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Standard Guide for Design and Construction of Low-Rise Frame Building Wall Systems to Resist Water Intrusion¹

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1. Scope

1.1 This guide describes design, specification, selection, installation, and inspection of new building wall systems, exterior deck and stair components, doors, windows, penetrations and sealant joints of wood and metal frame buildings, typically four stories or less, to minimize water intrusion.

1.2 This guide does not address prevention of damage caused by water originating from the use of wet building materials or from indoor or outdoor humidity. Water from these sources can be important, and the potential for damage caused by water from these sources must not be overlooked in building design or construction.

1.3 This guide does not address roofing systems, except when the surface of a deck also serves as a roof and at locations where roof systems interface with building walls.

1.4 This guide does not address any type of barrier wall system.

1.5 This guide does not address any exterior insulation and finish system (EIFS).

1.6 This guide does not address foundation conditions where the bottom of a slab on grade or the grade of a crawl space is at or below the water table or subject to hydrostatic pressure.

1.7 This guide is intended to supplement and not duplicate building code requirements.

1.8 Maintenance, although important, is not covered in detail.

1.9 Application of finishes, such as paint and sealers, may be important in the performance of some types of cladding; however, this is not covered in detail.

1.10 This guide applies only to constructions with sheathing, which facilitates installation of the water-resistive barrier and associated flashings in a common plane.

¹ This guide is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.55 on Performance of Building Enclosures.

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1.11 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.12 *This standard may involve hazardous materials, operations, and equipment. 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 requirements prior to use.*

1.13 Organization of Document:

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1.14 *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

- A153/A153M Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- C11 Terminology Relating to Gypsum and Related Building Materials and Systems
- C43 Terminology of Structural Clay Products (Withdrawn 2009)³
- C55 Specification for Concrete Building Brick
- C62 Specification for Building Brick (Solid Masonry Units Made From Clay or Shale)
- C67/C67M Test Methods for Sampling and Testing Brick and Structural Clay Tile
- C90 Specification for Loadbearing Concrete Masonry Units
- C126 Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units
- C150/C150M Specification for Portland Cement
- C168 Terminology Relating to Thermal Insulation
- C216 Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)
- C270 Specification for Mortar for Unit Masonry
- C652 Specification for Hollow Brick (Hollow Masonry Units Made From Clay or Shale)
- C717 Terminology of Building Seals and Sealants
- C755 Practice for Selection of Water Vapor Retarders for Thermal Insulation
- C836/C836M Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course
- C896 Terminology Relating to Clay Products
- C898/C898M Guide for Use of High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with Separate Wearing Course
- C920 Specification for Elastomeric Joint Sealants
- C926 Specification for Application of Portland Cement-Based Plaster
- C957/C957M Specification for High-Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane With Integral Wearing Surface
- C981 Guide for Design of Built-Up Bituminous Membrane Waterproofing Systems for Building Decks
- C1063 Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
- C1088 Specification for Thin Veneer Brick Units Made From Clay or Shale

- C1127/C1127M Guide for Use of High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with an Integral Wearing Surface
- C1180 Terminology of Mortar and Grout for Unit Masonry
- C1186 Specification for Flat Fiber-Cement Sheets
- C1193 Guide for Use of Joint Sealants
- C1209 Terminology of Concrete Masonry Units and Related Units (Withdrawn 2009)³
- C1232 Terminology for Masonry
- C1299 Guide for Use in Selection of Liquid-Applied Sealants (Withdrawn 2012)³
- C1400 Guide for Reduction of Efflorescence Potential in New Masonry Walls
- C1405 Specification for Glazed Brick (Single Fired, Brick Units)
- D226/D226M Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
- D1079 Terminology Relating to Roofing and Waterproofing
- D1970/D1970M Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
- D3679 Specification for Rigid Poly(Vinyl Chloride) (PVC) Siding
- D4477 Specification for Rigid (Unplasticized) Poly(Vinyl Chloride) (PVC) Soffit
- D4756 Practice for Installation of Rigid Poly(Vinyl Chloride) (PVC) Siding and Soffit
- D5843/D5843M Guide for Application of Fully Adhered Vulcanized Rubber Sheets Used in Waterproofing
- D5898 Guide for Standard Details for Adhered Sheet Waterproofing
- D5957 Guide for Flood Testing Horizontal Waterproofing Installations
- D6134/D6134M Specification for Vulcanized Rubber Sheets Used in Waterproofing Systems
- D6135 Practice for Application of Self-Adhering Modified Bituminous Waterproofing (Withdrawn 2014)³
- D6622/D6622M Guide for Application of Fully Adhered Hot-Applied Reinforced Waterproofing Systems
- D6864 Specification for Color and Appearance Retention of Solid Colored Plastic Siding Products (Withdrawn 2018)³
- E241 Guide for Limiting Water-Induced Damage to Buildings
- E331 Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
- E547 Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference
- E631 Terminology of Building Constructions
- E1105 Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference
- E1677 Specification for Air Barrier (AB) Material or Assemblies for Low-Rise Framed Building Walls
- E1825 Guide for Evaluation of Building Exterior Enclosure Materials, Products, and Systems

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