

SECTION 093013 – TILING, GROUT AND BATHROOM ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ceramic floor tile and grout.
2. Quarry floor tile and grout.
3. Porcelain floor tile and grout.
4. Glazed wall tile and grout.
5. Marble thresholds.
6. Cement board backing panels.
7. Waterproof membranes.
8. Crack isolation membranes.
9. Metal Edge Strips.
10. Vitreous china bathroom accessories.

B. Related Sections:

1. Section 055100 – Metal Pan Stairs.
2. Section 061000 – Rough Carpentry.
3. Section 079200 – Joint Sealants.
4. Section 092900 – Gypsum Board (includes backing panels).
5. Section 102800 – Toilet, Bath, and Laundry Accessories.

C. Reference and Industry Standards

1. The following reference standards shall be applicable to this Section:
 - a. The current Enterprise Green Communities (EGC) Criteria, and the current New York City Overlay.
2. Industry Standards
 - ANSI (American National Standards Institute)
 - ASTM (American Society for Testing and Materials)
 - TCNA (Tile Council of North America)

D. The current NYC Overlay of the current Enterprise Green Communities Criteria:

1. Mandatory Requirements: See the NYC Overlay of the EGC reference standards for full specification.
 - a. All projects must achieve compliance with the mandatory criteria measures that are applicable:
 - Criterion 6.6: Bath, Kitchen, Laundry Surfaces

- Criterion 6.10: Construction Waste Management

2. Optional Project Requirements for Certification Points

- a. Additionally, rehab projects are required to achieve **55** optional points. Criteria with optional points related to this Specification Section include, but may not be limited to:

- Criterion 6.7: Regional Materials
- Criterion 6.10: Construction Waste Management

1.2 ACTION SUBMITTALS

- A. Environmental Product Declaration (EPD) for each type of product.

- B. Samples:

1. Each type and composition of tile and for each color and finish required.
2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required.
3. Marble thresholds, 6 inches long.

1.3 INFORMATIONAL SUBMITTALS

- A. Documentation for compliance with Enterprise Green Communities Criteria.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. 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.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide Standard-grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

2.2 TILE PRODUCTS

- A. Factory-Mounted Mosaic Ceramic Tile Type: [**Unglazed**] [**Glazed**].

1. Composition: Vitreous or impervious natural clay or porcelain.
2. Module Size: [**1 by 1 inch**] [**1 by 2 inches**] [**2 by 2 inches**] <Insert dimensions>.
3. Thickness: 1/4 inch.

4. Face: Plain with cushion edges.
5. Dynamic Coefficient of Friction: Not less than 0.42.
6. Finish: **[Bright, opaque]** **[Bright, clear]** **[Mat, opaque]** **[Mat, clear]** **[Semimat, opaque]** **[Semimat, clear]** **[Vellum, opaque]** **[Vellum, clear]** **[Crystalline]** **<Insert description>** glaze.
7. Tile Color: As selected by **[Design-Professional-of-Record]** **[Owner]** from manufacturer's full range.
8. Grout Color: As selected by **[Design-Professional-of-Record]** **[Owner]** from manufacturer's full range.
9. 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:
 - a. Base Cove: Cove, module size **[1 by 1 inch]** **[2 by 1 inch]** **<Insert dimensions>**.
 - b. Base Cap: **[Bead (bullnose)]** **[Surface bullnose]**, module size **[1 by 1 inch]** **[2 by 1 inch]** **[2 by 2 inches]** **<Insert dimensions>**.
 - c. Wainscot Cap: **[Bead (bullnose)]** **[Surface bullnose]**, module size **[1 by 1 inch]** **[2 by 1 inch]** **[2 by 2 inches]** **<Insert dimensions>**.
 - d. External Corners for Thinset Mortar Installations: **[Bead (bullnose)]** **[Surface bullnose]**, module size **[1 by 1 inch]** **[2 by 1 inch]** **[2 by 2 inches]** **<Insert dimensions>**.
 - e. Internal Corners: Cove, module size **[1 by 1 inch]** **[2 by 1 inch]** **<Insert dimensions>**.
 - f. 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.

B. Square-Edged Quarry Tile Type: **[Unglazed]** **[Glazed]**.

1. 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]** **<Insert dimensions>**.
2. Thickness: **[3/8 inch]** **[1/2 inch]** **[3/4 inch]**.
3. Wearing Surface: **[Nonabrasive, smooth]** **[Abrasive aggregate embedded in surface]** **<Insert description>**.
4. Dynamic Coefficient of Friction: Not less than 0.42.
5. Finish: **[Bright, opaque]** **[Bright, clear]** **[Mat, opaque]** **[Mat, clear]** **[Semimat, opaque]** **[Semimat, clear]** **[Vellum, opaque]** **[Vellum, clear]** **[Crystalline]** **<Insert description>** glaze.
6. Tile Color: As selected by **[Design-Professional-of-Record]** **[Owner]** from manufacturer's full range.
7. Grout Color: As selected by **[Design-Professional-of-Record]** **[Owner]** from manufacturer's full range.

8. 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:
 - a. Base: Coved **[with surface bullnose top edge]**, face size **[6 by 6 inches] [8 by 3-7/8 inches] <Insert dimensions>**.
 - b. Wainscot Cap: Surface bullnose, face size **[6 by 6 inches] [8 by 3-7/8 inches] <Insert dimensions>**.

C. Porcelain Tile Type: **[Unglazed] [Glazed]**.

1. 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] <Insert dimensions>**.
2. Face Size Variation: Rectified.
3. Thickness: **[1/4 inch] [3/8 inch] [1/2 inch]**.
4. Face: **[Plain with square or cushion edges] [Plain with square edges] [Plain with cushion edges] [Polished with square edges] [As indicated]**.
5. Dynamic Coefficient of Friction: Not less than 0.42.
6. Tile Color and Glaze: As selected by **[Design-Professional-of-Record] [Owner]** from manufacturer's full range.
7. Grout Color: As selected by **[Design-Professional-of-Record] [Owner]** from manufacturer's full range.
8. 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:
 - a. Base Cap: Surface bullnose, module size **[same as adjoining flat tile] <Insert size>**.
 - b. Wainscot Cap: Surface bullnose, module size **[same as adjoining flat tile] <Insert size>**.
 - c. External Corners: Surface bullnose, module size **[same as adjoining flat tile] <Insert size>**.
 - d. 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.

D. Glazed Wall Tile Type:

1. Module Size: **[4-1/4 by 4-1/4 inches] [6 by 4-1/4 inches] [6 by 6 inches]**.
2. Face Size Variation: Rectified.
3. Thickness: 5/16 inch.
4. Face: **[Plain with modified square edges or cushion edges] [Plain with modified square edges] [Plain with cushion edges]**.
5. Finish: **[Bright, opaque] [Bright, clear] [Mat, opaque] [Mat, clear] [Semimat, opaque] [Semimat, clear] [Vellum, opaque] [Vellum, clear] [Crystalline] <Insert description>** glaze.

6. Tile Color: As selected by **[Design-Professional-of-Record]** **[Owner]** from manufacturer's full range.
7. Grout Color: As selected by **[Design-Professional-of-Record]** **[Owner]** from manufacturer's full range.
8. Mounting:
 - a. Factory, back mounted.
 - b. Pre-grouted sheets of tiles are factory assembled and grouted with manufacturer's standard white silicone rubber.
9. 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:
 - a. Base: **[Coved]** **[Straight]**, module size **[4-1/4 by 4-1/4 inches]** **[6 by 6 inches]** **[6 by 3-3/4 inches]** **[6 by 2 inches]**.
 - b. Wainscot Cap: **[Bullnose cap]** **[Surface bullnose]**, module size **[4-1/4 by 4-1/4 inches]** **[6 by 6 inches]** **[6 by 2 inches]**.
 - c. External Corners: **[Bullnose]** **[Surface bullnose]**, same size as adjoining flat tile.
 - d. Internal Corners: Field-buttet square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

2.3 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
 1. Bevel edges at 1:2 slope, 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.
- B. Marble Thresholds: ASTM C503, with a minimum abrasion resistance of 10 **[12]** according to ASTM C1353 or ASTM C241 and with honed finish.
 1. Description:
 - a. Uniform, fine- to medium-grained white stone with gray veining.

2.4 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 or ASTM C1325, Type A.
 1. Thickness: **[1/4 inch]** **[1/2 inch]** **[5/8 inch]**.
- B. Fiber-Cement Backer Board: ASTM C1288.
 1. Thickness: **[1/4 inch]** **[1/2 inch]**.

2.5 WATERPROOF MEMBRANES

- A. 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.
- B. Waterproof Membrane, Chlorinated Polyethylene Sheet: Non-plasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric.
 - 1. Nominal Thickness: **[0.030 inch] [0.040 inch]**.
- C. Waterproof Membrane, PVC Sheet: PVC heat-fused on both sides to facings of nonwoven polyester.
 - 1. Nominal Thickness: **[0.025 inch] [0.040 inch]**.
- D. Waterproof Membrane, Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.
- E. Waterproof Membrane, Fabric-Reinforced, Modified-Bituminous Sheet: Self-adhering, SBS-modified-bituminous sheet with fabric reinforcement facing; 0.040-inch nominal thickness.
- F. Waterproof Membrane, Fabric-Reinforced, Fluid-Applied: System consisting of liquid-latex rubber or elastomeric polymer and continuous fabric reinforcement.
- G. Waterproof Membrane, Fluid-Applied: Liquid-latex rubber or elastomeric polymer.
- H. Latex-Portland Cement Waterproof Mortar: Flexible, waterproof mortar consisting of cement-based mix and latex additive.
- I. Waterproofing and Tile-Setting Adhesive: One-part, fluid-applied product intended for use as both waterproofing and tile-setting adhesive in a two-step process.

2.6 CRACK ISOLATION MEMBRANES

- A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Crack Isolation Membrane, Chlorinated Polyethylene Sheet: Non-plasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030-inch nominal thickness.
- C. Crack Isolation Membrane, PVC Sheet: PVC heat-fused on both sides to facings of nonwoven polyester; 0.040-inch nominal thickness.
- D. Crack Isolation Membrane, Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.
- E. Corrugated Polyethylene: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on the underside; 3/16-inch nominal thickness.

- F. Crack Isolation Membrane, Fabric-Reinforced, Modified-Bituminous Sheet: Self-adhering, modified-bituminous sheet with fabric reinforcement facing; 0.040-inch nominal thickness.
- G. Crack Isolation Membrane, Fabric-Reinforced, Fluid-Applied: System consisting of liquid-latex rubber or elastomeric polymer and fabric reinforcement.
- H. Crack Isolation Membrane, Fluid-Applied: Liquid-latex rubber or elastomeric polymer.
- I. Latex-Portland Cement Crack-Resistant Mortar: Flexible mortar consisting of cement-based mix and latex additive.
- J. Crack Isolation Membrane and Tile-Setting Adhesive: One-part, fluid-applied product intended for use as both a crack isolation membrane and tile-setting adhesive in a two-step process.

2.7 SETTING MATERIALS

- A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.
- B. Standard Dry-Set Mortar (Thinset): ANSI A118.1.
 - 1. For wall applications, provide non-sagging mortar.
- C. Modified Dry-Set Mortar (Thinset): ANSI A118.4.
 - 1. Provide prepackaged, dry-mortar mix to which only water must be added at Project site.
 - 2. Provide prepackaged, dry-mortar mix combined with liquid-latex additive at Project site.
 - 3. For wall applications, provide non-sagging mortar.
- D. Improved Modified Dry-Set Mortar (Thinset): ANSI A118.15.
 - 1. Provide prepackaged, dry-mortar mix to which only water must be added at Project site.
 - 2. Provide prepackaged, dry-mortar mix combined with liquid-latex additive at Project site.
 - 3. For wall applications, provide non-sagging mortar.
- E. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3.
- F. Organic Adhesive: ANSI A136.1, Type I.

2.8 GROUT MATERIALS

- A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.
- B. Standard Cement Grout: ANSI A118.6.
- C. Water-Cleanable Epoxy Grout: ANSI A118.3 , with a VOC content of 65 g/L or less.
- D. Grout for Pre-grouted Tile Sheets: Same product used in factory to pre-grout tile sheets.

2.9 BATHROOM ACCESSORIES

- A. Provide vitreous china accessories of type and size suitable for installing by same method as adjoining wall tile.
 - a. Soap dish at lavatory.
 - b. Soap dish at bathtub.
 - c. Soap dish at shower area (within tub enclosure or at separate stall).
 - d. Combination cup holder and toothbrush holder at lavatory.
- B. Color: As selected by **[Design-Professional-of-Record]** **[Owner]** from manufacturer's full range. **[Color to match existing wall tile]**.

2.10 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, Portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shape, 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]** exposed-edge material.
- C. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. 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.

- B. 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.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site, before installing.

3.3 INSTALLATION

- A. 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.
 - 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors in wet areas.
 - b. Tile floors in laundries.
 - c. Tile floors consisting of tiles 8 by 8 inches or larger.
 - d. Tile floors consisting of rib-backed tiles.
- B. 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.
- C. 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.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Where accent tile differs in thickness from field tile, vary setting bed thickness so that tiles are flush.
- F. 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.
- G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Ceramic Mosaic Tile: **[1/16 inch] [1/8 inch]**.
 - 2. Quarry Tile: **[1/4 inch] [3/8 inch]**.
 - 3. Glazed Wall Tile: **[1/16 inch] [1/8 inch]**.
 - 4. Porcelain Tile: **[1/4 inch] [3/8 inch]**.
- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

- I. 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.
 - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- J. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
 - 1. 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).
- K. Metal Edge Strips: Install [**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**].
- L. 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.
- M. Install tile backing panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. [**Use modified dry-set mortar for bonding material unless otherwise directed in manufacturer's written instructions.**]
- N. 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.
- O. 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.

3.4 INTERIOR TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
 - 1. Tile Installation F112: Cement mortar bed (thickset) bonded to concrete; TCA F112.
 - a. Tile Type: <**Insert tile-type designation**>.
 - b. Thin-Set Mortar for Cured-Bed Method: [**Dry-set**] [**Latex-**] Portland cement mortar.
 - c. Grout: [**Sand-Portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**Polymer-modified sanded**] [**Polymer-modified unsanded**] grout.
- B. Interior Floor Installations, Wood Subfloor:
 - 1. TCNA F141 and [**ANSI A108.1A**] [**ANSI A108.1B**] [**ANSI A108.1C**]: Cement mortar bed (thickset) with cleavage membrane.
 - a. Ceramic Tile Type: <**Insert tile-type designation**>.

- b. Bond Coat for Cured-Bed Method: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.
 - c. Grout: [**Sand-Portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**Water-cleanable epoxy**] grout.
 - 2. TCNA F144: Thinset mortar on waterproof membrane over cementitious backer units or fiber-cement backer board.
 - a. Ceramic Tile Type: <Insert tile-type designation>.
 - b. Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.
 - c. Grout: [**Sand-Portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**Water-cleanable epoxy**] grout.
- C. Interior Wall Installations, Masonry or Concrete:
 - 1. TCNA W202: Thinset mortar.
 - a. Ceramic Tile Type: <Insert tile-type designation>.
 - b. Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.
 - c. Grout: [**Sand-Portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**Water-cleanable epoxy**] grout.
- D. Interior Wall Installations, Metal Studs or Furring:
 - 1. TCNA W244C or TCNA W244F: Thinset mortar on cementitious backer units or fiber-cement backer board [**over vapor-retarder membrane**].
 - a. Ceramic Tile Type: <Insert tile-type designation>.
 - b. Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.
 - c. Grout: [**Sand-Portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] [**Water-cleanable epoxy**] grout.
- E. Bathtub Wall Installations with No Shower Head, Wood or Metal Studs or Furring:
 - 1. TCNA B413: [**Thinset mortar**] [**Organic adhesive**] on water-resistant gypsum board.
 - a. Ceramic Tile Type: <Insert tile-type designation>.
 - b. Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.
 - c. Grout: [**Sand-Portland cement**] [**Standard sanded cement**] [**Standard unsanded cement**] grout.
- F. Bathtub/Shower Wall Installations, Wood or Metal Studs or Furring:
 - 1. TCNA B412: [**thinset mortar**] [**organic adhesive**] [**water-cleanable, tile-setting epoxy**] on cementitious backer units or fiber-cement backer board.
 - a. Ceramic Tile Type: <Insert tile-type designation>.

- b. Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.
- c. Grout: [**Sand-Portland cement**] [**Water-cleanable epoxy**] grout.

G. Shower Receptor and Wall Installations:

- 1. TCNA B415: [**Thinset mortar**] [**Organic adhesive**] [**Water-cleanable, tile-setting epoxy**] on [**waterproof membrane over cementitious backer units**] [**cementitious backer units over vapor-retarder membrane**].
 - a. Ceramic Tile Type: <**Insert tile-type designation**>.
 - b. Thinset Mortar: [**Standard dry-set**] [**Modified dry-set**] [**Improved modified dry-set**] mortar.
 - c. Grout: [**Sand-Portland cement**] [**Water-cleanable epoxy**] grout.

END OF SECTION 093013