

Standard Specification for Concrete Grid Paving Units¹

This standard is issued under the fixed designation C 1319; 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 (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the requirements for concrete grid paving units for vehicular trafficways, parking areas, soil stabilization, and revetments. Maximum dimensions are 24 long by 24 in. wide (610 by 610 mm), with a minimum nominal thickness of 3/8 in. (80 mm).

NOTE 1—When particular features are desired, such as weight classification, higher compressive strength, surface texture, finish, color, or other special features, such properties should be specified separately by the purchaser. However, local sellers should be consulted as to availability of units having the desired features.

1.2 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 Aggregates²
- C 140 Test Methods of Sampling and Testing Concrete Masonry Units³
- C 150 Specification for Portland Cement⁴
- C 331 Specification for Lightweight Aggregates for Concrete Masonry Units²
- C 595M Specification for Blended Hydraulic Cements⁴
- C 618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete²
- C 989 Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars²
- C 1157M Performance Specification for Blended Hydraulic Cement⁴

3. Materials

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

3.1.1 *Portland Cements*—Specification C 150.

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

3.1.2.1 Calcium carbonate, with a minimum 85 % CaCO₃ content, shall be permitted to be interground with the cement, provided the requirements of Specification C 150 as modified are met: limitation on insoluble residue is 1.5 % and limitation on loss on ignition is 7 %.

3.1.3 *Blended Cements*—Specification C 595M or C 1157M.

3.1.4 *Pozzolans*—Specification C 618.

3.1.5 *Blast Furnace Slag Cements*—Specification C 989.

3.2 *Aggregates*—Aggregates shall conform to one of the following ASTM specifications, except that grading requirements shall not necessarily apply:

3.2.1 *Normal Weight*—Specification C 33.

3.2.2 *Lightweight*—Specification C 331.

3.3 *Other Constituents*—Air-entraining agents, coloring pigments, integral water repellents, and finely ground silica, shall be previously established as suitable for use in concrete grid paving units and shall conform to applicable ASTM standards, or they shall be shown by test or experience satisfactory to the specifier and not to be detrimental to the durability of the concrete grid paving unit or any material customarily used in grid paving construction.

4. Physical Requirements

4.1 At the time of delivery to the work site, the units shall conform to the physical requirements prescribed in Table 1.

4.2 *Durability*—Durability shall be demonstrated by proven field performance satisfactory to the specifier that the grid paver units have adequate durability for the intended use.

4.2.1 *Proven Field Performance*—Satisfactory field performance is demonstrated when units similar in composition and made with the same manufacturing process as those to be supplied to the purchaser, maintain the physical requirements specified in Table 1 after three years of use. The units used as the basis for proven field performance shall have been exposed to the same general type of environment, temperature range, and traffic volume as is expected for the units supplied to the purchaser.

5. Permissible Variations in Dimensions

5.1 Length or width of units shall not differ by more than ±1/8 in. (±3.2 mm) from approved samples. Heights of units shall not differ by more than ±1/8 in. (±3.2 mm) from the specified standard dimensions. Tests shall be performed as required in 6.2.

¹ This specification is under the jurisdiction of ASTM Committee C-15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee C15.03 on Concrete Masonry Units and Related Units.

Current edition approved May 10, 1998. Published November 1998. Originally published as C 1319 – 95. Last previous edition C 1319 – 97.

² Annual Book of ASTM Standards, Vol 04.02.

³ Annual Book of ASTM Standards, Vol 04.05.

⁴ Annual Book of ASTM Standards, Vol 04.01.

TABLE 1 Physical Requirements

Compressive Strength Net Area, min. psi (MPa)		Water Absorption, max lb/ft ³ (kg/m ³)	Net Area, min., %	Web Width	
				in. (mm)	in. (mm)
Avg. of 3	Individual	Avg. of 3 units		Min. ^A	Avg. ^B
5000 (35)	4500 (31)	10 (160)	50	1.00 (25)	1.25 (32)

^AMeasured at the thinnest point.

^BAverage of measurements along the height of the web.

6. Sampling and Testing

6.1 The purchaser or his authorized representative shall be accorded proper facilities to inspect and sample the units at the place of manufacture from lots ready for delivery.

6.2 Sample and test units in accordance with Test Methods C 140, except that the coupon method for determining compressive strength shall not be used.

7. Visual Inspection

7.1 Units shall be free of defects that would interfere with the proper placing of the unit or impair the strength or permanence of the construction.

8. Compliance

8.1 If a sample tested in accordance with Section 6 fails to conform to the specified requirements, the manufacturer shall be permitted to remove units from the shipment. A new sample shall be selected by the purchaser from remaining units from the shipment with a similar configuration and dimension and tested at the expense of the manufacturer. If the second sample meets the specified requirements, the entire portion of the shipment represented by the sample meets the specified requirements. If the second sample fails to meet the specified requirements, the entire portion of the shipment represented by the sample fails to meet the specified requirements.

NOTE 2—Unless otherwise specified in the purchase order, the costs of tests is typically borne as follows: (1) if the results of the tests show that the units do not conform to the requirements of this specification the cost is typically borne by the seller; (2) if the results of the tests show that the units conform to the specification requirements, the cost is typically borne by the purchaser.

9. Keywords

9.1 concrete grid paving units; revetments; soil stabilization; vehicular trafficways

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