



## Evaluation Report CCMC 12884-R TYPAR® HouseWrap/CertaWrap™/BuildingWrap – Air Barrier Material

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### 1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “TYPAR® HouseWrap/CertaWrap™/BuildingWrap – Air Barrier Material,” when used as an air barrier material in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code (NBC) of Canada 2015:

- Clause 1.2.1.1.(1)(a) of Division A, as an acceptable solution from Division B:
  - Sentence 9.36.2.10.(1), Construction of Air Barrier Details
- Clause 1.2.1.1.(1)(b) of Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
  - Article 9.25.3.2., Air Barrier System Properties

This opinion is based on CCMC's evaluation of the technical evidence in Section 4 provided by the Report Holder.

Ruling No. 09-32-230 (12884-R), authorizing the use of this product in Ontario, subject to the terms and conditions contained in the Ruling, was made by the Minister of Municipal Affairs and Housing on 2009-12-02 (revised on 2011-05-30) pursuant to s.29 of the Building Code Act, 1992 (see Ruling for terms and conditions). This Ruling is subject to periodic revisions and updates.

### 2. Description

This report addresses the performance of "TYPAR® HouseWrap/CertaWrap™/BuildingWrap" as an air barrier material within the Fiberweb, LLC. - specified "TYPAR® HouseWrap/CertaWrap™/BuildingWrap" air barrier system. The air barrier system has not been evaluated but is described in Appendix A as additional information for the convenience of building officials and designers.

If the product is installed as part of the designated air barrier system as described, it will serve a dual function in the wall assembly acting as both an air barrier material and as a sheathing membrane to control incidental water infiltration behind cladding. The latter function is covered in a separate CCMC Evaluation Report (CCMC 12892-R).

The product is produced from a 100% polypropylene, spun-bonded olefin fabric made from oriented, isotactic, polypropylene filaments that have been thermally bonded and coated with a copolymer film. The product resists the passage of water but permits the passage of water vapour.

The product is light gray with a black backing. It is 0.30 mm thick and is available in rolls ranging from 0.91 m to 3.05 m wide × 28.96 m to 60.96 m long.

### 3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the product being used in accordance with the conditions and limitations set out below.

- The product has demonstrated a sufficiently low air permeance equivalent to the materials outlined in Table A-9.25.5.1.(1), Air and Vapour Permeance Values, and Sentence 9.36.2.10.(1) of Division B of the NBC 2015 to be the principal plane of airtightness in an air barrier system.
- Generally, when the product is installed as part of the airtight element of the proponent's proprietary air barrier system, the vapour barrier only needs to comply with Sentences 9.25.4.2.(1) and (5), Vapour Barrier Materials, of Division B of the NBC 2015. In cases where another low water vapour permeance element has been installed in the wall assembly, Article 9.25.5.1., General (Properties and Position of Materials in the Building Wrap), of Division B of the NBC 2015 must apply.
- The product must be installed:
  - with the printed side facing outward and protected from exposure to ultraviolet (UV) radiation from the sun within 60 days;
  - with a minimum 10-mm air space between the sheathing membrane and the cladding, unless the cladding has been deemed not to require an air space (e.g., by CCMC or by building officials based on past cladding performance); and
  - according to the most recent update of Fiberweb™ Inc.'s "TYPAR® HouseWrap/CertaWrap™/BuildingWrap" Installation Manual (sheathing membrane, air barrier and header wrap) (examples of the installation details are presented as "Additional Information" in Appendix A).
- A concealed air space exceeding 25 mm in width must contain proper fire blocking, in accordance with Subsection 9.10.16., Fire Blocks, of Division B of the NBC 2015.
- CCMC-evaluated sheathing tape in accordance with MasterFormat 07 25 20 must be used to seal all joints.
- The product must be clearly identified with the phrase "CCMC 12884-R."

### 4. Technical Evidence

The Report Holder has submitted technical documentation for CCMC's evaluation. Testing was conducted at laboratories recognized by CCMC. The corresponding technical evidence for this product is summarized below.

The durability assessment of "TYPAR® HouseWrap/CertaWrap™/BuildingWrap" is covered under CCMC 12892-R and additional aging in CAN/ULC-S741-08, "Standard for Air Barrier Materials - Specification".

#### 4.1 Performance Requirements

**Table 4.1.1 Results of Testing of the Performance Requirements for the Product**

Test	Requirement	Result
Tested as per CAN/ULC-S741-08 with five 1-m <sup>2</sup> membrane specimens and measured for air permeance at a minimum of six air pressure differentials (ΔP) between 0 and 300 Pa – Unconditioned (Prior to UV and Heat Aging).	Air leakage rate at 75 Pa ΔP (based on linear regression of 30 data points) ≤ 0.02 L/(s·m <sup>2</sup> )	0.0014 L/(s·m <sup>2</sup> )
Five 1-m <sup>2</sup> membrane specimens tested and measured for air permeance at a minimum of six air pressure differentials (ΔP) between 0 and 300 Pa – Conditioned (After UV and Heat Aging).	Where less than 0.01 L/(s·m <sup>2</sup> ) for unconditioned specimens, the increase of the air leakage rate at 75 Pa ΔP for conditioned specimens ≤ 0.001 L/(s·m <sup>2</sup> ).	0.0021 L/(s·m <sup>2</sup> ) <sup>1</sup>
		0.0007 L/(s·m <sup>2</sup> ) <sup>2</sup>
Water Vapour Permeance (Infiltration Direction)	When less than 60 ng/(Pa·s·m <sup>2</sup> ), the location of the product installation is restricted by the requirements listed in Article 9.25.1.1. of Division B of the NBC 2015.	525.0 ng/Pa.s.m <sup>2</sup>
Water Vapour Permeance (Exfiltration Direction)		339.6 ng/Pa.s.m <sup>2</sup>

**Notes to Table 4.1.1:**

1. Test result (air leakage rate) for the conditioned specimens after UV and heat aging.
2. Increase of the air leakage rate for conditioned specimens (after UV and heat aging).

## Report Holder

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**Date modified:**  
2017-09-18

## APPENDIX A - Additional Information

### An air barrier material as part of an air barrier system

CCMC has not evaluated the performance of the “TYPAR® HouseWrap/CertaWrap™/BuildingWrap” air barrier system in conformance with Article 9.25.3.2., Air Barrier System Properties, of Division B of the NBC 2015. However, CCMC’s opinion is that an air barrier system using this material and installed in conformance with the details outlined below, as well as in Fiberweb™ Inc.’s Installation Manual, should satisfy the requirements for continuity of the air barrier system in Articles 9.25.3.1., Required Barrier to Air Leakage, and 9.25.3.3., Continuity of the Air Barrier System, of Division B of the NBC 2015.

### Discussion

Authorities having jurisdiction (AHJ) should be aware that this system differs from the typical air barrier approach, which uses a flexible membrane as the principal plane of airtightness. In the typical approach, the membrane (i.e., polyethylene sheet) is sandwiched between two other materials so that it is not required to resist, on its own, the full force of indoor/outdoor pressure differences induced by stack effect, mechanical systems and, most importantly, wind.

In a system in which the membrane is applied to the outer surface of the wall sheathing, as it is in the proposed air barrier system, the membrane does not have continuous support against outward air pressure; it must therefore have adequate strength to resist that pressure where it spans between points of support, such as its own fastening points or the points where strapping or cladding are fastened to the wall. CCMC’s evaluation of this material **does not include the evaluation of this strength** or the strength of the continuity details. The AHJ must, therefore, determine whether the product’s air barrier system, described herein, meets the intent of Sentence 9.25.3.2.(1) of Division B of the NBC 2015, as being an effective barrier for the proposed construction in the proposed geographical/climate area. For example, based on their experience, the AHJ may deem the proposed air barrier system adequate for buildings in urban areas, sheltered sites or areas of low wind, but inadequate for buildings in areas of high wind and exposed sites in rural or coastal areas.

An air barrier system checklist for the authority having jurisdiction to consider is the following:

An air barrier system must:

- i. have an acceptable low air leakage rate;
- ii. be continuous;
- iii. be durable;
- iv. have sufficient strength to resist the anticipated air pressure load; and
- v. be buildable in the field.

### Installation details

The product is applied over exterior wood-based wall sheathing material complying with the NBC 2015. It does not contribute to an air barrier system until it is joined to the other components that make up the air barrier system of the building. Fiberweb™ Inc.’s Installation Manual outlines how the product must be joined to the foundation wall, to windows and doors, to penetrations in the wall and to the ceiling air barrier, thus forming the system.

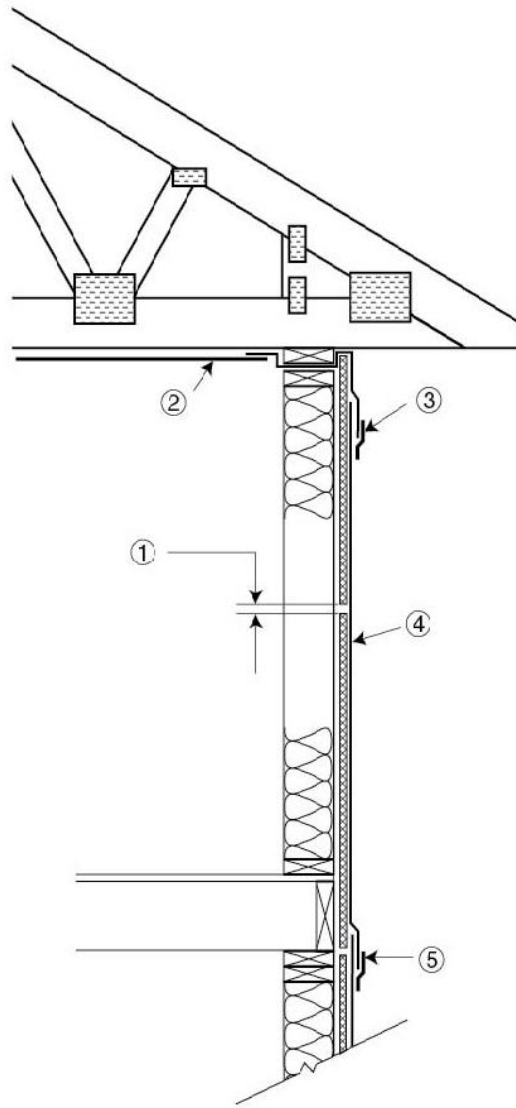
A successful air barrier system installation is predicated on sequencing during construction. Coordination is required during erection of framing and after completion of the system to ensure that no other trade breaches the integrity of the installed air barrier system.

The proposed air barrier system is defined as possessing the following features:

- i. “TYPAR® HouseWrap/CertaWrap™/BuildingWrap” – Air Barrier Material as the principal plane of airtightness;
- ii. accessories (including sealants and CCMC-evaluated sheathing tape) to maintain continuity at junctions with penetrations in the wall assembly (i.e., windows, doors, pipes, ducts, electrical outlets, etc.) and in accordance with continuity details in the Fiberweb™ Inc. Installation Manual;
- iii. durable, meeting UV and heat-aging requirements;
- iv. exterior sheathing with specified fasteners and fastening schedule of the “TYPAR® HouseWrap/ CertaWrap™/BuildingWrap” for structural sup- port against anticipated pressure loads; and

The air barrier system is to be built in the field by informed builders and reviewed by building officials.

Figures 1 to 7 outline typical construction details on the installation of the product as an air barrier system in the field. See Fiberweb™ Inc.’s “TYPAR® HouseWrap/CertaWrap™/BuildingWrap” Installation Manual for additional details.



**Figure 1. Exterior wall cross-section of the product – top wall/ceiling continuity**

- 1. wood-based sheathing installed with open horizontal gap**
- 2. ceiling air/vapour barrier**
- 3. CCMC-evaluated sheathing tape**
- 4. proprietary air barrier material**
- 5. typical overlap of 100 mm of the proprietary air barrier material and tape**

All horizontal joints in the material must be overlapped 100 mm and taped with CCMC-evaluated sheathing tape. To maintain continuity of the plane of airtightness, the material must be sealed to the roof by using an appropriate transition membrane. The material should be secured underneath the transition membrane to ensure proper shingling. Wood-based sheathing, glass-fibre-faced exterior gypsum board, or exterior gypsum board having a water vapour permeance of less than  $60 \text{ ng/Pa}\cdot\text{s}\cdot\text{m}^2$  must be installed in accordance with Article 9.25.5.2., Position of Low Permeance Materials, of Division B of the NBC 2015.

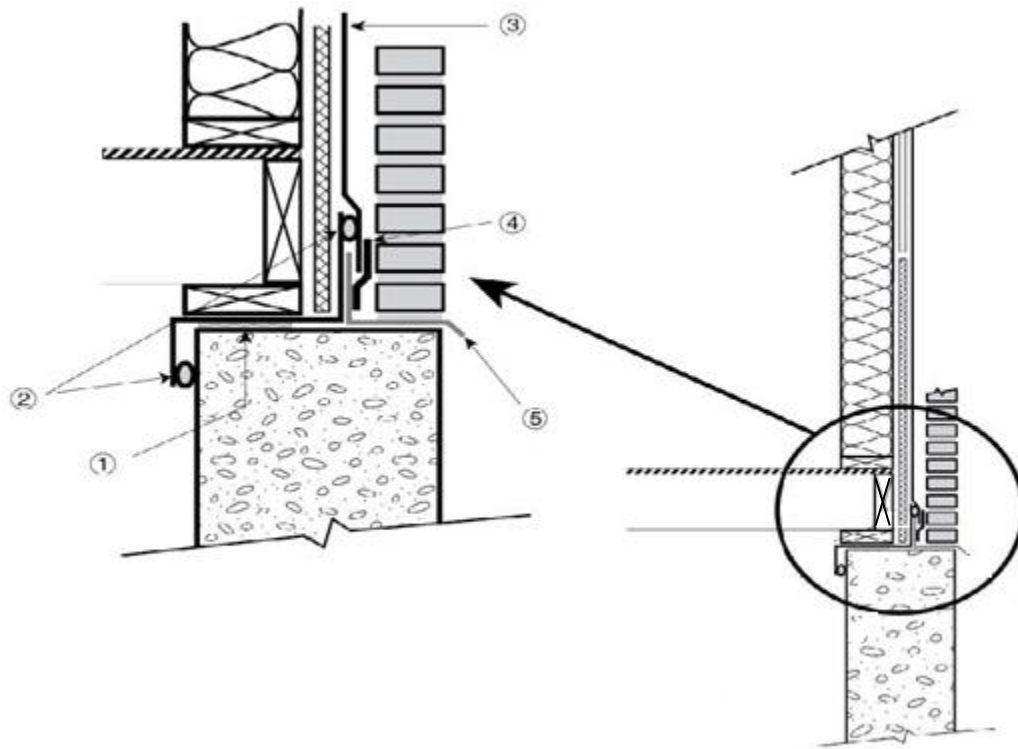
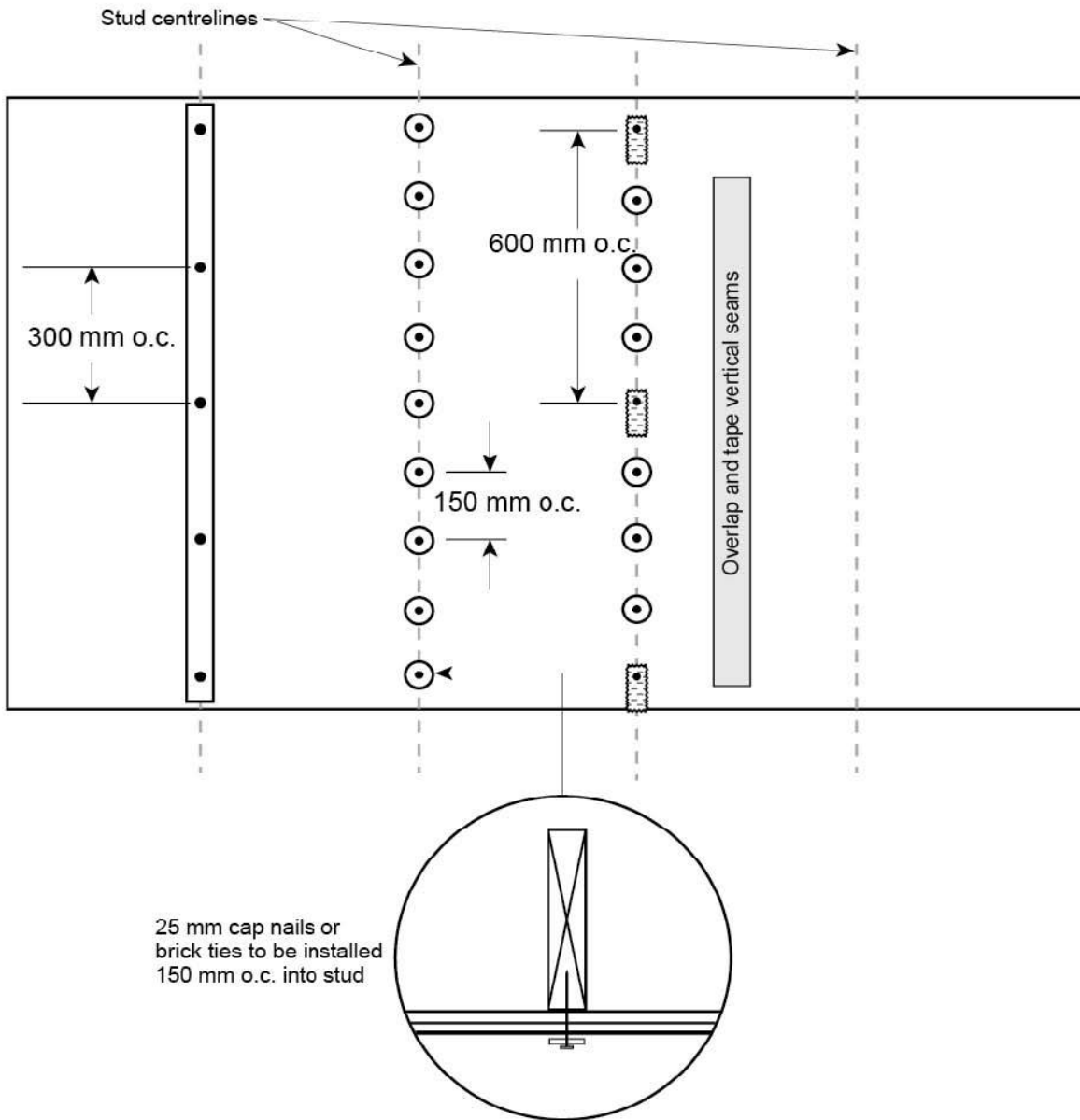


Figure 2. Bottom foundation detail for the product

1. sill plate gasket
2. sealant
3. proprietary air barrier material
4. tape
5. flashing

Since the foundation wall is part of the air barrier system, the product must be sealed to the foundation wall to maintain the continuity of the plane of airtightness. The sealant used must be compatible with the product (for example, silicone-based sealants must not be used). To maintain watertightness, the product's sheathing membrane must be installed over the flashing and taped to properly drain any rain penetration breaching the cladding.



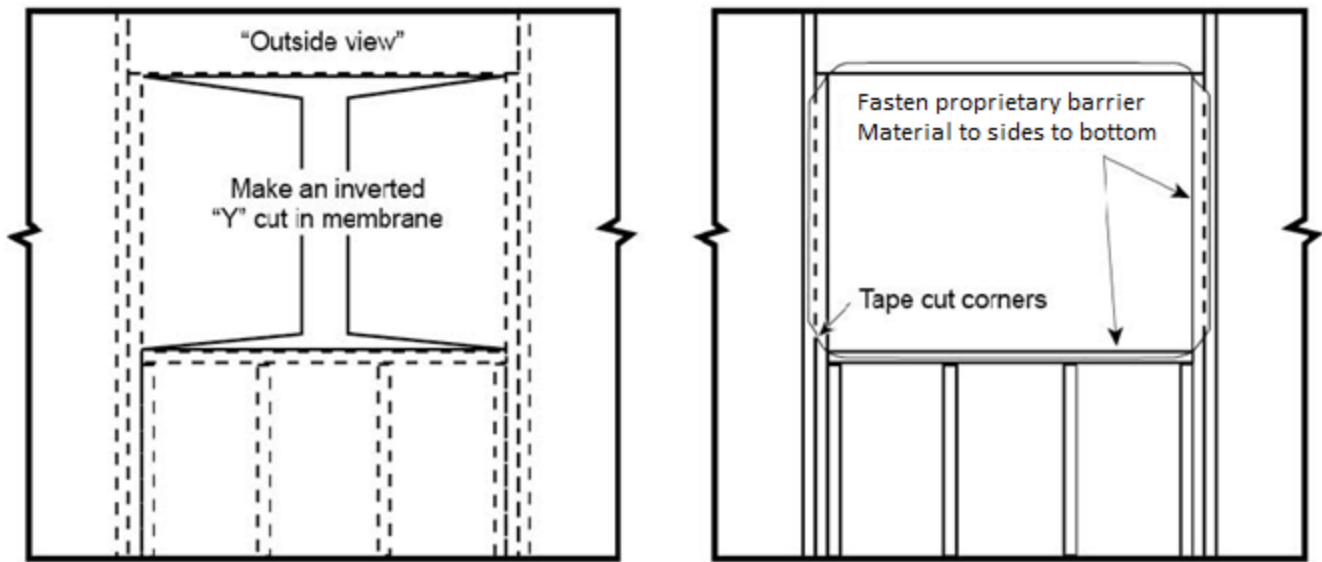
**Figure 3. Structural fasteners for the product**

When installed as the principal plane of airtightness, the product must be structurally attached using nails with plastic washers, screws with plastic washers, or appropriate brick tie anchors.

For wood-framed construction where the sheathing is either plywood, insulated board, glass-fibre-faced exterior gypsum, or exterior gypsum board, use nails with plastic washers and brick tie anchors.

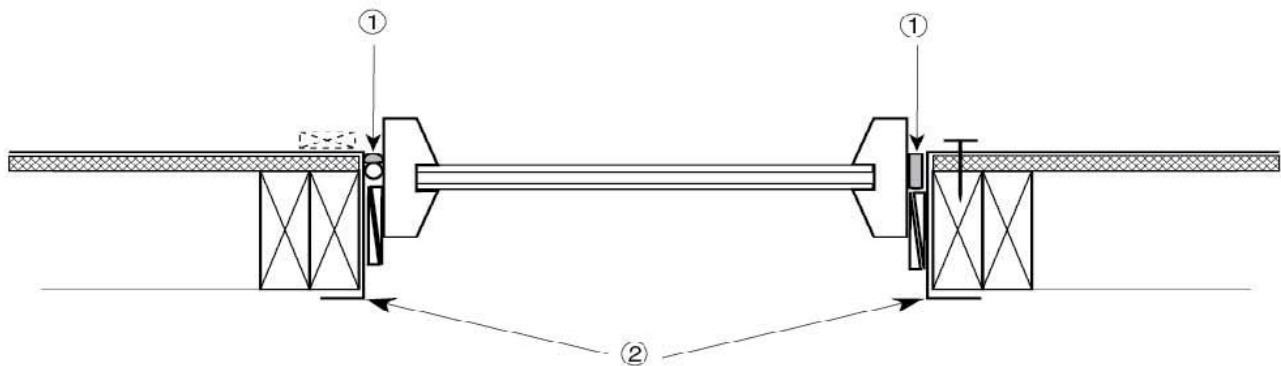
For steel-framed construction where the sheathing is either glass-fibre-faced exterior gypsum or exterior gypsum, use screws with washers and brick tie fasteners.

All seams require a 100-mm minimum overlap and both vertical and horizontal seams should be secured with a CCMC-evaluated sheathing tape.



**Figure 4. Window and door openings**

The material must be cut and wrapped around framing at openings (see Figure 4). Cut ends should then be taped or caulked to the inside frame. To ensure continuity at this junction, a seal must be established with the window or door element (see Figure 5).

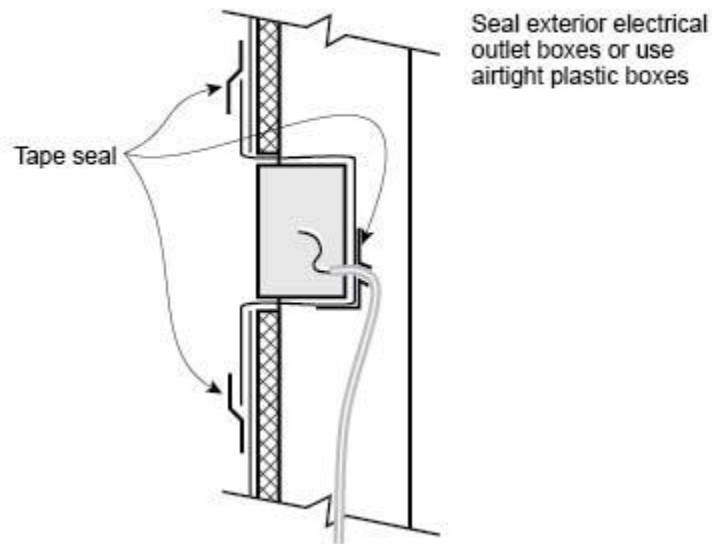
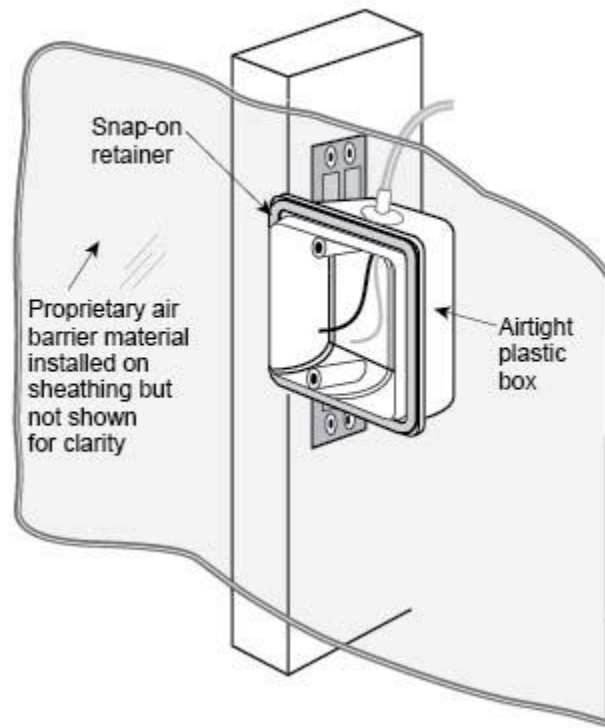


**Figure 5. Window frame cross-section**

1. seal to window with sealant or foam compatible with proprietary air barrier material and wood/vinyl/aluminum frames
2. proprietary air barrier material

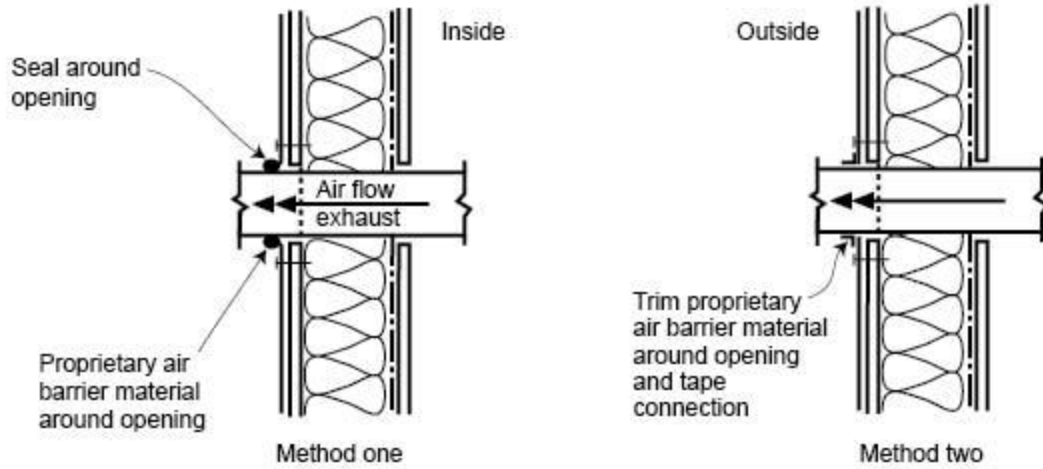
The plane of airtightness of the material must be made continuous with windows and doors that are part of the air barrier system for the building envelope. The material must be sealed to the window or door frames with either sealant/backer rod or filled with sealant foam. Sealants must be compatible with the material and adhere to the framing material.





**Figure 6. Exterior electrical boxes**

All exterior electrical boxes or other penetrations through the material must be rendered airtight to maintain the plane of airtightness of the air barrier system. All electrical boxes must be wrapped and taped to the product's membrane, or airtight electrical boxes can be used.



**Figure 7. Sealing at wall penetrations**

Where pipes and ducts breach the product's membrane, they must be sealed to the membrane. A sealant bead or CCMC-evaluated sheathing tape compatible with the product and the pipe or duct material is recommended.