used to specify tile products.

* + - * 1. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
				2. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
				3. Factory Blending: For tile exhibiting color variations within ranges, 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.
				4. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

Retain subparagraph below if tile is used in swimming pools, on exteriors, or in wet areas. According to ANSI A137.1, manufacturers must specify whether back- or edge-mounted tile assemblies are suitable for these installations, because mounting materials decrease contact area of setting material to tile, and mounting materials may not be as strong or as waterproof as setting materials.

Where tile is indicated for installation [**in swimming pools**] [**on exteriors**] [**or**] [**in wet areas**], do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

* + - 1. TILE PRODUCTS

Copy paragraphs below and re-edit for each type of tile required. Insert number to complete drawing designation. Use these designations on Drawings to show where each ceramic tile type is required.

Descriptions used in ceramic tile type paragraphs below are based on categories and requirements in ANSI A137.1. Note that categories do not necessarily coincide with applications (e.g., pressed floor tile can be used for applications other than floors, and glazed wall tile can be used for applications other than walls, although glazed wall tiles may be unsuitable for some applications). See the Evaluations. If tile is required that does not fit any category, it can be described as "specialty tile," and additional ceramic tile type paragraphs can be inserted to specify requirements.

* + - * 1. Ceramic Tile Type[**CT-**<**#**>]: Factory-mounted [**unglazed**] [**glazed**] ceramic mosaic tile.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=273) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[American Olean; a division of Dal-Tile Corporation](http://www.specagent.com/Lookup?uid=123457137980).

[Daltile](http://www.specagent.com/Lookup?uid=123457137982).

[Seneca Tiles, Inc](http://www.specagent.com/Lookup?uid=123457137988).

Approved equivalent.

The terms "porcelain" and "natural clay" describe the basic material that the tile is made of and have nothing to do with color. See the Evaluations. Note that if a manufacturer does not state that the tile is porcelain, it probably is not. Porcelain is the best type of tile (most durable and better color tone) at slightly higher cost.

Composition: [**Porcelain**] [**Impervious natural clay or porcelain**] [**Vitreous or impervious natural clay or porcelain**].

Retain "Certification" subparagraph below if applicable. Not all tile that is called "porcelain" complies with requirements of ANSI A137.1 for porcelain tile. The Porcelain Tile Certification Agency is a joint effort of the Ceramic Tile Distributors Association and TCNA to verify the properties of tile that is advertised as porcelain.

Certification: Porcelain tile certified by the Porcelain Tile Certification Agency.

Module Size: [**1 by 1 inch**] [**1 by 2 inches**] [**2 by 2 inches**].

Thickness: 1/4 inch.

Face: [**Plain**] [**Pattern of design indicated,**] with cushion edges.

Retain "Surface" subparagraph below for unglazed tile.

Surface: [**Smooth, without**] [**Slip resistant, with**] abrasive admixture.

Retain "Dynamic Coefficient of Friction" subparagraph below if required; ANSI A137.1 includes requirement below for tile used on surfaces of "commercial spaces that will be regularly walked on when wet."

Dynamic Coefficient of Friction: Not less than 0.42.

Retain "Finish" subparagraph below for glazed tile. Descriptions are defined in ASTM C242. All glazes may not be available in or suitable for this tile type.

Finish: [**Bright, opaque**] [**Bright, clear**] [**Mat, opaque**] [**Mat, clear**] [**Semimat, opaque**] [**Semimat, clear**] [**Vellum, opaque**] [**Vellum, clear**] [**Crystalline**] glaze.

Tile Color and Pattern: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

Grout Color: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

If trim units do not match adjoining flat tile, copy and re-edit "Trim Units" subparagraph below separately for trim units, deleting option.

Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable[**and matching characteristics of adjoining flat tile**]. Provide shapes as follows, selected from manufacturer's standard shapes:

Retain shape requirements from options in subparagraphs below that suit installation methods. Revise or supplement subparagraphs to suit Project.

Base Cove: Cove, module size [**1 by 1 inch**] [**2 by 1 inch**].

Base Cap for Portland Cement Mortar Installations: Bead (bullnose), module size [**1 by 1 inch**] [**2 by 1 inch**].

Base Cap for Thinset Mortar Installations: Surface bullnose, module size [**1 by 1 inch**] [**2 by 1 inch**] [**2 by 2 inches**].

Wainscot Cap for Portland Cement Mortar Installations: Bead (bullnose), module size [**1 by 1 inch**] [**2 by 1 inch**].

Wainscot Cap for Thinset Mortar Installations: Surface bullnose, module size [**1 by 1 inch**] [**2 by 1 inch**] [**2 by 2 inches**].

Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.

External Corners for Portland Cement Mortar Installations: Bead (bullnose), module size [**1 by 1 inch**] [**2 by 1 inch**].

External Corners for Thinset Mortar Installations: Surface bullnose, module size [**1 by 1 inch**] [**2 by 1 inch**] [**2 by 2 inches**].

Retain one of two "Internal Corners" subparagraphs below if required.

Internal Corners: Cove, module size [**1 by 1 inch**] [**2 by 1 inch**].

Internal Corners: Field-butted square corners. For coved base and cap, use angle pieces designed to fit with stretcher shapes.

Units in "Tapered Transition Tile" subparagraph below are available from some manufacturers. Before retaining, verify availability with manufacturers.

Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.

Insert other shapes if required.

* + - * 1. Ceramic Tile Type[**CT-**<**#**>]: [**Unglazed**] [**Glazed**] square-edged quarry tile.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=274) Subject to compliance with requirements, provide products by one of the following:

[Daltile](http://www.specagent.com/Lookup?uid=123457137994).

[Metropolitan Ceramics](http://www.specagent.com/Lookup?uid=123457138000).

[Summitville Tiles, Inc](http://www.specagent.com/Lookup?uid=123457138004).

Approved equivalent.

Face Size: [**3 by 3 inches**] [**4 by 4 inches**] [**6 by 3 inches**] [**6 by 6 inches**] [**8 by 3-7/8 inches**] [**8 by 8 inches**].

Thickness: [**3/8 inch**] [**1/2 inch**] [**3/4 inch**].

Retain "Wearing Surface" subparagraph below for unglazed tile. If striated surface or raised pattern is required, insert description.

Wearing Surface: [**Nonabrasive, smooth**] [**Abrasive aggregate embedded in surface**].

Retain "Dynamic Coefficient of Friction" subparagraph below if required; ANSI A137.1 includes requirement below for tile used on surfaces of "commercial spaces that will be regularly walked on when wet."

Dynamic Coefficient of Friction: Not less than 0.42.

Retain "Finish" subparagraph below for glazed tile. Descriptions are defined in ASTM C242. All glazes may not be available in or suitable for this tile type.

Finish: [**Bright, opaque**] [**Bright, clear**] [**Mat, opaque**] [**Mat, clear**] [**Semimat, opaque**] [**Semimat, clear**] [**Vellum, opaque**] [**Vellum, clear**] [**Crystalline**] glaze.

Tile Color and Pattern: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

Grout Color: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

If trim units do not match adjoining flat tile, copy and re-edit this "Ceramic Tile Type" paragraph separately for trim units, deleting option in "Trim Units" subparagraph below.

Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

Retain shape requirements from options in subparagraphs below that suit installation methods. Revise or supplement subparagraphs to suit Project.

Base: Coved[**with surface bullnose top edge**], face size [**6 by 6 inches**] [**8 by 3-7/8 inches**].

Wainscot Cap: Surface bullnose, face size [**6 by 6 inches**] [**8 by 3-7/8 inches**].

Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.

Insert other shapes if required. Pressed floor tile used to be called Paver tile.

* + - * 1. Ceramic Tile Type[**CT-**<**#**>]: [**Unglazed**] [**Glazed**] pressed floor tile.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9319) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[American Marazzi Tile, Inc](http://www.specagent.com/Lookup?uid=123457138010).

[American Olean; a division of Dal-Tile Corporation](http://www.specagent.com/Lookup?uid=123457138011).

[Daltile](http://www.specagent.com/Lookup?uid=123457138012).

Approved equivalent.

The terms "porcelain" and "natural clay" describe the basic material that the tile is made of and have nothing to do with color. See the Evaluations. Note that if a manufacturer does not state that the tile is porcelain, it probably is not.

Composition: [**Impervious natural clay or porcelain**] [**Vitreous or impervious natural clay or porcelain**] [**Natural clay or porcelain**].

Face Size: [**3 by 3 inches**] [**4 by 4 inches**] [**6 by 6 inches**] [**7-3/4 by 3-7/8 inches**] [**7-7/8 by 7-7/8 inches**] [**11-13/16 by 11-13/16 inches**] [**165 by 333 mm**] [**200 by 250 mm**] [**250 by 250 mm**] [**333 by 333 mm**] [**400 by 400 mm**].

Retain "Face Size Variation" subparagraph below if required for narrow joints. Calibrated tiles are sorted by the manufacturer to reduce face size variation; rectified tiles have their edges ground to minimize face size variation. See the Evaluations.

Face Size Variation: [**Calibrated or rectified**] [**Rectified**].

Thickness: [**1/4 inch**] [**3/8 inch**] [**1/2 inch**].

Face: [**Plain with square or cushion edges**] [**Plain with square edges**] [**Plain with cushion edges**] [**Pattern of design indicated, with square or cushion edges**] [**As indicated**].

Retain "Dynamic Coefficient of Friction" subparagraph below if required; ANSI A137.1 includes requirement below for tile used on surfaces of "commercial spaces that will be regularly walked on when wet."

Dynamic Coefficient of Friction: Not less than 0.42.

Retain "Glaze" subparagraph below for glazed tile. Descriptions are defined in ASTM C242. All glazes may not be available in or suitable for this tile type.

Glaze: [**Bright, opaque**] [**Bright, clear**] [**Mat, opaque**] [**Mat, clear**] [**Semimat, opaque**] [**Semimat, clear**] [**Vellum, opaque**] [**Vellum, clear**] [**Crystalline**].

Tile Color and Pattern: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

Grout Color: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

Verify availability before retaining "Trim Units" subparagraph below. If trim units do not match adjoining flat tile, copy and re-edit this "Ceramic Tile Type" paragraph separately for trim units, deleting option below.

Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

Retain shape requirements from options in subparagraphs below that suit installation methods. Verify availability of specific shapes before retaining any of 11 subparagraphs below. Revise or supplement subparagraphs to suit Project.

Base Cove: Cove, module size [**same as adjoining flat tile**].

Base Cap for Portland Cement Mortar Installations: Bead (bullnose), module size [**same as adjoining flat tile**].

Base Cap for Thinset Mortar Installations: Surface bullnose, module size [**same as adjoining flat tile**].

Wainscot Cap for Portland Cement Mortar Installations: Bead (bullnose), module size [**same as adjoining flat tile**].

Wainscot Cap for Thinset Mortar Installations: Surface bullnose, module size [**same as adjoining flat tile**].

Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.

External Corners for Portland Cement Mortar Installations: Bead (bullnose), module size [**same as adjoining flat tile**].

External Corners for Thinset Mortar Installations: Surface bullnose, module size [**same as adjoining flat tile**].

Retain one of two "Internal Corners" subparagraphs below if required.

Internal Corners: Cove, module size [**same as adjoining flat tile**].

Internal Corners: Field-butted square corners. For coved base and cap, use angle pieces designed to fit with stretcher shapes.

Units in "Tapered Transition Tile" subparagraph below are available from some manufacturers. Before retaining, verify availability with manufacturers.

Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.

Insert requirements for trim units after verifying availability with manufacturers.

* + - * 1. Ceramic Tile Type[**CT-**<**#**>]: [**Unglazed**] [**Glazed**] porcelain tile.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9320) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[American Marazzi Tile, Inc](http://www.specagent.com/Lookup?uid=123457138020).

[American Olean; a division of Dal-Tile Corporation](http://www.specagent.com/Lookup?uid=123457138021).

[Daltile](http://www.specagent.com/Lookup?uid=123457138023).

Approved equivalent.

Retain "Certification" subparagraph below if applicable. Not all tile that is called "porcelain" complies with requirements of ANSI A137.1 for porcelain tile. The Porcelain Tile Certification Agency is a joint effort of the Ceramic Tile Distributors Association and TCNA to verify the properties of tile that is advertised as porcelain.

Certification: Tile certified by the Porcelain Tile Certification Agency.

Face Size: [**3 by 3 inches**] [**4 by 4 inches**] [**6 by 6 inches**] [**7-3/4 by 3-7/8 inches**] [**7-7/8 by 7-7/8 inches**] [**11-13/16 by 11-13/16 inches**] [**165 by 333 mm**] [**200 by 250 mm**] [**250 by 250 mm**] [**333 by 333 mm**] [**400 by 400 mm**].

Retain "Face Size Variation" subparagraph below if required for narrow joints. Rectified tiles have their edges ground to minimize face size variation. See the Evaluations.

Face Size Variation: Rectified.

Thickness: [**1/4 inch**] [**3/8 inch**] [**1/2 inch**].

Face: [**Plain with square or cushion edges**] [**Plain with square edges**] [**Plain with cushion edges**] [**Polished with square edges**] [**As indicated**].

Retain "Dynamic Coefficient of Friction" subparagraph below if required; ANSI A137.1 includes requirement below for tile used on surfaces of "commercial spaces that will be regularly walked on when wet."

Dynamic Coefficient of Friction: Not less than 0.42.

Tile Color, Glaze, and Pattern: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

Grout Color: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

Verify availability before retaining "Trim Units" subparagraph below. If trim units do not match adjoining flat tile, copy and re-edit this "Ceramic Tile Type" paragraph separately for trim units, deleting option below.

Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable[**and matching characteristics of adjoining flat tile**]. Provide shapes as follows, selected from manufacturer's standard shapes:

Retain shape requirements from options in subparagraphs below that suit installation methods. Verify availability of specific shapes before retaining any of six subparagraphs below. Revise or supplement subparagraphs to suit Project.

Base Cap: Surface bullnose, module size [**same as adjoining flat tile**].

Wainscot Cap: Surface bullnose, module size [**same as adjoining flat tile**].

Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.

External Corners: Surface bullnose, module size [**same as adjoining flat tile**].

Internal Corners: Field-butted square corners.

Units in "Tapered Transition Tile" subparagraph below are available from some manufacturers. Before retaining, verify availability with manufacturers.

Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.

Insert requirements for trim units after verifying availability with manufacturers.

* + - * 1. Ceramic Tile Type[**CT-**<**#**>]: Glazed wall tile.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9322) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[American Marazzi Tile, Inc](http://www.specagent.com/Lookup?uid=123457138032).

[American Olean; a division of Dal-Tile Corporation](http://www.specagent.com/Lookup?uid=123457138033).

[Daltile](http://www.specagent.com/Lookup?uid=123457138034).

Approved equivalent.

Module Size: [**4-1/4 by 4-1/4 inches**] [**6 by 4-1/4 inches**] [**6 by 6 inches**] [**200 by 200 mm**] [**250 by 250 mm**] [**200 by 300 mm**].

Retain "Face Size Variation" subparagraph below if required for narrow joints. Rectified tiles have their edges ground to minimize face size variation. See the Evaluations.

Face Size Variation: Rectified.

Thickness: 5/16 inch.

Face: [**Plain with modified square edges or cushion edges**] [**Plain with modified square edges**] [**Plain with cushion edges**] [**Pattern of design indicated, with manufacturer's standard edges**].

Descriptions in "Finish" subparagraph below are defined in ASTM C242. All glazes may not be available in or suitable for this tile type. If inserting another description, also include list of products meeting that description.

Finish: [**Bright, opaque**] [**Bright, clear**] [**Mat, opaque**] [**Mat, clear**] [**Semimat, opaque**] [**Semimat, clear**] [**Vellum, opaque**] [**Vellum, clear**] [**Crystalline**] glaze.

Tile Color and Pattern: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

Grout Color: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

Mounting: Factory, back mounted.

Delete "Mounting" subparagraph above if tile selected is available in loose form only. Delete "Mounting" subparagraph below if pregrouted tile is not required.

Mounting: Pregrouted sheets of tiles are factory assembled and grouted with manufacturer's standard white silicone rubber.

Verify availability before retaining "Trim Units" subparagraph below. If trim units do not match adjoining flat tile, copy and re-edit this "Ceramic Tile Type" paragraph separately for trim units, deleting option in subparagraph below.

Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable[**and matching characteristics of adjoining flat tile**]. Provide shapes as follows, selected from manufacturer's standard shapes:

Retain shape requirements from options in subparagraphs below that suit installation methods. Revise or supplement subparagraphs to suit Project.

Base for Portland Cement Mortar Installations: Coved, module size [**4-1/4 by 4-1/4 inches**] [**6 by 6 inches**] [**6 by 3-3/4 inches**].

Base for Thinset Mortar Installations: Straight, module size [**4-1/4 by 4-1/4 inches**] [**6 by 6 inches**] [**6 by 2 inches**].

Wainscot Cap for Portland Cement Mortar Installations: Bullnose cap, module size [**4-1/4 by 4-1/4 inches**] [**6 by 6 inches**] [**6 by 2 inches**].

Wainscot Cap for Thinset Mortar Installations: Surface bullnose, module size [**4-1/4 by 4-1/4 inches**] [**6 by 6 inches**] [**6 by 2 inches**].

Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.

External Corners for Portland Cement Mortar Installations: Bullnose shape with radius of at least 3/4 inch unless otherwise indicated.

External Corners for Thinset Mortar Installations: Surface bullnose, same size as adjoining flat tile.

Revise "Internal Corners" subparagraph below if coved internal angles are required.

Internal Corners: Field-butted square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

Insert other shapes if required.

Insert paragraphs for special-purpose tile if required.

Accessories in "Accessories" paragraph below are generally used with glazed wall tile; retain if applicable. Verify availability with manufacturers.

* + - * 1. Accessories: Provide vitreous china accessories of type and size indicated, suitable for installing by same method as used for adjoining wall tile.

First two subparagraphs below are examples only; revise to suit Project or delete both and indicate accessories on Drawings. Insert descriptions or "Basis-of-Design Product" subparagraphs under each if needed to limit products to certain designs.

One soap holder for each shower and tub indicated.

One paper holder at each water closet.

Color and Finish: [**Match adjoining glazed wall tile**] [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**] [**White, bright glaze**].

* + - 1. THRESHOLDS
				1. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

Revise subparagraph below as necessary, or delete if accessibility for people with disabilities is not required. If difference in floor levels exceeds 1/2 inch, a ramp must be used; show ramps on Drawings.

Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.

* + - * 1. Granite Thresholds: ASTM C615, with [**polished**] [**honed**] finish.

Retain one of three "Description" subparagraphs below.

Description: Uniform, [**fine**] [**medium**]-grained, [**white**] [**gray**] [**black**] stone without veining.

Description: Match Director’s Representative's sample.

* + - * 1. Marble Thresholds: Sound Group A; ASTM C503, with a minimum abrasion resistance of 10 according to ASTM C1353 or ASTM C241 and with honed finish.

Retain one of three "Description" subparagraphs below.

Description: Uniform, fine- to medium-grained white stone with gray veining.

Description: Match Director’s Representative's sample.

Description: Provide[**one of**] the following marble types:

Vermont Champlain Black or Highland Danby (Gray).

Missouri Ozark (Gray) or Georgia Solar Gray.

Tennessee Edward Pink, Marmor (Pink), Craig Pink, or Cedar Tavernelle (Red-Reddish Brown).

* + - * 1. Slate Thresholds: Grade A or Clear Stock, hard, closed grain slate, ASTM C629, Classification [**I Exterior**] [**II Interior**], with fine, even grain and honed finish.

Retain one of three "Description" subparagraphs below.

Description: Uniform, [**black**] [**blue-black**] [**gray**] [**blue-gray**] [**green**] stone[**and unfading**].

Description: Match Director’s Representative's sample.

Description: Provide products from [**one of**] the following suppliers:

Vermont Structural Slate Co., Inc.

Buckingham Slate Corp.

The Structural Slate Co., Inc.

* + - 1. TILE BACKING PANELS
				1. Cementitious Backer Units: ANSI A118.9 or ASTM C1325, Type A, in maximum lengths available to minimize end-to-end butt joints.

[Products:](http://www.specagent.com/Lookup?ulid=277) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138304); WonderBoard® Lite Backerboard.

[Georgia-Pacific Gypsum LLC](http://www.specagent.com/Lookup?uid=123457138306); DensShield® Tile Backer.

[USG Corporation](http://www.specagent.com/Lookup?uid=123457138308); DUROCK Cement Board.

Approved equivalent.

Coordinate thickness in "Thickness" subparagraph below with products selected.

Thickness: [**1/2 inch**] [**5/8 inch**] [**As indicated**].

* + - 1. WATERPROOF MEMBRANE

ANSI A118.10 specifies waterproof membranes for use under thinset tile installations.

* + - * 1. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
				2. Chlorinated Polyethylene Sheet: ASTM D4068; Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric.

[Products:](http://www.specagent.com/Lookup?ulid=9324) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Noble Company (The)](http://www.specagent.com/Lookup?uid=123457138044); Chloraloy®.

Approved equivalent.

Nominal Thickness: 0.030 inch.

Nominal Thickness: 0.040 inch.

* + - * 1. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch minimum nominal thickness.

[Products:](http://www.specagent.com/Lookup?ulid=9326) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

Mapei Corporation; Mapeguard® WP 200.

[Schluter Systems L.P](http://www.specagent.com/Lookup?uid=123457138051); KERDI.

[Schönox; HPS North America, Inc](http://www.specagent.com/Lookup?uid=123457138053).; Schonox AB.

Approved equivalent.

* + - * 1. Fabric-Reinforced, Fluid-Applied Membrane: System consisting of liquid-latex rubber or elastomeric polymer and continuous fabric reinforcement.

[Products:](http://www.specagent.com/Lookup?ulid=9328) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Boiardi Products Corporation; a QEP company](http://www.specagent.com/Lookup?uid=123457138060); Elastiment 344 Reinforced Waterproofing and Anti-Fracture/Crack Suppression Membrane.

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138063); Custom® 9240 Waterproofing and Anti­Fracture Membrane.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138064).; Laticrete 9235 Waterproofing Membrane.

Mapei Corporation; Mapelastic 315.

[Summitville Tiles, Inc](http://www.specagent.com/Lookup?uid=123457138068).; S-9000.

Approved equivalent.

* + - * 1. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.

[Products:](http://www.specagent.com/Lookup?ulid=9329) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Boiardi Products Corporation; a QEP company](http://www.specagent.com/Lookup?uid=123457138073); Elastiment 644 Membrane Waterproofing System.

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138077); RedGard® Waterproofing and Crack Prevention Membrane.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138079).; Laticrete Hydro Ban®.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138080); Mapelastic WaterStop.

Approved equivalent.

* + - * 1. Latex-Portland Cement Waterproof Mortar: Flexible, waterproof mortar consisting of cement-based mix and latex additive.

[Products:](http://www.specagent.com/Lookup?ulid=9330) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Boiardi Products Corporation; a QEP company](http://www.specagent.com/Lookup?uid=123457138088); Elastiment 323 Cement Based Waterproofing, Anti-Fracture/Crack Suppression Membrane.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457186597).; Laticrete Hydro Ban® Cementitious Waterproofing Membrane.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138090); Mapelastic Turbo.

Approved equivalent.

* + - 1. CRACK ISOLATION MEMBRANE

Before retaining products listed in this article, verify that they comply with ANSI A118.12 performance level retained in "General" paragraph below. Standard performance corresponds to a 1/16-inch gap; high performance to a 1/8-inch gap.

* + - * 1. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.12 for [**standard performance**] [**high performance**] and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
				2. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030-inch nominal thickness.

[Products:](http://www.specagent.com/Lookup?ulid=9332) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Noble Company (The)](http://www.specagent.com/Lookup?uid=123457138098); Nobleseal CIS.

Approved equivalent.

* + - * 1. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.

[Products:](http://www.specagent.com/Lookup?ulid=9334) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

Mapei Corporation; Mapeguard® WP 200.

[Schluter Systems L.P](http://www.specagent.com/Lookup?uid=123457138104); KERDI.

[Schönox; HPS North America, Inc](http://www.specagent.com/Lookup?uid=123457138053).; Schonox AB.

Approved equivalent.

* + - * 1. Corrugated Polyethylene: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on the underside; 3/16-inch nominal thickness.

[Products:](http://www.specagent.com/Lookup?ulid=9335) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457156071); RedGard® Uncoupling Mat.

[Schluter Systems L.P](http://www.specagent.com/Lookup?uid=123457138107); DITRA.

Approved equivalent.

* + - * 1. Fabric-Reinforced, Fluid-Applied Membrane: System consisting of liquid-latex rubber or elastomeric polymer and fabric reinforcement.

[Products:](http://www.specagent.com/Lookup?ulid=9337) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Boiardi Products Corporation; a QEP company](http://www.specagent.com/Lookup?uid=123457138117); Elastiment 344 Reinforced Waterproofing and Anti-Fracture/Crack Suppression Membrane.

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138120); Custom® 9240 Waterproofing and Anti­Fracture Membrane.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138121).; Laticrete Blue 92 Anti-Fracture Membrane.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138122); Mapelastic 315.

[Summitville Tiles, Inc](http://www.specagent.com/Lookup?uid=123457138125).; S-9000.

Approved equivalent.

* + - * 1. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.

[Products:](http://www.specagent.com/Lookup?ulid=9338) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138131); RedGard® Waterproofing and Crack Prevention Membrane.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138133).; Laticrete Fracture Ban SC.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138134); Mapeleastic CI.

Approved equivalent.

* + - * 1. Latex-Portland Cement Crack-Resistant Mortar: Flexible mortar consisting of cement-based mix and latex additive.

[Products:](http://www.specagent.com/Lookup?ulid=9339) Subject to compliance with requirements, provide one of the following:

[Boiardi Products Corporation; a QEP company](http://www.specagent.com/Lookup?uid=123457138142); Elastiment 323 Cement Based Waterproofing, Anti-Fracture/Crack Suppression Membrane.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457186597).; Laticrete Hydro Ban® Cementitious Waterproofing Membrane.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138144); Mapelastic Turbo.

Approved equivalent.

* + - 1. SETTING MATERIALS
				1. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

Cleavage Membrane: Asphalt felt, ASTM D226, Type I (No. 15); or polyethylene sheeting, ASTM D4397, 4.0 mils thick.

Retain "Reinforcing Wire Fabric" subparagraph below for reinforced mortar bed.

Reinforcing Wire Fabric: Galvanized, welded-wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A185 and ASTM A82, except for minimum wire size.

Retain "Expanded Metal Lath" subparagraph below for portland cement plaster scratch coat. Delete if scratch coat is specified in Section 092400 "Cement Plastering."

Expanded Metal Lath: Diamond-mesh lath complying with ASTM C847.

Base Metal and Finish for Interior Applications: Uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet painted after fabrication into lath.

Base Metal and Finish for Exterior Applications: Zinc-coated (galvanized) steel sheet.

Configuration over Studs and Furring: Flat.

Configuration over Solid Surfaces: Self-furring.

Weight: [**2.5 lb/sq. yd.**] [**3.4 lb/sq. yd.**].

Retain "Latex Additive" subparagraph below if latex additive is required to improve flexibility and other properties of mortar setting bed.

Latex Additive: Manufacturer's standard water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=382) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Boiardi Products Corporation; a QEP company](http://www.specagent.com/Lookup?uid=123457139165).

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457139169).

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457139171).

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457139172).

Approved equivalent.

A moisture mitigation system may be required over the existing concrete floor slab on grade pending existing conditions and moisture test results. Good practice is to verify and confirm during design phase so that the DOR will know if to specify and design for a moisture mitigation system to be installed prior to the installation of the mortar bed and tile. Include Section 090561.13 if required.

Moisture Vapor Emission Control Membranes: As specified in Section 090561.13 “Moisture Vapor Emission Control”.

* + - * 1. Polymer Modified Portland Cement Mortar (Thickset and Sloping Bed): ANSI A108.1.

Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

Custom Building Products: Thickbed Mortar with CustomCrete Latex Mortar Admixture.

Laticrete International, Inc.: 3701 Fortified Mortar Bed.

Mapei Corporation: Plainslope RS.

Summitville Tiles, Inc. S-780 Floor Mortar Bed Mix with S-800 Mortar Bed Latex.

Approved equivalent.

* + - * 1. Standard Dry-Set Mortar (Thinset): ANSI A118.1.

[Products:](http://www.specagent.com/Lookup?ulid=12345) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138259); PremiumPlus® Non-Modified Thin-Set Mortar.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138261).; Laticrete 317 Mortar.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138262); Kerabond®.

[Summitville Tiles, Inc](http://www.specagent.com/Lookup?uid=123457138264).; S-777 Thin Set Mortar.

Approved equivalent.

See the Evaluations for discussion on difference between normal and nonsagging mortar.

For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.1.

Some manufacturers produce medium-bed, standard dry-set mortars. Insert a paragraph in this article if required, with wording similar to that used for "Medium-Bed, Modified Dry-Set Mortar" paragraph.

* + - * 1. Modified Dry-Set Mortar (Thinset): ANSI A118.4.

[Products:](http://www.specagent.com/Lookup?ulid=12346) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138272); FlexBond® Premium Crack Prevention Thin­set Mortar.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138274).; Laticrete 253 Gold.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138275); Ultraflex 3.

[Summitville Tiles, Inc](http://www.specagent.com/Lookup?uid=123457138278).; S-1100 Multi-Purpose Premium Thin Set Latex Mortar.

Approved equivalent.

Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.

See the Evaluations for discussion on difference between normal and nonsagging mortar.

For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

Some manufacturers recommend medium-bed mortars, although ANSI A118.4 does not contain any requirements distinguishing medium-bed mortars from other modified dry-set mortars. Medium bed mortars are typically used for large format tiles.

* + - * 1. Medium-Bed, Modified Dry-Set Mortar: Comply with requirements in ANSI A118.4. Provide product that is approved by manufacturer for application thickness of 5/8 inch.

[Products:](http://www.specagent.com/Lookup?ulid=12348) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138294); Complete Contact™ Fortified Mortar.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138296).; Laticrete Tri-Lite™.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138297); Ultraflor Plus.

[Summitville Tiles, Inc](http://www.specagent.com/Lookup?uid=123457138300).; S-1200 Multi-Purpose Premium Medium Bed Mortar.

Approved equivalent.

Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.

* + - * 1. Improved Modified Dry-Set Mortar (Thinset): ANSI A118.15.

[Products:](http://www.specagent.com/Lookup?ulid=12347) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138284); FlexBond® Premium Crack Prevention Thin­set Mortar.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138285).; Laticrete 254 Platinum.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138286); Ultraflex 3.

Approved equivalent.

Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.

See the Evaluations for discussion on difference between normal and nonsagging mortar.

For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.15.

* + - * 1. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3.

[Products:](http://www.specagent.com/Lookup?ulid=9345) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138170); EBM­Lite™ Premium Epoxy Bonding Mortar - 100% Solids.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138172).; Laticrete Latapoxy® 300 Adhesive.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138173); Kerapoxy 410.

[Summitville Tiles, Inc](http://www.specagent.com/Lookup?uid=123457138176).; S-300 Epoxy Setting Adhesive.

Approved equivalent.

subparagraph below is an example only. Delete if not required or revise to suit Project. Some products claim resistance of up to 350 deg F. See the Evaluations.

Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

Type II organic adhesive is also available but is suitable only for interior ceilings and walls subject to dry, light service or limited water exposure.

* + - * 1. Organic Adhesive: ANSI A136.1, Type I.

[Products:](http://www.specagent.com/Lookup?ulid=9346) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138184); OmniGrip® Premium Lightweight Tile Adhesive.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138186).; Laticrete 15 Premium Mastic.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138187); Type 1.

Approved equivalent.

* + - 1. GROUT MATERIALS

Grouts in "Standard Cement Grout" and "High-Performance Tile Grout" paragraphs below are prepackaged products and are available either sanded or unsanded. Sanded grout is generally used for tile installed with joint widths of 1/8 inch or wider; unsanded grout is generally used for tile installed with joint widths of 1/8 inch or narrower.

* + - * 1. Standard Cement Grout: ANSI A118.6; with antimicrobial enhanced properties.

[Products:](http://www.specagent.com/Lookup?ulid=9347) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138198); Fusion Pro® Single Component® Grout.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138200).; 1500 Sanded Grout.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138201); Ultracolor® Plus FA.

[Summitville Tiles, Inc](http://www.specagent.com/Lookup?uid=123457138203).; S-687 Fungus and Mildew Resistant Unsanded Grout.

Approved equivalent.

* + - * 1. High-Performance Tile Grout: ANSI A118.7.

[Products:](http://www.specagent.com/Lookup?ulid=9348) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138214); Prism® Ultimate Performance Grout.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138216).; Laticrete Permacolor® Grout.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138217); Ultracolor® Plus FA.

[Summitville Tiles, Inc](http://www.specagent.com/Lookup?uid=123457138220).; S-730 ProMax Grout.

Approved equivalent.

Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.

* + - * 1. Water-Cleanable Epoxy Grout: ANSI A118.3.

[Products:](http://www.specagent.com/Lookup?ulid=9349) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457138229); CEG-IG 100% Solids Industrial Grade Epoxy Grout.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457138231).; Laticrete Spectralock® 2000 IG.

[MAPEI Corporation](http://www.specagent.com/Lookup?uid=123457138232); Kerapoxy® IEG CQ.

[Summitville Tiles, Inc](http://www.specagent.com/Lookup?uid=123457138235).; S-600 Setting & Grouting Epoxy.

Approved equivalent.

Subparagraph below is an example only. Some products claim resistance of up to 350 deg F. Revise to suit Project. See the Evaluations.

Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

* + - * 1. Grout for Pregrouted Tile Sheets: Same product used in factory to pregrout tile sheets.
			1. MISCELLANEOUS MATERIALS

Delete "Trowelable Underlayments and Patching Compounds" paragraph below if tile is not applied over concrete substrates.

* + - * 1. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
				2. Vapor-Retarder Membrane: Polyethylene sheeting, ASTM D4397, 4.0 mils thick.

Retain "Metal Edge Strips" paragraph below if metal edge strips are required at junction with other floor finishes; revise if metal edge control joints are required.

* + - * 1. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; [**half-hard brass**] [**white zinc alloy**] [**nickel silver**] [**stainless steel, ASTM A276 or ASTM A666, 300 Series**] exposed-edge material.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9351) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Blanke Corporation; [www.blankecorp.com](http://www.blankecorp.com).

Dural; us.dural.com.

Schluter Systems L.P.; [www.schluter.com](http://www.schluter.com).

Approved equivalent.

* + - * 1. 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.
				2. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9351) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

ColorSealPro; [www.colorsealpro.com](http://www.colorsealpro.com).

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457194629).

Modern Stone Technologies; [www.modernstonecare.com](http://www.modernstonecare.com).

Approved equivalent.

* + - 1. MIXING MORTARS AND GROUT
				1. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
				2. Add materials, water, and additives in accurate proportions.
				3. 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.
1. EXECUTION
	* + 1. EXAMINATION

Coordinate substrate tolerances, finishes, and curing methods specified in Section 033000 "Cast-in-Place Concrete" with requirements in the ANSI A108 series of tile installation standards.

* + - * 1. 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 the Work.

Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

Verify that concrete substrates for tile floors installed with [**adhesives**] [**bonded mortar bed**] [**or**] [**thinset mortar**] comply with surface finish requirements in ANSI A108.01 for installations indicated.

Verify that surfaces that received a steel trowel finish have been mechanically scarified.

Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

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.

Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Director’s Representative.

Typically, retain "Moisture Testing" subparagraph below; excessive moisture vapor can cause ceramic tile flooring failure. ASTM F2170 (relative humidity test) recommends one test per 1000 sq. ft., but no fewer than three tests per test area.

* + - * 1. Moisture Testing of Concrete Slabs on Grade: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement or a level acceptable to the setting bed manufacturer.

* + - * 1. Proceed with installation only after unsatisfactory conditions have been corrected.
			1. PREPARATION
				1. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
				2. Where indicated, prepare substrates to receive waterproof membrane by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.
				3. 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.
			2. INSTALLATION OF CERAMIC TILE
				1. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

Retain first subparagraph below if tile types and sizes and Project conditions warrant specifying 95 percent coverage and if mortar installation is specified.

For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:

Subparagraphs below are examples only; revise to suit Project.

Exterior tile floors.

Tile floors in wet areas.

Tile swimming pool decks.

Tile floors in laundries.

Tile floors consisting of tiles 8 by 8 inches or larger.

Tile floors consisting of rib-backed tiles.

* + - * 1. 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.
				2. 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.

Usually retain first paragraph below unless trim shapes are unavailable for specified tile.

* + - * 1. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

If accent tile is used, verify tile thicknesses and retain first paragraph below if necessary. If difference in thickness is significant, consider providing a thicker substrate under thinner tile.

* + - * 1. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.
				2. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

Retain first subparagraph below for mounted tile.

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.

Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.

Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

* + - * 1. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

Joint widths in subparagraphs below are examples only and are based on widths recommended by American Olean for its products. Retain one width for each tile type below, or revise after verifying widths with tile manufacturers for products selected. Coordinate joint widths with grout selections and module sizes specified in "Tile Products" Article.

Ceramic Mosaic Tile: 1/16 inch.

Quarry Tile: 1/4 inch.

Pressed Floor Tile: 1/4 inch.

Glazed Wall Tile: 1/16 inch.

Porcelain Tile: 1/4 inch.

Retain first paragraph below for wainscots. Verify that instruction agrees with detailing.

* + - * 1. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

Refer to TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" and to the ANSI A108 series of tile installation standards for data on expansion joints. These standards require that joint locations be indicated on Drawings.

* + - * 1. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

* + - * 1. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in [**modified dry-set**] [**improved modified dry-set**] mortar (thinset).

Do not extend [**cleavage membrane**] [**waterproof membrane**] [**or**] [**crack isolation membrane**] under thresholds set in [**standard dry-set**] [**modified dry-set**] [**or**] [**improved modified dry-set**] mortar. Fill joints between such thresholds and adjoining tile set on [**cleavage membrane**] [**waterproof membrane**] [**or**] [**crack isolation membrane**] with elastomeric sealant.

* + - * 1. Metal Edge Strips: Install [**at locations indicated**] [**where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile**] [**where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated**].

Retain first option in "Floor Sealer" paragraph below if using epoxy grouts.

* + - * 1. Floor Sealer: Apply floor sealer to[**cementitious**] grout joints[**in tile floors**] according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.
			1. INSTALLATION OF TILE BACKING PANEL
				1. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated.
			2. INSTALLATION OF WATERPROOF MEMBRANE
				1. Install waterproof membrane to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.
				2. Allow waterproof membrane to cure and verify by testing that it is watertight before installing tile or setting materials over it.
			3. INSTALLATION OF CRACK ISOLATION MEMBRANE
				1. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.
				2. Allow crack isolation membrane to cure before installing tile or setting materials over it.
			4. ADJUSTING AND CLEANING
				1. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
				2. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

Remove grout residue from tile as soon as possible.

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.

* + - 1. PROTECTION
				1. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
				2. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
				3. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.
			2. EXTERIOR CERAMIC TILE INSTALLATION SCHEDULE

"Ceramic Tile Installation" subparagraphs in this article are based on TCNA installation methods. Have a copy of TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" at hand while revising this schedule. Not all exterior installation methods in the "TCNA Handbook" are included in this schedule; insert others if required.

Ceramic tile installation designations in this article can be used on Drawings. If substrate descriptions are sufficient to indicate where each installation type is required, tile-type designations can be indicated on Drawings instead of tile installation designations, and tile types can be deleted from tile installation subparagraphs. If tile installation designations are used on Drawings and more than one tile type is required for a particular installation method, copy and re-edit an installation subparagraph for each tile type.

* + - * 1. Exterior Floor Installations:

Ceramic Tile Installation <**Insert designation**>: TCNA F101 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) [**bonded to concrete**] [**over waterproof membrane on concrete**] [**over waterproof membrane on concrete where indicated and bonded to concrete where membrane is not indicated**].

Ceramic Tile Type: <**Insert tile-type designation**>.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F102; thinset mortar [**on concrete**] [**over waterproof membrane on concrete**] [**over waterproof membrane on concrete where indicated and on concrete where membrane is not indicated**].

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

* + - * 1. Exterior Roof/Deck Floor Installations:

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: [**TCNA F103**] [**TCNA F103B**] and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) over drainage material on roof membrane.

Ceramic Tile Type: <**Insert tile-type designation**>.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F104; thinset mortar [**on concrete**] [**over waterproof membrane on concrete**] [**over waterproof membrane on concrete where indicated and on concrete where membrane is not indicated**].

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] portland cement mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

* + - * 1. Exterior Wall Installations, Masonry or Concrete:

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA W201 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) on metal lath[**over vapor-retarder membrane**].

Ceramic Tile Type: <**Insert tile-type designation**>.

"Bond Coat for Wet-Set Method" subparagraph below is optional with ANSI A108.1A and ANSI A108.1C. If retaining either standard in "Ceramic Tile Installation (Insert designation)" subparagraph above, retain one mortar type from options below or delete subparagraph if unmodified portland cement is acceptable. Delete below if retaining ANSI A108.1B.

Bond Coat for Wet-Set Method: [**Standard**] [**Modified**] [**Improved modified**] dry-set mortar.

Retain "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA W202; thinset mortar[**over waterproof membrane**].

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

* + - * 1. Exterior Wall Installations, Wood or Metal Studs:

Ceramic Tile Installation <**Insert designation**>: TCNA W244E; thinset mortar [**over waterproof membrane on cementitious backer units**] [**on cementitious backer units over vapor-retarder membrane**].

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] portland cement mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

* + - 1. INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

"Ceramic Tile Installation" subparagraphs in this article are based on TCNA installation methods. Have a copy of TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" at hand while revising this schedule. Not all interior installation methods in the "TCNA Handbook" are included in this schedule; insert others if required.

Ceramic tile installation designations in this article can be used on Drawings. If substrate descriptions are sufficient to indicate where each installation type is required, tile-type designations can be indicated on Drawings instead of tile installation designations, and ceramic tile types can be deleted from tile installation subparagraphs. If tile installation designations are used on Drawings and more than one tile type is required for a particular installation method, copy and re-edit an installation subparagraph for each tile type.

* + - * 1. Interior Floor Installations, Concrete Subfloor:

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA F111 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) with cleavage membrane.

Ceramic Tile Type: <**Insert tile-type designation**>.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA F112 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) bonded to concrete.

Ceramic Tile Type: <**Insert tile-type designation**>.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F113; thinset mortar.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**]mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA F114 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) with cleavage membrane; epoxy grout.

Ceramic Tile Type: <**Insert tile-type designation**>.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**]mortar.

Grout: Water-cleanable epoxy grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F115; thinset mortar; epoxy grout.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**]mortar.

Grout: Water-cleanable epoxy grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F116; [**organic adhesive**] [**water-cleanable, tile-setting epoxy**].

Ceramic Tile Type: <**Insert tile-type designation**>.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA F121 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) on waterproof membrane.

Ceramic Tile Type: <**Insert tile-type designation**>.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F122; thinset mortar on waterproof membrane.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**]mortar.

Grout: High-performance [**sanded**] [**unsanded**] grout.

TCNA F125-Partial is the default unless full-coverage application of crack isolation membrane is specified; if partial coverage is required, specify or indicate location and extent of coverage.

Ceramic Tile Installation <**Insert designation**>: [**TCNA F125-Full**] [**TCNA F125-Full, except where partial coverage is indicated**] [**TCNA F125-Partial**]; thinset mortar on crack isolation membrane.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**]mortar.

Grout: [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F131; water-cleanable, tile-setting epoxy; epoxy grout.

Ceramic Tile Type: <**Insert tile-type designation**>.

Grout: Water-cleanable epoxy grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F132; water-cleanable, tile-setting epoxy on cured cement mortar bed [**bonded to concrete subfloor**] [**installed over cleavage membrane**]; epoxy grout.

Ceramic Tile Type: <**Insert tile-type designation**>.

Grout: Water-cleanable epoxy grout.

* + - * 1. Interior Floor Installations, Wood Subfloor:

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA F121 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) on waterproof membrane.

Ceramic Tile Type: <**Insert tile-type designation**>.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA F141 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) with cleavage membrane.

Ceramic Tile Type: <**Insert tile-type designation**>.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F142; organic adhesive.

Ceramic Tile Type: <**Insert tile-type designation**>.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F143; water-cleanable, tile-setting epoxy; epoxy grout.

Ceramic Tile Type: <**Insert tile-type designation**>.

Grout: Water-cleanable epoxy grout.

Ceramic Tile Installation <**Insert designation**>: TCNA F144; [**thinset mortar**] [**water-cleanable epoxy adhesive**] on[**waterproof membrane over**] cementitious backer units or fiber-cement backer board.

Ceramic Tile Type: <**Insert tile-type designation**>.

Delete "Thinset Mortar" subparagraph below if water-cleanable epoxy adhesive is used.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

* + - * 1. Interior Radiant Heat Floor Installations, Concrete Subfloor:

Ceramic Tile Installation <**Insert designation**>: TCNA RH110; thinset mortar [**on crack isolation membrane**]; hydronic piping installed in concrete.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**]mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA RH117 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) with hydronic piping installed in mortar bed.

Ceramic Tile Type: <**Insert stone tile-type designation**>.

Retain bond coat from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA RH112; thinset mortar [**on crack isolation membrane**]; hydronic piping encapsulated in cementitious self-leveling underlayment.

Ceramic Tile Type: <**Insert tile-type designation**>.

Cementitious Self-Leveling Underlayment: Specified in Section 035416 "Hydraulic Cement Underlayment."

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA RH115; thinset mortar; electric radiant system encapsulated in thinset mortar.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA RH116; thinset mortar [**on crack isolation membrane**]; electric radiant system encapsulated in cementitious self-leveling underlayment.

Ceramic Tile Type: <**Insert tile-type designation**>.

Cementitious Self-Leveling Underlayment: Specified in Section 035416 "Hydraulic Cement Underlayment."

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

* + - * 1. Interior Radiant Heat Floor Installations, Wood Subfloor:

Ceramic Tile Installation <**Insert designation**>: TCNA RH123; thinset mortar[**on crack isolation membrane**]; hydronic piping encapsulated in cementitious self-leveling underlayment.

Ceramic Tile Type: <**Insert tile-type designation**>.

Cementitious Self-Leveling Underlayment: Specified in Section 035416 "Hydraulic Cement Underlayment."

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA RH130; thinset mortar on exterior-glue plywood; electric radiant system encapsulated in thinset mortar.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**EGP (exterior glue plywood) latex-portland cement**] [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA RH135; thinset mortar on cementitious backer units or fiber-cement backer board; electric radiant system encapsulated in thinset mortar.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA RH140; thinset mortar[**on crack isolation membrane**]; electric radiant system encapsulated in cementitious self-leveling underlayment.

Ceramic Tile Type: <**Insert tile-type designation**>.

Cementitious Self-Leveling Underlayment: Specified in Section 035416 "Hydraulic Cement Underlayment."

Thinset Mortar: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA RH141 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) with hydronic piping installed in mortar bed.

Ceramic Tile Type: <**Insert stone tile-type designation**>.

Retain bond coat from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

* + - * 1. Interior Wall Installations, Masonry or Concrete:

Ceramic Tile Installation <**Insert designation**>: TCNA W202; thinset mortar.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Medium-bed, modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA W211 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) bonded to substrate.

Ceramic Tile Type: <**Insert tile-type designation**>.

"Bond Coat for Wet-Set Method" subparagraph below is optional with ANSI A108.1A and ANSI A108.1C. If retaining either standard in "Ceramic Tile Installation (Insert designation)" subparagraph above, retain one mortar type from options below or delete subparagraph if unmodified portland cement is acceptable. Delete below if retaining ANSI A108.1B.

Bond Coat for Wet-Set Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA W221 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**], cement mortar bed (thickset) on metal lath [**over cleavage membrane**] [**over waterproof membrane**].

Ceramic Tile Type: <**Insert tile-type designation**>.

"Bond Coat for Wet-Set Method" subparagraph below is optional with ANSI A108.1A and ANSI A108.1C. If retaining either standard in "Ceramic Tile Installation (Insert designation)" subparagraph above, retain one mortar type from options below or delete subparagraph if unmodified portland cement is acceptable. Delete below if retaining ANSI A108.1B.

Bond Coat for Wet-Set Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**]mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA W222 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; one-coat cement mortar bed (thickset) on metal lath [**over cleavage membrane**] [**over waterproof membrane**].

Ceramic Tile Type: <**Insert tile-type designation**>.

"Bond Coat for Wet-Set Method" subparagraph below is optional with ANSI A108.1A and ANSI A108.1C. If retaining either standard in "Ceramic Tile Installation (Insert designation)" subparagraph above, retain one mortar type from options below or delete subparagraph if unmodified portland cement is acceptable. Delete below if retaining ANSI A108.1B.

Bond Coat for Wet-Set Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**]mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Note that TCNA W223 requires smooth substrate because of thickness limitations of organic adhesives; some masonry surfaces will not be suitable.

Ceramic Tile Installation <**Insert designation**>: TCNA W223; organic adhesive.

Ceramic Tile Type: <**Insert tile-type designation**>.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

* + - * 1. Interior Wall Installations, Wood or Metal Studs or Furring:

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA W221 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) [**over cleavage membrane**] [**over waterproof membrane**] on solid backing.

Ceramic Tile Type: <**Insert tile-type designation**>.

"Bond Coat for Wet-Set Method" subparagraph below is optional with ANSI A108.1A and ANSI A108.1C. If retaining either standard in "Ceramic Tile Installation (Insert designation)" subparagraph above, retain one mortar type from options below or delete subparagraph if unmodified portland cement is acceptable. Delete below if retaining ANSI A108.1B.

Bond Coat for Wet-Set Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**]mortar.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA W222 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; one-coat cement mortar bed (thickset) [**over cleavage membrane**] [**over waterproof membrane**] on solid backing.

Ceramic Tile Type: <**Insert tile-type designation**>.

"Bond Coat for Wet-Set Method" subparagraph below is optional with ANSI A108.1A and ANSI A108.1C. If retaining either standard in "Ceramic Tile Installation (Insert designation)" subparagraph above, retain one mortar type from options below or delete subparagraph if unmodified portland cement is acceptable. Delete below if retaining ANSI A108.1B.

Bond Coat for Wet-Set Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA W223; organic adhesive on solid backing.

Ceramic Tile Type: <**Insert tile-type designation**>.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Note that TCNA W231/W241 is for cleavage membrane and lath applied directly to studs or furring without solid backing. If retaining "Ceramic Tile Installation (Insert designation)" subparagraph below, retain one of three options for ANSI standard. ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA W231/W241 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset).

Ceramic Tile Type: <**Insert tile-type designation**>.

"Bond Coat for Wet-Set Method" subparagraph below is optional with ANSI A108.1A and ANSI A108.1C. If retaining either standard in "Ceramic Tile Installation (Insert designation)" subparagraph above, retain one mortar type from options below or delete subparagraph if unmodified portland cement is acceptable. Delete below if retaining ANSI A108.1B.

Bond Coat for Wet-Set Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA W242; organic adhesive on gypsum board.

Ceramic Tile Type: <**Insert tile-type designation**>.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA W243; thinset mortar on gypsum board.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA W244C or TCNA W244F; thinset mortar on cementitious backer units or fiber-cement backer board[**over vapor-retarder membrane**].

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA W245 or TCNA W248; thinset mortar on glass-mat, water-resistant gypsum backer board.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

* + - * 1. Bathtub Wall Installations with No Shower Head, Wood or Metal Studs or Furring:

Ceramic Tile Installation <**Insert designation**>: TCNA B413; [**thinset mortar**] [**organic adhesive**] on water-resistant gypsum board.

Ceramic Tile Type: <**Insert tile-type designation**>.

Delete "Thinset Mortar" subparagraph below if organic adhesive is used.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Retain high-performance grout in "Grout" subparagraph below if organic adhesive and metal studs or furring are used.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

* + - * 1. Bathtub/Shower Wall Installations, Wood or Metal Studs or Furring:

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA B411 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) over vapor-retarder membrane.

Ceramic Tile Type: <**Insert tile-type designation**>.

"Bond Coat for Wet-Set Method" subparagraph below is optional with ANSI A108.1A and ANSI A108.1C. If retaining either standard in "Ceramic Tile Installation (Insert designation)" subparagraph above, retain one mortar type from options below or delete subparagraph if unmodified portland cement is acceptable. Delete below if retaining ANSI A108.1B.

Bond Coat for Wet-Set Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA B412; [**thinset mortar**] [**organic adhesive**] [**water-cleanable, tile-setting epoxy**] on cementitious backer units or fiber-cement backer board.

Ceramic Tile Type: <**Insert tile-type designation**>.

Delete "Thinset Mortar" subparagraph below if organic adhesive or water-cleanable, tile-setting epoxy is used.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA B419; thinset mortar on coated glass-mat, water-resistant gypsum backer board.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

* + - * 1. Shower Receptor and Wall Installations:

ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.

Ceramic Tile Installation <**Insert designation**>: TCNA B414 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]; cement mortar bed (thickset) over vapor-retarder membrane.

Ceramic Tile Type: <**Insert tile-type designation**>.

"Bond Coat for Wet-Set Method" subparagraph below is optional with ANSI A108.1A and ANSI A108.1C. If retaining either standard in "Ceramic Tile Installation (Insert designation)" subparagraph above, retain one mortar type from options below or delete subparagraph if unmodified portland cement is acceptable. Delete below if retaining ANSI A108.1B.

Bond Coat for Wet-Set Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Retain one thinset mortar from options in "Bond Coat for Cured-Bed Method" subparagraph below if retaining ANSI A108.1B or ANSI A108.1C in "Ceramic Tile Installation (Insert designation)" subparagraph above; delete subparagraph below if retaining ANSI A108.1A.

Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA B415; [**thinset mortar**] [**organic adhesive**] [**water-cleanable, tile-setting epoxy**] on [**waterproof membrane over cementitious backer units or fiber-cement backer board**] [**cementitious backer units or fiber-cement backer board over vapor-retarder membrane**].

Ceramic Tile Type: <**Insert tile-type designation**>.

Delete "Thinset Mortar" subparagraph below if organic adhesive or water-cleanable, tile-setting epoxy is used.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA B420; thinset mortar on [**waterproof membrane over coated glass-mat, water-resistant gypsum backer board**] [**coated glass-mat, water-resistant gypsum backer board over vapor-retarder membrane**].

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] [**Water-cleanable epoxy**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA B421; thinset mortar on waterproof membrane over solid backing.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Ceramic Tile Installation <**Insert designation**>: TCNA B422; thinset mortar on waterproof membrane with integrated bonding flange for bonded membranes.

Ceramic Tile Type: <**Insert tile-type designation**>.

Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.

Grout: [**Sand-portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**High-performance sanded**] [**High-performance unsanded**] grout.

Insert additional paragraphs for ceilings, stairs, countertops, renovations, etc., to suit Project.

END OF SECTION 093013