

SECTION 077619 - PORCELAIN-TILE ROOF PAVERS

PART 1 - GENERAL

This is a specification guideline template. Verify all specifications in accordance with any applicable building codes and project engineering.

1.1 SUMMARY

A. Section Includes:

1. Porcelain-tile roof pavers.
2. Paver support system.
3. Supplementary support system components and accessories necessary for installation.
4. Other system components, provided by Installer.

B. Related Requirements:

1. Section 321400 "Unit Paving" for brick, asphalt, concrete, and stone pavers on aggregate, mortar, and bituminous setting beds.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product and system indicated.

1. Include manufacturer's specifications for materials, finishes, construction details, installation instructions, and recommendations for maintenance.

B. Shop Drawings: For paver tile and paver support system layout; indicate adjacent construction, perimeter containment components, penetrations, attachment details, and other conditions.

1. Include data indicating compliance with performance requirements.

C. Samples for Initial Selection: For each type of porcelain-tile roof paver, provide representative charts of manufacturer's full range of patterns and colors.

D. Samples for Verification: For each type of exposed finish for each porcelain-tile roof paver selected.

1. Paver Size: Manufacturers' standard size, **[4 by 4 inches]** **[12 by 12 inches]** **[24 by 24 inches]** **[full]**.
2. Accessories: **[Adjustable pedestal support]** **[base pad]** **[and]** **[shims]**.

E. Delegated Design Submittal: For paver support system installation, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For delegated design engineer.

- B. Sample Warranty: For warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For porcelain-tile roof pavers and paver support system to include in operation and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Extra Stock Material: Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. Include inventory list of items delivered.
 1. Porcelain-Tile Roof Pavers: Full-size units in quantity equal to [3] <Insert number> percent of quantity installed for each type, pattern, color, and size.
 2. Paver Supports: Units in quantity equal to [3] <Insert number> percent of quantity installed for each type and size. Include manufacturer-furnished adjustment tool.
 3. Deliver materials to location determined by Owner.

1.6 QUALITY ASSURANCE

- A. Delegated Design Engineer: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.

1.7 MOCKUPS

- A. Mockup: Build mockups to verify selections made under Sample submittals and to set quality standards for materials and execution.
 1. Build mockup in size and location indicated on Drawings, or if not indicated, no fewer than [four] <Insert number> porcelain-tile roof pavers and [nine] <Insert number> roof paver supports.
 2. Acceptance of mockups does not constitute acceptance of deviations from the Contract Documents contained in mockups unless Architect specifically accepts such deviations in writing.
 3. Subject to compliance with requirements, accepted mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect products during shipping, handling, and storage to prevent staining, chipping, deterioration of components, or other damage. Store unused materials in original packaging.

1.9 WARRANTY

- A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace the following:
1. Damaged porcelain-tile roof pavers that are delivered to Project site chipped, cracked, or broken prior to being unpackaged.
 2. Porcelain-tile roof pavers and paver supports that fail in materials or workmanship within specified warranty period when installed and used in accordance with manufacturer's written instructions.
 3. Manufacturer's Warranty Period: Ten years from date of Substantial Completion.
 4. Installer's Warranty Period: **[Three]** <insert number> years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain porcelain-tile roof pavers and roof paver supports from single source or producer.

2.2 PORCELAIN-TILE ROOFING PAVERS

- A. Structural Porcelain-Tile Roof Pavers: An impervious vitreous tile with a water-absorption rate of 0.5 percent or less in accordance with ASTM C373 test method; abrasion, freeze/thaw, chemical, and stain resistant; intended for exterior use with paver support system.
1. See current available colors for specification.
 - a. **Mbrico Tile**
 2. Size: **Nominal 12x24, 24x24, 12x48, 24x48.**
 3. Thickness: **7/8" (20 mm).**
 4. Weight: **10.6 lb/sq. ft. (44 kg/sq. m).**
 5. Breaking Strength (ISO 10545-4): **4500 lbf/sq. ft. (1.053 MPa),** minimum.
 6. Bending Strength (EN 1339): Class 14.
 7. Static Load Capacity (EN 12825): **1700 lbf/sq. ft. (0.814 MPa),** minimum.
 8. Wind Uplift (ASTM E 1592): **Contact for specific installation method (160 MPH).**
 9. Modulus of Rupture (ISO 10545-4): **7000 lbf/sq. in. (0.335 MPa),** minimum.
 10. Colors and Textures: **[As indicated by manufacturer's designations] [Match Architect's samples] [As selected by Architect from manufacturer's standard range] [As selected by Architect from manufacturer's custom range] [As selected by Architect from manufacturer's full standard and custom range] <Insert color>.**

2.3 PAVER SUPPORT SYSTEM

- A. Adjustable-Height-Pedestal Paver Supports: Continuously variable, adjustable-height, high-impact and flame-resistant ABS plastic system components. Accommodate height adjustments from **1/2 to 39 inches** to provide level paver installation. System shall maintain **1/8- to 1/4-inch** paver joint width and alignment of pavers while allowing for drainage, air circulation, and preventing water accumulation.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide MRP Adjustable Pedestals or comparable product by one of the following:
 - a. **<Insert manufacturer's name>**.
 - 2. Load Capacity: Not less than **2200 lbs**
- B. Fixed-Height-Pedestal Paver Supports: High-impact and flame-resistant ABS plastic system components of varying thickness, stackable to accommodate height adjustments from **1/2 to 2 inches**. System shall maintain **1/8- to 1/4-inch** paver joint width and alignment of pavers while allowing for drainage, air circulation, and preventing water accumulation.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide MRP Fixed Height Pedestals or comparable product by one of the following:
 - a. **<Insert manufacturer's name>**.
 - 2. Load Capacity: Not less than **1500 lbs**.
- C. Paver Support System Components and Accessories: Provide manufacturer's standard high-impact and flame-resistant ABS plastic spacer tabs, shims, extenders, reducers, lateral bracing support members, and other accessories as necessary for a complete assembly.

2.4 OTHER SYSTEM COMPONENTS, PROVIDED BY INSTALLER

- A. Protection Course: As recommended by roofing membrane manufacturer to prevent damage to roofing while allowing adequate flow to drainage system.
- B. Perimeter Containment Components: System as provided by Installer to restrain paver support system.

2.5 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design paver support and perimeter containment systems.
- B. Paver Support System: Capable of withstanding effects of gravity loads and the following loads and stresses, within limits and under conditions indicated:
 - 1. Floors: Uniform load of **125 lbf/sq. ft. (610 kg/sq. m)** or a concentrated load of **2000 lbf (8.9 kN)**, whichever produces greater stress.

2. Walkways and Elevated Platforms Other Than Exits: Uniform load of **60 lbf/sq. ft. (293 kg/sq. m)**.
 3. Walkways and Elevated Platforms Used as Exits: Uniform load of **100 lbf/sq. ft. (488 kg/sq. m)**.
 4. All Roof Zones (Corner, Perimeter, and Field-of-Roof) Uplift Pressures: As indicated on Drawings.
 5. Roof Zone 1 (Field-of-Roof) Uplift Pressure: **<Insert lbf /sq. ft. (kg/sq. m)>**.
 6. Roof Zone 2 (Perimeter) Uplift Pressure: **<Insert lbf /sq. ft. (kg/sq. m)>**, located within **<Insert ft. (m)>** of roof perimeter.
 7. Roof Zone 3 (Corners) Uplift Pressure: **<Insert lbf /sq. ft.>**, located within **<Insert ft. (m)>** of roof outside corner.
- C. Perimeter Containment System: Capable of resisting lateral forces in paver support system without displacement exceeding **1/8 inch**.

2.6 MATERIALS

- A. ABS Plastic: Complying with ASTM F2806.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. Verify suitability of perimeter containment components.
- B. Examine roofing installation, with roofing Installer present, for protection from paver support system installation. Examine areas where roofing system is turned up or flashed against vertical surfaces and horizontal roofing.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate placement of paver support system with roofing membrane Work.
- B. Lay out porcelain-tile roof paver and roof-paver support locations, and mark for installation.

3.3 INSTALLATION OF PAVER SUPPORT SYSTEM

- A. Install protection course and bearing pads below pedestals in accordance with manufacturer's written instructions to protect roofing substrate surface.
- B. Accurately set paver supports in locations coordinated with approved porcelain-tile roof paver layout. Install in accordance with manufacturer's written instructions and accepted Shop

Drawings. Adjust paver support heights prior to, and following, installation of porcelain-tile roof pavers. Shim where fine adjustment is necessary using manufacturer-provided shims.

- C. Install [**wind uplift and safety system components**] [**and**] [**lateral bracing support system components**] in accordance with manufacturer's written instructions and accepted Shop Drawings.

3.4 INSTALLATION OF ROOF PAVERS

- A. Install porcelain-tile roof pavers over support system in accordance with manufacturer's written instructions and accepted Shop Drawings. Align joint patterns parallel in each direction. Lay out paver units to avoid less than half-width units at perimeter or other terminations.
- B. Set porcelain-tile roof pavers in place using placement methods that result in stable installation free from rocking, using sound pavers with no edge or surface damage. Make final in-place level adjustments using manufacturer's furnished tool to adjust paver support heights.
- C. Do not use paver units with chips, cracks, voids, discolorations, and other defects that might be visible or cause staining in finished work.

3.5 CONSTRUCTION TOLERANCES

- A. Variation of Level Across Width of Each Porcelain-Tile Roof Paver: **1/16 inch**, maximum.
- B. Variation from Level for Paved Areas: Do not exceed **1/4 inch in 10 ft.**, when measured at any location and in any direction.
- C. Variation in Joint Width: Do not vary joint thickness more than one-fourth of nominal joint width.
- D. Variation in Plane at Joints (Lipping): Do not exceed **1/16-inch** difference between planes of adjacent units.
- E. Variation in Line of Edge at Joints (Lipping): Do not exceed **1/16-inch** difference between edges of adjacent units, where edge line continues across joint.

3.6 CLEANING AND PROTECTION

- A. Remove and replace loose, chipped, broken, stained, or otherwise damaged porcelain-tile roof pavers or pavers that do not match adjoining units or pattern indicated on Drawings.
- B. Cleaning: Remove soiling from exposed porcelain-tile roof paver surfaces; wash and scrub clean. Leave joints between pavers open and clean of debris to allow for proper drainage and airflow.
- C. Provide final protection and maintain porcelain-tile roof pavers without damage or deterioration at time of Substantial Completion.