



Designation: C 1491 – 01

## Standard Specification for Concrete Roof Pavers<sup>1</sup>

This standard is issued under the fixed designation C 1491; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This specification covers concrete roof pavers that are machine-made from portland cement, water, and suitable mineral aggregates with or without the inclusion of other materials, for use as roof ballast and protection of roof membranes.

NOTE 1—The design of roof ballast systems for resisting wind uplift is beyond the scope of this specification. Building codes and other standards should be consulted in designing for wind uplift resistance.

1.2 The text of this standard references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- C 33 Specification for Concrete Aggregates<sup>2</sup>
- C 140 Test Methods for Sampling and Testing Concrete Masonry Units and Related Units<sup>3</sup>
- C 150 Specification for Portland Cement<sup>4</sup>
- C 331 Specification for Lightweight Aggregates for Concrete Masonry Units<sup>2</sup>
- C 595 Specification for Blended Hydraulic Cements<sup>4</sup>
- C 618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete<sup>2</sup>
- C 989 Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars<sup>2</sup>
- C 1157 Performance Specification for Hydraulic Cement<sup>4</sup>
- C 1209 Terminology of Concrete Masonry Units and Related Units<sup>3</sup>
- C 1232 Terminology of Masonry<sup>3</sup>
- C 1262 Test Method for Evaluating the Freeze-Thaw Durability of Manufactured Concrete Masonry Units and Re-

lated Concrete Units<sup>3</sup>

### 3. Terminology

3.1 Terminology defined in Terminology C 1209 and Terminology C 1232 shall apply to this specification.

### 4. Material

4.1 *Cementitious Materials*—Materials shall conform to the following applicable specifications:

4.1.1 *Portland Cement*—Specification C 150.

4.1.2 *Modified Portland Cement*—Portland cement conforming to Specification C 150, modified as follows:

4.1.2.1 *Limestone*—Limestone, with a minimum 85 % calcium carbonate ( $\text{CaCO}_3$ ) content, shall be permitted to be added to the cement, provided the requirements of Specification C 150 are modified as follows:

(1) *Limitation on Insoluble Residue*—1.5 %.

(2) *Limitation on Air Content of Mortar*—Volume percent, 22 % max.

(3) *Limitation on Loss on Ignition*—7 %.

4.1.3 *Blended Cements*—Cement conforming to either Specification C 595 or Specification C 1157.

4.1.4 *Pozzolans*—Specification C 618.

4.1.5 *Blast Furnace Slag*—Specification C 989.

4.2 *Aggregates*—Aggregates shall conform to the following specifications, except that grading requirements shall not necessarily apply:

4.2.1 *Normal Weight Aggregates*—Specification C 33.

4.2.2 *Lightweight Aggregates*—Specification C 331.

4.3 *Other Constituents*—Air-entraining agents, coloring pigments, integral water repellents, finely ground silica, and other constituents shall be previously established as suitable for use in concrete roof pavers and shall conform to applicable ASTM standards or shall be shown by test or experience satisfactory to the purchaser to be not detrimental to the durability of the units or any material customarily used in concrete roof pavers.

### 5. Physical Requirements

5.1 At the time of delivery to the work site, the units shall conform to the physical requirements of Table 1 and shall have a minimum net area average compression strength (average of 3 units) of 3000 psi (20.68 MPa) with no individual unit compressive strength less than 2600 psi (17.93 MPa) when tested in accordance with 8.2.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee C15.03 on Concrete Masonry Units and Related Units.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.02.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.05.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 04.01.