

## SECTION 09300 - CERAMIC TILE

### City of San Diego, CWP Guidelines

#### PART 1 -- GENERAL

##### 1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing all of the ceramic tile and appurtenant work, complete.

##### 1.2 RELATED SECTIONS

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 03300 Cast-in-Place Structural Concrete
2. Section 07100 Waterproofing
3. Section 07920 Sealants and Caulking
4. Section 09200 Lathing and Plastering
5. Section 09250 Gypsum Board

##### 1.3 CODES

- A. The WORK of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal Code:

1. Uniform Building Code

##### 1.4 SPECIFICATIONS AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

1. Federal Specifications:

TT-S-001543A	Sealing Compound: Silicone Rubber Base (For Caulking, Sealing, and Glazing in Buildings and Other Structures)
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UU-B-790A	Building Paper, Vegetable Fiber (Kraft, Waterproofed, Water Repellant and Fire Resistant)
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2. Commercial Standards:

ANSI A 108.1	Installation of Glazed Wall Tile, Ceramic Mosaic Tile, Quarry Tile and Paver Tile with Portland Cement Mortar
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ANSI A 108.4	Installation of Ceramic Tile with Water-Resistant Organic Adhesives
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ANSI A 108.5	Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar
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ANSI A 118.4	Specifications for Latex-Portland Cement Mortar
ANSI A 136.1	Standard for Organic Adhesive for Installation of Ceramic Tile
ANSI A 137.1	Standard Specification for Ceramic Tile
ASTM A 185	Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement
ASTM D 41	Specification for Asphalt Primer Used in Roofing and Waterproofing
ASTM D 226	Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
ASTM D 312	Specification for Asphalt Used in Roofing
ASTM D 2178	Specification for Asphalt Glass (Felt) Used in Roofing and Waterproofing

3. Trade Standards:

"Handbook for Ceramic Tile Installation" by the Tile Council of America (TCA)

"Receptors," Ceramic Tile Institute (CTI) Standard Specification, CTI-R8-103-62 R-88

"Ceramic Tile Manual" by the Ceramic Tile Institute (CTI)

"Products and Materials Guide" by the Tile Contractors Association of America

1.5 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. Manufacturer's Information: Manufacturer's specifications and installation instructions for each product required.
2. Samples:
  - a. Samples of the tile manufacturer's full range of tile products conforming to the Specifications. If "equal" products are submitted, samples shall also represent the manufacturer's full range of similar products which conform to the Specifications.
  - b. Color selection samples shall include 2 sets of the manufacturer's full color and texture range of the series of tiles indicated, for the CONSTRUCTION MANAGER'S selections.
  - c. After color selection, the CONTRACTOR shall furnish three full size tile samples of each color and texture selected. Samples shall represent the full range of variation in color and texture to be expected from the product selected.
  - d. Submit samples of each type and color of sealant and grout and 12-inch long samples of each type of marble threshold.

- e. Submit one actual sample of each type of accessory item indicated, i.e., soap holder, grab bar, etc.
- 3. Shop Drawings: Shop drawings showing locations of all wall and floor expansion joints shall be submitted.
- 4. Special Patterns: Special tile patterns and layout drawings shall be submitted wherever a special design is indicated.

#### 1.6 OWNER'S MANUAL

- A. The following shall be included in the OWNER'S MANUAL in compliance with Section 01300:
  - 1. All tile provided for the job shall be delivered with quality certificates of the Tile Council of America (TCA) and shall meet all local code requirements for the installation indicated.
  - 2. In addition to a carton grade seal, the CONTRACTOR shall furnish the CONSTRUCTION MANAGER with a Master Grade Certificate stating the grade, kind of tile, identification marks for tile packages, and the name and location of the job. The certificate shall be signed by the manufacturer and issued when tile is shipped. Containers shall be delivered to the site with seals unbroken.
  - 3. Manufacturer's maintenance instruction for tile and grout shall be provided.

#### 1.7 REGULATORY REQUIREMENTS

- A. The WORK of this Section shall comply with the following:
  - 1. Slip Resistant Floor Surface Requirements: The floor surface of the finished installation shall comply with the slip resistant requirements of the authorities having jurisdiction.

#### 1.8 ALLOWABLE TOLERANCES

- A. Except for allowable tolerances in tile as specified in ANSI A 137.1, make corners of all tile flush and level with corners of adjacent tile.
- B. Where noted or required, slope floors to drains, complying with the tolerances indicated.
- C. For flat surfaces, the maximum deviation from true plumb or level plane shall not exceed 1/8 inch in 8 feet as measured under straight edge placed at any location on the surface.

#### 1.9 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. **Delivery of Materials:** Manufactured materials shall be delivered in original, unbroken, packages or containers bearing the manufacturer's label. Packages or containers shall be delivered to the site with seals unbroken. Labels on setting and grouting materials shall certify compliance with referenced standards.
- B. **Storage:** All materials shall be carefully stored in an area that is protected from deleterious elements in a manner recommended by the product manufacturer. Storage shall be in a manner that will prevent damage to this material or marring of its finish.

#### 1.10 WARRANTY

- A. The WORK hereunder shall be warranted for a period of not less than 2 years against defects in material and workmanship.

## PART 2 -- PRODUCTS

### 2.1 GENERAL

- A. **Manufacturer's Standards:** Ceramic tile products shall be in accordance with the quality standards of the Tile Council of America, manufacturer's published literature and specifications for the products indicated.

### 2.2 TILES

- A. **Grade:** All tile, unless otherwise indicated herein, shall be Standard Grade and shall comply with requirements of ANSI Standard A137.1. All tile containers shall be grade-sealed in accordance with minimum grade specifications described in ANSI Standard A137.1.
- B. **Size and Finish:** Tile shall conform to the following requirements:

1. Ceramic tile for walls [and ceilings] shall be domestically produced, 4-1/4-inch by 4-1/4-inch by 5/16-inch thick, bright and matte glazed, cushion edged, wall tile. Base ceramic tile shall be 4-1/4-inch by [4-1/4] [6]-inch, self covered tile similar to wall tiles.
2. Mosaic tile for floors and bases shall be domestically produced, 2-inch by 2-inch, and 1-inch by 1-inch unglazed ceramic tile. Tile used for locker room and shower floors and curb shall be slip-resistive tile having a 7-1/2 percent plus or minus 0.5 percent abrasive content. Mosaic tile selections shall be restricted to stock patterns. Mosaic tile for the floors shall be selected from the products of manufacturers as indicated hereinafter. [The tiles used at bases and/or borders shall be selected from the manufacturer's full range of mosaic tile.]
3. Quarry tile shall be domestically produced, standard grade quality, ground to size after firing. Quarry tile shall be [6-inch by 6-inch by 1/2-inch] [4-inch by 8-inch by 1/2-inch] thick. Base tile shall be same as other quarry tile [and be self-covered].

- C. Coved and rounded trim shapes shall be provided at all inside and outside corners, exposed edges, and as required for a complete installation.

### 2.3 SETTING AND GROUTING MATERIALS

- A. **Mortar:** Portland Cement Mortar Installation Materials: Provide materials to comply with ANSI A 108.1 as required for the installation method designated.
  1. Portland cement mortar shall be an approved mix of portland cement, sand, hydrated lime, and water.
  2. Mortar bed for quarry tile shall be one part (by volume) cement to 6 parts damp sand.
  3. Dry-set mortar for quarry tile which is used as a bond coat for setting tile shall be a mixture of portland cement mortar with sand and additives imparting water retentivity conforming to ANSI A 108.1.

- B. **Organic Adhesive:** ANSI A 136.1, Type I; adhesive used as a bond coat for setting ceramic tile.
- C. **Cleavage Membrane:** ASTM C 171, Type 1.1.2; cleavage membrane shall be polyethylene film, 4-mil thickness for wall use and 6-mil thickness for floor use.
- D. **Reinforcing Wire Mesh:** Floor setting bed wire mesh shall be 2-inch by 2-inch, 16-gauge welded wire fabric conforming to ASTM A 185.
- E. **Building Felts:** Building felts shall conform to ASTM D 226 or ASTM D 2178.
- F. **Asphalt Paper:** Asphalt paper shall conform to Federal Specification UU-B-790.
- G. **Grout:** Grout for tile setting shall conform to the following requirements:
  - 1. Grout for ceramic tile on cement mortar shall be either a mixture of one part white waterproof portland cement and one part fine-graded sand or one of the following manufactured mixes indicated hereinafter. Grout color(s) shall be as selected by the CONSTRUCTION MANAGER.
  - 2. Grout for mosaic tile in shower shall be a mix of one part gray waterproof portland cement and one part fine-graded, #30 silica sand.
  - 3. Grout for mosaic tile dry-set or adhesive set shall be a mix of grout indicated under the preceding subparagraph 1, herein, and special latex additive.
  - 4. Grout for quarry tile shall be a commercial, pre-mixed, colored grout which is approved by the TCA.

#### 2.4 TILE ACCESSORIES AND MISCELLANEOUS MATERIALS

- A. Tile accessories and miscellaneous related materials shall conform to the following requirements:
  - 1. **Soap Holder:** At each shower head the CONTRACTOR shall provide a soap holder. Soap holders shall be recess-type of vitreous china ceramic tile with matte glaze. Color shall be the same as adjacent tile; unless otherwise indicated.
  - 2. **Marble Thresholds:** Marble thresholds shall comply with ASTM C 503 requirements, shall be Marble Institute of America Group A, first-quality marble, free from cracks, chips, stains, or other defects and shall be uniform in tone and coloring. Threshold color shall be as selected by the CONSTRUCTION MANAGER from standard obtainable colors. Threshold shall be provided with long bevel as required by finish floor surface elevation.
  - 3. **Cleaning and Sealing Materials:** Cleaning and sealing materials shall be as specified in the tile manufacturer's printed recommendations.
  - 4. **Sealants:** Sealants shall be fungicidal, one-part silicone rubber sealant meeting Federal Specification TT-S-001543, Class A or B (as appropriate). Color shall be as selected by CONSTRUCTION MANAGER from manufacturer's standard colors.

5. Metal Edge/Transition Strip: Metal strips shall be satin finish brass [zinc alloy] [stainless steel], 1/8 inch wide at top edge, with integral provision for anchorage to mortar bed or substrate. Height shall match top surface of tile.

## 2.5 SHOWER PAN MATERIALS

- A. Materials for shower pan construction shall be as indicated in Section 07100.

## 2.6 MANUFACTURERS

- A. Products shall be of the following manufacture and type (or equal):

1. Unglazed ceramic tile for floors:

American Olean Tile Company (AOTC)  
United States Ceramic Tile Company

CONTRACTOR shall submit pricing for price [group 1] [group 2].

2. Glazed ceramic tile for walls [and ceilings]:

American Olean Tile Company (AOTC)  
United States Ceramic Tile Company

CONTRACTOR shall submit pricing for price [group 1] [group 2].

3. Quarry tile:

American Olean Tile Company (AOTC)  
Summitville Tile Company

CONTRACTOR shall submit pricing for price [group 1] [group 2]

4. Grout for ceramic tile:

Tile-Seal Tite; Upco; L&M Surco; Kaiser

5. Grout for Mosaic Tile:

Upco; L&M Surco; Kaiser

6. Mortar:

TCA 759, grey; L&M Surco; Upco; Kaiser

7. Sealant:

Dow Corning #795; GE "Silpruf"

## **PART 3 -- EXECUTION**

### 3.1 INSTALLATION - GENERAL

- A. All materials shall be installed by qualified tile setters under proper supervision of the CONTRACTOR, in strict conformance with requirements of the referenced standards.
- B. The installer shall examine substrates on which ceramic and quarry tile will be installed and conditions under which WORK will be performed. The CONTRACTOR shall be notified in writing of conditions detrimental to proper installation and maintenance of tile. Installer shall not proceed with WORK until unsatisfactory conditions have been corrected in an acceptable manner. Commencing WORK shall imply acceptance of existing conditions as satisfactory to successful completion of this WORK.
- C. Tile WORK shall extend into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, except as otherwise shown. WORK shall terminate neatly at obstructions, edges and corners without disrupting pattern or joint alignments.
- D. Intersections and returns shall be formed accurately. Cutting and drilling of tile shall be accomplished without marring of visible surfaces. Cut edges of tile abutting trim, finish or built-in items, shall be carefully ground smooth with a fine stone for straight, aligned joints. Tile shall be fit closely to electrical outlets, piping, fixtures, and other penetrations such that plates, collars, or covers overlap tile completely.
- E. **Jointing Pattern:** Unless otherwise indicated, tile shall be laid in a grid pattern. When adjoining tiles on floor, base, walls and trim are the same size, joints shall be made to align.
- F. Tile fields shall be centered on each ceiling, wall, floor, and section thereof in order to avoid or minimize small, unsightly cuts.
- G. All glazed tile shall be set with a spaced joint formed by 2 projecting lugs on each edge of all field tile. Joint widths shall be uniform throughout unless otherwise indicated.
- H. Factory-manufactured angles shall be used to form all trim corners. All vertical and horizontal external and internal corners and tops of walls shall be formed with integral bullnose tile. Cove base shall be used at the intersections of floors and walls. Corners shall be formed with integral cove tiles.
- I. The intersection of wall tile to ceiling and the top of ceramic tile wainscots shall be sealed with a sealant.
- [J. Tile backing board shall have all joints filled and taped with tape. Materials, and methods shall be as required by the board manufacturer and CTI published recommendations and specifications.]

### 3.2 CEMENT MORTAR SET TILE

- A. All glazed ceramic tiles and mosaic tiles for toilets, locker rooms, drying areas, laundry, wash areas, and wet or moist areas, walls, wainscots, floors, and ceilings shall be set with portland cement mortar unless otherwise indicated.
- B. Where Portland cement mortar is used, the non-vitreous tile shall be thoroughly soaked at least one-half hour in clear water and the excess drained off, leaving no free water on the back of the tiles. Any tiles left out of water for more than 2 hours shall be resoaked.
- C. Mortar setting bed on walls shall be cut through to scratch coat at every fourth course.

- D. Tiles shall be firmly embedded in mortar with all finished surfaces brought to true and level planes.

### 3.3 ADHESIVE SET TILE

- A. Ceramic tile walls, wainscots and base of [ ] [ ] and [ ] shall be installed by an adhesive set system.

### 3.4 GROUTING

- A. Tile joints shall be thoroughly washed with clean water before grouting.
- B. Grouting cement shall be mixed with water to a thick cream consistency. Grout shall be forced into all joints to thoroughly fill entire depth.
- C. Square edge tile joints shall be grouted flush with face of tiles making a neatly finished smooth surface. Cushion-edged tile joints shall have grout recessed to depth of cushion.

### 3.5 SHOWER PAN AND WALL MEMBRANE

- A. **Wall Membrane:** Water resistant membrane behind wall tile shall be provided and constructed per UBC and applicable Standards listed in Part 1 unless otherwise indicated.
- B. **Floor Membrane:** Floor membrane shall be a cleavage membrane system. It shall be installed per UBC and applicable Standards as listed in Part 1 and manufacturer's published installation instructions.
- C. **Shower Pan System:** Each shower shall be provided with a waterproof membrane shower pan system. Floor membrane shall be shower pan membrane system as indicated in Section 07100. Shower pan system shall be recessed so that wall and base tile will align. The CONTRACTOR shall notch the framing system if necessary. The shower pan shall extend up all walls at least 6 inches and over curbs covering the top surface of the curb.
- D. **Minimum Installation Requirements:** Application and installation of wall membrane, floor membrane and shower pan shall be per UBC and per manufacturer's printed instructions.

### 3.6 SOAP HOLDERS

- A. The soap holders shall be recessed to align with adjacent tile surfaces. The joint around soap holders shall be kept clean and free of grout and filled with sealant. Soap holders shall be located where they will not interfere with grab bars and plumbing fixtures.

### 3.7 EXPANSION JOINTS

- A. Expansion joints and other sealant filled joints, including control, contraction and isolation joints shall be located where indicated, or if not indicated, shall be located at spacings and locations recommended in TCA "Handbook for Ceramic Tile Installation," and approved by the CONSTRUCTION MANAGER. Preparation of joints and application of sealant shall comply with referenced standards and recommendations of sealant manufacturer.
- B. Expansion joints shall be provided in the floor within 2 inches of all walls and columns. Where tile work abuts expansion resistive surfaces, expansion joints shall be provided conforming

to TCA method EJ411; and whenever the surface dimension exceeds 16 feet in length or width.

- C. Expansion joints shall be provided where tile abuts flush with another flooring material and around wall hinge bench supports.

### 3.8 MARBLE THRESHOLDS

- A. Marble thresholds shall be provided where floor tile does not abut flush with adjacent floor materials.
- B. Marble thresholds shall be installed at locations indicated and set in same type of setting bed as abutting field tile unless otherwise indicated.

### 3.9 QUARRY TILE

- A. Concrete subfloor shall be cleaned and dampened before applying mortar bed.
- B. Reinforcing wire mesh joints shall be lapped at least one full mesh width. Mesh shall be supported so that it will be at approximately the mid depth of the mortar bed.
- C. Mortar bed materials shall be mixed with as little water as will produce a workable mix. Mortar bed shall not be under 3/4-inch, nor over 1-1/4-inch thick.
- D. Tile shall be applied in position and tamped firmly into mortar to obtain a strong bond. Mortar shall be tamped before tile is applied.

### 3.10 ADHESIVE-SET TILE

- A. Adhesive-set may be used only where tile is applied to water-resistive gypsum board backing [tile backing board] or where otherwise indicated. Backing material and sealer shall comply with manufacturer's written recommendations. Special care shall be given to all areas which require waterproofing.

### 3.11 CLEANING, CURING, AND SEALING

- A. Setting materials, grout, and sealant shall be cleaned from tile and adjacent surfaces as WORK progresses. All stain shall be removed from face of tiles.
- B. Finished installation shall be left clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile WORK.
- C. Proper temperature and humidity conditions shall be provided for curing the WORK. All cement grouts shall be damp-cured for not less than 72 hours. Additional dampness shall be provided as required and the installation covered with a non-staining membrane during the curing process.
- D. All tile and grout shall be cleaned and sealed with materials and methods recommended by tile manufacturer. Adjacent work and surface shall be protected from damage during cleaning of the tile.

### 3.12 PROTECTION

- A. Barricades or other suitable means shall be provided to protect finished tile work for a minimum of 7 days after grouting is completed to allow proper set. Before other trades receive access to the area, floor tiles shall be covered with suitable nonstaining paper until final acceptance of all WORK.

\*\* END OF SECTION \*\*