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ICC-ES Evaluation Report

ESR-2375

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
SECTION: 07 25 00—WATER-RESISTIVE BARRIERS/WEATHER BARRIERS
SECTION: 07 27 00—AIR BARRIERS

REPORT HOLDER:

E.I. DuPONT DE NEMOURS & COMPANY, INC. (DuPONT™) DuPONT BUILDING INNOVATIONS

EVALUATION SUBJECT:

DUPONT™ TYVEK® HOMEWRAP®—STYLE 1055B; DUPONT™ TYVEK® STUCCOWRAP®—STYLE 1062X; DUPONT™ TYVEK® DRAINWRAP™—STYLE 1063X; DUPONT™ TYVEK® COMMERCIALWRAP®—STYLE 1162B; DUPONT™ TYVEK® COMMERCIALWRAP® D-STYLE 1083; AND DUPONT™ TYVEK® HEADERWRAP®



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DUPONT™ TYVEK® COMMERCIALWRAP® D-STYLE 1083; AND DUPONT™ TYVEK® HEADERWRAP®

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2015, 2012 and 2009 *International Building Code*® (IBC)
- 2015, 2012 and 2009 *International Residential Code*® (IRC)
- 2015, 2012 and 2009 *International Energy Conservation Code*® (IECC)
- Other Codes (see Section 8.0)

Properties evaluated:

- Water resistance
- Surface-burning characteristics
- Air leakage
- Wall draining characteristics (DuPont™ Tyvek® StuccoWrap®—Style 1062X, DuPont™ Tyvek® DrainWrap™—Style 1063X and DuPont™ Tyvek® CommercialWrap® D-Style 1083 only) for EIFS and one-coat stucco
- Exterior walls of Types I, II, III and IV construction

1.2 Evaluation to the following green codes and/or standards:

- 2016 California Green Building Standards Code (CALGreen), Title 24, Part 11
- 2012 and 2015 *International Green Construction Code*® (IgCC)

- 2014 and 2011 ANSI/ASHRAE/USGBC/IES Standard 189.1—Standard for the Design of High-Performance Green Buildings, Except Low-Rise Residential Buildings
- 2015, 2012 and 2008 ICC 700 National Green Building Standard™ (ICC 700-2012 and ICC 700-2008)

2.0 USES

DuPont™ Tyvek® HomeWrap®—Style 1055B; DuPont™ Tyvek® StuccoWrap®—Style 1062X; DuPont™ Tyvek® DrainWrap™—Style 1063X; DuPont™ Tyvek® CommercialWrap®—Style 1162B; DuPont™ Tyvek® CommercialWrap® D-Style 1083; and DuPont™ Tyvek® HeaderWrap® are used as water-resistive barriers on the exterior side of exterior walls of buildings of any construction type under the IBC and construction permitted under the IRC, except as noted in Section 4.5. They are equivalent to Grade D paper with a 60-minute water-resistance rating as described in 2012 and 2009 IBC Section 2510.6 and IRC Section R703.6.3. All products may be used as air barrier materials under IRC Section N1102.4.1 and IECC Sections 402.4 and 502.4.

In addition, DuPont™ Tyvek® StuccoWrap®—Style 1062X, DuPont™ Tyvek® DrainWrap™—Style 1063X and DuPont™ Tyvek® CommercialWrap® D-Style 1083 may be used as components of an EIFS or one-coat stucco drainage system as described in Section 4.4.

3.0 DESCRIPTION

3.1 General:

The products described in this report are comprised of nonwoven, flash spunbonded, nonperforated, olefin sheets that are manufactured from high-density polyethylene fibers combined with an ultraviolet stabilizing additive. The products have been bonded by heat and pressure into sheets with variations as described in Sections 3.2 through 3.6.

All products have a flame spread index of less than 25 and a smoke-developed index of less than 450, when tested in accordance of ASTM E84.

The sheet materials have an air leakage rate not exceeding 0.02 L/s-m² [0.004 cfm/ft² at 0.3 w.g. (1.57 psf)] when used as an air barrier material.

The attributes of the water-resistive barriers have been verified as conforming to the requirements of (i) 2016 CALGreen Section 5.407.1 for water-resistive barriers and Section A4.407.5 for air barriers; (ii) 2015 and 2012 IgCC Section 605.1.2.1 for air barriers; (iii) 2014 ASHRAE 189.1 Section 7.3.1.1 and 2011 ASHRAE 189.1 Section 7.4.2.9 for air barriers; (iv) 2015 and ICC 700-2012 Section

602.1.8 and ICC 700-2008 Section 602.9 for water-resistive barriers. Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

3.2 DuPont™ Tyvek® HomeWrap®–Style 1055B:

This product is a smooth sheet with a nominal basis weight of 1.8 ounces per square yard (61 grams per square meter) and is produced in rolls of varying sizes.

3.3 DuPont™ Tyvek® StuccoWrap®–Style 1062X:

The product has a surface texture that is intended to allow for drainage of water that may get behind the exterior wall finish material. This product has a nominal basis weight of 2.1 ounces per square yard (71 grams per square meter) and is produced in rolls of varying sizes.

3.4 DuPont™ Tyvek® DrainWrap™–Style 1063X:

The product has a surface texture that is intended to allow for drainage of water that may get behind the exterior wall finish material. This product has a nominal basis weight of 2.1 ounces per square yard (71 grams per square meter) and is produced in rolls of varying sizes.

3.5 DuPont™ Tyvek® CommercialWrap®–Style 1162B:

This product is a smooth sheet with a nominal basis weight of 2.7 ounces per square yard (92 grams per square meter) and is produced in rolls of varying sizes.

3.6 DuPont™ Tyvek® HeaderWrap®:

This product is the same as Tyvek® HomeWrap®–Style 1055B, except that the rolls are narrower.

3.7 DuPont™ Tyvek® CommercialWrap® D-Style 1083:

The product has a surface texture that is intended to allow for drainage of water that may get behind the exterior wall finish material. This product has a nominal basis weight of 2.4 ounces per square yard (81 grams per square meter) and is produced in rolls of varying sizes.

4.0 INSTALLATION

4.1 General:

The manufacturer's published installation instructions and this report must be strictly adhered to. If requested by the code official, a copy of this report must be available at the jobsite during installation.

The use of Tyvek® HeaderWrap® in conjunction with any of the products recognized in Sections 3.2 through 3.5 is optional. The use of tape to seal seams and edges of the products is optional, except as described in Section 4.3 and where required by the manufacturer's installation instructions.

4.2 Water-resistive Barrier:

The water-resistive barriers described in this report are installed after wall framing is completed. The roll is placed 6 to 12 inches (152 to 305 mm) from the starting corner and fastened to the sheathing with corrosion-resistant staples or nails approved by the manufacturer, and is then unrolled around the building and fastened as set forth in the manufacturer's published installation instructions at top and bottom sill plates and at framing members. A minimum of 6 inches (152 mm) of overlap is provided for vertical seams and 2 inches (51 mm) for horizontal seams, except where the manufacturer's installation instructions specify a greater overlap dimension. When use is over wood-based

sheathing in exterior plaster applications, two layers of a water-resistive barrier must be applied over sheathing in accordance with IBC Section 2510.6 or IRC Section R703.6.3. For cementitious coatings or exterior insulation and finish systems, application must be in accordance with the evaluation report on the exterior coating.

4.3 Air Barrier Material:

When used as an air barrier material or as a component of an air barrier assembly, the products must be installed in accordance with the manufacturer's published installation instructions and this report.

4.4 Wall Covering Assembly with Drainage:

The assembly described in this section complies with Section 4.5 of the ICC-ES Acceptance Criteria for EIFS Clad Drainage Wall Assemblies (AC235) and Section 3.2.10 of the ICC-ES Acceptance Criteria for Cementitious Exterior Wall Coatings (AC11). The assembly is limited to Type V construction, and may be used in Group R, Division 1 and 3, Occupancies. The system consists of minimum $\frac{7}{16}$ -inch-thick (11.1 mm) Exterior or Exposure 1 plywood or Exposure 1 oriented strand board applied to wood studs spaced a maximum of 16 inches (406 mm) on center and fastened in accordance with the requirements of Chapter 23 of the IBC or Chapter 6 of the IRC. Vertical board edges must butt over studs. DuPont™ Tyvek® StuccoWrap®–Style 1062X, DuPont™ Tyvek® DrainWrap™–Style 1063X or DuPont™ Tyvek® CommercialWrap® D-Style 1083 must be applied as described in Section 4.2. For EIFS, minimum 1-inch-thick (25.4 mm) flat or grooved face Type I expanded polystyrene (EPS) foam plastic boards, recognized in a current ICC-ES evaluation report as complying with ASTM C 578, are placed over the Tyvek® StuccoWrap®, Tyvek® DrainWrap™ or Tyvek® CommercialWrap® D and fastened to the sheathing along the EPS edges and midway between the horizontal edges. The fastener spacing must not exceed 24 inches (610 mm) on center along the EPS edges. For midway locations, the fastener spacing must not exceed 16 inches (406 mm) on center and fasteners must be located within 16 inches (406 mm) of the horizontal edges. Fasteners consist of wood screws sized to meet wind resistance requirements, with minimum $\frac{3}{4}$ -inch-diameter (45 mm) plates or washers, and penetrating a minimum of $\frac{1}{4}$ inch (6.4 mm) through the sheathing Weep screeds, as set forth in IBC Section 2512.1.2 or IRC Section R703.6.2.1, must be installed. The EIFS base coat, fabric and finish coat must be installed over the EPS in accordance with the EIFS manufacturer's ICC-ES evaluation report. The one-coat stucco system must be installed in accordance with the manufacturer's ICC-ES evaluation report.

4.5 Exterior Walls of Types I, II, III and IV Construction:

4.5.1 DuPont™ Tyvek® HomeWrap®–Style 1055B; DuPont™ Tyvek® StuccoWrap®–Style 1062X; DuPont™ Tyvek® DrainWrap™–Style 1063X; and DuPont™ Tyvek® HeaderWrap® may be used on exterior walls of Types I, II, III or IV construction 40 feet or less above grade plane. The use is not limited to any specific assembly, except where the wall assembly uses foam plastic insulation it must also comply with the requirements of IBC Section 2603.5.

4.5.2 The DuPont™ Tyvek® CommercialWrap®–Style 1162B and DuPont™ Tyvek® CommercialWrap® D-Style 1083 may be used as a component of exterior walls of buildings of Type I, II, III or IV construction as follows:

Under the 2015 IBC: Use on exterior walls greater than 40 feet in height is not limited to any specific wall assembly

where the DuPont™ Tyvek® CommercialWrap®–Style 1162B and DuPont™ Tyvek® CommercialWrap® D-Style 1083 is the only combustible material as provided for in 2015 IBC Section 1403.5, Exception 2. Where the wall assembly does not meet the requirements of IBC Section 1403.5, Exception 2, the use on exterior walls greater than 40 feet in height above grade is limited to the assemblies described in Table 1. The use on exterior walls of Types I, II, III or IV construction 40 feet or less above grade plane is not limited to any specific assembly, except that wall assemblies that use foam plastic insulation must also comply with the requirements of IBC Section 2603.5.

Under the 2012 IBC: Use on exterior walls greater than 40 feet in height above grade is limited to the assemblies described in Table 1. The use on exterior walls of Types I, II, III or IV construction 40 feet or less above grade plane is not limited to any specific assembly, except that wall assemblies that use foam plastic insulation must also comply with the requirements of IBC Section 2603.5.

Under the 2006 and 2009 IBC: Use on exterior walls greater than 40 feet in height above grade is not limited to any specific assembly, except that wall assemblies that use foam plastic insulation must also comply with the requirements of IBC Section 2603.5.

5.0 CONDITIONS OF USE

The DuPont™ Tyvek® products described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The products must be installed in accordance with the manufacturer's published installation instructions, the requirements of the applicable code and this report. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.
- 5.2 The water-resistive barriers must be covered by an exterior wall finish complying with the requirements of the applicable code.
- 5.3 When DuPont™ Tyvek® StuccoWrap®–Style 1062X, DuPont™ Tyvek® DrainWrap™–Style 1063X or DuPont™ Tyvek® CommercialWrap® D-Style 1083 are used in an EIFS wall covering assembly with drainage or a one-coat stucco assembly as described in Section 4.4, the assembly must be specifically recognized in the evaluation report on the EIFS or one-coat stucco.
- 5.4 This report provides air leakage rates for the products as an air barrier material only. When used as a component of an air barrier assembly, the design and evaluation of the air barrier assembly of which they are a component must be provided to the satisfaction of the code official.
- 5.5 Use of DuPont™ Tyvek® CommercialWrap®–Style 1162B and DuPont™ Tyvek® CommercialWrap® D-Style 1083 on exterior walls of buildings of Type I, II, III or IV construction must be in accordance with the requirements of Section 4.5 for the applicable edition of the code.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Water-resistive Barriers (AC38), dated January 2015.

- 6.2 Data in accordance with Section 4.10 of the ICC-ES Acceptance Criteria for EIFS Clad Drainage Wall Assemblies (AC235), dated January 2015.
- 6.3 Report of testing in accordance with ASTM E84.
- 6.4 Reports of testing in accordance with ASTM E2178.
- 6.5 Reports of testing in accordance with NFPA 285 with related engineering analysis.
- 6.6 Reports of testing in accordance with ASTM E1354.

7.0 IDENTIFICATION

- 7.1 The products described in this report are identified by a label on the container of each roll of membrane, and by printing on the product that includes the report holder's name, address, and telephone number; the product name; and the evaluation report number (ESR-2375).
- 7.2 The report holder's contact information is the following:

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(DuPONT™)
DuPONT BUILDING INNOVATIONS
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WILMINGTON, DELAWARE 19880-0721
(800) 44-TYVEK
www.construction.tyvek.com
tyvekinf@usa.dupont.com

8.0 OTHER CODES

8.1 Evaluation Scope:

In addition to the codes referenced in Section 1.0, the products covered in this report were evaluated for compliance with the requirements of the following codes:

- 2006 *International Building Code*® (2006 IBC)
- 2006 International Residential Code® (2006 IRC)
- 2006 International Energy Conservation Code® (2006 IECC)
- 2003 International Building Code® (2003 IBC)
- 2003 International Residential Code® (2003 IRC)
- 2003 *International Energy Conservation Code*® (2003 IECC)

8.2 Uses

See Section 2.0.

8.3 Description

See Section 3.0.

8.4 Installation

See Section 4.0.

8.5 Conditions of Use

See Section 5.0.

8.6 Evidence Submitted

See Section 6.0.

8.7 Identification

See Section 7.0.

TABLE 1
NFPA 285 ASSEMBLIES (REFER TO FIGURE 1 FOR COMPONENT LOCATIONS)

I. Base Wall System Use either 1, 2, 3, 4, or 5)	1. Concrete Wall
	2. Concrete Masonry Wall (CMU)
	3. Standard Clay Brick Wall
	4. Adobe Block Wall
	5. Steel Stud Framed Wall (Use a, b, c, d or e, as applicable) – Minimum 20-gauge, 3 ⁵ / ₈ -inch-deep, studs with lateral bracing every 4 feet vertically, spaced 24 inches on center maximum
	a. Interior Wallboard – Minimum of 1 layer of 5/8-inch-thick Type X gypsum wallboard on interior face of studs
	b. Interior Vapor Barrier (optional) – 1 layer of maximum 6 mil thick polyethylene plastic or equivalent can be applied
	c. Cavity Insulation – None or any noncombustible insulation (faced or unfaced)
	d. Floorline Firestopping – (where studs are outboard of the floor assembly): 4 lb/ft ³ mineral wool in each stud cavity and at each floorline – attached with Z-clips
e. Exterior Sheathing – 1/2- or 5/8-inch-thick, exterior type gypsum sheathing	
II. Air and Water Barrier Applied to I. Base Wall System or over III. Exterior Insulation (Use either 1 or 2)	1. DuPont™ Tyvek® CommercialWrap®–Style 1162B
	2. DuPont™ Tyvek® CommercialWrap® D-Style 1083
III. Exterior Insulation (Use either 1, 2, 3 or 4) ^{1,2}	1. None
	2. Any noncombustible mineral wool insulation, faced or unfaced, <u>classified as Class A when tested in accordance with ASTM E84 or UL 723, minimum 2 inches (51 mm) thick</u>
	3. Dow Thermax™ Polyisocyanurate rigid insulation (see ICC-ES ESR-1659) with total thickness to be a minimum of 5/8 inch and a maximum of 3 inch.
	4. Extruded Polystyrene Foam Insulation (XPS) – Type IV complying with ASTM C578 with total thickness to be a minimum of 1/2 inch to maximum of 3 inch and recognized in a current ICC-ES evaluation report.
IV. Exterior Cladding ³ (Use either 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10)	1. Brick: Standard nominal 4" thick, clay brick. Use standard brick veneer anchors installed maximum 24" on center vertically on each stud with a 2" maximum air gap between exterior insulation and brick.
	2. Stucco: Minimum 3/4-inch-thick, exterior cement plaster and lath. An optional secondary water-resistive barrier can be installed between the exterior insulation and the lath. The secondary water-resistive barrier shall not be full-coverage asphalt or butyl-based self-adhered membranes. (Cannot be combined with Exterior Insulation: #4-XPS)
	3. Stone Veneer: Minimum 2 inches thick, limestone or natural stone veneer or minimum 1 1/2" thick cast artificial stone veneer. Any standard installation technique can be used.
	4. Fiber Cement Siding or Panels: Any standard installation technique can be used. (Cannot be combined with Exterior Insulation: #4-XPS)
	5. Metal Exterior Wall Coverings: Including but not limited to steel, aluminum, and copper installed using standard installation techniques. (Cannot be combined with Exterior Insulation: #4-XPS)
	6. Terra Cotta Cladding: Use any Terra cotta cladding system in which terra cotta is minimum 1 1/4-inch-thick. Any standard installation technique can be used.
	7. Metal Composite Material (MCM): Alpolic/fr wall panels (see ICC-ES ESR-2653), Alcoa Reynobond FR 6-mm ACM panels or other MCM panel that has been tested in accordance with NFPA 285 and which is recognized in a current ICC-ES evaluation report. The MCM panels cannot be combined with Exterior Insulation: #4-XPS.
	8. Concrete Masonry Units (CMU): Minimum 4-inch-thick CMU, with a 2-inch maximum air gap between exterior insulation and CMU.
	9. Concrete Panels: Minimum 2-inch-thick panel, with a 2-inch maximum air gap between exterior insulation and concrete panel.
	10. Insulated Concrete Sandwich Panels: Minimum 2-inch-thick outer and inner faces. Maximum 2-inch air gap between panel and wall system.

For **SI**: 1 inch = 25.4 mm; 1 lb/ft³ = 16 kg/m³

Notes:

¹ On insulation joints, an asphalt or butyl-based flashing tape with a 4 inch maximum width may be used.

² Use any header treatment shown in Window Head Detail Options, Figures 2 through 7 for all window and door openings in the exterior wall.

³ Exterior claddings must comply with the applicable provisions of IBC Chapter 14 and IRC Chapter 7

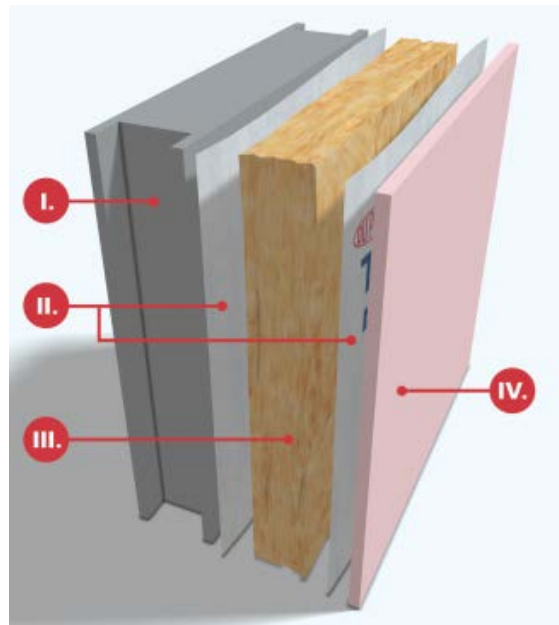
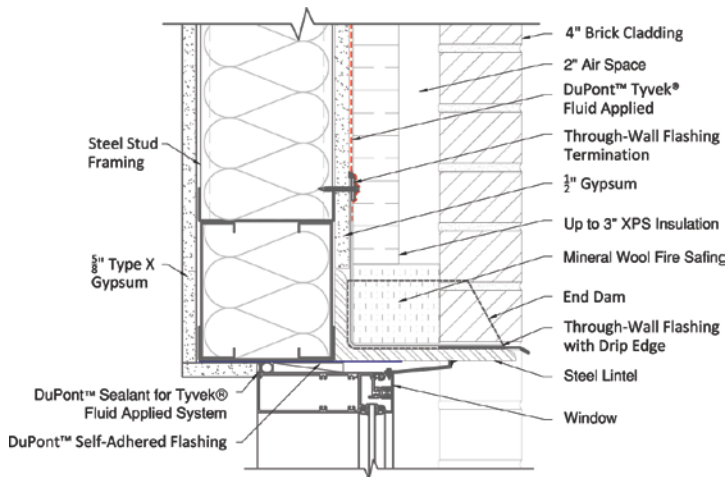
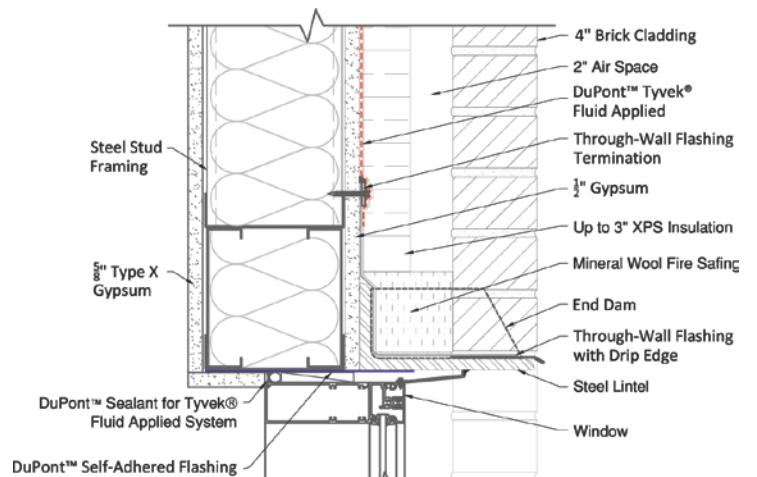


FIGURE 1
Refer to Table 1 for system components.



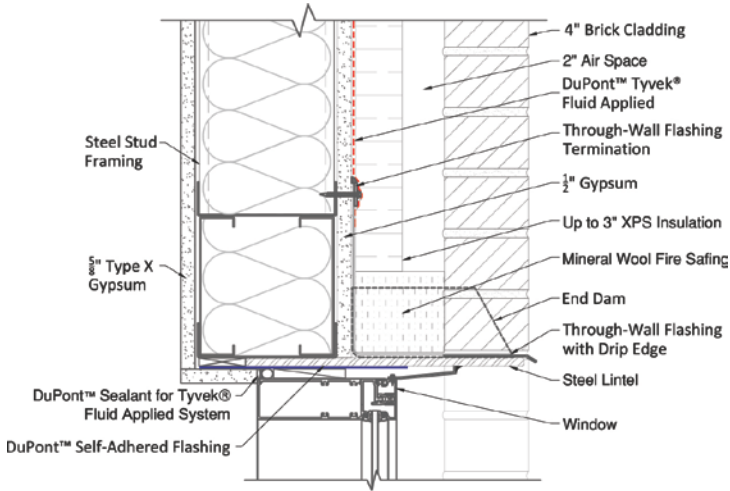
**NFPA 285 Window Head
Detail Option #1**

FIGURE 2



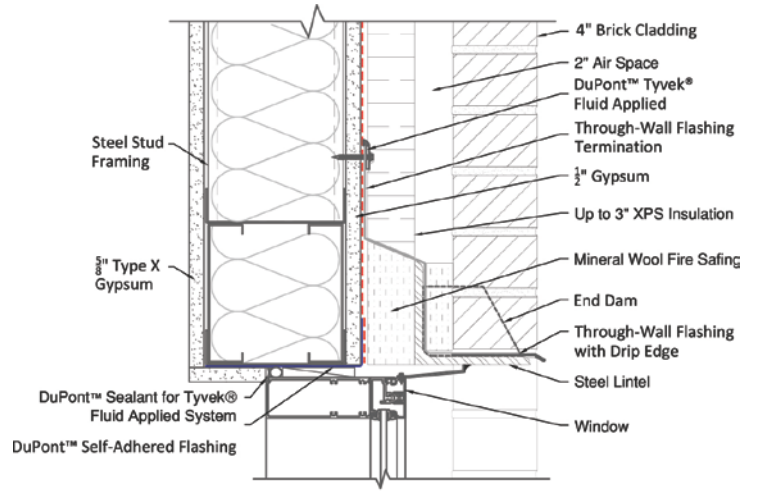
**NFPA 285 Window Head
Detail Option #2**

FIGURE 3



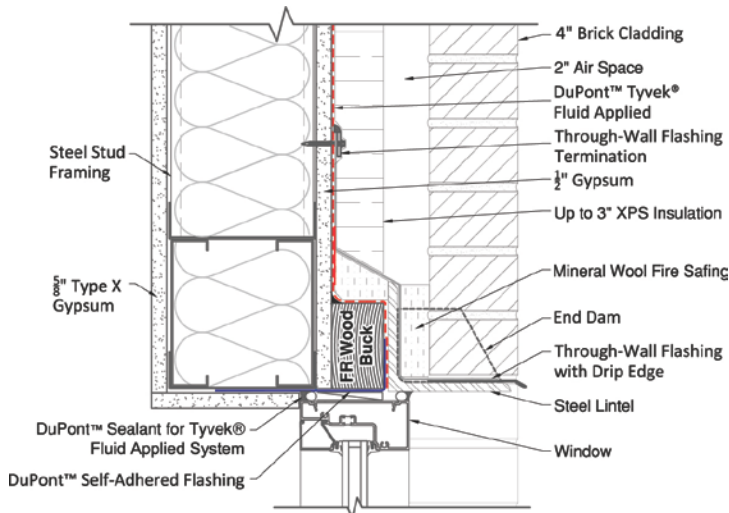
NFPA 285 Window Head
Detail Option #3

FIGURE 4



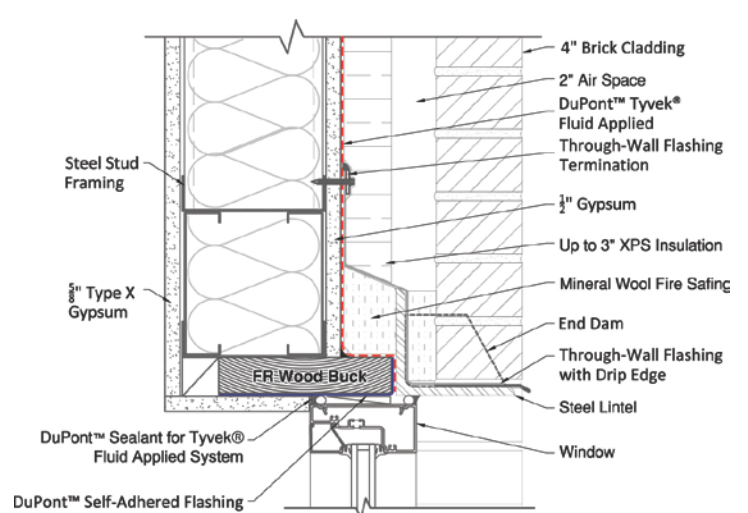
NFPA 285 Window Head
Detail Option #4

FIGURE 5



NFPA 285 Window Head
Detail Option #5

FIGURE 6



NFPA 285 Window Head
Detail Option #6

FIGURE 7