



Designation: C 139 – 04<sup>3</sup>

## Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes<sup>1</sup>

This standard is issued under the fixed designation C 139; 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.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope\*

1.1 This specification covers solid precast segmental concrete masonry units made from a mixture of portland hydraulic cement, water, and suitable mineral aggregates, with or without the inclusion of other materials. The units are intended for use in the construction of catch basins and manholes.

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

### 2. Referenced Documents

#### 2.1 ASTM Standards:

C 33 Specification for Concrete Aggregates<sup>2</sup>

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<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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**\*A Summary of Changes section appears at the end of this standard.**

- 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 207 Specification for Hydrated Lime for Masonry Purposes<sup>4</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>

### 3. Terminology

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

### 4. Materials

4.1 Cementitious materials shall conform to the following ASTM specifications:

- 4.1.1 *Portland Cement*— Specification C 150.
- 4.1.2 *Blended Hydraulic Cements*—Specification C 595.
- 4.1.3 *Hydraulic Cement*—Specification C 1157.
- 4.1.4 *Ground Blast-Furnace Slag*—Specification C 989.
- 4.1.5 *Hydrated Lime*— Type S of Specification C 207.
- 4.1.6 *Fly Ash*—Specification C 618.

4.1.7 *Siliceous and Pozzolanic Materials* —Siliceous and pozzolanic materials shall conform to applicable ASTM standards, or shall be shown by test or experience to be not detrimental to the durability of the concrete.

4.2 *Aggregates*—Aggregates shall conform to Specification C 33, except grading requirements shall not apply.

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 masonry units and shall conform to applicable ASTM standards or shall be shown by test or experience not to be detrimental to the durability of the concrete masonry units or any material customarily used in masonry construction.

### 5. Physical Requirements

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

### 6. Dimensions and Permissible Variations

- 6.1 The thickness of any unit shall be not less than 5 in. (127 mm).
- 6.2 Overall dimensions shall not vary by more than  $\pm 3\%$  from the specified dimensions.

### 7. Sampling and Testing

7.1 The purchaser or his authorized representative shall be accorded proper facilities to inspect and sample the units at the place of manufacture from the lots ready for delivery. At least ten days should be allowed for completion of the tests.

7.2 Units shall be sampled and tested in accordance with Test Methods C 140.

7.3 Except as specified in Section 8, and unless otherwise agreed, the expense of inspection and testing shall be borne by the purchaser.

### 8. Visual Inspection

8.1 All units shall be sound and free of cracks or other defects that interfere with the proper placing of the unit.

### 9. Compliance

9.1 If a sample 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

<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.

**TABLE 1 Strength and Absorption Requirements**

Compressive Strength, min, psi (MPa) (Average Gross Area)		Water Absorption, max, lb/ft <sup>3</sup> (kg/m <sup>3</sup> ) (Average of 3 Units)
Average of 3 Units	Individual Unit	
2500 (17)	2000 (13)	10 (16)

and dimension and tested at the expense of the manufacturer. If the second sample meets the specified requirements, the remaining portion of the shipment represented by the sample meets the specified requirements. If the second sample fails to meet the specified requirements, the remaining portion of the shipment represented by the sample fails to meet the specified requirements.

NOTE 1—Unless otherwise specified in the purchase order, the cost 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.

## 10. Keywords

10.1 catch basins; concrete masonry units; manholes; masonry units

## SUMMARY OF CHANGES

Committee C15 has identified the location of the following changes since C 139–01 that may impact the use of this standard.

(1) Portland cement was changed to hydraulic cement in Section 1.1.

Committee C15 has identified the location of selected changes to this standard since C 139-99 was published in the 2001 Annual Book of ASTM Standards, Vol 04.05.

(1) In Section 4 on Materials, Specification C 1157 was moved from Paragraph 4.1.2 to its own paragraph and identified as hydraulic cement rather than blended cement.

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