WAUSAU TILE

Pressed Concrete Pavers - Lok Down Pedestal Installation Guide Specifications

Section 07 555

Part 1 – General

1.01 RELATED DOCUMENTS

A. Drawings and general provision of contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to work of this Section.

1.02 SUMMARY

A. Perform all work required to complete as indicated by the Contract Documents and furnish all supplementary items necessary for the proper installation of Pressed Concrete Pavers.

B. Concrete paver and pedestal support systems, if used, are to be placed over roofing/waterproofing systems where indicated. Standard concrete Paver System to comply with IBC 1504.4 – ANSI/SPRI RP-4 for wind uplift.

C. Standard Concrete paver with Lok Down System to meet ultimate design wind speed of 180 mph per ASCE 7-05 Section 6.6 Method 3 using full-scale wind tests. Full-scale wind tests comply with IBC 1504.4- ANSI/SPRI RP-4 and IBC 1609.1.1.2. Pedestal components are to meet ASTM D635 burn rate category CC2.

D. Related Sections include the following:
   1. Section 03 30 00 Cast in Place Concrete.
   2. Section 07 00 00 Modified Bituminous Sheet Membrane Waterproofing.
   3. Section 07 10 00 Waterproof Membrane.
   4. Section 07 10 00 Drains in Waterproofed Concrete Slabs above Conditioned Space
   5. Section 07 92 00 Sealants.

1.03 REFERENCES

A. Testing Standards
   1. ASTM C-150 - Specification for Portland Cement.
   2. ASTM C-127 - Test method for specific gravity and absorption of Course Aggregates.
   3. ASTM C-128 - Test method for specific gravity and absorption of Fine Aggregates.
   4. ASTM C-136 - Test method for sieve analysis of Fine and Coarse Aggregates.
   5. ASTM C-140 - Testing for sampling and testing Concrete masonry and related units.
   6. ANSI A326.3 - Dynamic Coefficient of Friction.
   7. ASTM C-1028 - Static Coefficient of Friction.
   8. ASTM C-1262 - Test Method for Evaluating Freeze-Thaw Durability.
   9. WTCL 99 - Load Carrying Capacity.
   10. ASTM D638-03 - Standard Test Method for Tensile Properties of Plastics.
   11. ASTMD6110-10 - Standard Test Method for Determining the Charpy Impact Resistance of Notched Specimens of Plastics.
   12. ASTM G155-05a - Standard practice for Operating Xenon Arc Light Apparatus for

Exposure of Non-Metallic Materials.

13. ASTM D1929-96 - Standard Test Method for Determining Ignition Temperature of Plastics.
14. ASTM D2843-99 - Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.
15. ASTM D635-06 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.

1.04 SUBMITTALS

A. Submit under provisions of Section 01 30 00.
B. Product Data:
    1. Manufacturer's data sheets on each product to be used, including preparation instructions, installation methods, storage, handling requirements and recommendations.
    2. Submit test results for compliance with performance requirements specified herein.
    3. Submit written instructions for recommended maintenance.
C. Shop Drawings:
    1. Layout drawings of each paved area showing the pattern of pressed pavers, indicate pavers requiring cutting, drainage patterns, drains and relationship of paving joints. Include details of setting beds, noting all materials and their thickness, and show details at curbs and vertical surfaces.
    2. Details of custom (nonstandard) curbs and stair tread/risers, include methods of installation.
D. Samples:
    1. Submit sample to be selected by Architect / Engineer / Landscape Architect / Owner from manufacturer’s available standard and custom colors.

1.05 QUALITY ASSURANCE

A. **Manufacturer Qualifications:** All products covered under this Section shall be produced by a single manufacturer, unless otherwise specified, with a minimum of fifteen (15) years proven production of this concrete paver product.
B. **Installer Qualifications:** Installer shall have a minimum of five (5) years proven specialized construction experience with this product and be capable of estimating and building from blueprint plans and details, in addition to proper material handling. All work must comply with local, state/provincial licensing and bonding requirements.

1.06 MOCK-UP INSTALLATION

A. Prior to the start of pressed concrete paver work, construct mock-up of each type of pressed paver size and pattern area for the owner and architect to review. The mock-up will be at the project site or at a location mutually agreed to by the owner and contractor.
    1. Construct the mock-up installation in a minimum 4-foot by 4-foot area of typical concrete units and slabs with all setting beds, joints, edge and curb details as shown on the drawings.
    2. After review of the mock-up, it will be retained and used as a standard of quality for the

pressed concrete paver work. At completion of the work, remove the mock-up installations and related materials from the project site. If the mock-ups are incorporated in the actual construction, record their locations and sizes on the actual built record drawings for the project.

1.07 DELIVERY, STORAGE AND HANDLING

A. In accordance with provisions of Section 01 60 00.
B. Pressed concrete pavers to be banded on pallets and delivered in original unopened packaging with legible manufacturer identification, manufacturing number and manufacture date.
C. Protect pressed concrete pavers during shipment, storage and construction against damage.

1.08 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity and ventilation). Do not install products under adverse environmental conditions.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer:
    1. Wausau Tile, Inc. | 1.800.388.8728 | info@wausautile.com | www.wausautile.com
B. Choose from V-Series: Blasted Glass, EcoPremier, Expressions, Exterior Terrazzo, Ocean View, Sand Series, Series Sesto, Stoney Creek, Textured Granite, Timber and UltraFace pavers.
C. Substitutions: Not permitted.
D. Pressed concrete pavers, equal in appearance and function and meeting these specifications, will be acceptable when the specified submittals from Section 00 26 00 are approved in writing by the Architect prior to bid.

2.02 MATERIAL REQUIREMENTS

A. The pressed paver system shall include the following components:
    1. *Portland Cement:* ASTM C-150 specifications for Portland Cement,
    2. *Aggregates:* All aggregates are tested in accordance with ASTM C127, ASTM C128, and ASTM C-136 specifications. Aggregate shall be blended to meet individual project requirements.
    3. *Coloring:* Pigments used shall be inorganic and alkali resistant and used per manufacturer's recommendations.

2.03 PERFORMANCE REQUIREMENTS*

**Performance Requirements based on 24"x24"x2" pressed paver*

A. V-Series
    1. *Compressive Strength:* (ASTM C-140) The average compressive strength shall not be less than 8,000 psi with no individual unit less than 7,500 psi.
    2. *Water Absorption:* (ASTM C-140) The average shall not be greater than 6 percent.
    3. *Flexural Strength:* (ASTM C-140) Shall not be less than 1200 lbs. avg.

4. *Center Load:* (WTCL 99) Pressed paver units shall have a tested center load capacity of 1,850 lbs.
5. *Freeze/Thaw:* (ASTM C-1262) Durability of the pressed paver shall meet the freeze/thaw tests per Section 8, shall have no breakage and not greater than 1 percent loss in dry weight of any individual unit when subject to 100 cycles of freeze/thaw.
6. *Dynamic Coefficient of Friction:* (ANSI A326.3): Wet: $\geq$ 0.42
7. *Sizing Dimensions:* Shall not differ by more than 1/16 inch (1.6 mm) from width, height, length or thickness. Unit shall conform to a true plane and not differ by more than 1/16 inch (1.6 mm) in either concave and/or convex warpage.

2.04 INSTALLATION MATERIALS

A. Components and Materials:
   1. Terra Stand: High impact copolymer polypropylene that adjusts from 3 to 21 inches in height. Slope compensation of up to 5/8 inch per foot. Outside base dimension of 7 inches by 7 inches provides 49 inches square of contact surface. Maximum static load per pedestal is 3000 lbs.
   2. Terra Shim Plate: 1/16-inch, 1/8-inch or 1/4-inch thick made of SBR rubber.
   3. Burn Rates of plastic Terra Stand pedestal and waffle reducer: Must meet burn rate category CC2 per ASTM D635 for plastic materials.
   4. Lok Down: The Lok Down is made of a high impact copolymer polypropylene. Outside base dimension of 7 inches by 7 inches provides 49 inches square of contact surface. It is installed on previously established grid lines. An average project will require one Lok Down for each paver.

B. Basic Use:
   1. Terra pavers are designed for exterior application on roof decks, plazas, parking garages, terraces and other flat or sloped surfaces structurally sound with required dead load capacity.
   2. The standard paver is an open joint system and will drain all water to waterproofing/roofing system below.
   3. The Lok Down System complies with above sections.

C. Design Wind Speed
   1. Full scale wind pressure studies at the International Hurricane Research of Florida International University have shown the Wausau Tile Lok Down System to reach an ultimate design wind speed of 146 mph. The full-scale work was performed using the Wall of Wind with pressure taps, multi-dimensional wind force was used and no parapets were present on the roof deck of the full scale test model. Paver units were 2 feet by 2 feet, 2 inches thick in size.
   2. The Lok Down devise provides a multiple paver static lift resistance to uplift. Factors of safety are computed based on specific wind uplift pressures generated at each paver system location on the building.
   3. This full-scale wind evaluation per ASCE 7-05 Section 6.6 also meets the requirements of IBC 1504.8 – ANSI/SPRI RP-4 and IBC 1609.1.1.2.

2.5 INSTALLATION MATERIALS

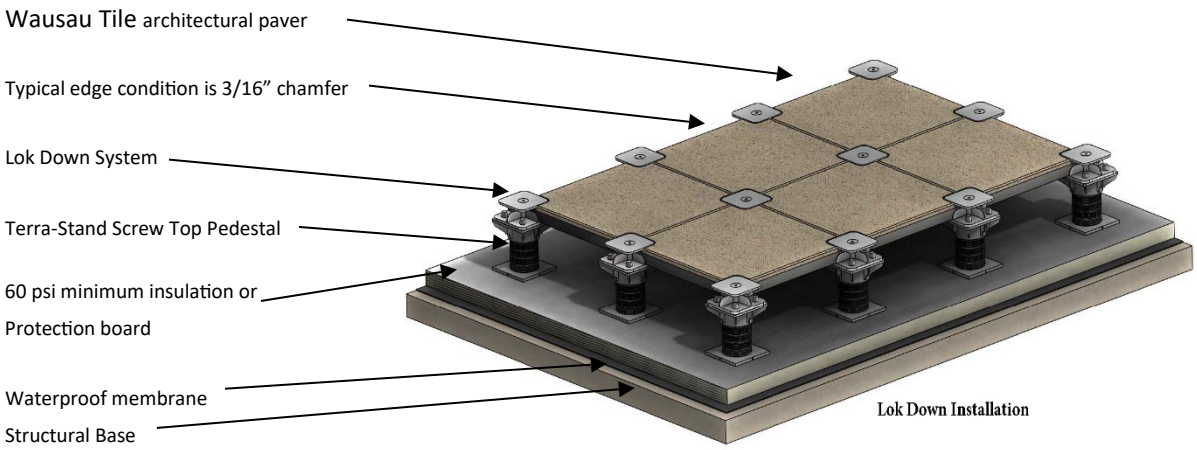
A. Pedestals and Accessories

1. Terra-Tabs and Shim Plates:
    a. The SBR rubber Terra-Tab units provide spacing tabs, 3/16 inch or 1/8 inch, allowing for drainage and air circulation. Terra-Tabs to have a shore hardness of 70, allowing for resiliency without sound transmission. Terra-Tab sizes to correspond with various sizes of pavers.
    b. Shim plates are 1/16-inch, 1/8-inch and 1/4-inch thick and of various sizes to correspond with various size Terra-Tabs. Shim Plates to be of the same material as the Terra-Tab.
2. Pedestal Systems:
    a. Terra-Stand Pedestals: Accommodates various pitches and height changes of the project area. Unit has outside dimension of 7 inches square and provides surface contact of 49 square inches. Unit adjusts from a minimum of 2-1/2 inches to a maximum of 21 inches and can tilt to a level plane. Units to be high impact copolymer polypropylene. Terra-Tabs are used on top of this unit.
    b. Lok Down: The Lok Down is made of a high impact copolymer polypropylene. Outside base dimension of 7 inches by 7 inches provides 49 inches square of contact surface. It is installed on previously established grid lines. An average project will require one Lok Down for each Terra Paver.
3. Waffle Reducer:
    a. The Waffle Reducer is made of high impact copolymer polypropylene. Waffle Reducers are made to accommodate height adjustments 1/2 to 3 inches. An outside base diameter of 6 inches provides surface contact of 28 square inches. The unit consists of one base with three pieces of 3/8-inch waffle rings and two pieces of 3/4-inch waffle rings.
4. Terra Paving Under Edge Restraint System:
    a. Edge termination system for mechanical fastening pavers in areas where the maximum wind uplift force occurs on the roof deck. The versatility of this system accommodates complex roof and parapet designs.
5. Installation Handles:
    a. Paver Blok Handles: Units to handle paver sizes 12 inches to 24 inches nominal, allowing installing contractor to set units into proper location with 1/8-inch or 3/16-inch joint between units. Also allows for removal and reinstallation units without causing any damage to units or adjacent units, thus allowing inspection of utilities or drains at any time.
    b. Big Blok Handle: Unit to handle paver sizes 24 inches to 36 inches nominal allowing installing contractor to set units reinstallation without causing any damage to units or adjacent units, thus allowing inspection of utilities or drains at any time.

PART 3 – EXECUTION

3.01 INSPECTION

A. Examine all jobsite surfaces to receive the parts of the paving materials. Notify the contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected. Installation of pressed concrete pavers and associated construction constitutes acceptance of the adjacent and underlying construction.



3.02 INSTALLATION OF LOK DOWN SYSTEM

A. Install in accordance with Wausau Tile Inc:
   1. Install in accordance with contributing manufacturer's instructions. Installation requirements vary for each individual project site. Pressed pavers used, pattern, grid layout, starting point and finished elevation should be shown on plan view shop drawings which have been prepared and approved by the designer, installing contractor and/or owner.
   2. Inspection of deck and fixed elevation locations. All height or location problems to be corrected before installation.
   3. Compare layout of deck to shop drawings or architectural drawings. All variances of field conditions to drawings to be reviewed and corrected prior to starting installation.
   4. Set Terra Stand units or Lok Down Base as a set of grid patterns.
   5. Level surface installation using Terra-Stand screw-top pedestal to follow manufacturer's installation procedures. No variances to system allowed.
   6. Minor height and pitch adjustments to pedestal are handled with 1/16-inch rubber shim plates.
   7. Waffle Reducer unit is used for height adjustments of between 1/2 and 3 inches in 3/8-inch increments.
   8. Set Lok Down base on top of Terra Stand or Waffle Reducer with shim (see Step 6).

9. Set paver on base of Lok Down. Aligning the knob on base with recess on bottom of paver.
10. Set top plate on. Aligned flanges on top plate with flanges on bottom plate. (Top cap should fit into recess on top of the paver.)
11. Place bolt in place and tighten with the bit. Tighten to 70 psi max with torque wrench; do not over tighten. 07 76 00-4, Roof Pavers
12. Install Terra Paving Under Edge Restraint System and fasten per engineering design.

B. Placement Tolerance:
   1. Maximum of 1/16-inch (1.6 mm) height variation between adjacent pavers.
   2. Individual pressed pavers shall not vary more than 1/16 inch (1.6 mm) from level across width of the pressed paver.
   3. Paved areas shall not vary more than 1/4 inch (6 mm) in a distance of 10 feet (3 m) measured at any location and in any direction.
   4. The surface elevation of pavers shall be 1/8 inch to 1/4 inch (3 mm to 6 mm) above adjacent drainage inlets, concrete collars or channels.
   5. Joints between pavers to be greater than 1/16 inch (1.6 mm).

3.3 CLEANING AND PROTECTION

A. Remove and replace pressed pavers which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in same manner as original units with same joint treatment to eliminate evidence of replacement.

B. Wash entire surface with phosphate free neutral cleaner, rinse with clean water and allow to dry thoroughly.

C. Apply sealer in accordance with manufacturer's directions.
   1. Penetrating or topical type sealer designed especially for pressed concrete pavers.