

LONG FORM GUIDELINE SPECIFICATIONS
SECTION 09300 - CERAMIC TILE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Furnish all labor, materials, tools, equipment and services necessary for and reasonably incidental to complete the tile work as shown on the drawings or specified.
- B. Related documents, drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to work of this section.
- C. Related Sections:
 - 1. Division 7, sealing expansion joints and other joints in tile work (joint sealant types, colors and manufacturers to be specified by Architect). 07920
 - 2. Division 3, Concrete. 03300

1.2 REFERENCE STANDARDS

- A. Comply with current editions and applicable Specifications of the following:
 - 1. American Society for Testing and Materials (ASTM).
 - 2. American National Standards Institute (ANSI).
 - 3. Tile Council of America (TCA) Handbook for Ceramic Tile Installation.

1.3 QUALITY ASSURANCE

- A. Provide tile materials of each type, color and finish from Crossville Porcelain Stone / USA, Crossville, Tennessee. Provide setting, grouting and related materials of each type, color and finish obtained from one source.
- B. Deliver, store and handle materials in accordance with manufacturer's instructions.
- C. Tile contractor, by commencing the work of this section, assumes overall responsibility to assure that all assemblies, components and parts shown or required within the work of this section comply with contract documents and are compatible with each other and with the conditions and expected use.
- D. Installer Qualification: Engage an installer with a minimum of five (5) commercial tile installations similar in material, design and scope to that indicated.

- E. Pre-Installation Meeting: Prior to tile installation, conduct a pre-installation project meeting. Contractor, Subcontractor, Material Suppliers, Architect and Owner representative shall be notified of the meeting.
- F. Field Mock-Up: Install a fully finished mock-up for each type tile installation. Mock-up shall be a minimum of 10'0" x 10'0" and will be reviewed for joint quality, color range, pattern and workmanship.
- G. Extra Stock: Furnish extra stock of quantity equal to _____% of amount installed, in full-size units, for each type, color, size and finish of tile.

1.4 SUBMITTALS

- A. Verification Samples: Submit the following for each type, color, size, and finish included in the work.
 - 1. Full size tile and trim shapes, (indicate number of pieces required).
 - 2. Grout color samples.
 - 3. Sealant color samples or Prefabricated Joint/Transition Strip Samples
- B. Product and Installation Data:
 - 1. Porcelain tile manufacturer's product and technical data indicating compliance with applicable standards.
 - 2. Master Grade Certificates for each type of tile issued by tile manufacturer and signed by the installer.
 - 3. Mortar and grout manufacturer's technical data sheets indicating suitability for the installation specified and compliance with applicable standards.
 - 4. Sealant or prefabricated joint manufacturer's product and technical data.

1.5 ENVIRONMENTAL

- A. Comply with requirements of referenced standards and recommendations of material manufacturers for environmental conditions before, during and after installation.
- B. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- C. Maintain minimum and maximum temperature limits as recommended by manufacturers.

- D. Protect adjacent surfaces during progress of the work in this section.
- E. Illuminate the work area during installation providing the same level and angle of illumination as will be available for final inspection.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Furnish tile complying with "Standard Grade" requirements per ANSI A137.1 - 1988, for types of tile indicated.
- B. Comply with ANSI Standard for Tile Installation Material and current Tile Council of America Handbook for products and materials indicated for setting and grouting.

2.2 TILE

A. Unglazed and glazed porcelain tile shall be standard grade quality as manufactured by Crossville Inc., Crossville, Tennessee, and shall conform to the requirements of ANSI A137.1 - 1988.

1. Size: Porcelain and ceramic tile shall be manufactured to specific size after firing and shall be Nominal - _____ (Insert). All measurements are in inches unless otherwise specified.

* Denotes mounted mosaics, refer to manufacturer's literature or go to crossvilleinc.com for specific dimensions of mounted sheet.

Nominal	Actual
*1 x 1 x 5/16	1 ¼ x 1 ¼ x 5/16
1 x 1 x 3/8	1 x 1 x 3/8
*1 x 2 x 5/16	1 ¼ x 2 5/8 x 5/16
*1 x 3 x 5/16	1 ¼ x 4 x 5/16
*2 x 2 x 3/8	2 ¼ x 2 ¼ x 3/8
*3 x 3 x 3/8	2 ¾ x 2 ¾ x 3/8
*3 x 3 x 1/4	2 7/8 x 2 7/8 x ¼
3 x 6 x 3/8	3 x 6 x 3/8
3 x 6 x 3/8	2 ¾ x 5 5/8 x 3/8
3 x 6 x 3/8	2 7/8 x 5 ¾ x 3/8
3 x 12 x 3/8	2 7/8 x 11 ¾ x 3/8
*4 x 4 x 3/8	3 ¾ x 3 ¾ x 3/8
4 ½ x 4 ½ x 3/8	4 ½ x 4 ½ x 3/8
4 x 8 x 3/8	3 ¾ x 7 ¾ x 3/8
6 x 6 x 5/16	5 ¾ x 5 ¾ x 5/16
6 x 6 x 3/8	5 ¾ x 5 ¾ x 3/8
6 x 6 x 3/8	6 x 6 x 3/8
6 ½ x 6 ½ x 3/8	6 ½ x 6 ½ x 3/8
6 x 12 x 5/16	5 ¾ x 11 ¾ x 5/16
6 x 12 x 3/8	5 ¾ x 11 ¾ x 3/8
6 x 24 x 3/8	5 ¾ x 23 7/8 x 3/8
7 x 7 x 5/16	6 ¾ x 6 ¾ x 5/16
8 x 8 x 5/16	7 ¾ x 7 ¾ x 5/16
8 x 8 x 3/8	7 ¾ x 7 ¾ x 3/8
8 x 12 x 5/16	7 ¾ x 11 ¾ x 5/16
8 x 13 x 5/16	7 7/8 x 13 1/8 x 5/16
12 x 12 x 1/4	11 7/8 x 11 7/8 x ¼
12 x 12 x 5/16	11 ¾ x 11 ¾ x 5/16
12 x 12 x 3/8	11 ¾ x 11 ¾ x 3/8
12 x 12 x 3/8	12 ¼ x 12 ¼ x 3/8
12 x 18 x 3/8	11 ¾ x 17 ¾ x 3/8
12 x 18 x 3/8	12 ¼ x 18 3/8 x 3/8
12 x 24 x 3/8	11 ¾ x 23 7/8 x 3/8
12 x 24 x ½	11 ¾ x 23 ½ x ½
13 x 13 x 5/16	13 1/8 x 13 1/8 x 5/16
13 x 13 x 3/8	13 x 13 x 3/8
14 x 14 x 5/16	13 5/8 x 13 5/8 x 5/16
14 x 28 x 3/8	13 5/8 x 27 ¼ x 3/8
16 x 16 x 3/8	15 ¾ x 15 ¾ x 3/8
18 x 18 x 3/8	17 ½ x 17 ½ x 3/8
18 x 18 x 3/8	17 ¾ x 17 ¾ x 3/8
18 x 18 x 3/8	18 3/8 x 18 3/8 x 3/8
20 x 20 x 3/8	19 ½ x 19 ½ x 3/8
24 x 24 x ½	23 ½ x 23 ½ x ½

2. Type: Porcelain tile shall be _____ (Insert)

Cross-Sheen [UPS]	Unpolished [UP]	Polished [PO]
Cross-Tread [CTS]	Cross-Dot [CD]	Cross-Grip [CG]
Cross-Slate [CS]	Cross-Plus [CP]	Exterior [XT]
Cross-Grid [CG]	Cross-Colors Mosaics [UPS], [GL], [CTS]	

3. Thickness: Porcelain tile shall be manufactured to specific thickness after firing and shall be nominal _____ ([8.0 mm or greater] for large unit tile or [6.0mm or greater] for Mosaics).

4. Color: _____ (Insert Crossville color name and number).

5. Product Test Data:

a. Water Absorption (ASTM C373): _____ %.

b. Abrasive Wear Resistance (ASTM C501): _____.

c. Breaking Strength (ASTM C648): _____ lbs.

d. Bond Strength (ASTM C482): _____ psi.

e. Coefficient of Friction (ASTM C1028): _____ dry/ _____ wet.

6. According to availability, provide matching trim shapes such as bullnose, corners, borders and cove base when specified.

2.3 SETTING AND GROUTING MATERIALS:

A. Use appropriate installation mortars according to ANSI A118-1999 series or A136.1-1999.

B. Use grout per ANSI A118.3, A118.5, A118.6 A118.7 or A118.8-1999.

C. Use waterproofing/Anti Fracture Membrane as required according to ANSI A118.10-1999.

2.4 EXPANSION JOINTS, CONTROL, CONTRACTION, AND ISOLATION JOINTS:

A. Refer to most current TCA Handbook, Method EJ171-YY (Year) for recommendations on locating, treating and detailing various types of construction joints. NOTE: Architect must specify type of expansion joints and show location and details on drawings.

B. Use sealant complying with ASTM C920 according to Type, Grade, Class and Uses required.

- C. Provide marble threshold trim strips or other edging material where tile terminates at dissimilar finishes as shown or specified.
- D. Prefabricated expansion joints can also be used when suitable for installation.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates where tile will be installed for compliance with requirements for installation tolerances and other conditions effecting performance of installed tile. Verify that substrates for setting tile are well cured, structurally sound dry, clean, and free from oil or waxy films, curing compounds or other coatings and surface treatments.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected. Commencement of work signifies acceptance of substrate and installation conditions.

3.2 PREPARATION

- A. Substrate Preparation: Prepare and clean substrate in accordance with installation standards and manufacturer's instructions, and as follows:
 - 1. Remove protrusions, bumps and ridges by grinding or chipping.
 - 2. Repair, fill, and level cracks, holes, depressions and rough or chipped areas in substrate using patching material recommended by setting materials manufacturer.
 - 3. Slab to have light broom finish when tile is installed by thin-set method.
 - 4. Ensure that the substrate is within the following tolerances:
 - a. Horizontal surfaces (floors) - Maximum variation in substrate shall not exceed ¼ " in ten feet* from required plane, depending on substrate.
 - b. Vertical surfaces (walls) - Maximum variation in substrate shall not exceed ¼ " in ten feet* from the required plane, depending on substrate.

* When using tile larger than 12"x12" and a grout joint narrower than ¼" is desired a more stringent tolerance (e.g., 1/8 " in 10'), should be considered.
- B. Jobsite Blending: Blend tiles before installing in accordance with reference standards to produce an even range and distribution of color and finish.

3.3 INSTALLATION

- A. Manufacturers' Instructions: Perform work in compliance with standard accepted installation guidelines, Crossville Porcelain Stone/USA instructions and setting materials manufacturers' instructions.
- B. General Installation Standards: Install tile in accordance with ANSI A108 standards, appropriate TCA methods, and written instructions of the specified manufacturers.
 - 1. Thin-set Floor Installations: TCA Method F-_____.
 - 2. Thin-set Wall Installations: TCA Method W-_____.
 - 3. Thick Set Floor Installations: TCA Method F-_____.
 - 4. Thick Set Wall Installations: TCA Method W-_____.
- C. Installing Tile:
 - 1. Install tile in pattern indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Adjust to minimize tile cutting and to avoid tile less than half size.
 - 2. When possible, smooth cut edges of tile and/or use appropriate cutter or wet saw to produce smooth cuts. Provide straight cuts which align with adjacent materials.
 - 3. Extend tile into recesses and under equipment and fixtures to form a complete covering without interruption.
 - 4. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment.
 - 5. Provide tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints smooth and even, without voids, cracks, or excess mortar or grout.
 - 6. Mix mortar in strict accordance with manufacturer's recommendations.
 - 7. Apply setting material in accordance with manufacturer's directions and install tile before mortar has started initial cure. For thin set mortar application, use a notch trowel that will achieve the recommended coverage of mortar after tiles have been installed. Reference standard coverage information and follow manufacturer's recommendations for trowel size when using mortar.
 - 8. Do not spread more material than can be covered within 10 to 15 minutes. If "skinning" occurs, remove mortar and spread fresh material. Spread mortar

with notches running in one direction that shall be perpendicular to the pressing, pushing and pulling of tile during placement.

9. Place tile in fresh mortar, press, push and pull the tile slightly to achieve as near 100% coverage and contact of tile with setting material and substrate as possible. The coverage shall be no less than 85% and be sufficiently distributed to give full support of the tile. Make sure that all corners and edges are well supported with mortar. Leave no hollow corners or edges. NOTE: 95-100% coverage is mandatory for wet or exterior areas. A skim coat ("back-butter") of mortar can be placed onto the entire back of the tile using a trowel in order to assist in optimum adhesion and coverage of the mortar being used.
10. Ensure there is a minimum 1/8" of mortar between tile and substrate after proper bedding. Installer must periodically remove sheets or individual tiles to assure proper bond coverage consistent with industry specifications. If coverage is found to be insufficient, use a larger size notch trowel.
11. Use a beating block and hammer or rubber mallet so that faces and edges of individual tiles are flush and level with faces and edges of adjacent tiles, and to reduce lippage.

D. Grouting:

1. Install grout in accordance with ANSI A108.10, A108.6, A108.8, A108.9-1999 correlating to grout type chosen and manufacturer's recommendations.
2. Mix grout material in strict accordance with manufacturer's directions.
3. Apply grout to produce full, smooth grout joints of uniform width, and free of voids and gaps.
4. Before grouting entire area do a test area to assure there will be no permanent staining or discoloration of the tile and to verify that the grout is easily removed from the surface. If necessary, pre-coat exposed surfaces of tile with a grout release as recommended by the manufacturer, as this will facilitate removal of the grout.
5. Cure all setting and grouting materials in accordance with manufacturer's recommendations.

E. Cleaning and Protection:

1. If one has been used, remove grout release and clean tile surfaces so they are free of grout residue and foreign matter, in accordance with manufacturer's

instructions. If a grout haze or residue remains, use a suitable grout haze remover or cleaner and contact grout manufacturer for recommendations. Flush surface with clean water before and after cleaning. Do not use harsh hydrochloric, muriatic or sulfuric acid or acid-based cleaners to clean glazed tiles or tiles grouted with latex modified grout.

2. When a heavy residue of Portland cement grout is present, acceptable tile cleaning acids may be used. However, the grout should be allowed to cure a minimum of 10 days before this aggressive cleaning method is employed. Tile and grout shall be soaked with water before cleaning. In the absence of a recommendation from the grout manufacturer, acid cleaning may be done with a saturated solution of phosphoric or sulfamic acid, mixed in accordance with manufacturer's recommendations.
3. After cleaning, provide protective covering and maintain conditions to protect tile work from damage or deterioration. Where tiled surfaces will be subject to equipment or wheel traffic or heavy construction traffic, and during move-in of furniture and equipment, cover protective covering with 1/4" hardboard, plywood or similar material.
4. Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.
5. Consult most current Crossville Brochure "How to Care For Porcelain Tile" for information on post installation cleanup and routine maintenance

This form document is intended as a general guideline only. It is the responsibility of the design professional to revise this form to suit specific requirements of the project. Crossville Porcelain Stone / USA makes no representation or warranties that the general information contained within this document is suitable for the specific requirements of the project. Consult your Crossville Porcelain Stone / USA representative and the installation and maintenance material manufacturers specified for technical assistance. The design professional should refer to the current edition of the TCA handbook and other reference standards for additional information. The design professional should coordinate this section with the drawings and with general provisions of the contract, including general and supplementary conditions and Division I general requirements.

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