

## SECTION 09 30 00

CERAMIC TILE, QUARRY TILE, AND PAVER TILE  
07/06

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A108.1 (2005) Installation of Ceramic Tile

ANSI A137.1 (1988) Ceramic Tile

## ASTM INTERNATIONAL (ASTM)

ASTM A 185 (2002) Steel Welded Wire Reinforcement, Plain, for Concrete

ASTM C 144 (2004) Aggregate for Masonry Mortar

ASTM C 150 (2005) Portland Cement

ASTM C 206 (2003) Finishing Hydrated Lime

ASTM C 207 (2005) Hydrated Lime for Masonry Purposes

ASTM C 241 (1990; R 1997e1) Abrasion Resistance of Stone Subjected to Foot Traffic

ASTM C 33 (2003) Concrete Aggregates

ASTM D 2103 (2003) Polyethylene Film and Sheeting

ASTM D 226 (2005) Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

## MARBLE INSTITUTE OF AMERICA (MIA)

MIA Design Manual (2003) Dimension Stone Design Manual

## TILE COUNCIL OF AMERICA (TCA)

TCA Hdbk (2003-2004) Handbook for Ceramic Tile Installation

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval.] Submit the following in accordance with Section 01 33 00  
SUBMITTAL PROCEDURES:

### SD-02 Shop Drawings

#### Detail Drawings

Drawings showing ceramic tile pattern elevations and floor plans.

### SD-03 Product Data

#### Tile; G

Manufacturer's catalog data and preprinted installation and cleaning instructions.

### SD-04 Samples

#### Tile

#### Accessories

#### Marble Thresholds

#### Grout

Samples of sufficient size to show color range, pattern, type and joints.

## 1.3 DELIVERY AND STORAGE

Deliver materials to the project site in manufacturer's original unopened containers with seals unbroken and labels and hallmarks intact. Protect materials from weather, and stored under cover in accordance with manufacturer's printed instructions.

## 1.4 ENVIRONMENTAL REQUIREMENTS

Do not perform ceramic tilework unless the substrate and ambient temperature is at least 50 degrees F and rising. Maintain temperature above 50 degrees F while the work is being performed and for at least 7 days after completion of the work. When temporary heaters are used, ventilate the area to the outside to avoid carbon dioxide damage to new tilework.

## 1.5 WARRANTY

Provide manufacturer's standard performance guarantees or warranties that extend beyond a 1-year period.

## 1.6 EXTRA STOCK

Supply an extra two percent of each type tile used in clean and marked cartons.

## 1.7 DETAIL DRAWINGS

Dimension and draw detail drawings at a minimum scale of 1/4 inch = 1 foot. Include drawings of pattern at inside corners, outside corners, termination points and location of all equipment items such as thermostats, switch plates, mirrors and toilet accessories mounted on surface.

## PART 2 PRODUCTS

### 2.1 TILE

Conform to ANSI A137.1 for standard grade tile. Provide grade sealed containers. Provide tile type, size, and color indicated on drawings.

#### 2.1.1 Accessories

Provide built-in type accessories of the same materials and finish as the wall tile. Provide accessories as follows:

### 2.2 SETTING-BED

Provide for shower floors and as indicated on drawings. Compose the setting-bed of the following materials:

#### 2.2.1 Aggregate for Concrete Fill

Conform to ASTM C 33 for aggregate fill. Do not exceed one-half the thickness of concrete fill for maximum size of coarse aggregate.

#### 2.2.2 Portland Cement

Conform to ASTM C 150 for cement, Type I, gray.

#### 2.2.3 Sand

Conform to ASTM C 144 for sand.

#### 2.2.4 Hydrated Lime

Conform to ASTM C 206 for hydrated lime, Type S or ASTM C 207, Type S.

#### 2.2.5 Reinforcing Wire Fabric

Conform to ASTM A 185 for wire fabric. Provide 2 by 2 inch mesh.

### 2.3 WATER

Provide potable water.

### 2.4 MORTAR, GROUT, AND ADHESIVE

Conform to the following for mortar, grout, and adhesive:

2.4.1 Dry-Set Portland Cement Mortar

ANSI A108.1.

2.4.2 Latex-Portland Cement Mortar

ANSI A108.1.

2.4.3 Ceramic Tile Grout

ANSI A108.1.

2.4.4 Cementitious Backer Board

Provide cementitious backer units, for use as tile substrate in toilet/locker rooms and as indicated on drawings. Furnish 1/2inch thick cementitious backer units.

2.5 MARBLE THRESHOLDS

Provide marble thresholds of size required by drawings or conditions. Categorize marble Group A as classified by MIA Design Manual. Provide a fine sand-rubbed finish marble with white or gray in color as approved by the Contracting Officer. Provide minimum 12.0 marble abrasion when tested in accordance with ASTM C 241.

2.6 MEMBRANE MATERIALS

Conform to ASTM D 226, Type 1 for 15 pound waterproofing membrane, asphalt-saturated building felt. Conform to ASTM D 2103 4 mil for polyethylene film.

PART 3 EXECUTION

3.1 PREPARATORY WORK AND WORKMANSHIP

Inspect surface to receive tile in conformance to the requirements of ANSI A108.1 for surface conditions for the type setting bed specified and for workmanship. Provide variations of tiled surfaces that fall within maximum values shown below:

TYPE	WALLS	FLOORS
Dry-Set Mortar	1/8 inch in 8 ft.	1/8 inch in 10 ft.
Latex Portland Cement Mortar	1/8 inch in 8 ft.	1/8 inch in 10 ft.

3.2 GENERAL INSTALLATION REQUIREMENTS

Do not start tile work until roughing in for mechanical and electrical work has been completed and tested, and built-in items requiring membrane waterproofing have been installed and tested. Do not start floor tile installation in spaces requiring wall tile until after wall tile has been installed. Apply tile in colors and patterns indicated in the area shown on the drawings. Install tile with the respective surfaces in true even

planes to the elevations and grades shown. Provide special shapes as required for sills, jambs, recesses, offsets, external corners, and other conditions to provide a complete and neatly finished installation. Solidly back tile bases and coves with mortar.

### 3.3 INSTALLATION OF WALL TILE

Install wall tile in accordance with the TCA Hdbk, method W202.

#### 3.3.1 Dry-Set Mortar and Latex-Portland Cement Mortar

Use Dry-set or Latex-Portland Cement to install tile in accordance with ANSI A108.1. Use Latex Portland Cement when installing porcelain ceramic tile.

### 3.4 INSTALLATION OF FLOOR TILE

Install floor tile in accordance with TCA Hdbk method F113 and F115. Install shower receptors in accordance with TCA Hdbk method B415.

#### 3.4.1 Workable or Cured Mortar Bed

Install floor tile over a workable mortar bed or a cured mortar bed at the option of the Contractor. Conform to ANSI A108.1 for workable mortar bed materials and installation. Conform to ANSI A108.1 for cured mortar bed materials and installation. Provide minimum 1/4 inch to maximum 3/8 inch joints in uniformed width.

#### 3.4.2 Dry-Set and Latex-Portland Cement

Use dry-set or Latex-Portland cement mortar to install tile directly over properly cured, plane, clean concrete slabs in accordance with ANSI A108.1. Use Latex Portland cement when installing porcelain ceramic tile.

#### 3.4.3 Ceramic Tile Grout

Prepare and install ceramic tile grout in accordance with ANSI A108.1.

#### 3.4.4 Waterproofing

Shower pans are specified in Section 22 00 00 PLUMBING, GENERAL PURPOSE.

#### 3.4.5 Concrete Fill

Provide a 3500 psi concrete fill mix to dry as consistency as practicable.

Spread, tamp, and screed concrete fill to a true plane, and pitch to drains or levels as shown. Thoroughly damp concrete fill before applying setting-bed material. Reinforce concrete fill with one layer of reinforcement, with the uncut edges lapped the width of one mesh and the cut ends and edges lapped a minimum 2 inch. Tie laps together with 18 gauge wire every 10 inch along the finished edges and every 6 inch along the cut ends and edges. Provide reinforcement with support and secure in the centers of concrete fills. Provide a continuous mesh; except where expansion joints occur, cut mesh and discontinue across such joints.

Provide reinforced concrete fill under the setting-bed where the distance between the under-floor surface and the finished tiles floor surface is a minimum 2 inch, and of the same thickness that the mortar setting-bed over the concrete fill with the thickness required in the specified TCA Hdbk method.

### 3.5 INSTALLATION OF MARBLE THRESHOLDS

Install thresholds where indicated, in a manner similar to that of the ceramic tile floor. Provide thresholds full width of the opening. Install head joints at ends not exceeding 1/4 inch in width and grouted full.

### 3.6 EXPANSION JOINTS

Form and seal joints as specified in Section 07 92 00 JOINT SEALANTS.

#### 3.6.1 Walls

Provide expansion joints at control joints in backing material. Wherever backing material changes, install an expansion joint to separate the different materials.

#### 3.6.2 Floors

Provide expansion joints over construction joints, control joints, and expansion joints in concrete slabs. Provide expansion joints where tile abuts restraining surfaces such as perimeter walls, curbs and columns and at intervals of 24 to 36 feet each way in large interior floor areas and 12 to 16 feet each way in large exterior areas or areas exposed to direct sunlight or moisture. Extend expansion joints through setting-beds and fill.

### 3.7 CLEANING AND PROTECTING

Upon completion, thoroughly clean tile surfaces in accordance with manufacturer's approved cleaning instructions. Do not use acid for cleaning glazed tile. Clean floor tile with resinous grout or with factory mixed grout in accordance with printed instructions of the grout manufacturer. After the grout has set, provide a protective coat of a noncorrosive soap or other approved method of protection for tile wall surfaces. Cover tiled floor areas with building paper before foot traffic is permitted over the finished tile floors. Provide board walkways on tiled floors that are to be continuously used as passageways by workmen. Replace damaged or defective tiles.

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