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Standard Practice for Preparation of Field Removed Manufactured Masonry Units and Masonry Specimens for Testing[1]

This standard is issued under the fixed designation C1587/C1587M; 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 The purpose of this practice is to standardize the preparation of manufactured masonry units and masonry specimens extracted from the field for compressive and flexural bond strength testing in a laboratory environment.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The inch-pound units are shown in brackets. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 *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~~ safety, health, and ~~health~~environmental practices and ~~to~~ determine the applicability of regulatory limitations prior to use.*

1.4 *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:*[2]

~~C67~~C67/C67M Test Methods for Sampling and Testing Brick and Structural Clay Tile
C140/C140M Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
C1072 Test Methods for Measurement of Masonry Flexural Bond Strength
C1180 Terminology of Mortar and Grout for Unit Masonry
C1232 Terminology for Masonry
C1314 Test Method for Compressive Strength of Masonry Prisms
C1532/C1532M Practice for Selection, Removal, and Shipment of Manufactured Masonry Units and Masonry Specimens from Existing Construction

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminologies C1180 and C1232.

[1] This practice is under the jurisdiction of ASTM Committee C15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee C15.04 on Research.
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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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

4. Significance and Use

4.1 Masonry units and masonry specimens are sometimes removed as part of an assessment of the condition of masonry construction. This standard is intended to standardize the preparation of such units and masonry specimens for compressive and flexural bond strength testing.

NOTE 1—Masonry specimens removed from existing masonry construction (single wythe, multi-wythe or portions thereof) will sometimes contain mortar, grout, reinforcement, or accessory materials.

4.2 This practice provides information pertaining to the removal of hardened mortar, cleaning, and other special preparation required prior to compressive and flexural bond strength testing of a manufactured masonry unit or masonry specimen that has been removed from usage.

4.3 This practice does not address test procedures or the use of test results conducted on removed specimens. This practice does not determine whether removed masonry materials met original specification requirements.

NOTE 2—Compressive and flexural bond strength test results of masonry units and masonry specimens extracted from the field are expected to vary from and will likely be less than test results of masonry units that have not been placed in service or masonry prisms that have been constructed within a controlled environment. Comparison of results of tests conducted on specimens removed from service to those of masonry units prior to use or of constructed prisms is difficult. Considerable judgment is typically required for the selection and preparation of specimens removed from service.

5. Inspection of Specimens

5.1 Specimens shall be selected, removed from service, and shipped in accordance to Practice C1532/C1532M.

5.2 Carefully remove specimens from transportation packaging. Visually inspect specimens. Compare received specimens with visual assessment as reported under Practice C1532/C1532M. Note additional damage, if any, contained within each specimen.

5.2.1 If specimen shipment does not include a visual assessment report, note the report as missing as part of the subsequent test report and document condition of each specimen as received.

5.3 Take photographs of specimens as received to document condition prior to any preparation for testing.

6. Preparation for Compressive Strength Testing

6.1 *Preparation of Units and Prisms:*

6.1.1 Unless required by the testing procedure that will be subsequently used to evaluate the specimen, do not oven dry the test specimens.

6.1.2 Use care to limit the potential damage to the bond between mortar and manufactured masonry units in the masonry specimen; this is important for ungrouted masonry specimens that are particularly susceptible to damage during handling and preparation for testing.

6.1.3 Test specimens are subsequently capped to provide a level-bearing surface for compressive strength testing. Therefore, it is not necessary to remove portions of hardened mortar in recesses of masonry.

6.1.4 Remove loose and unsound material. Remove excess mortar that would interfere with capping from the top and bottom of bearing surfaces of the unit or prism. However, if such removal is expected to do more harm to the test specimen than good, leave mortar in place.

6.1.5 ~~Remove all unsound material and smooth~~ Smooth irregularities of the ~~unit's~~unit's or masonry ~~specimen's~~specimen's bearing surfaces using a method that will not affect the integrity of the unit or masonry specimen to produce a test specimen, either a unit or a prism, that is no more than 3 mm [⅛ in.] out of level over 300 mm [12 in.] and no more than 3 mm [⅛ in.] out of plumb over 300 mm [12 in.].

~~6.1.3 Test specimens are subsequently capped to provide a level-bearing surface for compressive strength testing. Therefore, it is not necessary to remove portions of hardened mortar in recesses of masonry.~~

~~6.1.4 Ungrouted masonry specimens are particularly susceptible to damage during handling and preparation for testing. Use care to limit the potential damage to the bond between mortar and manufactured masonry units in the masonry specimen.~~

~~6.1.5 If necessary, remove sound material to produce a more suitable test specimen.~~

~~6.1.6 Limit protrusions to those allowed in the appropriate test procedure.~~

~~6.1.7 If possible, avoid saw-cuts that reduce the thickness of the webs and face shells of hollow units or prisms.~~

6.1.6 If ~~possible, prepare test specimens to minimize variations in length and width provided such preparation does not damage the~~ necessary, remove sound material to produce a more suitable test specimen.

6.1.6.1 Limit protrusions to those allowed in the appropriate test procedure.

6.1.6.2 If possible, avoid saw-cuts that reduce the thickness of the webs and face shells of hollow units or prisms.

6.1.6.3 If possible, prepare test specimens to minimize variations in length and width provided such preparation does not damage the test specimen.

~~6.1.9 Remove loose and unsound mortar. Remove excess mortar that would interfere with capping from the top and bottom of bearing surfaces of the unit or prism. However, if such removal is expected to do more harm to the test specimen than good, leave mortar in place.~~

6.1.7 Discard all test specimens that are damaged as a result of removing ~~unsound~~ material. Resulting damage is assessed by comparing visible cracking, or chipping on the unit or prism after removal to that documented under ~~6.1.2~~6.1.3 and ~~6.1.3~~6.1.4. Do not discard test specimens if resulting damage occurs in portions of the test specimen that will be subsequently cut or otherwise modified so that the damaged portion of the masonry unit or masonry specimen will not be tested.

6.1.8 Document methods used in removal of ~~unsound~~ materials and smoothing irregularities of unit or prism surfaces.

6.1.9 Take photographs of test specimens after preparation has been completed to document condition prior to capping.

6.2 *Masonry Units:*

6.2.1 Refer to Test Methods ~~C67~~C67/C67M for additional information relative to the preparation of brick and structural clay tile test specimens prior to testing.

6.2.2 Refer to Test Methods C140/C140M for additional information relative to the preparation of concrete masonry unit test specimens prior to testing.

NOTE 3—Individual masonry units filled or partially filled with grout or mortar should not be used to determine the compressive strength of the masonry units or of the masonry assembly. If evaluation of grouted masonry is desired, it should be performed on masonry assemblies meeting the requirements of 6.3.

6.3 *Masonry Prisms:*

6.3.1 The masonry prisms shall:

6.3.1.1 Include at least one bed joint,

6.3.1.2 Have an aspect ratio (height divided by least lateral dimension) between 1.3 and 5,

6.3.1.3 Have a height defined by at least two units, each of which are no less than one-half the full height of a typical unit,