



Designation: E3069 – 17

Standard Guide for Evaluation and Rehabilitation of Mass Masonry Walls for Changes to Thermal and Moisture Properties of the Wall¹

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1. Scope

1.1 This guide addresses the evaluation of existing mass masonry walls for the potential addition of interior insulation and continuous air barrier or vapor retarder or other changes to the thermal and moisture management properties of the wall.

1.2 This guide describes methods for evaluating causes of water infiltration or other moisture accumulation related problems specific to mass masonry walls. This guide does not apply to walls that include provisions to manage bulk water through internal drainage, flashings, or other measures other than the moisture storage capacity of the wall.

1.3 This guide describes analysis, design, and specification of materials with the required thermal and vapor resistance to improve the energy performance of an existing mass masonry wall, but that would not create problematic conditions to the masonry units or within the masonry wall or interior of the building.

1.4 This guide applies to walls of solid or multiwythe masonry construction meeting the requirements of a “mass masonry wall” as defined herein and having an overall thickness of solid masonry not less than 8 in. This guide does not apply to masonry walls that, by design, are intended to manage water as a barrier wall system or drainage wall system.

1.5 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.

1.6 *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 limitations prior to use.*

¹ This guide is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.24 on Building Preservation and Rehabilitation Technology.

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2. Referenced Documents

2.1 ASTM Standards:²

C20 Test Methods for Apparent Porosity, Water Absorption, Apparent Specific Gravity, and Bulk Density of Burned Refractory Brick and Shapes by Boiling Water

C67 Test Methods for Sampling and Testing Brick and Structural Clay Tile

C1046 Practice for In-Situ Measurement of Heat Flux and Temperature on Building Envelope Components

C1155 Practice for Determining Thermal Resistance of Building Envelope Components from the In-Situ Data

C1498 Test Method for Hygroscopic Sorption Isotherms of Building Materials

C1794 Test Methods for Determination of the Water Absorption Coefficient by Partial Immersion

E96 Test Methods for Water Vapor Transmission of Materials

E398 Test Method for Water Vapor Transmission Rate of Sheet Materials Using Dynamic Relative Humidity Measurement

E631 Terminology of Building Constructions

E2128 Guide for Evaluating Water Leakage of Building Walls

2.2 Other Standards:

ASHRAE 160 Criteria for Moisture-Control Design Analysis in Buildings³

International Energy Conservation Code⁴

Secretary of The Interior's Standards for Rehabilitation⁵

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.

³ Available from American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), 1791 Tullie Circle, NE, Atlanta, GA 30329, <http://www.ashrae.org>.

⁴ Available from International Code Council (ICC), 500 New Jersey Ave., NW, 6th Floor, Washington, DC 20001, <http://www.iccsafe.org>.

⁵ Available from Technical Preservation Services (TPS), National Park Service, 1849 C Street, NW (org 2255), Washington, DC 20240, <http://www.nps.gov/tps>.