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Designation: C 1532 – 05

Standard Practice for Selection, Removal, and Shipment of Masonry Specimens from Existing Construction[1]

This standard is issued under the fixed designation C 1532; 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 practice covers the process of selection, removal, and shipment of masonry specimens from existing construction that are intended for testing. These specimens are a portion of existing masonry, typically consisting of masonry units, mortar, grout, reinforcing steel, collar joint, and masonry accessories, that has been removed from an existing masonry assembly. The specimens may be taken from single- or multiple-wythe construction, or portions thereof. This practice also covers procedures for reporting as part of this process.

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.

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 and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:* [2]

C 43 Terminology of Structural Clay Products

C 1180 Terminology of Mortar and Grout for Unit Masonry

C 1209 Terminology of Concrete Masonry Units and Related Units

C 1232 Terminology of Masonry

C 1420 Practice for Selection, Removal, and Shipment of Manufactured Masonry Units Placed in Usage

E 122 Practice for Calculating Sample Size to Estimate, with a Specific Tolerable Error, the Average for Characteristics of a Lot or Process

3. Terminology

3.1 *Definitions*:

3.1.1 For definitions of other terms used in this practice, refer to Terminologies C 43, C 1180, C 1209, and C 1232.

4. Significance and Use

4.1 Masonry specimens are sometimes removed as part of an assessment of the condition of masonry construction. Such specimens are commonly prepared for shipment to a laboratory where the specimens are assessed with visual techniques, petrographic techniques, or standard test methods. The process of selecting, removing, and shipping the specimens can have an effect on test results. This practice provides procedures for selecting, removing, and shipping masonry specimens removed from existing construction.

4.2 The selection and removal processes described in this practice are primarily intended for walls. Selection and removal of masonry specimens from locations other than walls requires user judgment in order to obtain appropriate specimens.

4.3 This practice also covers reporting of the selection, removal, and shipping processes. This information allows interested parties to assess the impact of these processes on test results.

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

4.5 If only individual units are to be removed from an existing construction, refer to Practice C 1420.

5. Selection and Removal

5.1 *Selection of Test Samples*:

5.1.1 *Visual Assessment*—Prior to selecting masonry specimens for removal, perform a visual survey of the exposed surface to assess the in-place, undisturbed condition of the masonry wall and other related construction.

5.1.1.1 Record observations from the visual survey with photographs or drawings, or both, that represent the appearance of the masonry. Include sample locations identified in 5.2.

[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.**

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5.1.1.2 Conduct the visual assessment either over the whole construction or on a representative sample of the whole. Examine locations with different exposures.

NOTE 1—Locations with different exposures, such as walls exposed to rain and walls protected from rain may be used to distinguish different segments of construction to be examined.

5.1.2 *Sampling*—Select specimens representative of the entire masonry construction or a portion thereof. Sample by one or more of the following techniques:

NOTE 2—When sampling a portion of the entire construction consider aspects such as the orientation of the units (for example, stretcher, header, or soldier); location in the structure (for example, parapet, corbel, or quoin); or where different masonry units are blended to produce a range of color, architectural effect within the entire construction; and required specimen size to accommodate further testing.

5.1.2.1 *Random Sampling*—Within the entire construction, or in a selected part of the entire construction, select masonry specimen sample locations based on a random sampling process. Designate a numbering system associated with specimen locations and randomly select numbers, or use a similar random sampling method.

NOTE 3—When masonry specimens are to be removed for testing in accordance with test methods that include requirements for selection and sampling of samples, those requirements should be replaced with 5.1 of this practice.

NOTE 4—Practice E 122 provides information on how to calculate the number and locations of samples necessary in order to estimate with a prescribed precision, a measure of quality representing all the sampling area.

5.1.2.2 *Location-Specific Sampling*—Select masonry specimens sample locations specific to a particular installed location.

5.1.2.3 *Condition-Specific Sampling*—Select masonry specimen sample locations specific to a physical condition of the masonry, such as units or mortar visually assessed to be deteriorated or units or mortar visually assessed to be undamaged.

NOTE 5—Selecting masonry specimens for condition-specific sampling could include considering masonry visually assessed to be deteriorated, or masonry assessed to be undamaged, for examples.

NOTE 6—Sampling is useful for identification of differences in masonry construction in different locations or exposures, that is, the difference between the masonry on different building elevations, or the difference between masonry exposed to environmental or atmospheric conditions and those not exposed. Under these circumstances, sampling should be representative of each usage condition. For example, select masonry visually considered to be in the best physical condition, in the worst physical condition, and the most representative of the overall physical condition.

5.2 *Identification*—Identify each specimen on the wall with a permanent marker and photograph before removal. Do not mark on more than 10 % of any face of the specimen. Reference the marked specimen to the specific location where the specimen was obtained as recorded in 5.1.1.1.

5.3 *Pre-removal Documentation*—Prior to removing masonry specimens, thoroughly document the visual condition of the masonry within the proposed sampling locations. Prepare a sketch of or photograph each sample location. Trace over any cracks on the specimens with a felt-tipped marker and document the cracks' maximum width(s). Trace along the outer limits of all other areas of distress using a felt tip pen and document the approximate depth of the distress at each individual location, if any.

NOTE 7—The pre-removal documentation will be used for judging the specimen's pre-removal condition and for comparative purposes to determine if it is damaged during removal or shipping. Documenting the condition of cracks and other distress, if any, will be used in judging if the extent and size of existing distress has increased during specimen removal or shipping.

NOTE 8—Distress is any damage not typically associated with sound masonry. It may be manifested as spalling, chipping, crazing, stains, efflorescence, or other types of visually assessable defects.

5.4 *Specimen Removal*:

5.4.1 *Specimen Size*—Each specimen shall be sufficient size to allow the proposed testing as specified in the test procedure(s).

5.4.2 *Specimen Removal*—Remove existing masonry construction (units and mortar) at the perimeter of the specimen as necessary to allow removal of accessories (such as ties, joint reinforcement across wythes, and so forth), within the specimen perimeter, without causing damage to the specimen. Remove adjacent masonry or adjoining construction by sawcutting or by chiseling, as necessary, to obtain properly sized masonry specimens. Do not use electric or hydraulic impact equipment that damages the specimen. Remove the specimen from the construction and set on stable horizontal surface (such as the ground, scaffolding, and so forth), taking care to avoid damage during removal and transport to the stable surface.

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NOTE 9—While removing the masonry specimens, do not detrimentally affect the structural or serviceability performance of the remaining masonry and other related construction. Provide adequate shoring and weather protection.

NOTE 10—Masonry specimens with a nominal thickness of 4 in. (102 mm) are normally removed with a power-driven rotary saw with a diamond-tipped blade having a diameter of 12 to 14 in. (305 to 356 mm).

NOTE 11—One successful way to minimize damage to specimens removed from existing masonry walls by way of cutting is to first make the bottom cut and shim it to take up the weight of the specimen, then make the top cut, and finally make the two side cuts. These cuts should extend past the specimen corners a distance at least equal to the thickness of the specimen and extend completely through the specimen at the corners.

5.4.3 *Specimen Condition after Removal*—Move specimen to site of preparation for shipping and document the specimen's condition on all exposed sides as described in 5.3.

NOTE 12—The purpose of documenting the specimen condition after removal is to judge if the specimen has been damaged during the removal process.

5.4.4 *Specimen Confinement Prior to Transport*—Prior to packing for shipment, place rigid material cut to the specimen's thickness and width plus any additional over sizing to allow installation of the system of confinement, on the top and bottom of the specimen and confine the specimen without damage during packaging and shipment. Record description of specimen confinement for shipping.

NOTE 13—¾ in. (19 mm) thick plywood pieces or other equally rigid materials have been successfully used for confinement plates.

NOTE 14—If a specimen is confined with steel banding straps applied