



Designation: ~~C1884–23~~ C1884 – 23a

Standard Specification for Manufactured Concrete Ballast Units¹

This standard is issued under the fixed designation C1884; 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 dry-cast, manufactured concrete units that are primarily used for ballast applications. These units are machine-made from hydraulic cement, water, and suitable mineral aggregates with or without the inclusion of other materials.

NOTE 1—The design of concrete ballast units 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.

NOTE 2—Previously, there were two standards that covered units used for ballast. Specification C1491 was for concrete roof pavers, primarily used for roof ballast and protection of roof membrane. Specification C1884 was for units for ballast for rooftop equipment. Due to the similarity in these units and application, this standard now serves as the single standard for manufactured concrete units used in all ballast applications.

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 standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:

- [C33/C33M Specification for Concrete Aggregates](#)
- [C140/C140M Test Methods for Sampling and Testing Concrete Masonry Units and Related Units](#)
- [C150/C150M Specification for Portland Cement](#)
- [C331/C331M Specification for Lightweight Aggregates for Concrete Masonry Units](#)
- [C595/C595M Specification for Blended Hydraulic Cements](#)
- [C618 Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete](#)
- [C979/C979M Specification for Pigments for Integrally Colored Concrete](#)
- [C989/C989M Specification for Slag Cement for Use in Concrete and Mortars](#)

¹ 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

[C1157/C1157M Performance Specification for Hydraulic Cement](#)
[C1232 Terminology for Masonry](#)
[C1240 Specification for Silica Fume Used in Cementitious Mixtures](#)
[C1262/C1262M Test Method for Evaluating the Freeze-Thaw Durability of Dry-Cast Segmental Retaining Wall Units and Related Concrete Units](#)
[C1491 Specification for Concrete Roof Pavers \(Withdrawn 2023\)²](#)

3. Terminology

3.1 Terminology defined in Terminology [C1232](#) shall apply to this specification.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *concrete ballast unit, n*—a manufactured concrete unit used primarily to provide weight for stabilizing materials.

3.2.1.1 *Discussion*—

Example applications for concrete ballast units are ballast for photovoltaic arrays, or paving to protect roofing membranes.

4. Material

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

4.1.1 *Portland Cement*—Specification [C150/C150M](#).

4.1.2 *Modified Portland Cement*—Portland cement conforming to Specification [C150/C150M](#), modified as follows:

4.1.2.1 *Limestone*—Limestone, with a minimum 85 % calcium carbonate (CaCO_3) content, shall be permitted to be added to the cement, provided the requirements of Specification [C150/C150M](#) 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 %.

(1) *Limestone*—If calcium carbonate is added to the cement, the CaCO_3 content shall not be less than 85 %.

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

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

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

4.1.3 *Blended Cements*—Specification [C595/C595M](#).

4.1.4 *Hydraulic Cement*—Specification [C1157/C1157M](#).

4.1.5 *Pozzolans*—Specification [C618](#).

4.1.6 *Blast Furnace Slag Cement*—Specification [C989/C989M](#).

4.1.7 *Silica Fume*—Specification [C1240](#).

4.2 *Aggregates*—Aggregates shall conform to the following specifications, except for grading requirements:

4.2.1 *Normal Weight Aggregates*—Specification [C33/C33M](#).

4.2.2 *Lightweight Aggregates*—Specification [C331/C331M](#).

NOTE 3—The grading requirements of Specifications [C33/C33M](#) and [C331/C331M](#) may not be suitable for concrete ballast unit production. Because of this, producers are allowed to modify grading to meet their needs and the requirements of this specification.

4.3 *Pigments for Integrally Colored Concrete*—Specification [C979/C979M](#).

² The last approved version of this historical standard is referenced on www.astm.org.