



Designation: C1780 – 23a

Standard Practice for Installation Methods for Cement-based Adhered Masonry Veneer¹

This standard is issued under the fixed designation C1780; 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 is intended to provide accepted procedures to designers and installers of cement-based adhered masonry veneer in residential and commercial construction. This information is meant to complement the specific installation instructions provided by manufacturers of cement-based adhered masonry veneers and recognized building codes, but is not meant to replace them. This practice does not address installation methods or techniques for all materials in the building envelope. This practice covers the installation of cement-based adhered masonry veneer units for application as adhered veneer to exterior and interior walls, columns, landscape structures and other structures suitable to receive adhered veneer. The units included in this practice are manufactured to meet the requirements of Specification **C1670/C1670M** or **C1877**. This practice is limited to the installation of units. This practice does not cover all flashing or moisture management requirements. Refer to the applicable building code and project documents for additional flashing and moisture management requirements.

NOTE 1—The National Concrete Masonry Association (NCMA) publication *Installation Guide and Detailing Options for Compliance with ASTM C1780 for Adhered Manufactured Stone Veneer* provides generally accepted methods and details for installation and flashing for manufactured stone veneer.

NOTE 2—This standard was developed for the installation of cement-based adhered veneer units manufactured from wet-cast concrete or dry-cast concrete. Refer to Guide **C1242** for installation of adhered natural stone veneer.

1.2 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.

1.3 All workmanship and materials related to the installation of cement-based adhered masonry veneer units shall meet the requirements of the contract documents and building code having jurisdiction over the project.

¹ This practice is under the jurisdiction of ASTM Committee **C15** on Manufactured Masonry Units and is the direct responsibility of Subcommittee **C15.05** on Masonry Assemblies.

Current edition approved Aug. 1, 2023. Published August 2023. Originally approved in 2013. Last previous edition approved in 2023 as C1780 – 23. DOI: 10.1520/C1780-23A.

1.4 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.

1.5 *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. (Warning—Fresh hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.²)*

1.6 *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:³

- C90** Specification for Loadbearing Concrete Masonry Units
- C270** Specification for Mortar for Unit Masonry
- C482** Test Method for Bond Strength of Ceramic Tile to Portland Cement Paste
- C847** Specification for Metal Lath
- C926** Specification for Application of Portland Cement-Based Plaster
- C932** Specification for Surface-Applied Bonding Compounds for Exterior Plastering
- C933** Specification for Welded Wire Lath
- C979/C979M** Specification for Pigments for Integrally Colored Concrete
- C1032** Specification for Woven Wire Plaster Base
- C1059/C1059M** Specification for Latex Agents for Bonding Fresh To Hardened Concrete

² Annual Book of ASTM Standards. Vol 04.01. See the section on Safety Precautions in the Manual of Cement Testing.

³ 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

C1063 Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster

C1180 Terminology of Mortar and Grout for Unit Masonry

C1232 Terminology for Masonry

C1242 Guide for Selection, Design, and Installation of Dimension Stone Attachment Systems

C1325 Specification for Fiber-Mat Reinforced Cementitious Backer Units

C1384 Specification for Admixtures for Masonry Mortars

C1670/C1670M Specification for Adhered Manufactured Stone Masonry Veneer Units

C1714/C1714M Specification for Preblended Dry Mortar Mix for Unit Masonry

C1788 Specification for Non Metallic Plaster Bases (Lath) Used With Portland Cement Based Plaster in Vertical Wall Applications

C1861 Specification for Lathing and Furring Accessories, and Fasteners, for Interior and Exterior Portland Cement-Based Plaster

C1877 Specification for Adhered Concrete Masonry Units

D226 Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

E2556/E2556M Specification for Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment

2.2 Other Standards:

TMS 402 Building Code Requirements for Masonry Structures⁴

TMS 602 Specification for Masonry Structures⁴

ICC ES AC 376 Acceptance Criteria for Reinforced Cementitious Sheets Used as Wall and Ceiling Sheathing and Floor Underlayment⁵

2.3 ANSI Standards:⁶

ANSI A118.1-2013.1 American National Standard Specifications for Dry-Set Cement Mortar

ANSI A118.4-2013.1 American National Standard Specifications for Modified Dry-Set Cement Mortar

ANSI A118.15-2012.1 American National Standard Specifications for Improved Modified Dry-Set Cement Mortar

2.4 ICRI International Concrete Repair Institute:⁷

No. 310.2—1997 Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays (formerly No. 03732). Concrete Surface Profile Chips

2.5 National Concrete Masonry Association:⁸

Installation Guide and Detailing Options for Compliance with ASTM C1780 for Adhered Manufactured Stone Veneer

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *cement-based adhered masonry veneer, n*—the assembly of thin cement-based masonry units adhered to a backing with a cementitious mortar.

3.1.1.1 *Discussion*—Thin cement-based masonry units include those covered under Specifications **C1670/C1670M** and **C1877**.

3.1.2 *back butter, v*—the act of applying a setting bed mortar to the back of a masonry unit.

3.1.3 *brown coat, n*—in multiple coat stucco work, the second coat, applied over the scratch coat.

3.1.4 *drainage wall system, n*—a system installation that creates a physical planar air gap between cladding system and water resistive barrier.

3.1.5 *foundation weep screed, n*—an accessory used to terminate cement-based adhered masonry veneer at the bottom of exterior framed walls.

3.1.5.1 *Discussion*—This accessory shall have a sloped, solid, or perforated, ground or screed flange to facilitate the removal of moisture from the air gap and a vertical attachment flange not less than 3½ in. (89 mm) long.

3.1.6 *full setting bed, n*—mortar bed of specified thickness, covering the complete back of units and free of voids.

3.1.7 *scratch coat, n*—the first coat of mortar or hydraulic cement based plaster applied to a base and then scratched to create additional bonding area and mechanical interlock.

3.1.8 *setting bed, n*—the mortar used to bond units to a prepared surface or scratch coat.

3.1.9 *sheathed frame substrate, n*—wood or metal/steel framing covered by a building code approved sheathing material.

3.1.10 *thumb-print hard, adj*—description of mortar joints to determine their readiness for tooling determined when the mortar will retain the imprint of a thumb but no mortar is transferred to the thumb.

3.1.11 *tight fit joint, n*—a joint created when units are installed with edges touching or less than ⅜ in. (10 mm) distance between units.

3.1.11.1 *Discussion*—Many units have varied and random edges which make it impossible to define specific minimum or maximum joint space.

3.1.12 *water resistive barrier (WRB), n*—a material behind an exterior wall covering that is intended to resist liquid water that has penetrated the exterior covering from further intruding into the exterior wall assembly.

3.2 Refer to Terminology **C1180** for additional terminology for mortar and Terminology **C1232** for additional terminology for masonry.

4. Materials

4.1 Cement-based adhered masonry veneer shall comply with the following requirements:

4.1.1 Units shall comply with Specification **C1670/C1670M** or **C1877**.

⁴ Available from The Masonry Society (TMS), 105 South Sunset Street, Suite Q, Longmont, CO 80501, <http://www.masonrysociety.org>.

⁵ Available from ICC Evaluation Service, 3060 Saturn Street, Suite 100 Brea, California 92821, <http://www.iccsafe.org>.

⁶ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁷ Available from International Concrete Repair Institute (ICRI), 38800 Country Club Drive Farmington Hills, MI 48331, <http://www.icri.org>.

⁸ Available from National Concrete Masonry Association (NCMA), 13750 Sunrise Valley Drive Herndon, VA 20171, <http://www.ncma.org>.