Fortress Installation Systems

Installation Manual

For

Fenestration Rough Opening Moisture Protection

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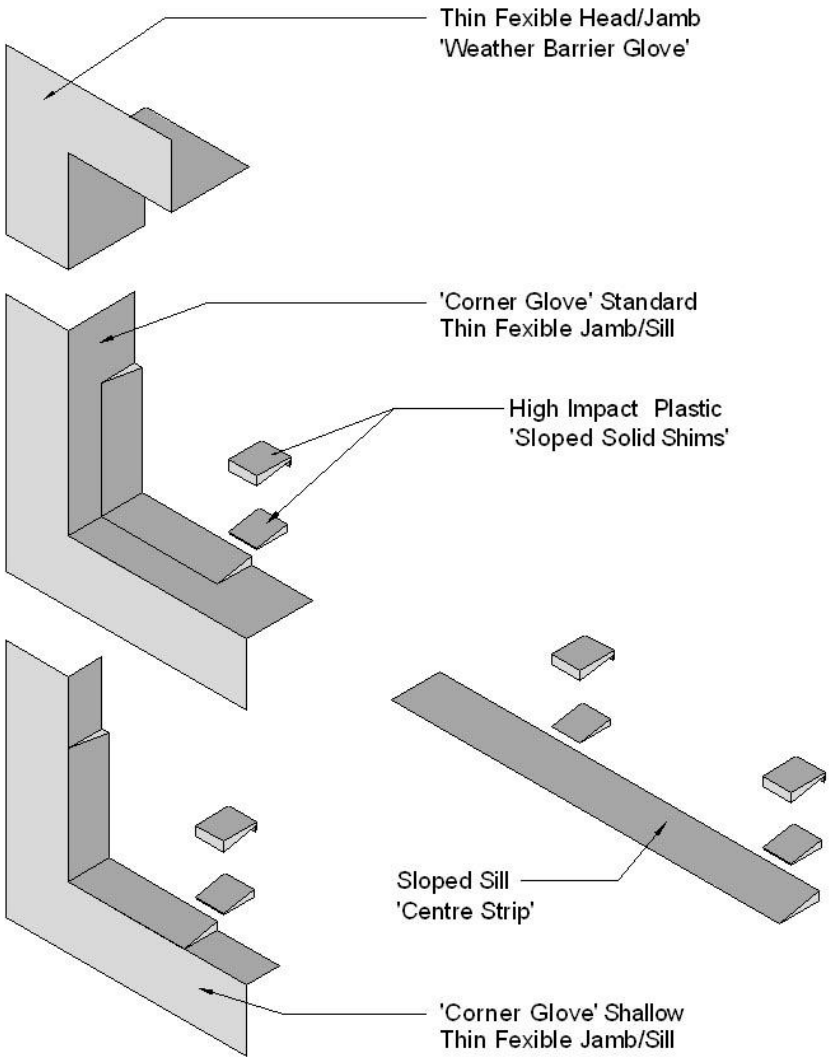
This document provides a technical review of Fortress Installation System's fenestration rough opening details and installation specifications. Click on the blue Section No. link to go directly to that Section.

1.0 FIS Components



FIS Figure No. 1.1

FIS is a revolutionary fenestration rough opening moisture protection system that ties the fenestration into the weather resistive barrier easier than ever before and provides a WARRANTY. And where required, FIS ties the fenestration into the exterior air barrier easier than ever before.

FIS proprietary components include:

- a thin flexible pre-molded 'Corner Glove' available in 'standard' and 'shallow' depths. The 'Corner Glove' fits into the sill/jamb bottom corners of the fenestration rough opening and simplifies and speeds up the fenestration rough opening protection installation, reducing construction schedule time and labour costs.

- a semi-rigid sloped 'Center Strip'.

- high density plastic 'Sloped Solid Shims'

- a thin flexible pre-molded 'Weather Barrier Glove'. Where the weather resistive barrier is required to be turned into the fenestration rough opening for moisture protection and air tightness of the rough opening, the 'Weather Barrier Glove' can be installed at the top corners of the rough opening.

FIS is compatible with both window and door installations and can be installed 'before' or 'after' the installation of the weather resistive barrier.

Door Installation Note: As the 'Center Strip' and FIS fenestration bearing/blocking shims provide a bearing elevation ½" (12.7mm) higher than the bottom of the rough opening, this will set the door threshold up and additional ½" (12.7mm) above the finished floor height, as opposed to setting the threshold down into a double bead of butyl sealant.

Note: Depending on the depth of the door threshold, additional blocking may be required below the inner side of the threshold, on the interior side of the sloped 'Center Strip' to support the inner side of the threshold.

FIS is compatible with retrofit projects using the FIS installation methods. Caution should be noted to adjust fenestration outside measures (OSM) to accommodate the FIS required ½" (12.7mm) perimeter cavity.

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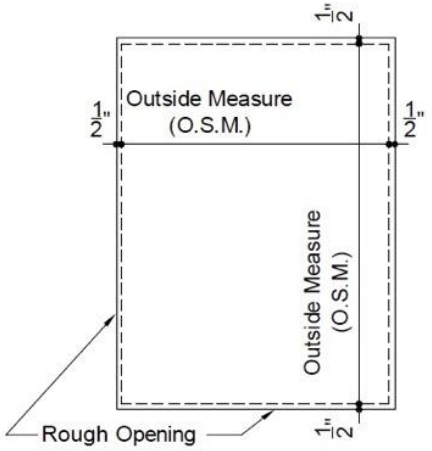
2.0 FIS Fenestration Rough Opening Framing Requirements



FIS Figure No. 2.1

FIS WARRANTY requires the perimeter cavity around the fenestration unit to be a minimum of ½" (12.7mm) wide on all sides of fenestration units less than 8 feet (2,400 mm) in width or height.
Refer to FIS Figure No. 2.1.

The width of the perimeter cavity required for thermal expansion of fenestration units larger than 8 feet (2,400 mm) in width or height shall be calculated on occurrence as per the requirements defined in ASTM E2112-19C or CSA A440.

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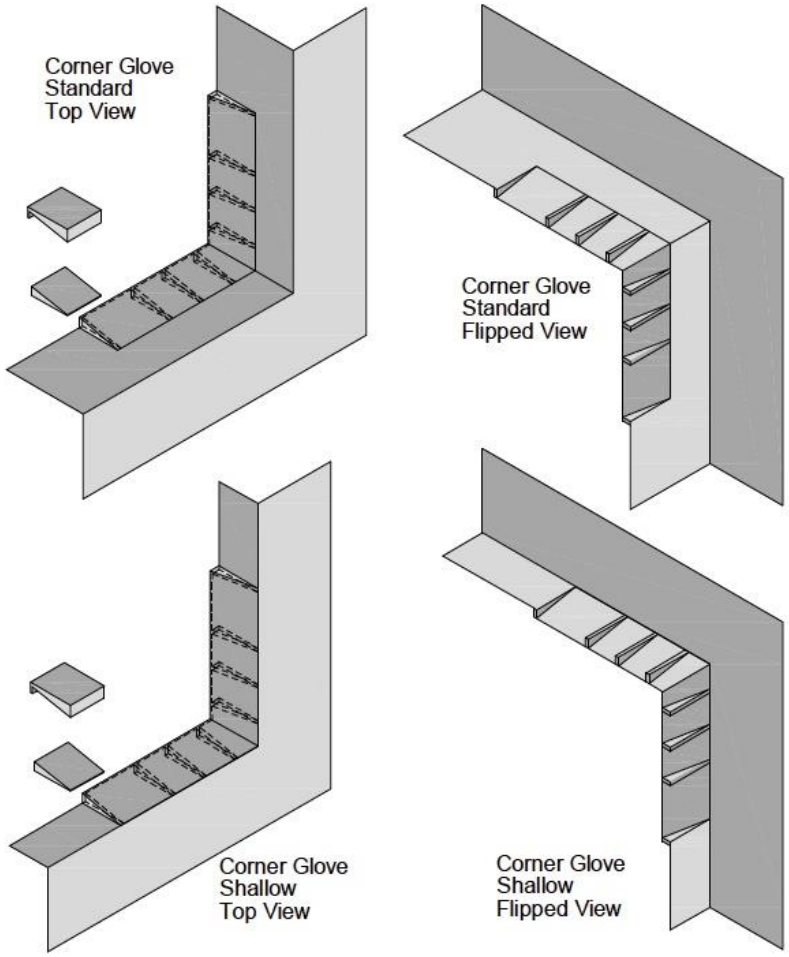
3.0 FIS Corner Gloves and Weather Barrier Gloves



FIS Figure No. 3.1

The FIS proprietary Corner Glove is designed to simplify the corner waterproofing detailing of the rough opening and speed up installation.

The FIS Corner Glove is available in both a 'standard' depth and 'shallow' depth for various window depth.

The 'standard' depth Corner Glove is generally used with windows that have jamb extensions.

The 'shallow' depth Corner Glove is generally used with windows that do not have jamb extensions.

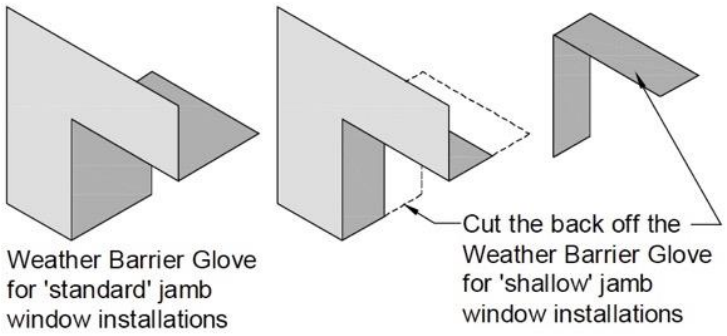
The FIS Corner Glove is universal left-right with no cutting required to install. Simply set the Corner Glove into the bottom corners of the rough opening and staple or nail into position.
Refer to FIS Figure No. 3.1.

The FIS Corner Glove is universal left-right and is designed with a slot at the end of each sloped section to allow the insertion of the FIS high impact plastic "Sloped Plastic Shims' at the sill.

The location of the bearing shim slot sets the edge of the installed shims 3-½" (89mm) from the corner of the rough opening. As the FIS required perimeter cavity is ½" (12.7mm), this sets the edge of the shim 3" (75mm) from the end of the fenestration unit as required by ASTM E2112-19C and CSA A440.

While the back height of the 'Corner Gloves' are 3/8" high/wide, the 'Corner Gloves' are manufactured from a semi-rigid plastic material that will flex under any load from the thermal expansion of the fenestration unit and WILL NOT restrict thermal expansion of the fenestration unit and WILL NOT transfer any loads onto the fenestration unit.

If the building's weather resistive barrier is specified to function as the building's exterior side air barrier and is required to be turned into the rough opening to seal to the fenestration unit, FIS requires the installation of the FIS 'Weather Barrier Glove' for the top corners of the rough opening. Refer to FIS Figure No. 5.2 – Weather Barrier Glove.



The FIS 'Weather Barrier Glove' is universal left-right with no cutting required to install. Simply set the Weather Barrier Glove into the top corners of the rough opening and staple or nail into position.
Refer to FIS Figure No. 3.2.

For the 'shallow' windows installation, the installer may choose to cut off the back portion of the 'Weather Barrier Glove'

FIS Figure No. 3.2 – Weather Barrier Glove

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4.0 Installation of Flexible Flashing Membranes

FIS components are compatible with most flexible flashing membranes and liquid applied membranes. If in doubt, complete a sample priming, bonding, installation mock up for review of bond and chemical compatibility prior to final installation.

FIS 'Corner Glove' and 'Centre Strip' products are manufactured from plastic resulting in very smooth surfaces. Some flashing membranes bond exceptional well to the FIS smooth plastic surfaces without the use of primers. The elimination of the need for primers speeds up installation and resolves 'cold weather issues' with primer products and colder temperature applications.

Regardless membrane manufacturer's primer requirements for bonding, FIS WARRANTY requires all installed flashing membrane bonding to the FIS components to be rolled with a 1" roller with adequate pressure to applied to the roller to ensure a proper full bond to FIS components. Refer to FIS Figure No. 4.1 for 1" roller type.

FIS WARRANTY requires the installer to follow the recommendations of the flashing membrane manufacturer for primer and pressure rolling requirements.

FIS Figure No. 4.1

As the FIS is compatible with most available flashing membranes, the architect, engineer, or installer shall specify or select an appropriate flashing membrane to suite the building's adjacent components and follow the flashing membrane manufacturer's written instructions for flashing membrane selection, primers, and pressure rolling for bonding/adhesion.

There are many different flexible membrane options that FIS is compatible with, providing the selected membrane is installed as per the membrane manufacturer's requirements and compatible with the building's weather resistive barrier.

The following is a section copied directly from the ASTM E2112-19C document regarding flashing membrane.

> *8.1.1.1.4 Use the flashing cut formulas (see Table 7) to determine the length of each strip of flashing for each window. The ASTM standard requires a flexible flashing minimum roll width of 9 in. (230 mm). Wider flashing materials, (for example, 12 in. (300 mm)) may be used, however the actual cut lengths figured by using the chart will increase. The use of self-adhesive type flashing is acceptable. Use of self-adhered flashings in widths other than 9 in. (230 mm) shall be permitted when accepted in writing by the window manufacturer and the flashing manufacturer, or specified by the design professional. Self-adhesive type flashing seals itself to the water-resistive barrier and to the mounting flange without the need for additional sealant applied to the exterior face of the flange. Self-adhesive type flashing materials must properly adhere, (creating a water tight joint) to the (WRB) and to the mounting flange material in order to be acceptable for use.*

TABLE 7 Flashing Lengths and Cut Formulas

Sill flashing = R.O. width + (2 × flashing width)
Jamb flashing = R.O. height + (2 × flashing width) – 1 in. (25 mm)
Head flashing = R.O. width + (2 × flashing width) + 2 in. (50 mm)

FIS WARRANTY requires 9" wide strip flashing membranes to comply with ASTM E2112-19C.

If the fenestration manufacturer and flashing manufacturer, design professional, contractor, or installer, alters the width specification for the 9" wide strip flashing membrane they may do so at their own RISK and assume all liabilities for such revisions, as the fenestration installation is no longer in compliance with ASTM E2112-19C.

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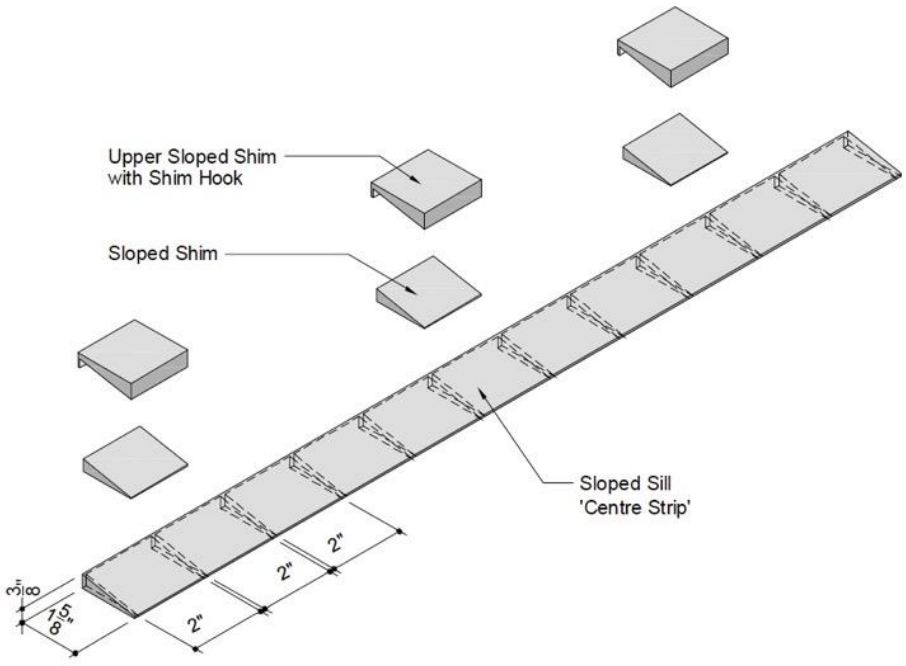
5.0 Installation of FIS Centre Strip and FIS High Density Sloped Shims



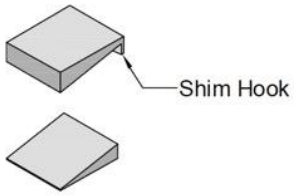
FIS Figure No. 5.1

The FIS 'Centre Strip' is fabricated from a pliable polymer, flexible enough to allow for thermal expansion of the fenestration unit without damaging the fenestration unit, and rigid enough to maintain a positive sloped surface towards the exterior wall face for drainage of moisture.

The 'Center Strip' support gussets are located to allow the Fortress Installation System high impact plastic 'Sloped Solid Shims' to be inserted into the bottom/back side as required, with a spacing to allow shims to be installed at various dimensional spacings.

Tack the lower shim into position with a staple or nail prior to installing the sill flashing membrane. After the sill flashing membrane has been installed, set the upper matched sloped shim into a bed of butyl sealant, and push into position above the lower sloped shim location.

FIS tapered shims are made from high impact plastic and have been tested to loads exceeding 1,100 lbs and comply with ASTM E2112-19C and CSA A440. Refer to FIS Figure No. 5.1.



FIS Figure No. 5.2

FIS tapered shim are designed with matching upper and lower shims. The lower shim fit into the back of the ‘Corner Gloves’ and ‘Centre Strip’ and should be installed prior to installing the flexible flashing membrane, as noted in the following Section 3.0 - FIS Corner Gloves and Weather Barrier Gloves.

The upper shim is positioned on the top of the ‘Corner Glove’ and ‘Centre Strip’ after the flashing membrane has been installed. The upper shim is designed with a shim hook on the back edge to prevent the shim from sliding out of position during construction. Apply a bed of butyl to the bottom side of the upper shim and press into position over top of the location of the lower shim.

The shim hook eliminates the need for a nail or staple fastener to secure the upper shim in place, eliminating a potential leak issue at the location of a penetrating fastener through the sill flashing membrane.

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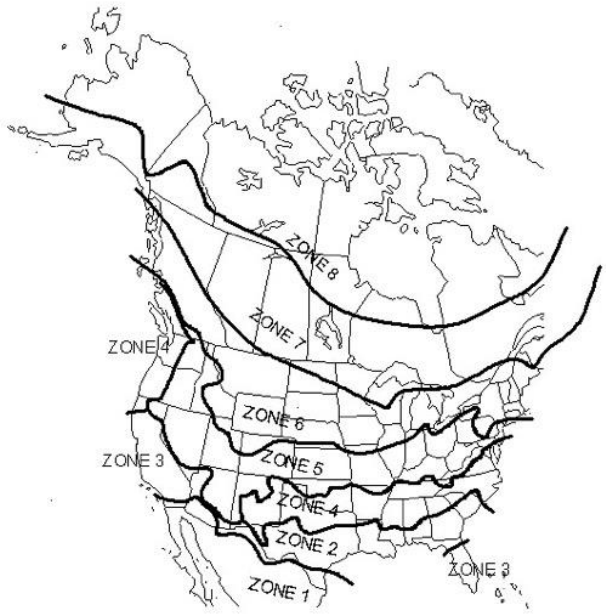
6.0 Choosing an FIS Fenestration Rough Opening Moisture Protection Installation Type

The ASTM E2112-19C and CSA A440 identifies several methods for installing fenestration that provides various levels of moisture protection for the rough opening. But which rough opening protection installation type is best suited for your project?

For all fenestration installations, consideration should be given to defective fenestration and/or failing fenestration as the fenestration ages, resulting in moisture leaking down through the fenestration unit into the bottom of the rough opening. For this reason, FIS WARRANTY requires the FIS 'Corner Gloves' and 'Center Strip' and the related installation process for ALL fenestration installations.



FIS Figure No. 6.0.1 – Climate Zone map

In general, North America has various Climate Zones as indicated in FIS Figure No. 6.0.1.

When selecting a rough opening moisture protection installation type, consideration should be given the climate zone where the fenestration is being installed.

In zones 1 through 5, condensation within the perimeter cavity around the fenestration unit is generally not an issue, so control of condensation within the perimeter cavity is generally not required. FIS installation methods A, B, C and D are acceptable for these zones, where the weather resistive barrier or flashing membrane is not turned into the rough opening at the head or for full height of the jambs.

In zones 6, 7, and 8, condensation within the perimeter cavity around the fenestration unit will occur, and control of condensation within the perimeter cavity should be considered. FIS installation methods AW, BW, CW and DW are acceptable for these zones, where the weather resistive barrier or flashing membrane is turned into the rough opening at the head and jambs and is sealed to the fenestration unit.

FIS recommends the following FIS rough opening moisture protection installation types for the various climate zones. Refer to Table 6.0.2.

Table 6.0.2 - FIS Installation Method Options by Climate Zone

Climate Zone	FIS Components	Weather Resistive Barrier (WRB)	FIS Installation Method (Click on Links below to view.)
Zone 1	Corner Gloves, Center Strip	WRB not turned into the rough opening	Method A or B or C or D
Zone 2	Corner Gloves, Center Strip	WRB not turned into the rough opening	Method A or B or C or D
Zone 3	Corner Gloves, Center Strip	WRB not turned into the rough opening	Method A or B or C or D
Zone 4	Corner Gloves, Center Strip	WRB not turned into the rough opening	Method A or B or C or D
Zone 5	Corner Gloves, Center Strip	WRB not turned into the rough opening	Method A or B or C or D
Zone 6	Corner Gloves, Center Strip, Weather Barrier Glove	WRB turned into the rough opening	Method AW or BW or CW or DW
Zone 7	Corner Gloves, Center Strip, Weather Barrier Glove	WRB turned into the rough opening	Method AW or BW or CW or DW
Zone 8	Corner Gloves, Center Strip, Weather Barrier Glove	WRB turned into the rough opening	Method AW or BW or CW or DW
Air Barrier Tie-in See Section 6.1	Corner Gloves, Center Strip, Weather Barrier Glove	WRB turned into the rough opening	Method AW or BW or CW or DW

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6.1 ASTM E2112-19C Installation Method Descriptions (For reference only)

The follow descriptions in *Blue Italics* are copied direct from the ASTM E2112019C document.

Method A — *Water-Resistive Barrier Applied after the Window Installation Flashing Applied Over the Face of the Mounting Flange*

Method B — *Water-Resistive Barrier Applied after the Window Installation Flashing Applied Behind the Face of the Mounting Flange*

Method A1 — *Water-Resistive Barrier Applied Prior to the Window Installation Flashing Applied Over the Face of the Mounting Flange*

Method B1 — *Water-Resistive Barrier Applied Prior to the Window Installation Flashing is Applied Behind the Mounting Flange*

Methods C and C1 — *Combine flashing techniques from ASTM E2112 Methods A, B, A1, and B1. Methods C and C1 show self-adhered flashings (SAF) as the perimeter flashing under and over the window or door fins. To provide air and water barrier continuity, the SAF is extended into the rough opening (R.O.) at jambs, head, and sill to at least the back of the fenestration unit to receive an interior air seal between SAF and the back of the unit frame. Prior to the window installation, a strip of SAF is applied along the top of the R.O. head for continuity of the sheathing substrate SAF around the opening. Methods C and C1 utilize a water-resistive barrier of building paper (or building felt) of approximately 3 ft. wide rolls for Methods C. Method C1 utilize polymeric-type WRB in approximately 9 ft. wide rolls. Other widths of WRB can be used for Methods C and C1.*

Methods D and D1 — *Add sill pan flashing or rigid head flashing, or both, to the details of C and C1. Methods D, and D1 show self-adhered flashings (SAF) as the perimeter flashing under and over the window or door fins. To provide air and water barrier continuity, the SAF is extended into the rough opening (R.O.) at jambs, head, and sill to at least the back of the fenestration unit to receive an interior air seal between SAF and the back of the unit frame. Prior to the window installation, a strip of SAF is applied along the top of the R.O. head for continuity of the sheathing substrate SAF around the opening. Methods D, and D1 utilize a water-resistive barrier of building paper (or building felt) of approximately 3 ft. wide rolls for Methods D. Method D1 utilize polymeric-type WRB in approximately 9 ft. wide rolls. Other widths of WRB can be used for Methods D, and D1.*

6.2 FIS Installation Method Comparisons to ASTM E2112-19C Installation Methods

FIS Installation Method	Weather Resistive Barrier (WRB) Materials	WRB install 'Before' or 'After' Fenestration	WRB sealed to fenestration as air barrier	Compliant with or exceeds ASTM E2112-19C Method *
A	36" to 48" wide rolls, like building paper	After	No	A, B,
AW	36" to 48" wide rolls, like building paper	After	Yes	A1, B1, C, D, C1, D1
B	36" to 48" wide rolls, like building paper	Before	No	A, B
BW	36" to 48" wide rolls, like building paper	Before	Yes	A1, B1, C, D, C1, D1
C	Large 8' wide rolls of house wrap	Before	No	A, B
CW	Large 8' wide rolls of house wrap	Before	Yes	A1, B1, C, D, C1, D1
D	Large 8' wide rolls of house wrap	After	No	A, B
DW	Large 8' wide rolls of house wrap	After	Yes	A1, B1, C, D, C1, D1

* ASTM E2112-19C Method letter indicators do not relate direction to FIS method types. Refer to ASTM E2112-19C for ASTM installation method descriptions.

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6.3 Weather Resistive Barrier Functions as Air Barrier

If the design of your building requires the Weather Resistive Barrier to also function as the Air Barrier for the building envelope, FIS requires installation method AW, BW, CW or DW.

The reason for this requirement is, all FIS installation methods and as the ASTM E2112-19C installation methods leave the sill flange of the fenestration unit unsealed to allow for drainage from the fenestration's rough opening. The fact that the sill flanges is un-sealed will allow air infiltration through in behind the unsealed sill flange.

Installation methods AW, BW, CW and DW provide a continuous fenestration tie into the weather resistive barrier that also functions as an Air Barrier tie-in.

Installation methods A, B, C, and D, DO NOT function as an Air Barrier tie-in to the weather resistive barrier.

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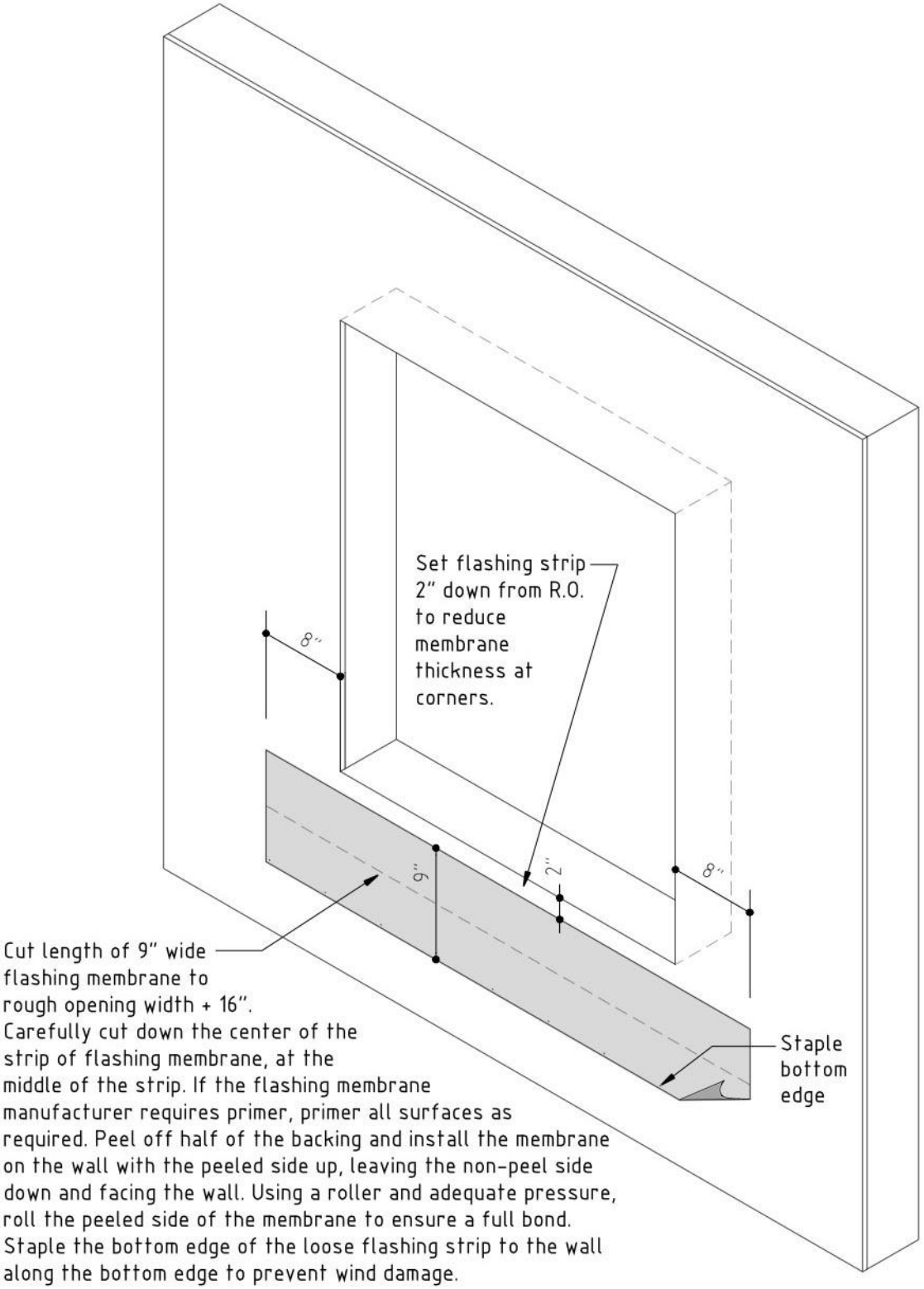
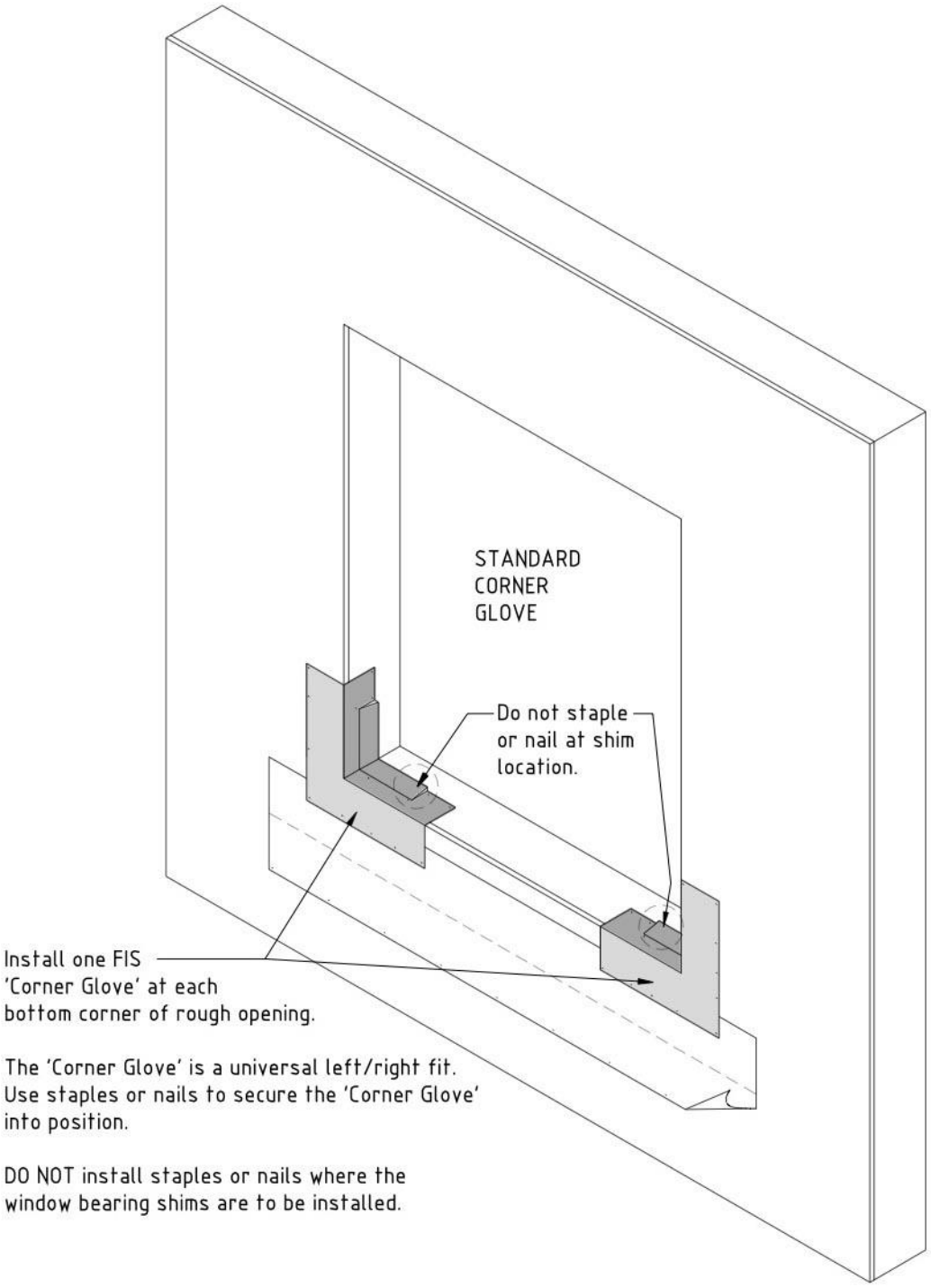
7.0 Requirements for FIS Installation Method A

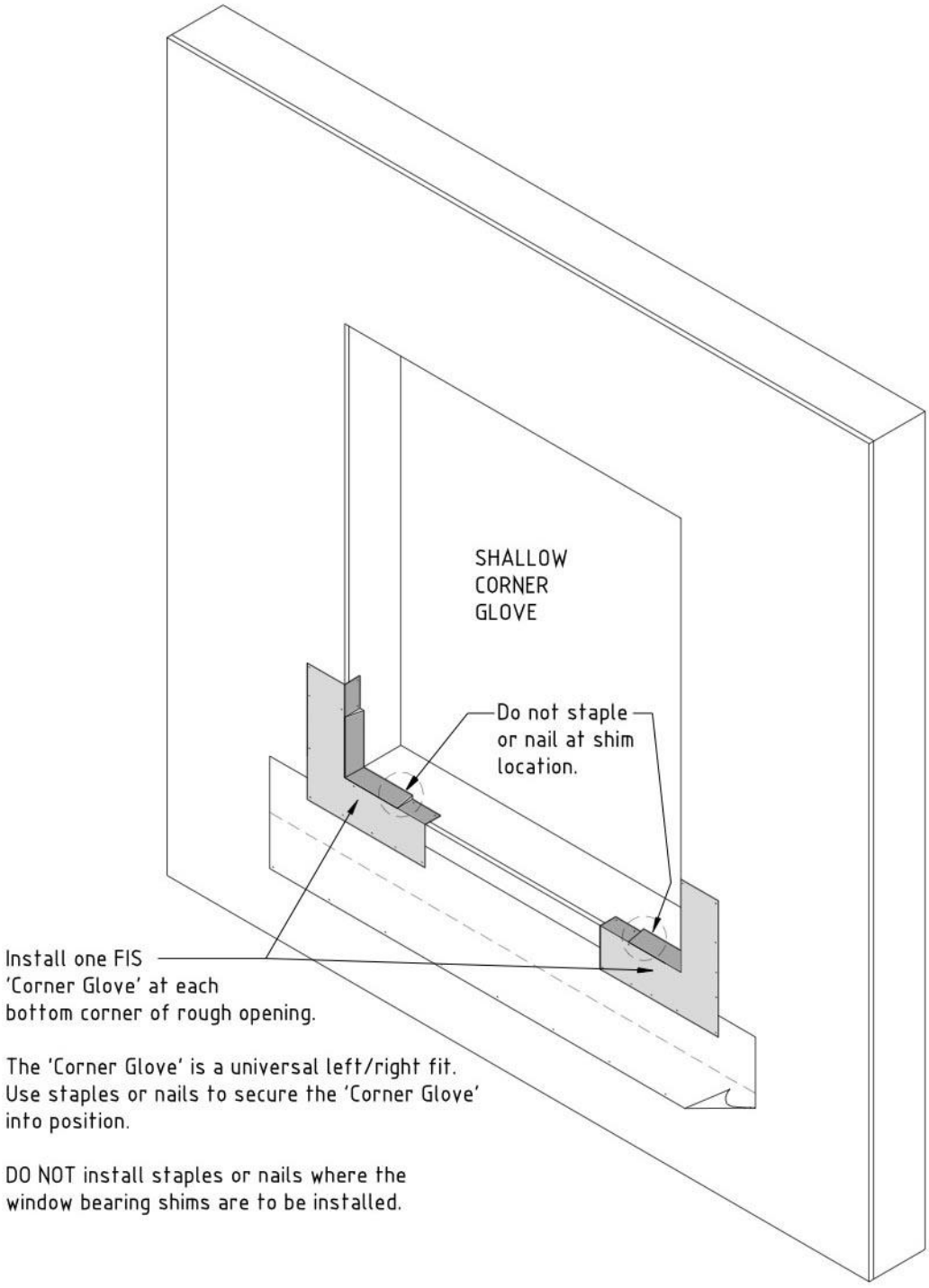
Building paper WRB installed ‘after’ installation of fenestration.
Flashing Applied Over the Face of the Mounting Flange. ASTM E2112-19C compliant.



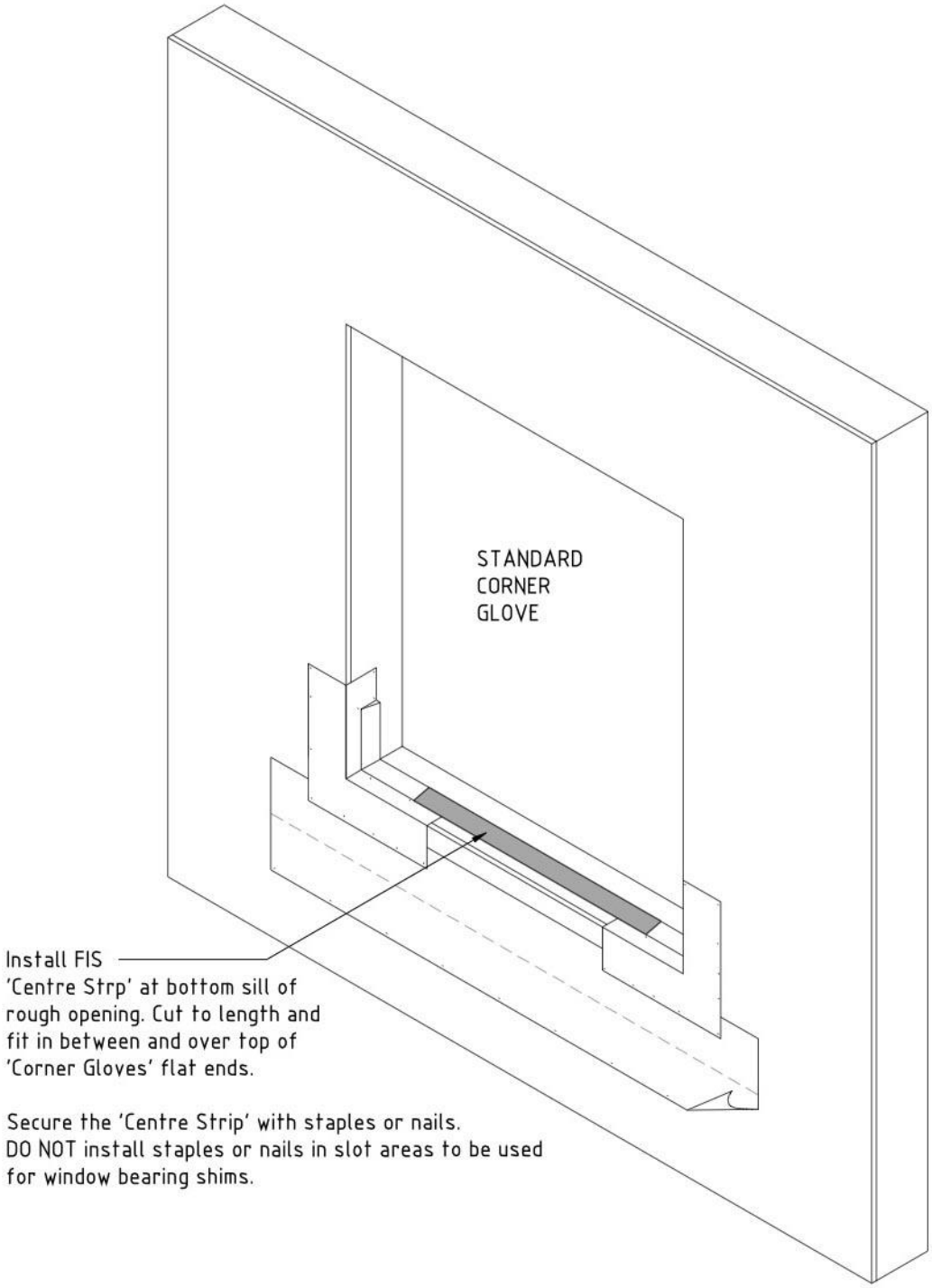
FIS Figure No. 7.0.1 – Method A – Sill / Weather Resistive Barrier Tie-in Membrane.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



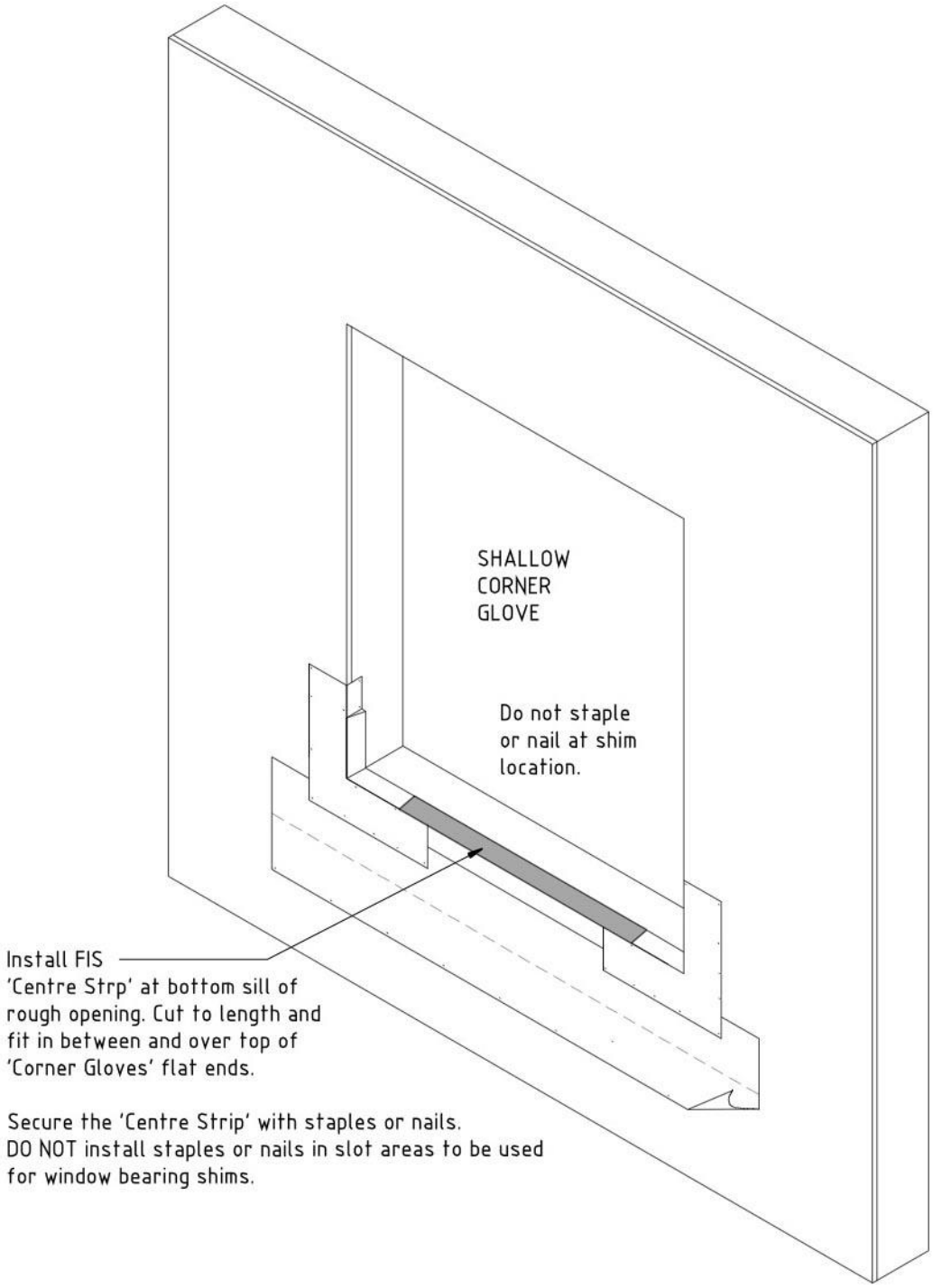
FIS Figure No. 7.0.2 – Method A - Standard ‘’Corner Glove’ for windows with jamb extensions. Weather Resistive Barrier installed ‘after’ installation of fenestration.



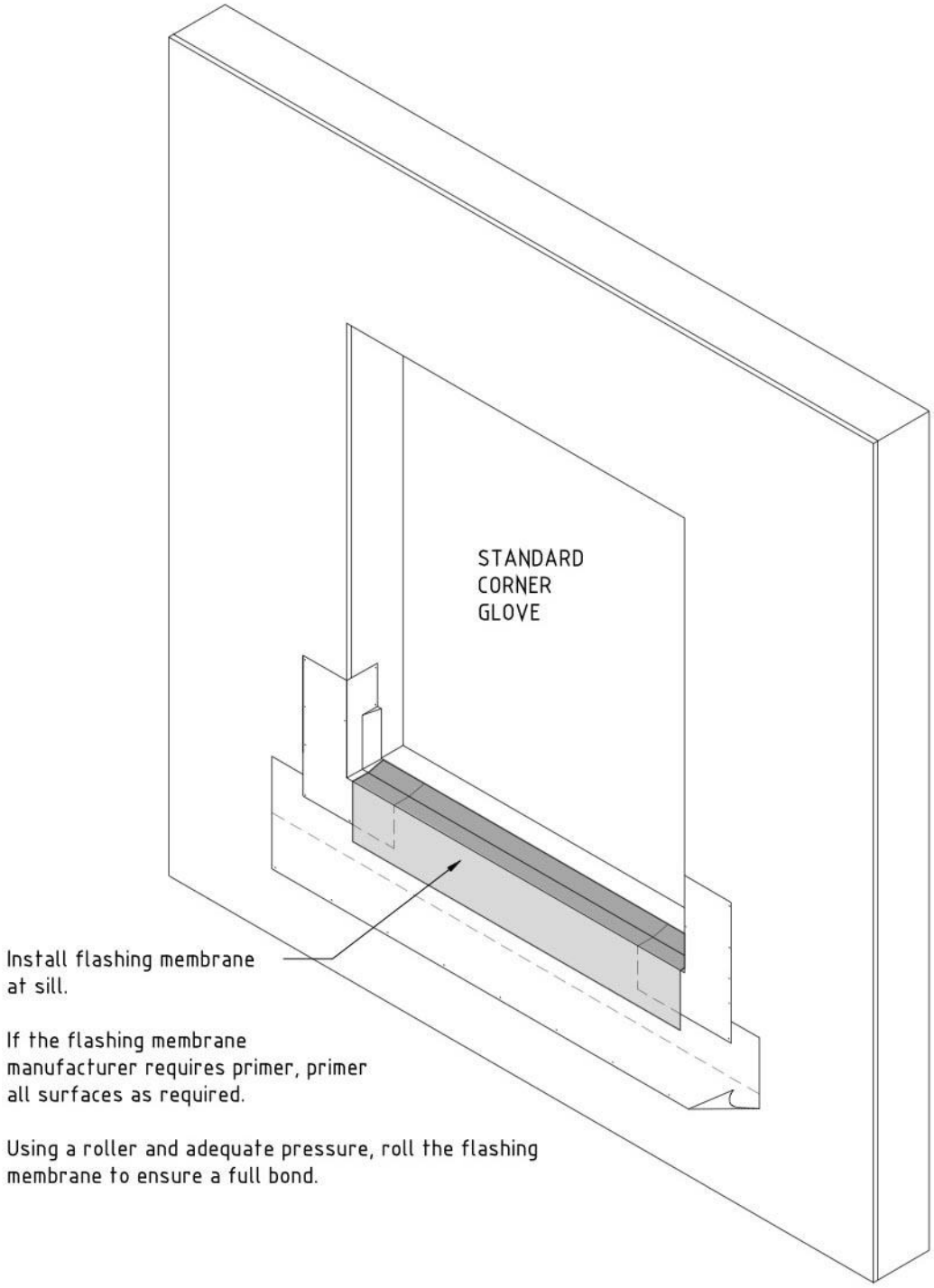
FIS Figure No. 7.0.3 – Method A - Shallow 'Corner Glove' for windows without jamb extensions. Weather Resistive Barrier installed 'after' installation of fenestration.



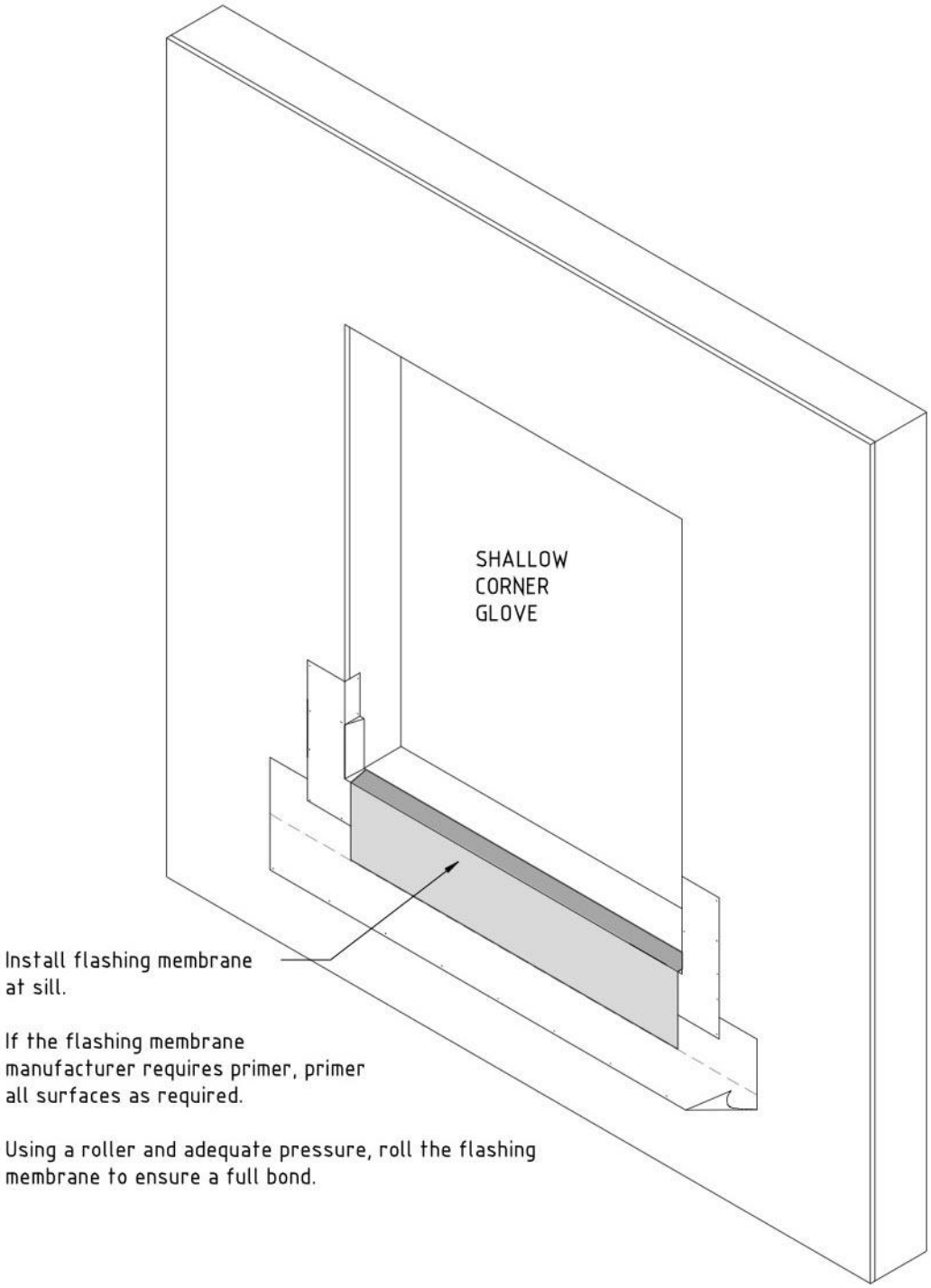
FIS Figure No. 7.0.4 – Method A - 'Center Strip' installed between standard 'Corner Gloves'
Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.0.5 – Method A - Center Strip' installed between shallow 'Corner Gloves'
Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.0.6 – Method A – Sill flashing membrane at standard ‘Corner Gloves’.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

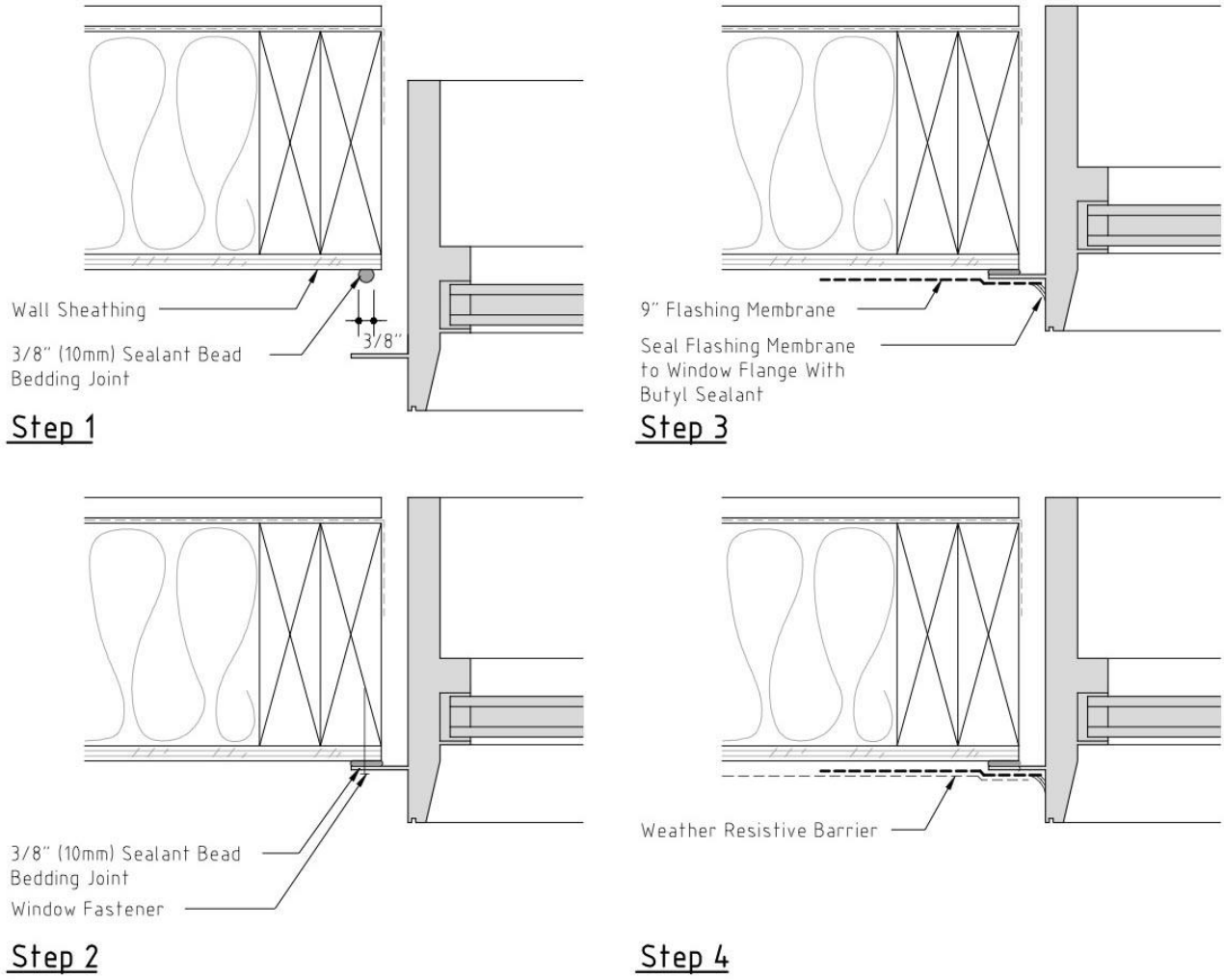


FIS Figure No. 7.0.7 – Method A - Sill flashing membrane at shallow ‘Corner Gloves’.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

Warranty Note: For Method A, the steps to this point conclude the requirements to comply with the FIS product installation warranty. The remaining steps for Method A identified herein, indicate the FIS recommended steps for this fenestration installation method to comply with ASTM E2112-19C.

Warranty Note: If the full installation of the fenestration does not complete with ASTM E2112-19C the FIS Warranty is void.

FIS is compatible with most available sealants. The architect, engineer or installer shall specify or select an appropriate sealant based on ASTM E2112-19C Table A4.1 or CSA A440, to suite the building's adjacent components and follow the sealant manufacturer's written instructions for sealant selection, primers, and installation.



FIS Figure No. 7.0.8 – Method A - Fenestration Bedding Joint and sealing of Weather Resistive Barrier. Weather Resistive Barrier installed 'after' installation of fenestration.

A 3/8" diameter sealant bedding joint shall be applied to the face of the wall sheathing at the head and jambs as seen in Step 1 of FIS Figure No. 7.0.8.

DO NOT APPLY SEALANT across the sill of the fenestration's rough opening, as the sill must be left unsealed to allow for moisture drainage from the rough opening at that location.

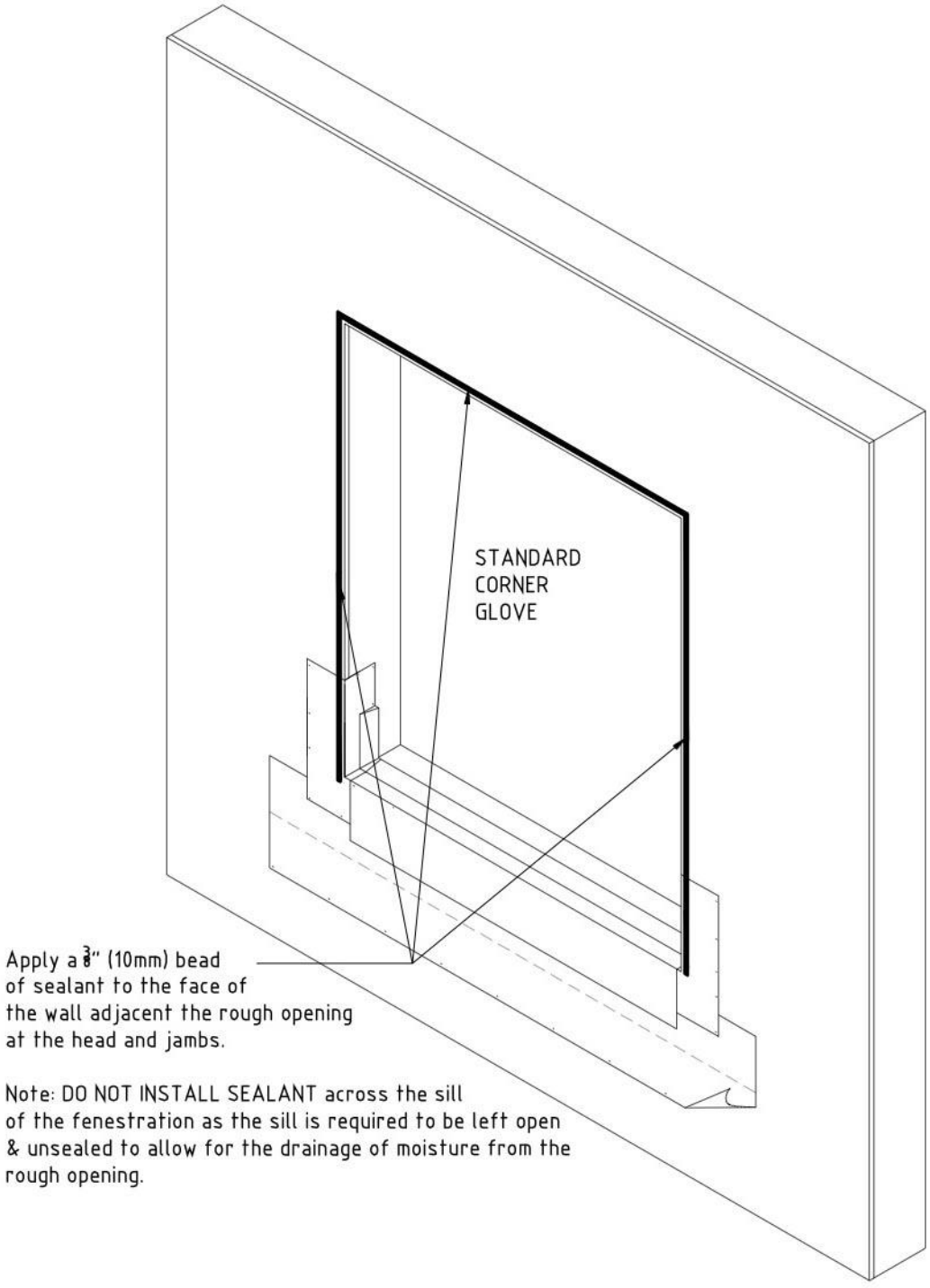
In Step 2, the fenestration unit is installed squishing the sealant bead to become the fenestration sealant bedding joint.

Step 3 requires the installation of a 9" wide flexible flashing membrane to be installed on the face of the wall at the jambs and head, lapping onto the fenestration's flange and sealing the flexible flashing membrane to the fenestration unit with a corner bead of sealant.

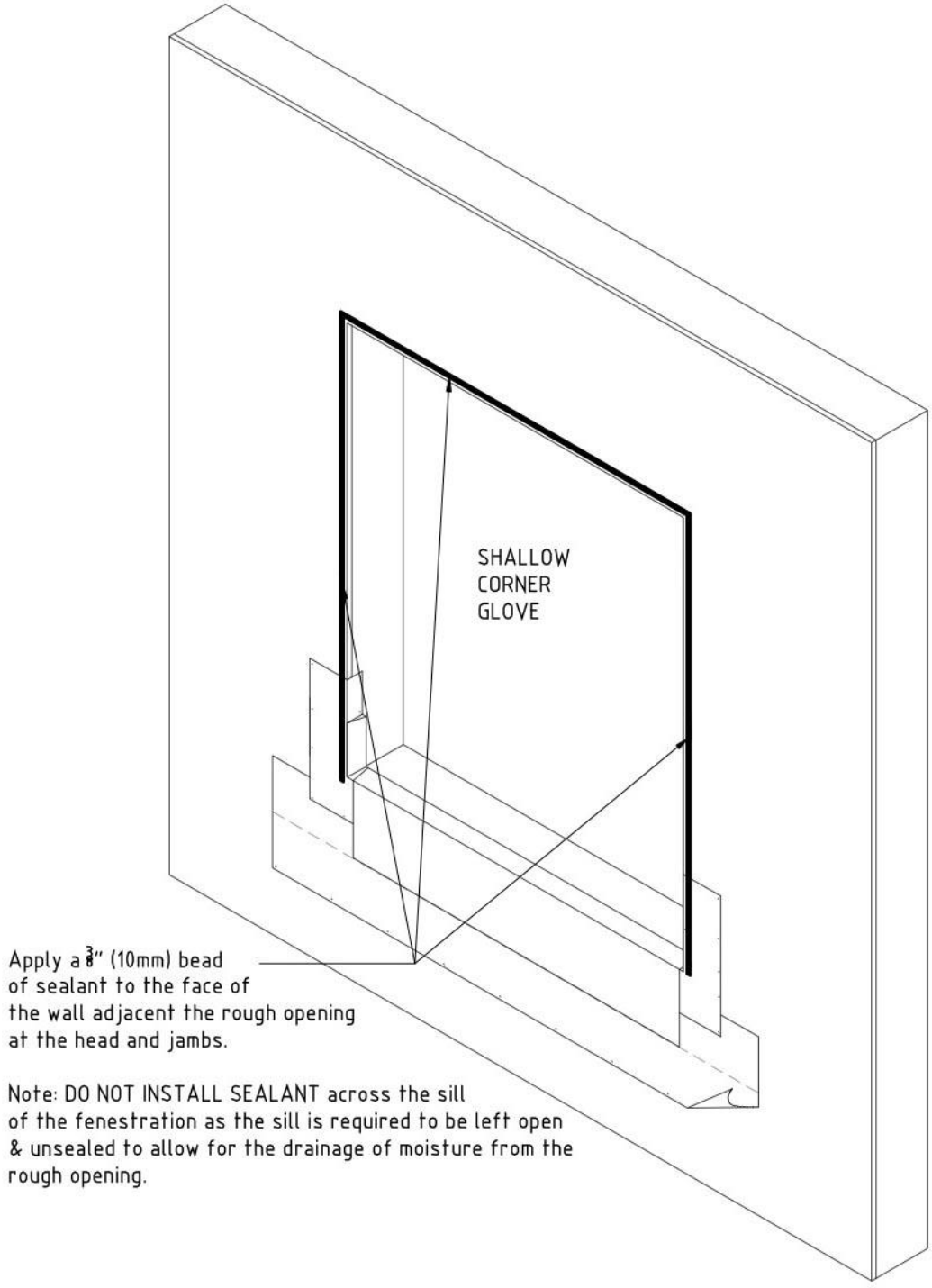
Step 4 requires the weather resistive barrier to be installed and lapped tight to the fenestration unit. This weather resistive barrier can be a roll product like building paper.

Note: If the weather resistive barrier is a high-performance product that is fully bonded to the wall, Step 3 can be eliminated if the fully bonded weather resistive barrier is lapping onto and bonded to the fenestration flange and then sealing the weather resistive barrier to the fenestration unit, similar to as seen in Step 4.

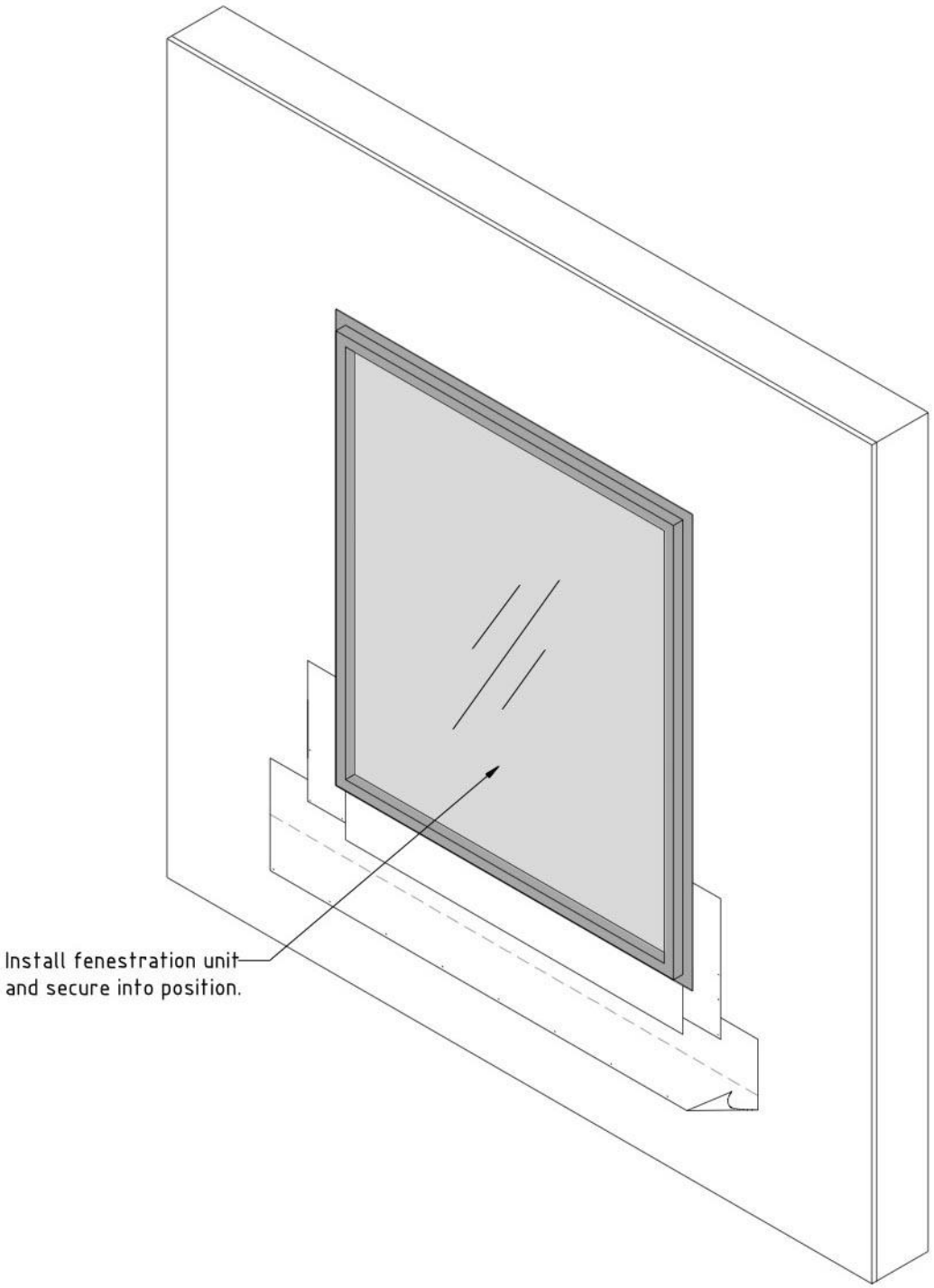
Note: If the fenestration unit does not have integral mounting flanges, the applied flanges will require more elaborate flashing and sealing details to ensure weather protection of the installed unit. When using applied flanges, follow the manufacturers' instructions for sealing the flange to the frame.



FIS Figure No. 7.0.9 – Method A – Standard 'Corner Glove' Fenestration Bedding Joint.
Weather Resistive Barrier installed 'after' installation of fenestration.



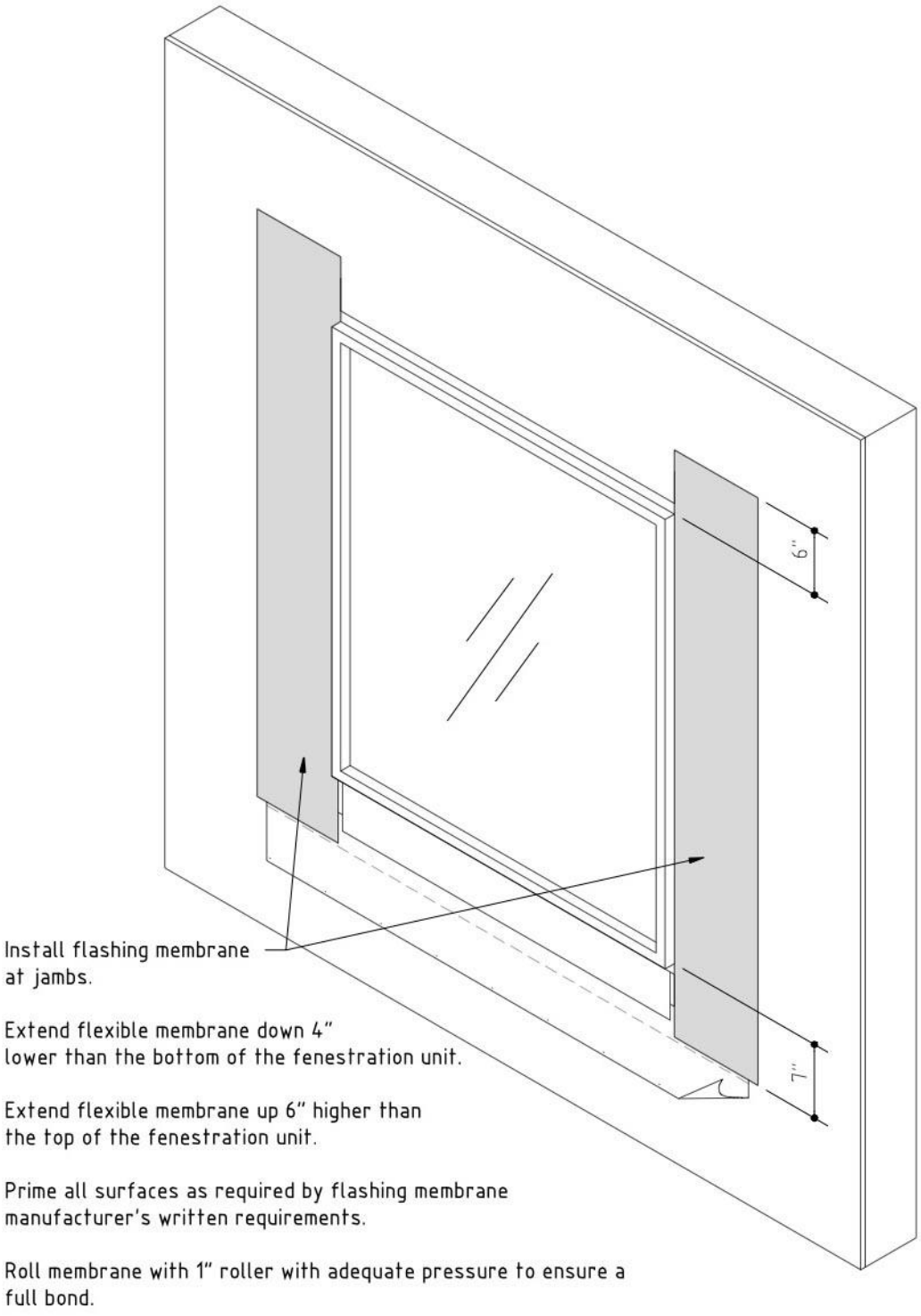
FIS Figure No. 7.0.10 – Method A - Shallow ‘Corner Glove’ Fenestration Bedding Joint.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



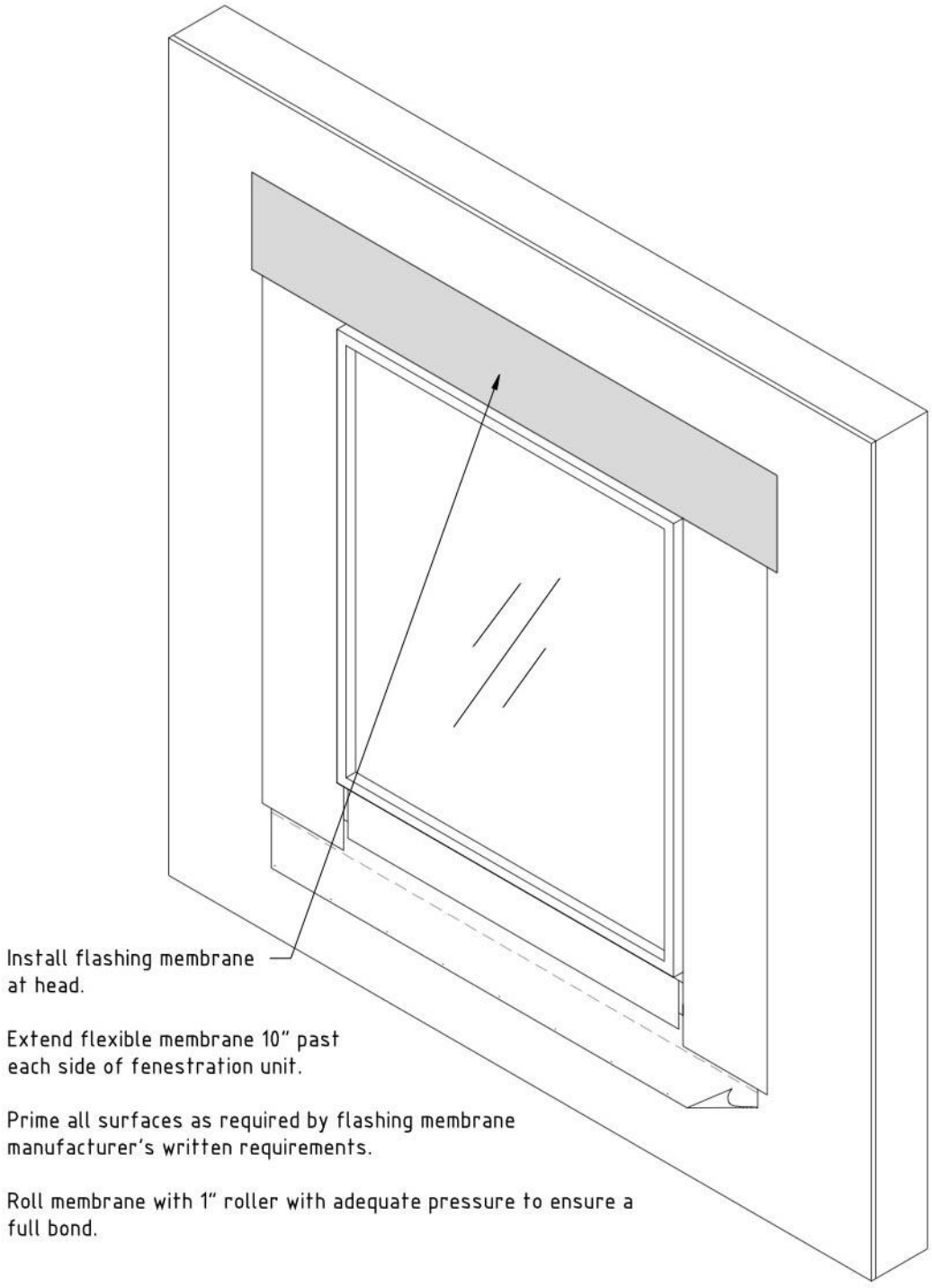
FIS Figure No. 7.0.11 – Method A – Window Installation.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

With the fenestration installed, If desired or required, the interior side of the fenestration’s perimeter cavity should be sealed with low expansion spray foam insulation. The spray foam insulation will seal the fenestration to the to the framing, vapour barrier, and provide thermal separation on all sides of the fenestration unit.
Refer to Section 9.0 for similar foam requirements and recommended installation.

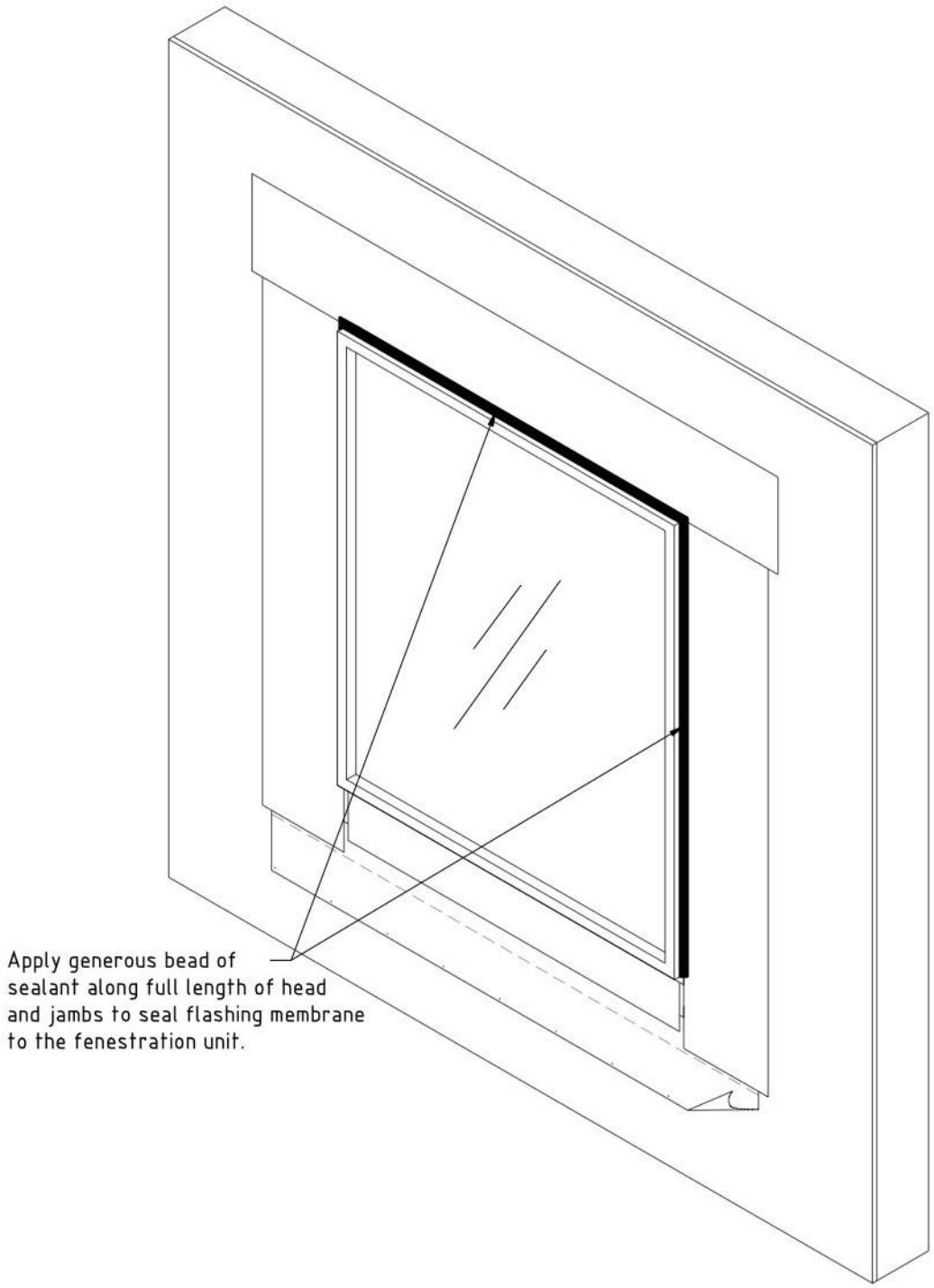
Continue with remaining flashing membrane and WRB installation steps as identified in this section.



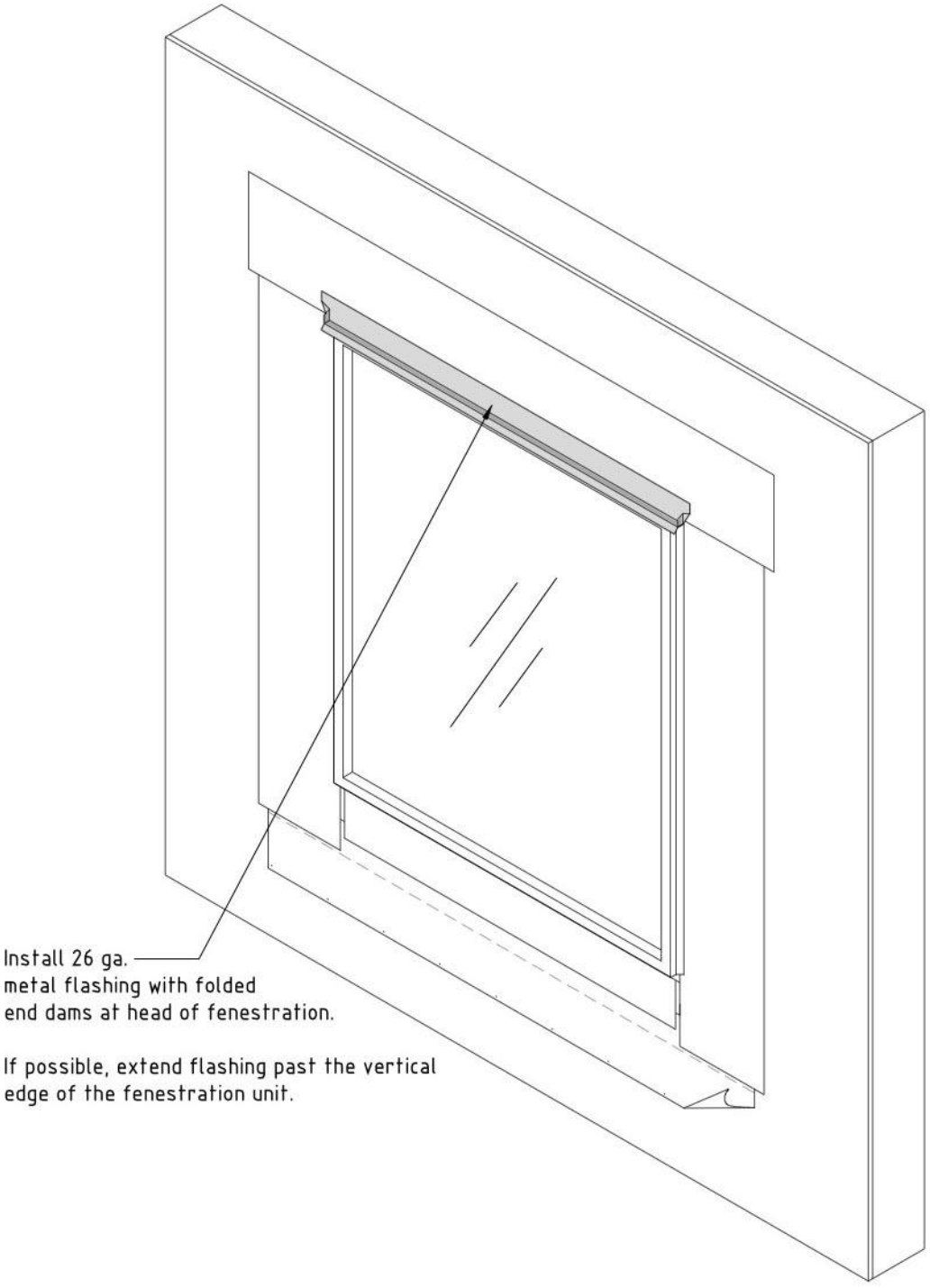
FIS Figure No. 7.0.12 – Method A – Jamb flange flashing membrane installation.
Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.0.13 – Method A – Head flange flashing membrane installation.
Weather Resistive Barrier installed 'after' installation of fenestration.

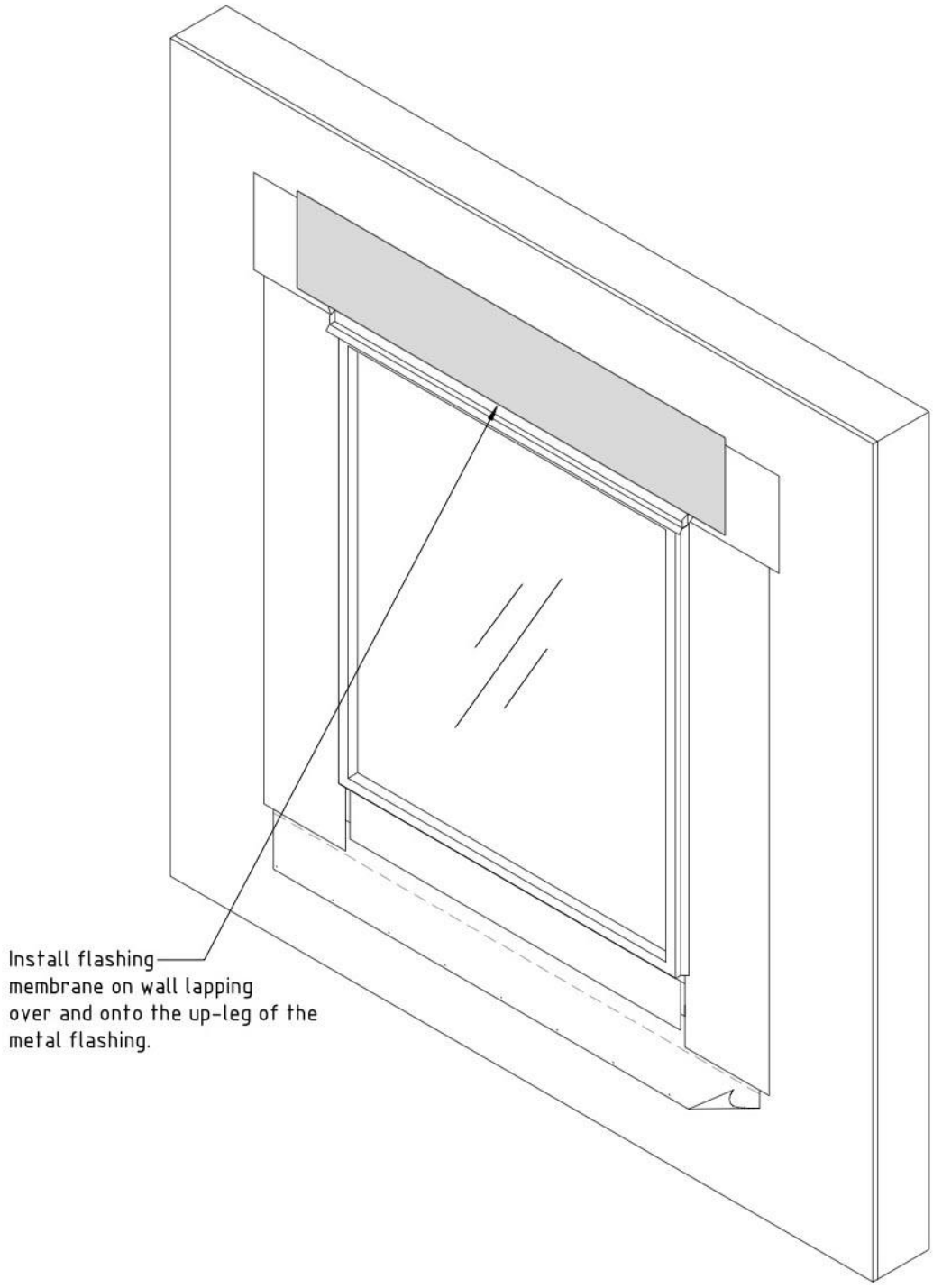


FIS Figure No. 7.0.14 – Method A – Window Sealed to Weather Resistive Barrier
Weather Resistive Barrier installed ‘after’ installation of fenestration.

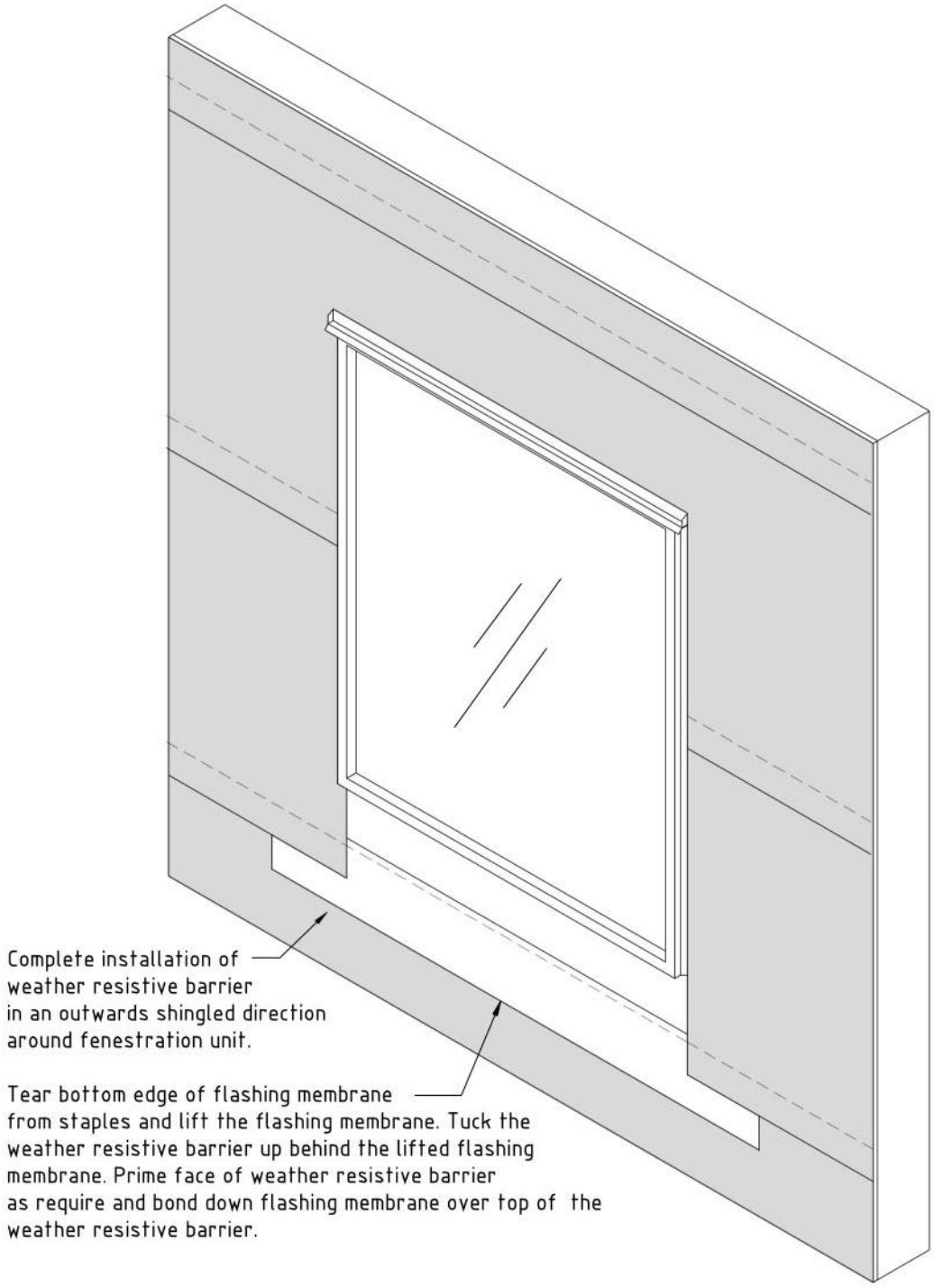


FIS Figure No. 7.0.15 – Method A Metal Head Flashing Options with Folded End Dams.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

Refer to Section 8.0 for FIS recommended flashing details.



FIS Figure No. 7.0.16 – Method A - Flashing membrane installation lapping metal flashing up-leg. Weather Resistive Barrier installed ‘after’ installation of fenestration.



FIS Figure No. 7-0-17 –Method A - Complete the installation of weather resistive barrier.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

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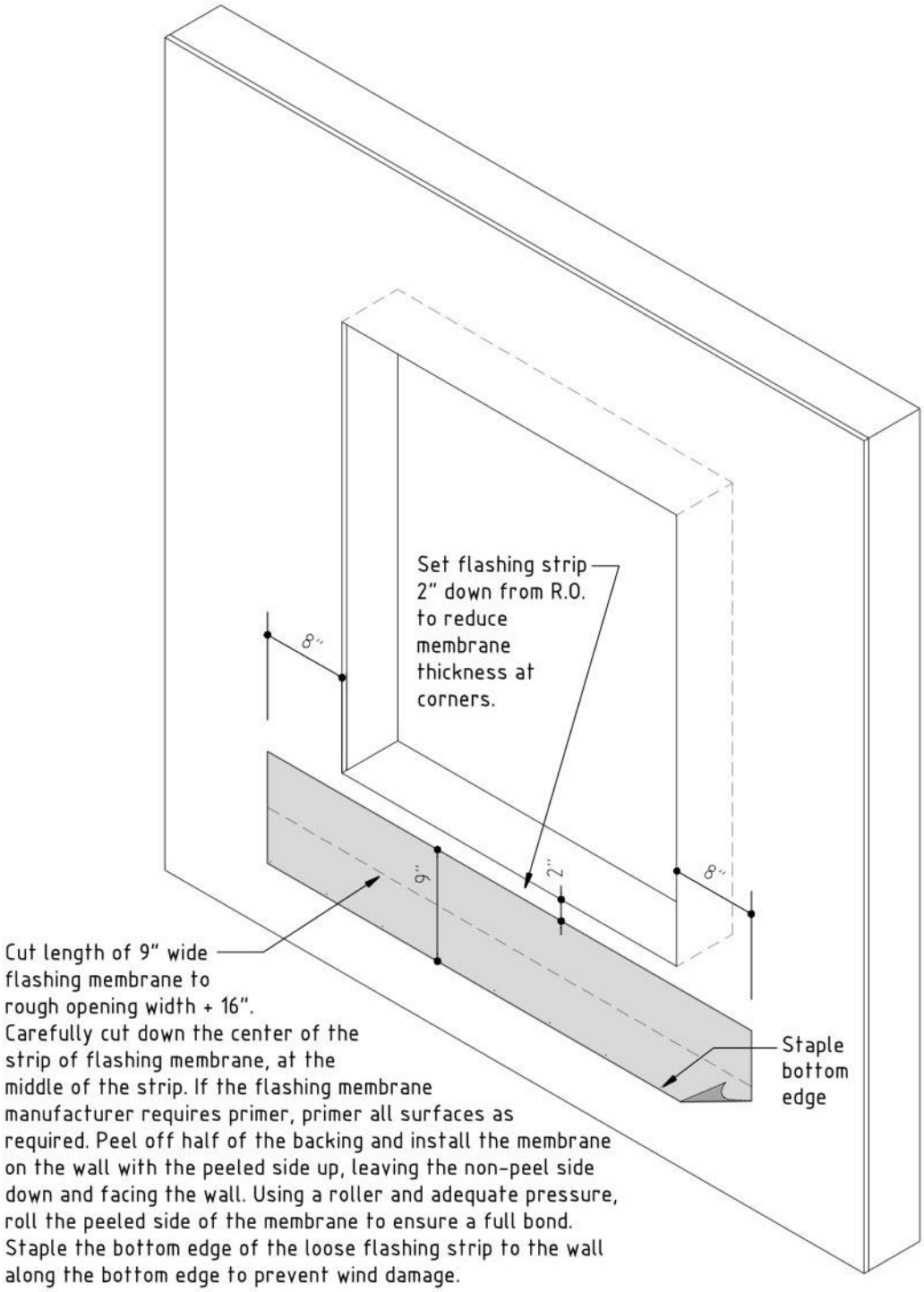
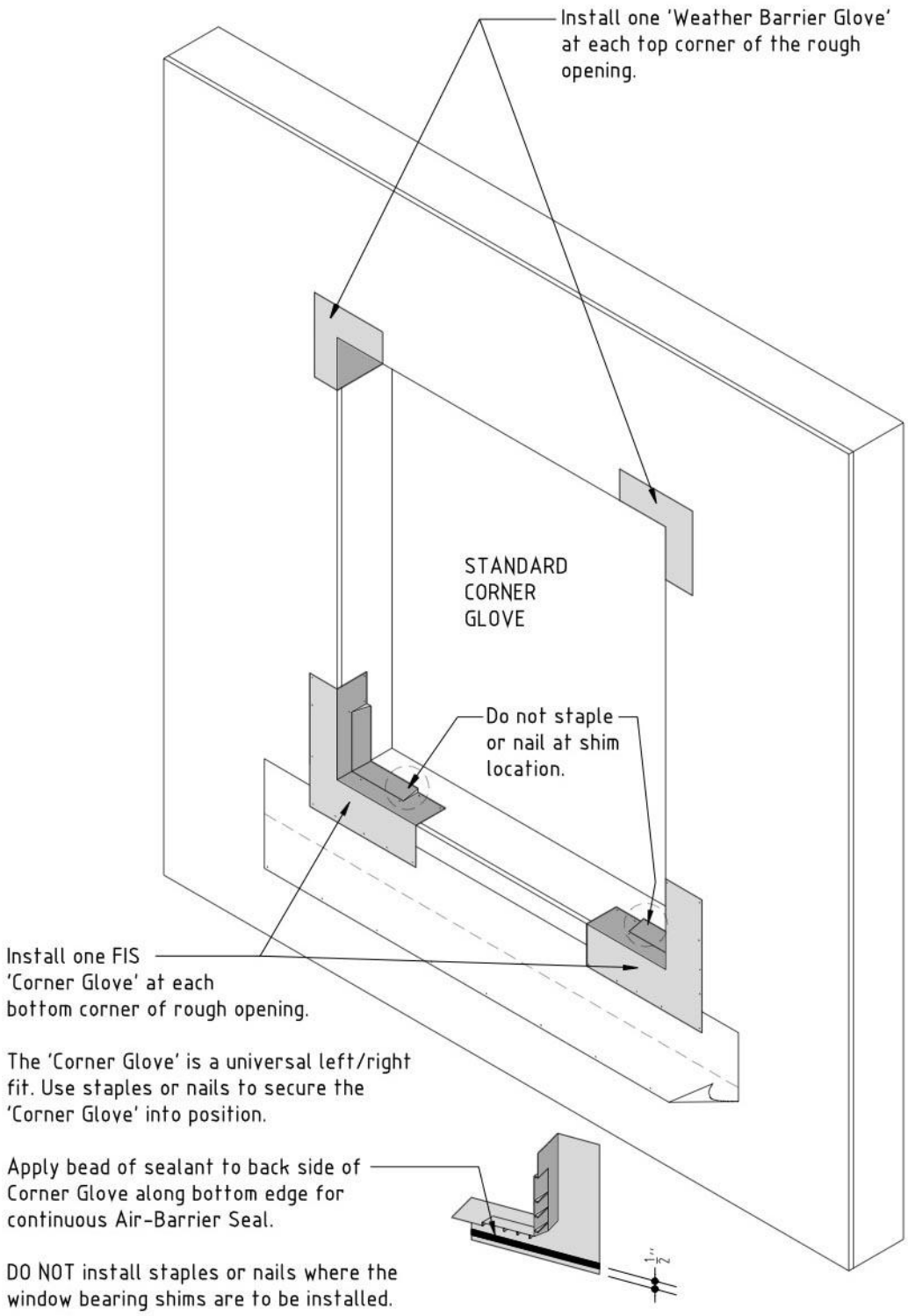
7.1 Requirements for FIS Installation Method AW

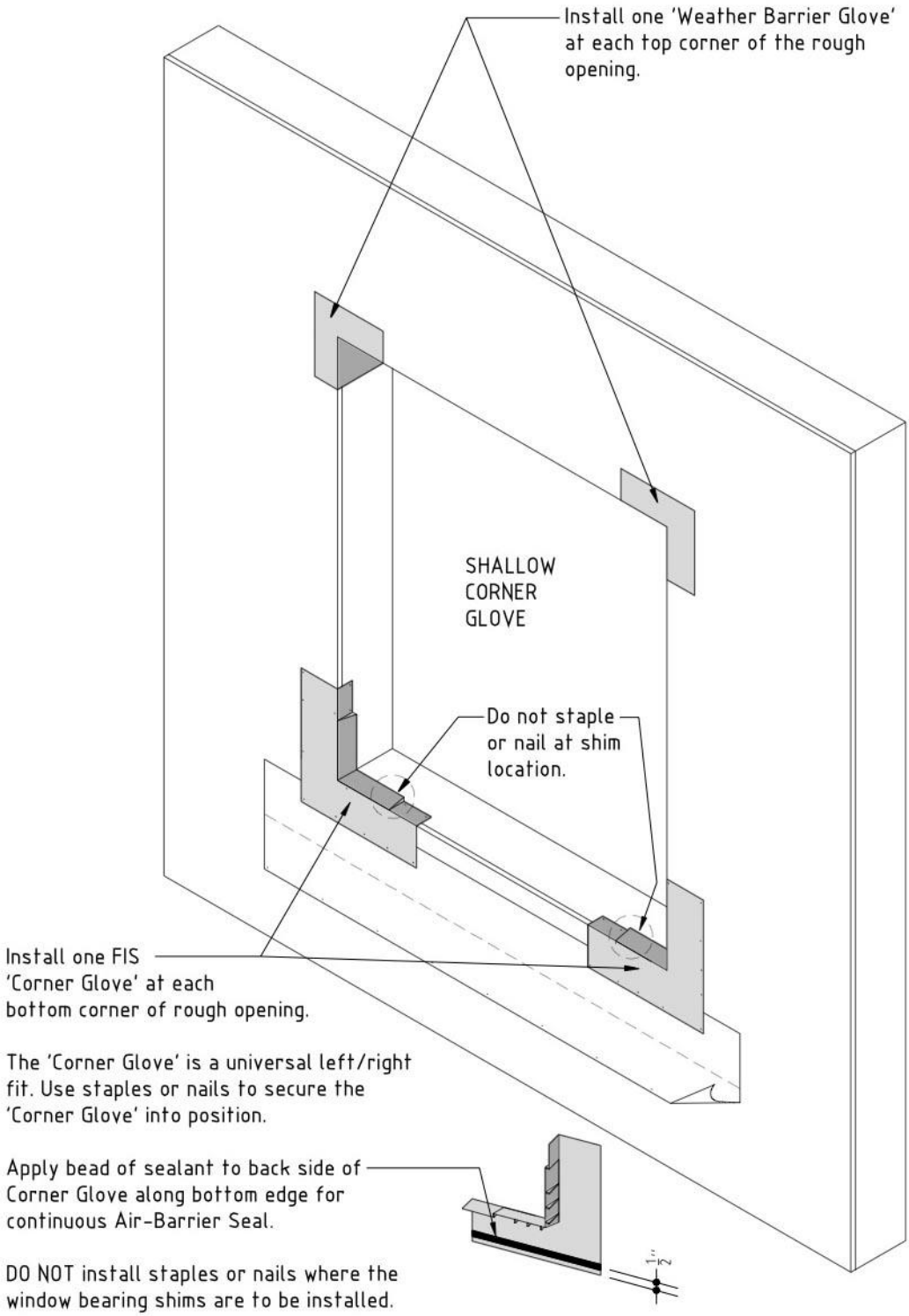
Building paper WRB installed ‘after’ installation of fenestration.
Flashing Applied Behind the Face of the Mounting Flange.
Flashing membranes extend into the rough opening for air barrier tie-in to fenestration.
ASTM E2112-19C compliant.



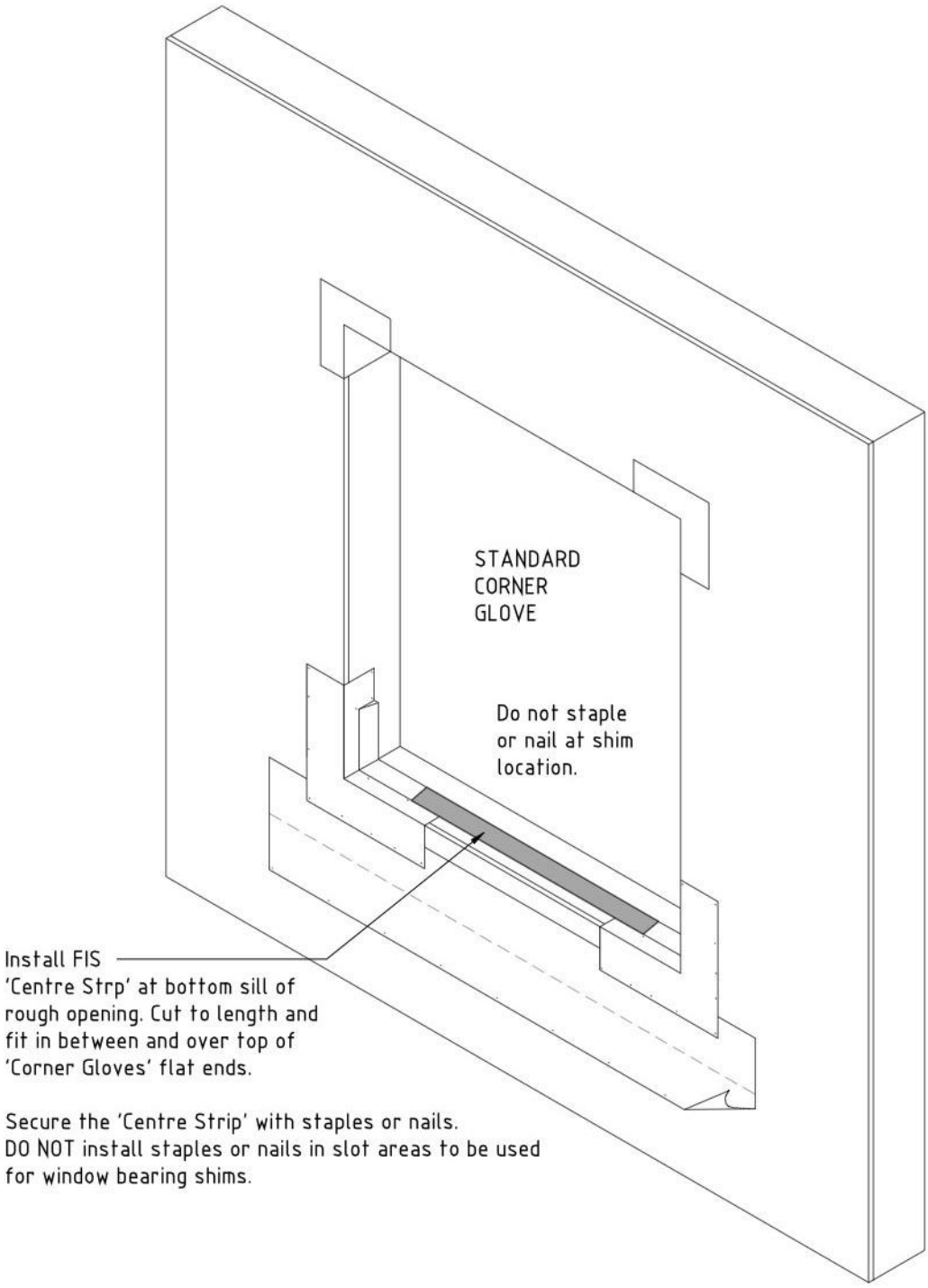
FIS Figure No. 7.1.1 – Method AW - Sill / Weather Resistive Barrier Tie-in Membrane.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



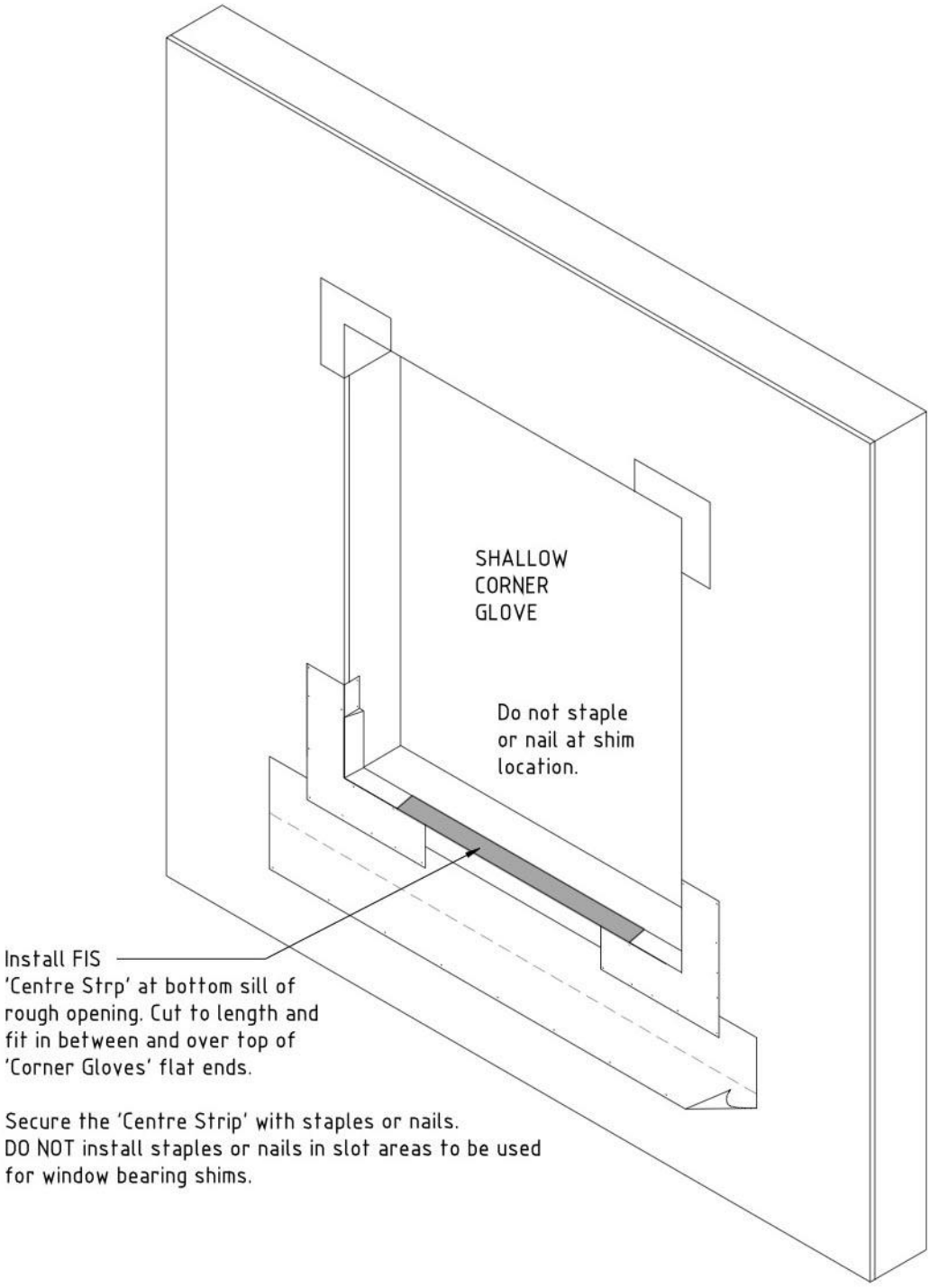
FIS Figure No. 7.1.2 – Method AW - Standard ‘’Corner Glove’ for windows with jamb extensions. Weather Resistive Barrier installed ‘after’ installation of fenestration.



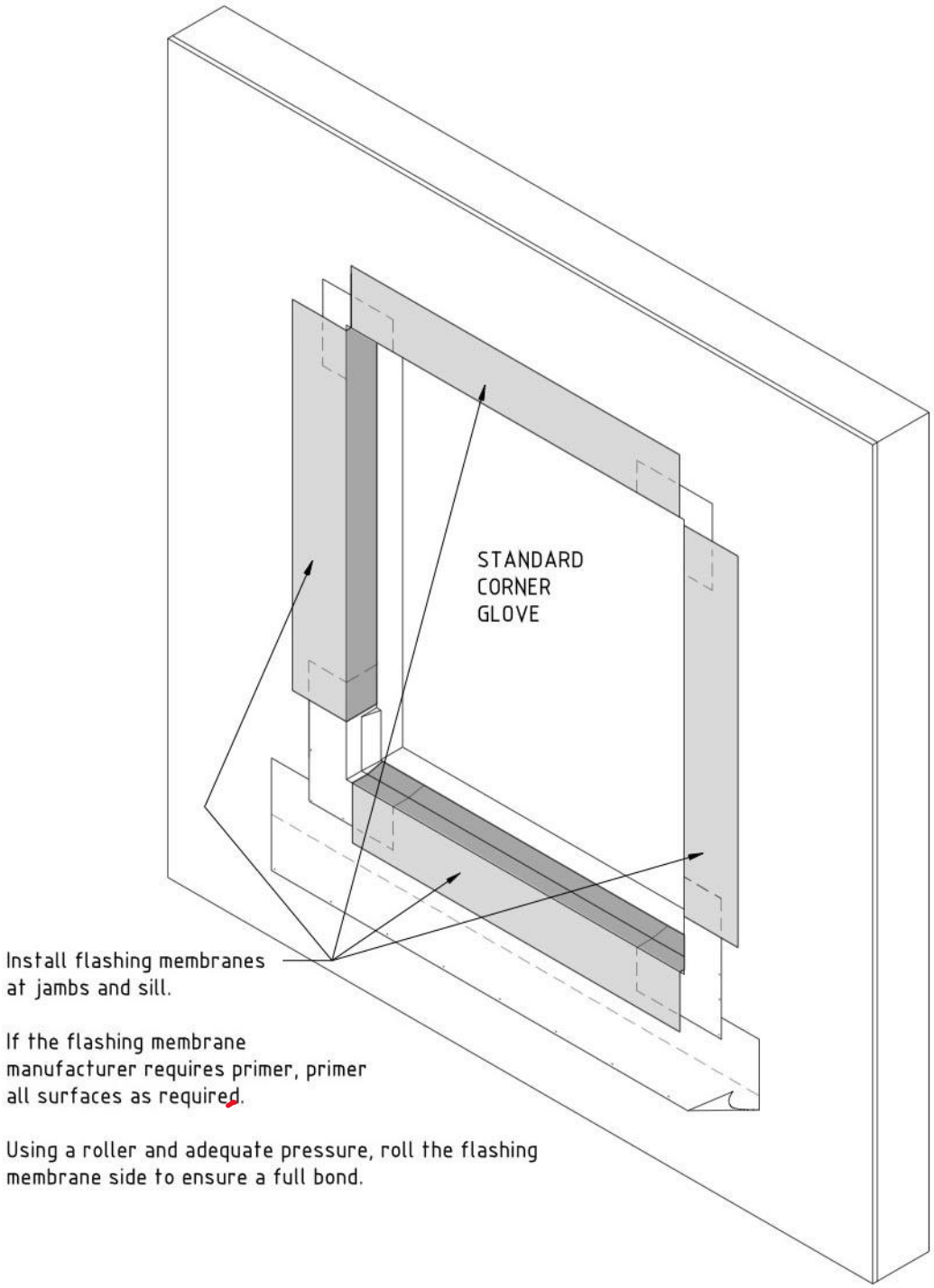
FIS Figure No. 7.1.3 – Method AW - Shallow 'Corner Glove' for windows without jamb extensions. Weather Resistive Barrier installed 'after' installation of fenestration.



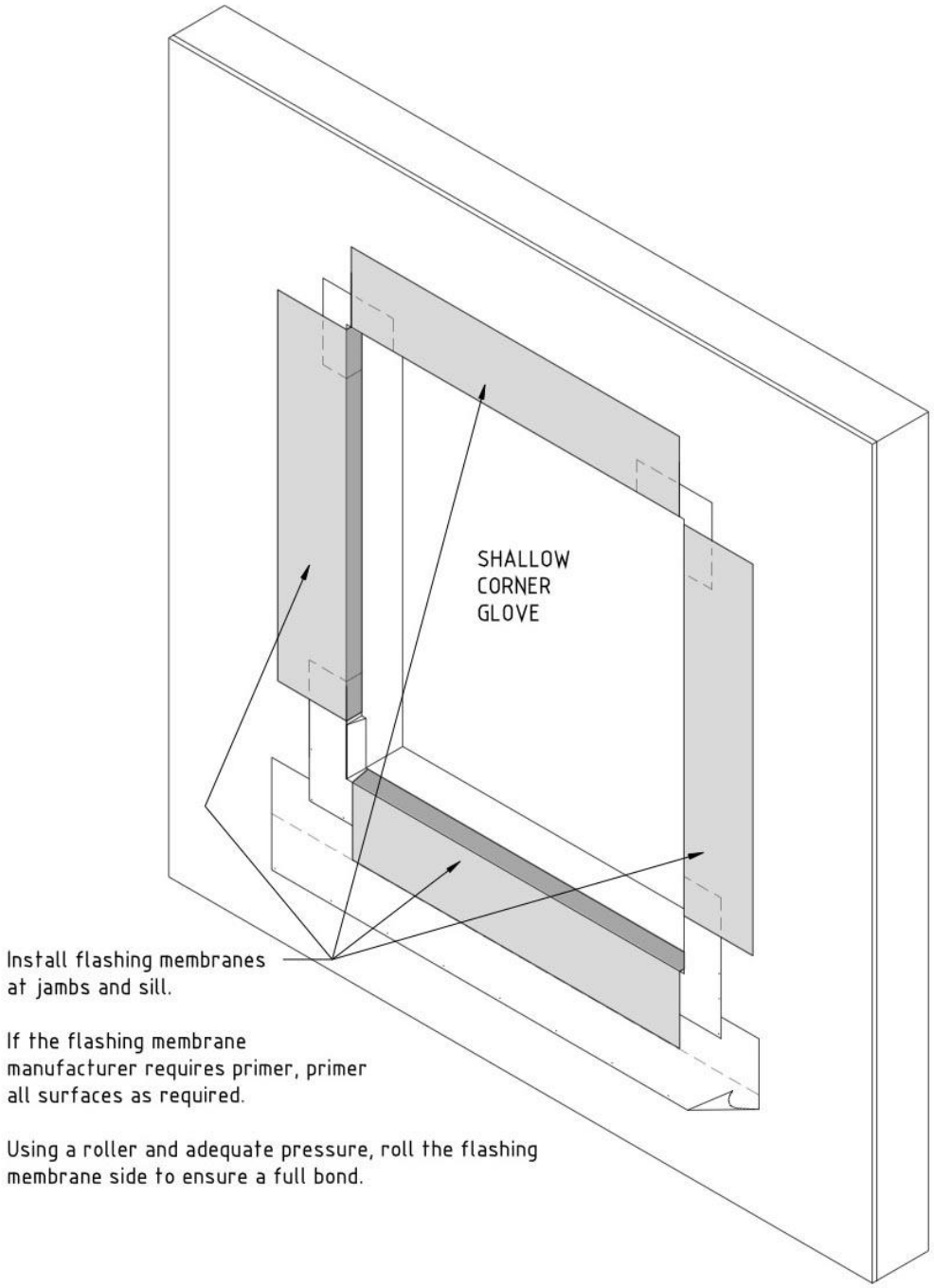
FIS Figure No. 7.1.4 – Method AW - Center Strip' installed between standard 'Corner Gloves' Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.1.5 – Method AW - Center Strip' installed between shallow 'Corner Gloves'
Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.1.6 - Method AW – Head/Jamb/Sill flashing membrane at standard ‘Corner Gloves’. Weather Resistive Barrier installed ‘after’ installation of fenestration.

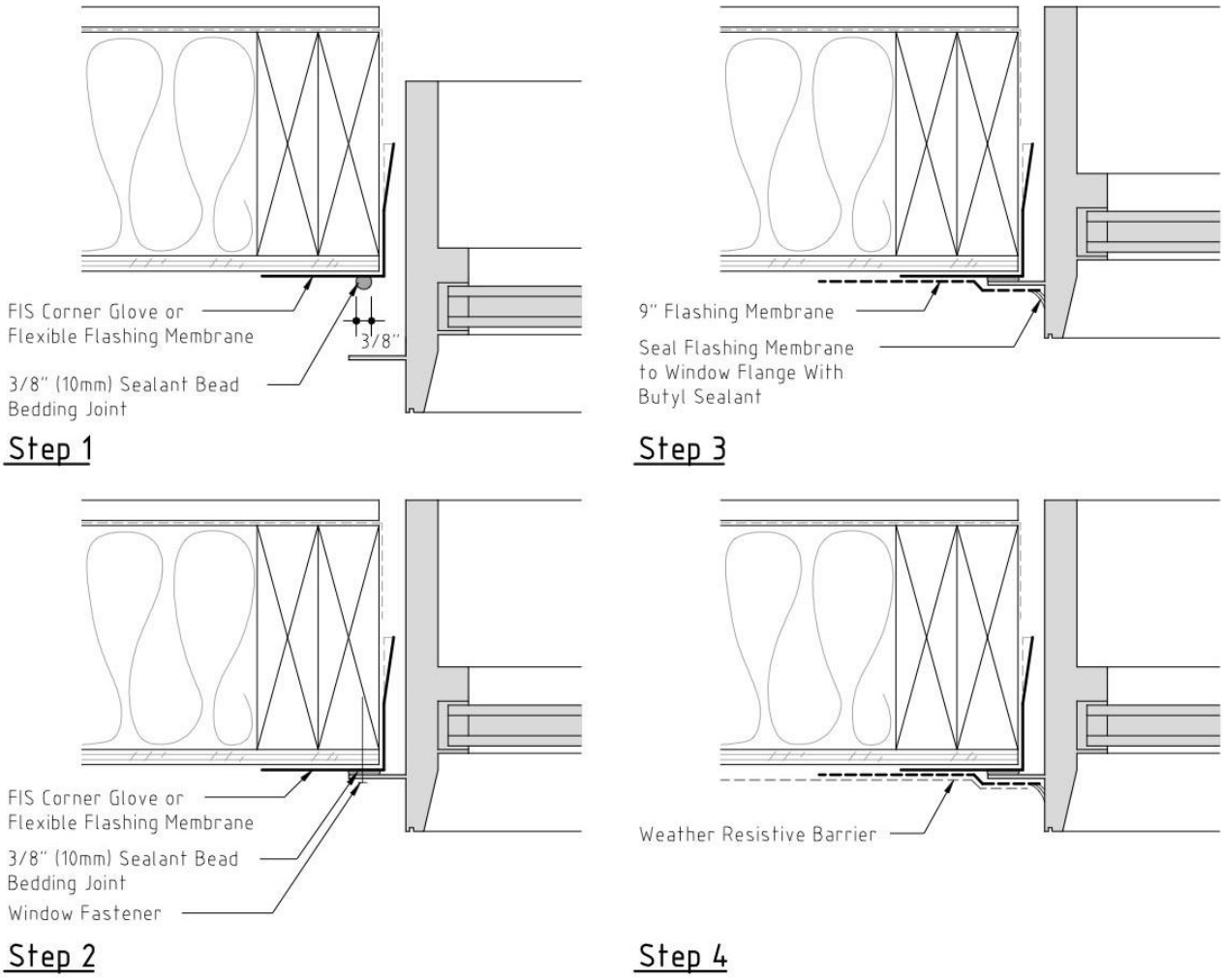


FIS Figure No. 7.1.7 – Method AW - Head/Jamb/Sill flashing membrane at shallow ‘Corner Gloves’. Weather Resistive Barrier installed ‘after’ installation of fenestration.

Warranty Note: For Method AW, the steps to this point conclude the requirements to comply with the FIS product installation warranty. The remaining steps for Method AW identified herein, indicate the FIS recommended steps for this fenestration installation method to comply with ASTM E2112-19C.

Warranty Note: If the full installation of the fenestration does not complete with ASTM E2112-19C the FIS Warranty is void.

FIS is compatible with most available sealants. The architect, engineer or installer shall specify or select an appropriate sealant based on ASTM E2112-19C Table A4.1 or CSA A440, to suite the building's adjacent components and follow the sealant manufacturer's written instructions for sealant selection, primers, and installation.



FIS Figure No. 7.1.8 – Method AW - Fenestration Bedding Joint and sealing of Weather Resistive Barrier. Weather Resistive Barrier installed 'after' installation of fenestration.

A 3/8" diameter sealant bedding joint shall be applied to the face of the flashing membrane at the head and jambs as seen in Step 1 of FIS Figure No. 7.1.8.

DO NOT APPLY SEALANT across the sill of the fenestration's rough opening, as the sill must be left unsealed to allow for moisture drainage from the rough opening at that location.

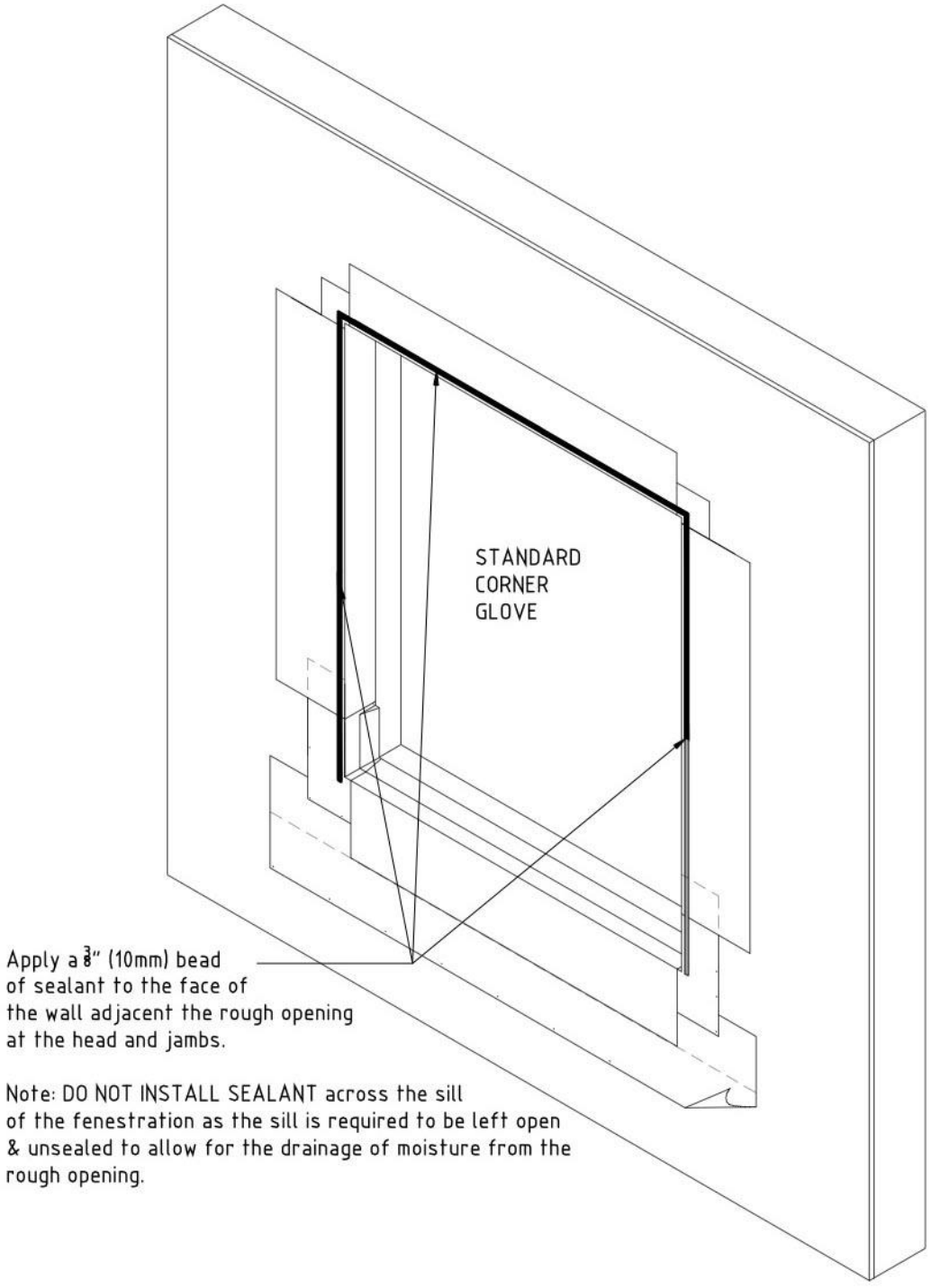
In Step 2, the fenestration unit is installed squishing the sealant bead to become the fenestration sealant bedding joint.

Step 3 requires the installation of a 9" wide flexible flashing membrane to be installed on the face of the wall at the jambs and head, lapping onto the fenestration's flange and sealing the flexible flashing membrane to the fenestration unit with a corner bead of sealant.

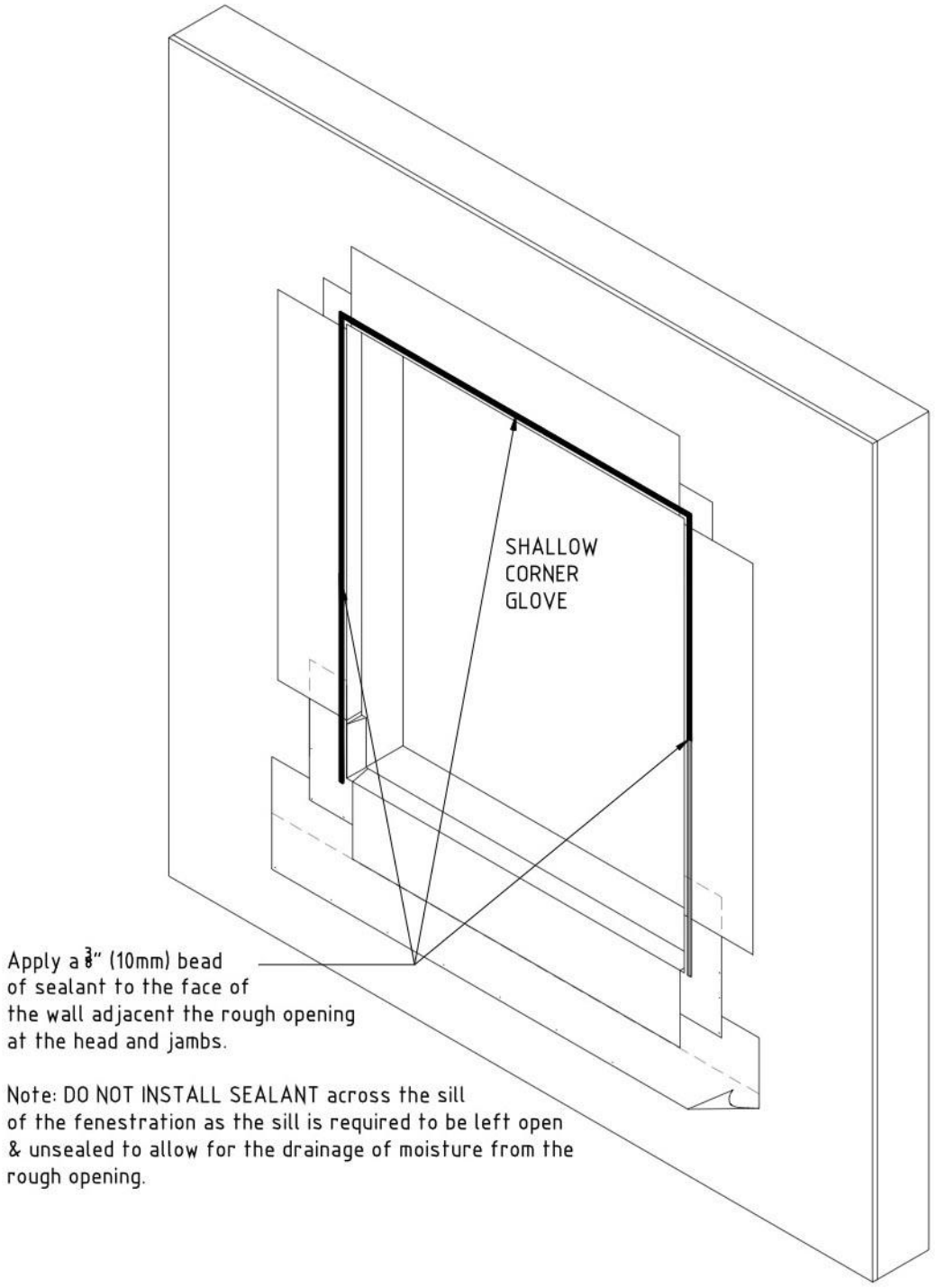
Step 4 requires the weather resistive barrier to be installed and lapped tight to the fenestration unit. This weather resistive barrier can be a roll product like building paper.

Note: If the weather resistive barrier is a high-performance product that is fully bonded to the wall, Step 3 can be eliminated with the fully bonded weather resistive barrier lapping onto and bonding to the fenestration flange and then sealing the weather resistive barrier to the fenestration unit, similar to as seen in Step 4.

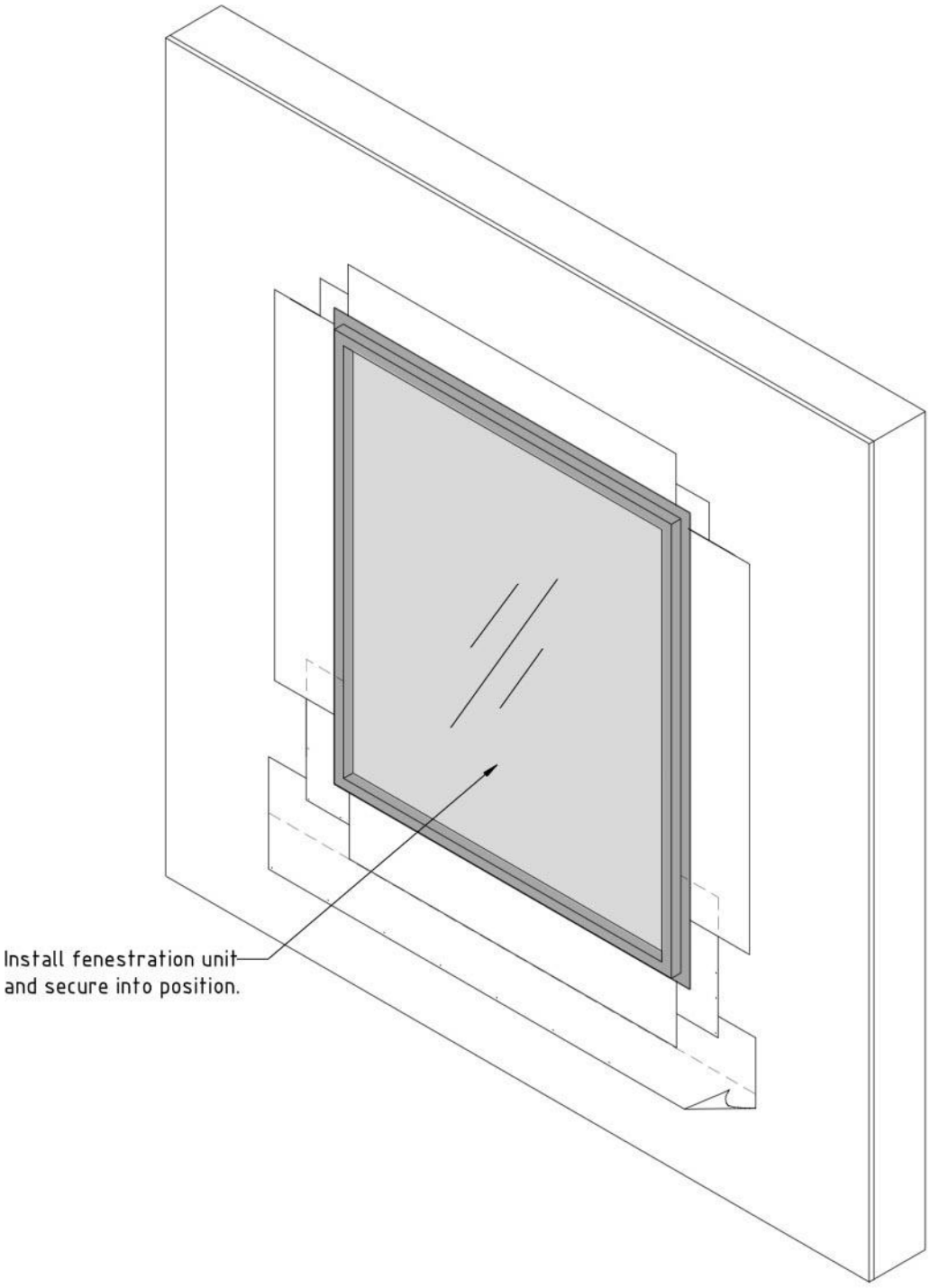
Note: If the fenestration unit does not have integral mounting flanges, the applied flanges will require more elaborate flashing and sealing details to ensure weather protection of the installed fenestration unit. When using applied flanges, follow the manufacturers' instructions for sealing the flange to the frame.



FIS Figure No. 7.1.9 – Method AW – Standard 'Corner Glove' Fenestration Bedding Joint. Weather Resistive Barrier installed 'after' installation of fenestration.



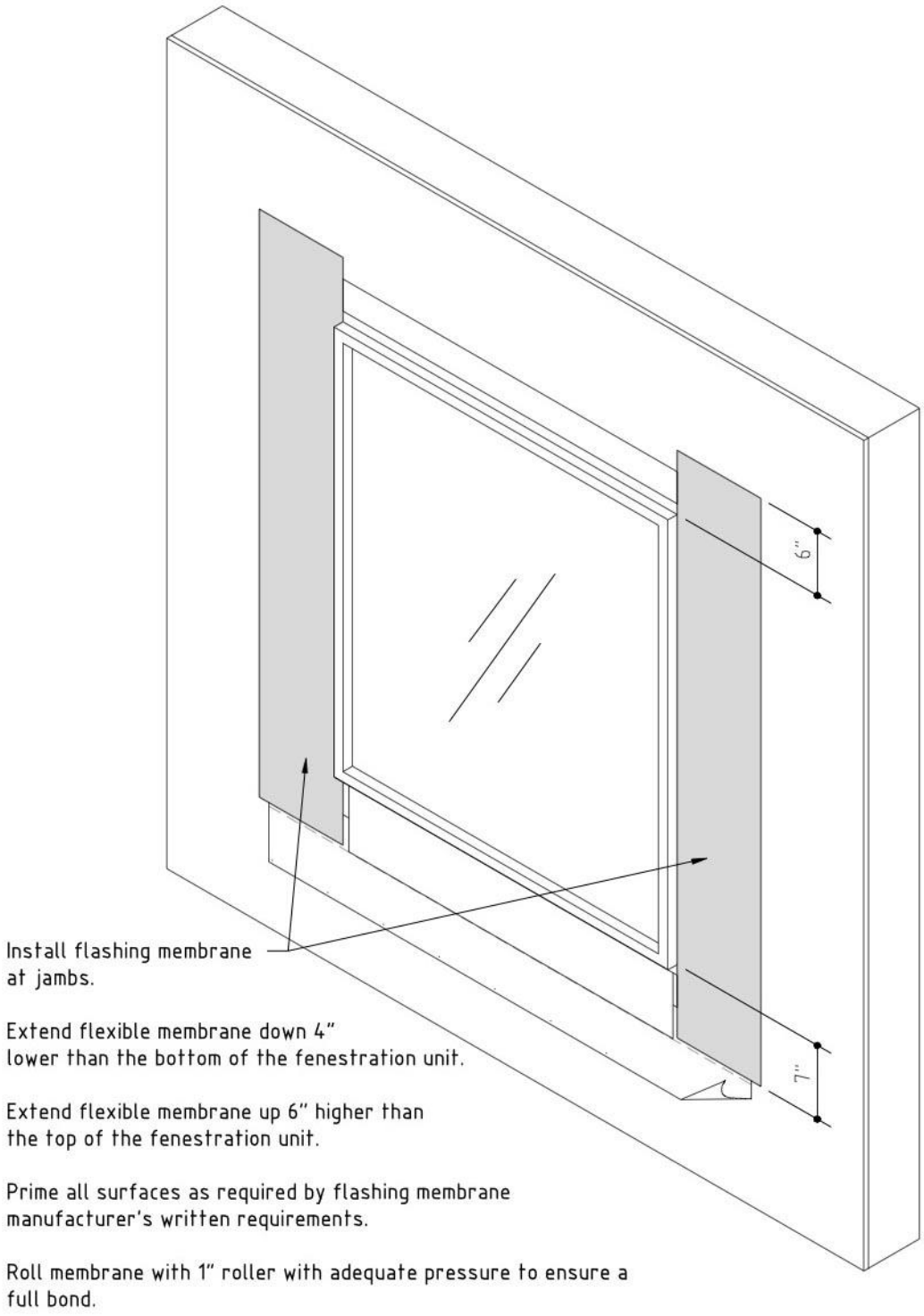
FIS Figure No. 7.1.10 – Method AW - Shallow ‘Corner Glove’ Fenestration Bedding Joint.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



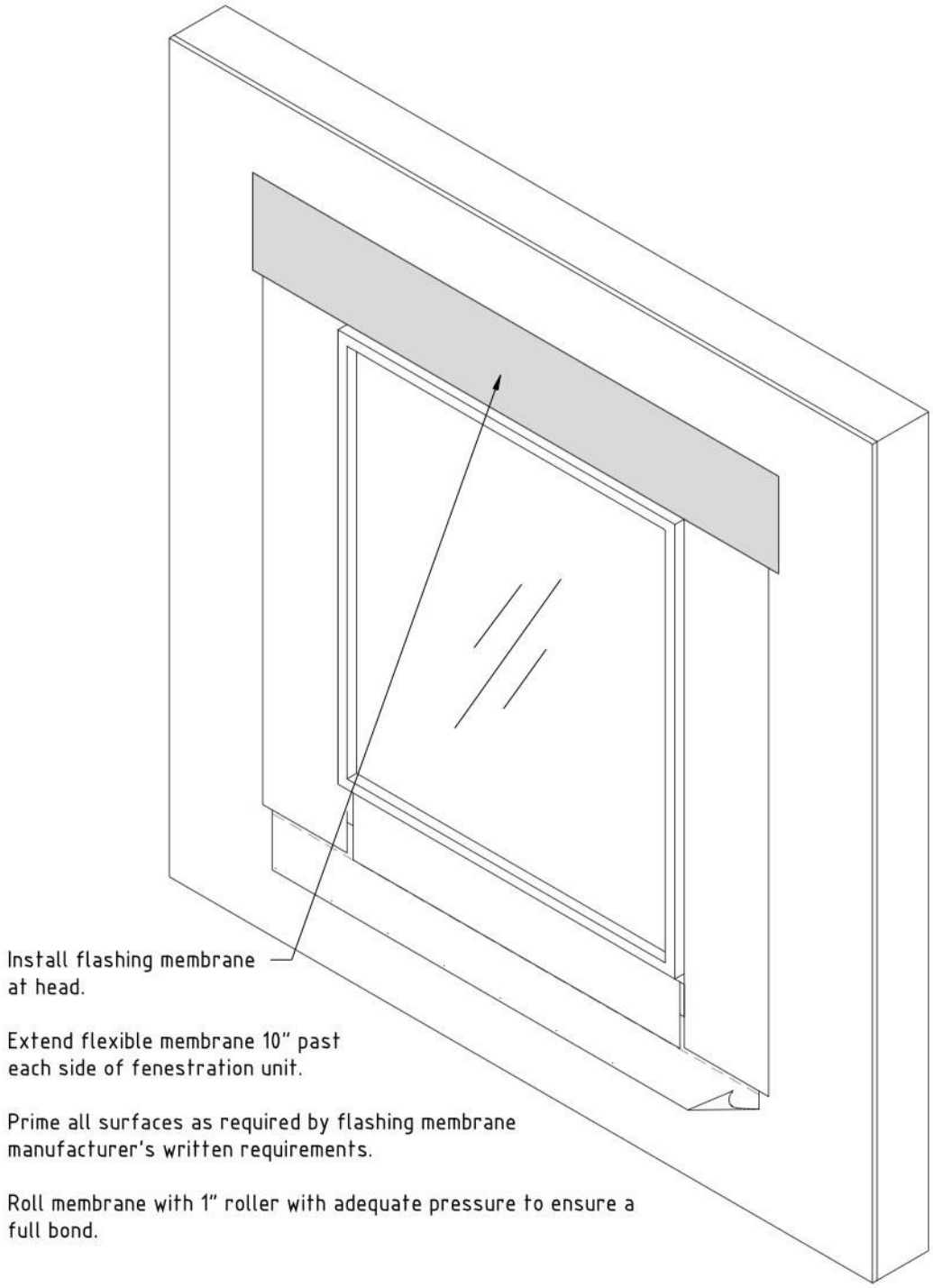
FIS Figure No. 7.1.11 – Method AW – Window Installation.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

With the fenestration installed, the interior side of the fenestration’s perimeter cavity is required to be sealed with low expansion spray foam insulation. The spray foam insulation will seal the fenestration to the WRB on all sides of the fenestration unit. Refer to Section 9.0

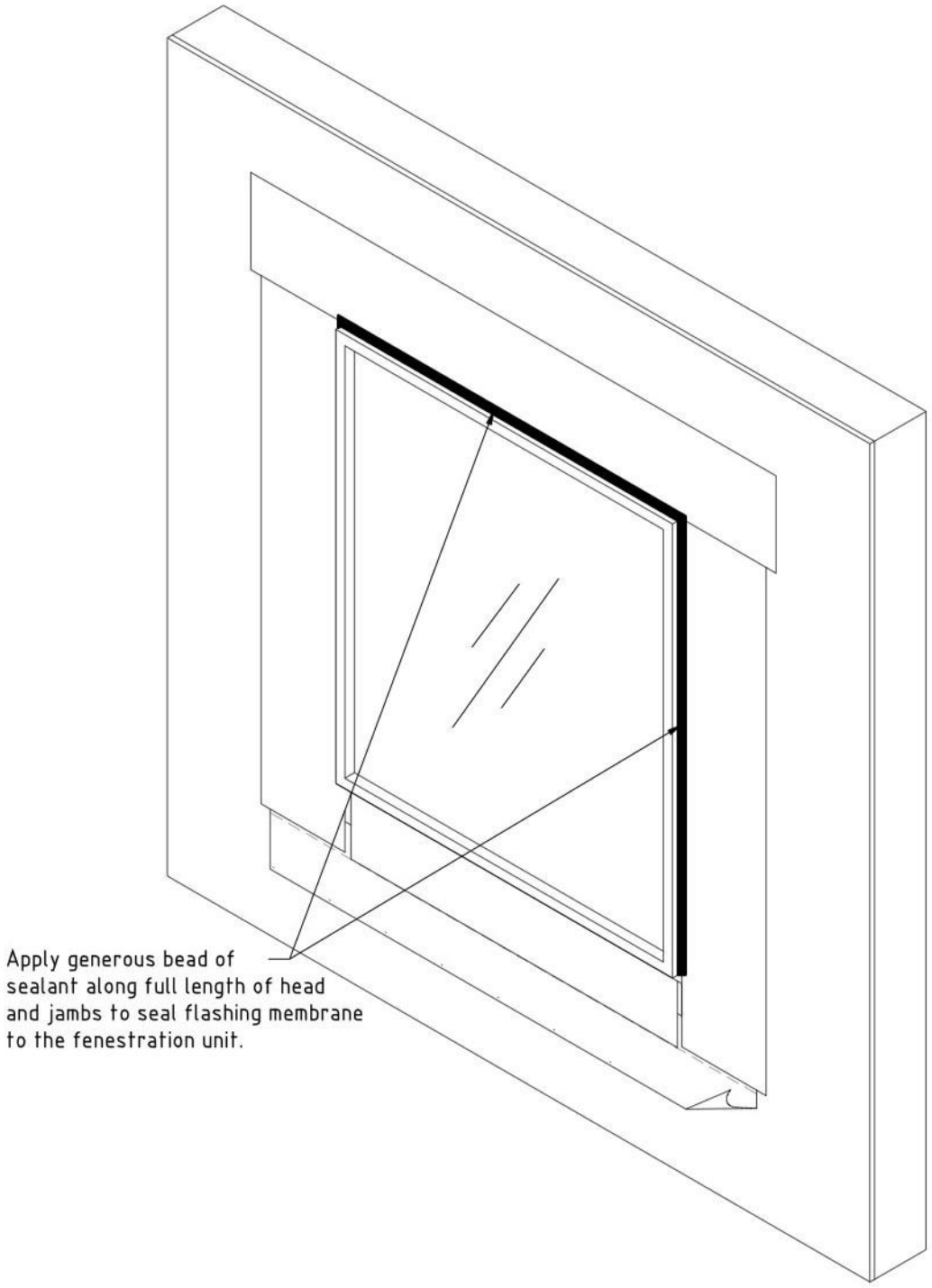
Continue with remaining flashing membrane and WRB installation steps as identified in this section.



FIS Figure No. 7.1.12 – Method AW - Jamb flange flashing membrane installation.
Weather Resistive Barrier installed 'after' installation of fenestration.



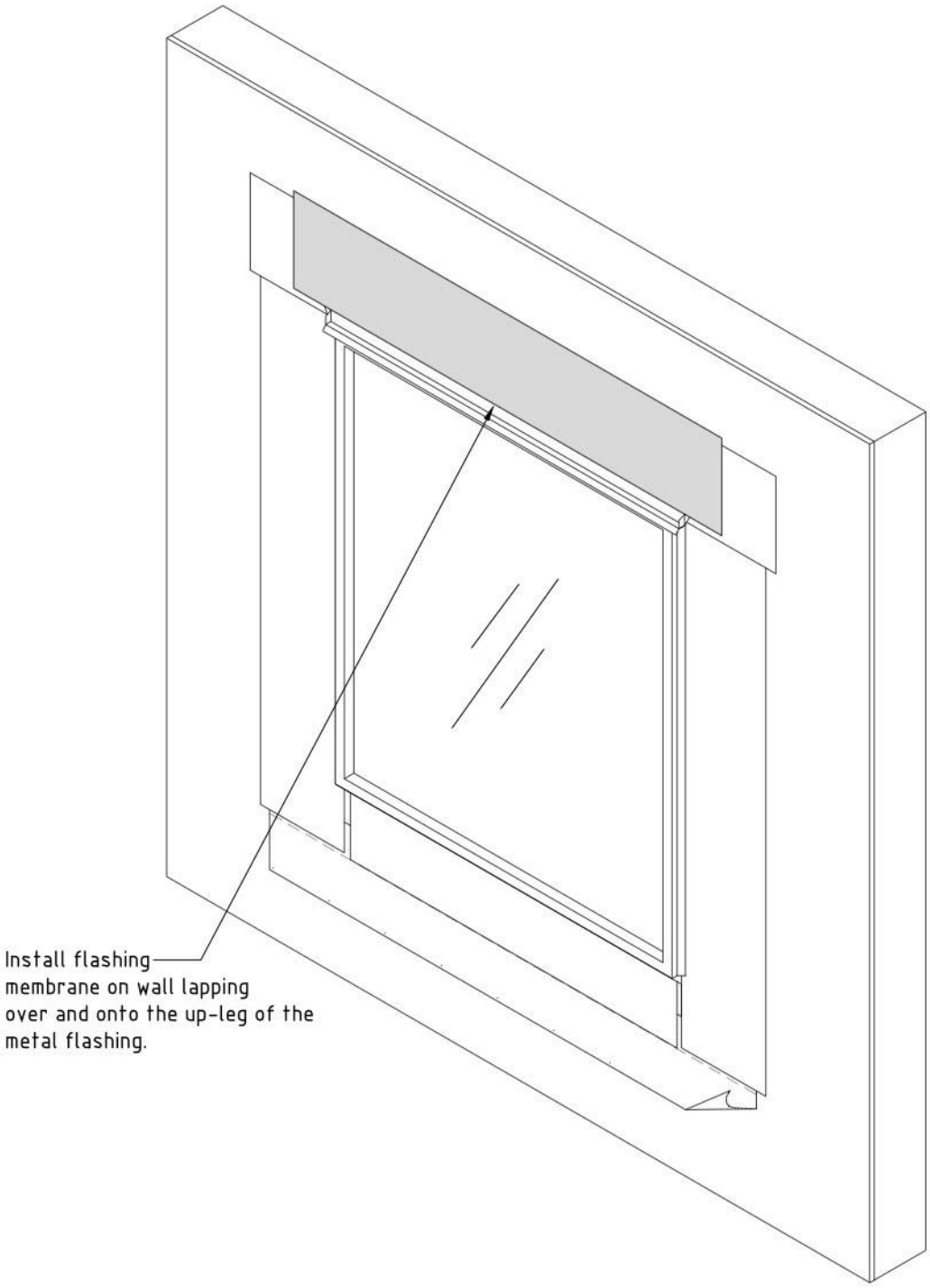
FIS Figure No. 7.1.13 – Method AW - Head flange flashing membrane installation.
Weather Resistive Barrier installed 'after' installation of fenestration.



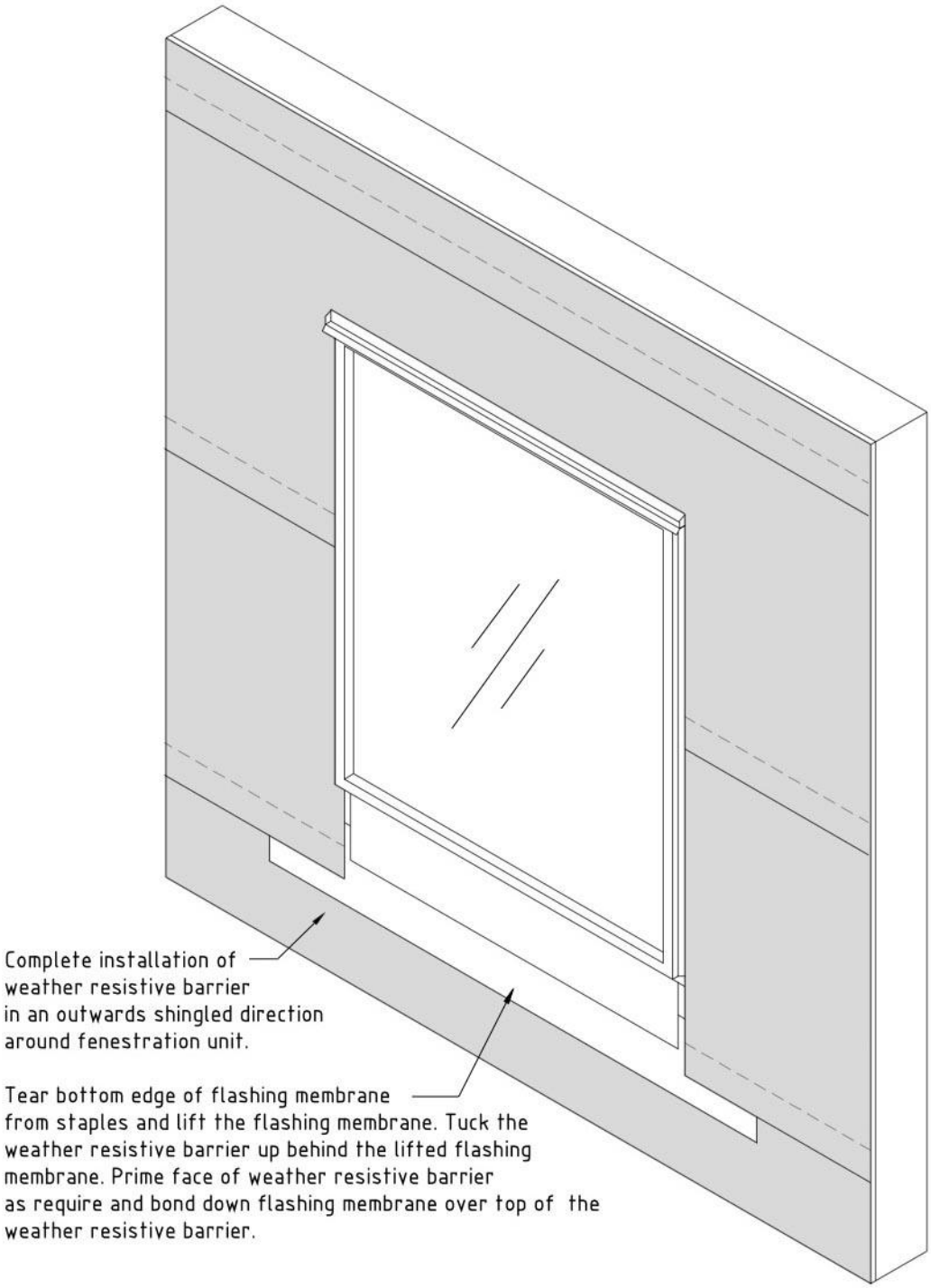
FIS Figure No. 7.1.14 – Method AW - Window Sealed to Weather Resistive Barrier
Weather Resistive Barrier installed ‘after’ installation of fenestration.

FIS Figure No. 7.1.15 – Method AW - Metal Head Flashing Options with Folded End Dams.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

Refer to Section 8.0 for FIS recommended flashing details.



FIS Figure No. 7.1.16 – Method AW - Flashing membrane installation lapping metal flashing up-leg. Weather Resistive Barrier installed ‘after’ installation of fenestration.



FIS Figure No. 7.1.17 – Method AW - Complete the installation of weather resistive barrier. Weather Resistive Barrier installed ‘after’ installation of fenestration.

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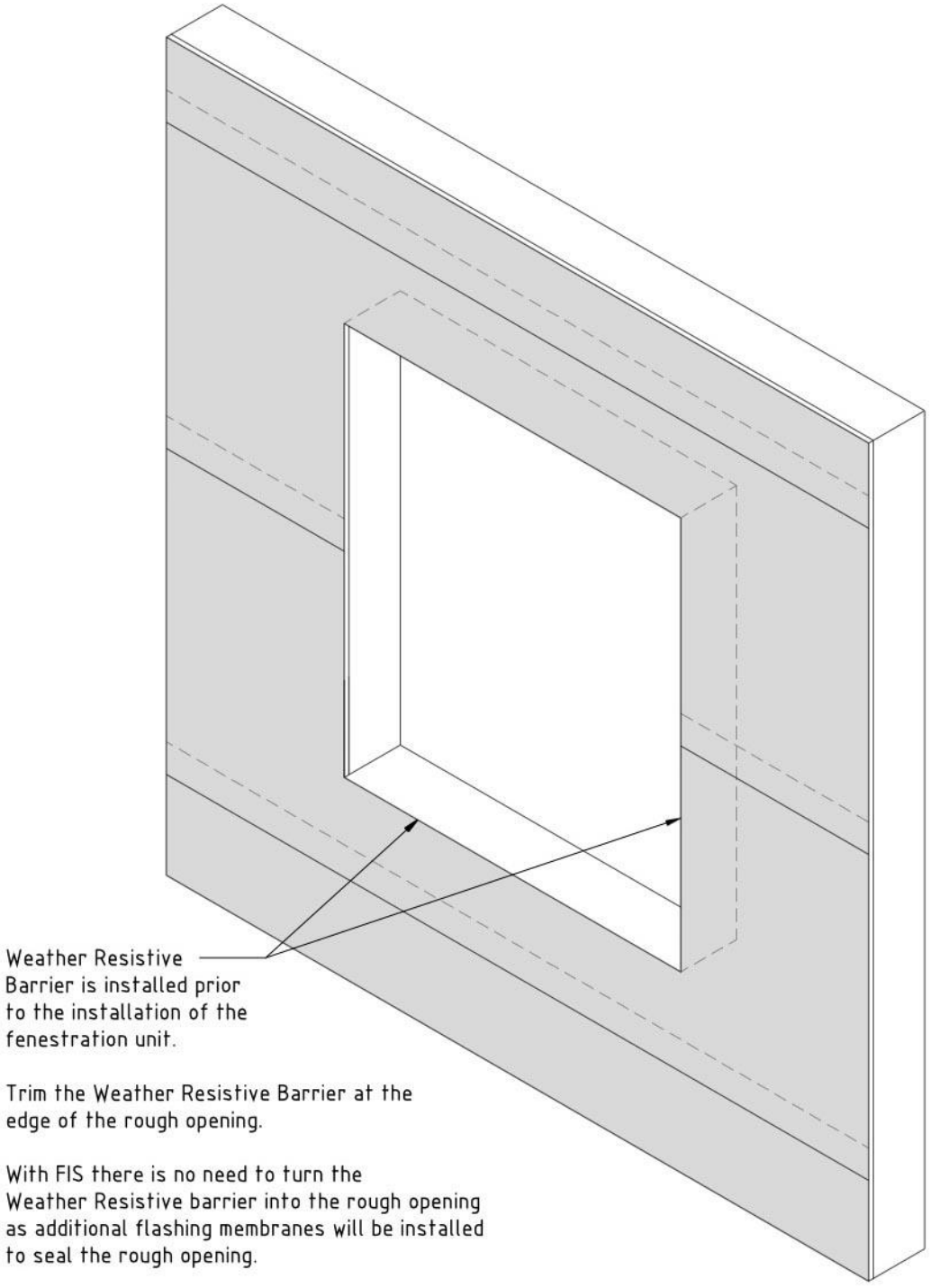
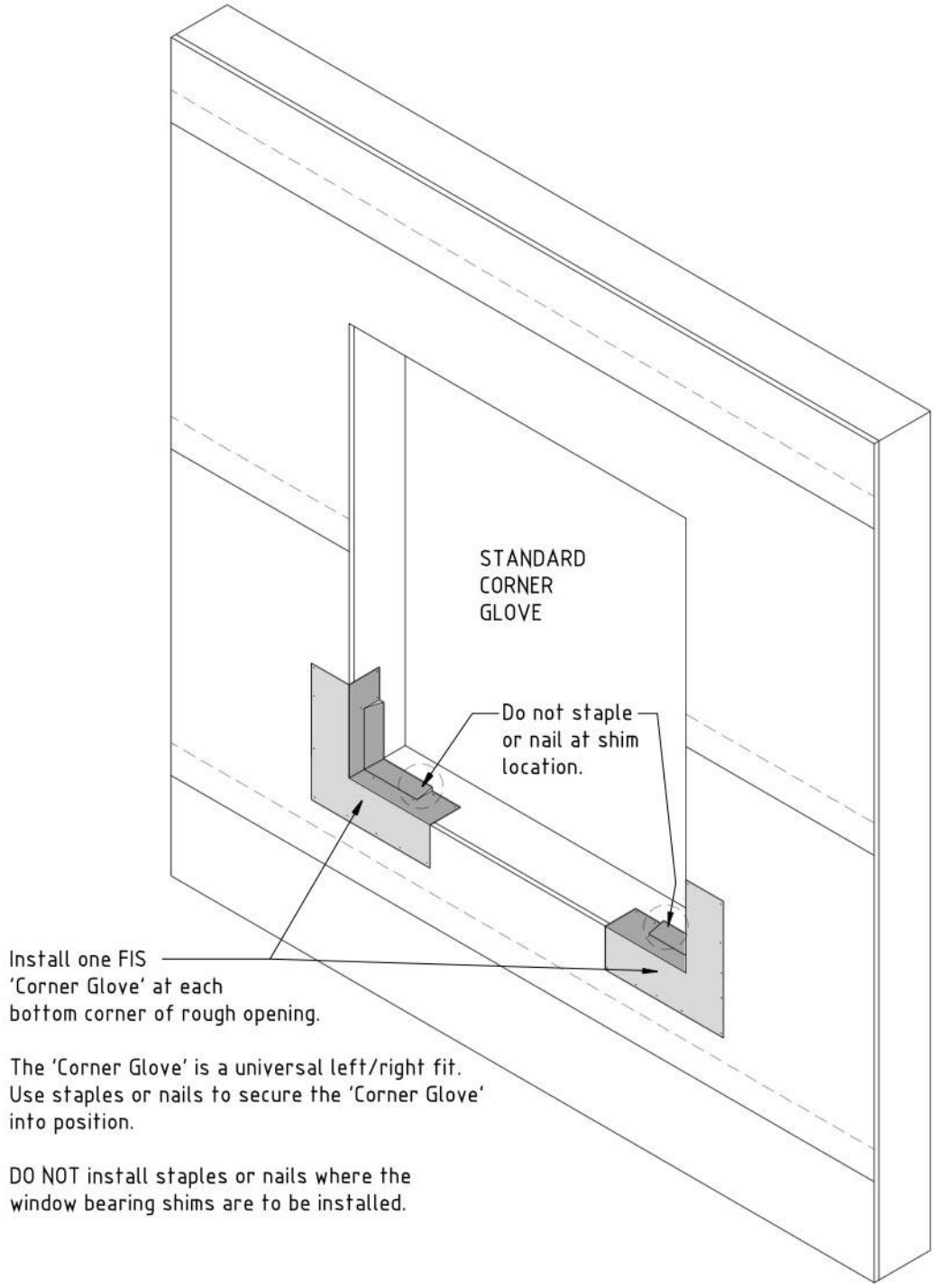
7.2 Requirements for FIS Installation Method B

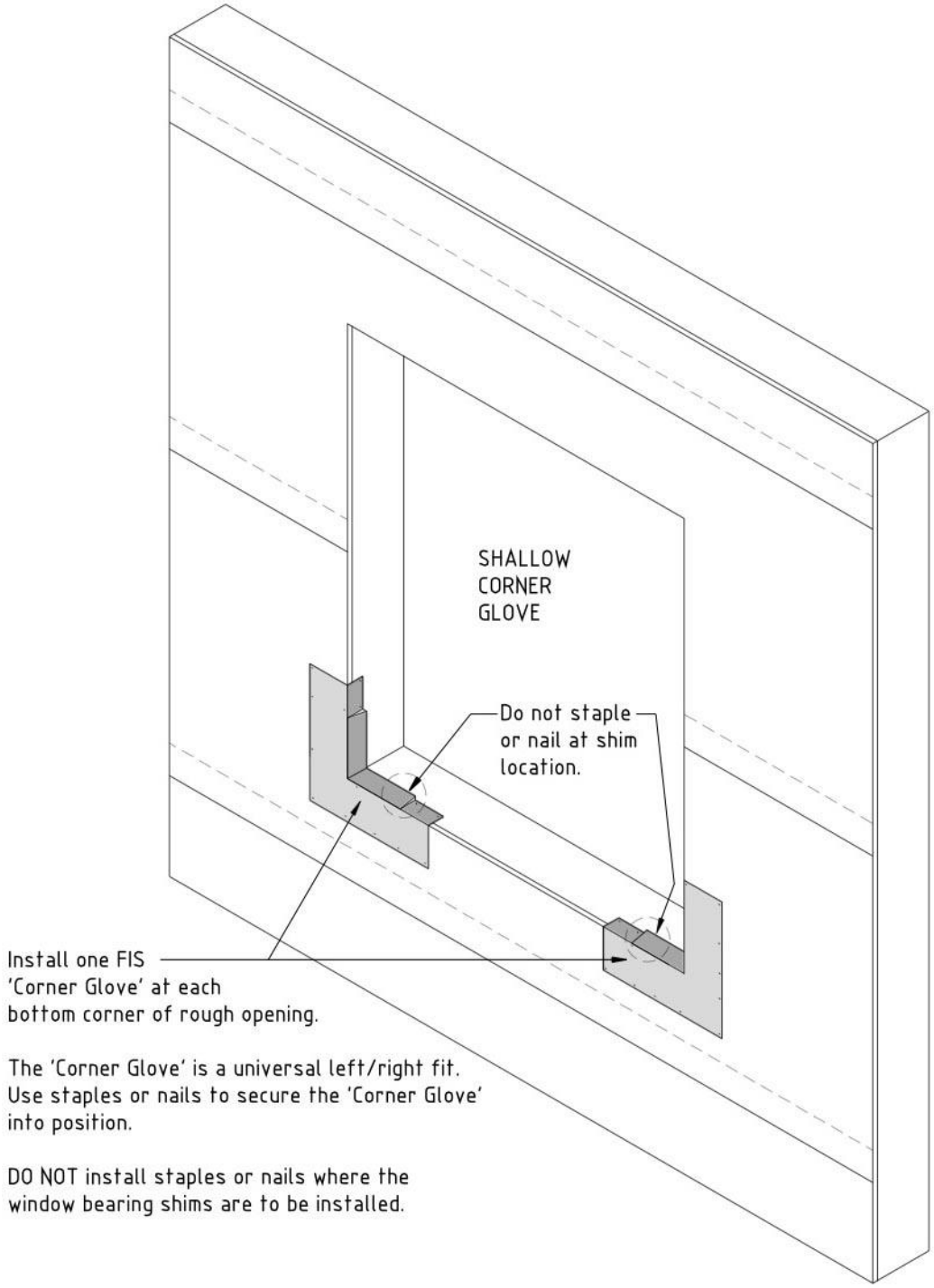
Building paper WRB installed ‘before’ installation of fenestration.
Flashing Applied Over the Face of the Mounting Flange.
ASTM E2112-19C compliant.



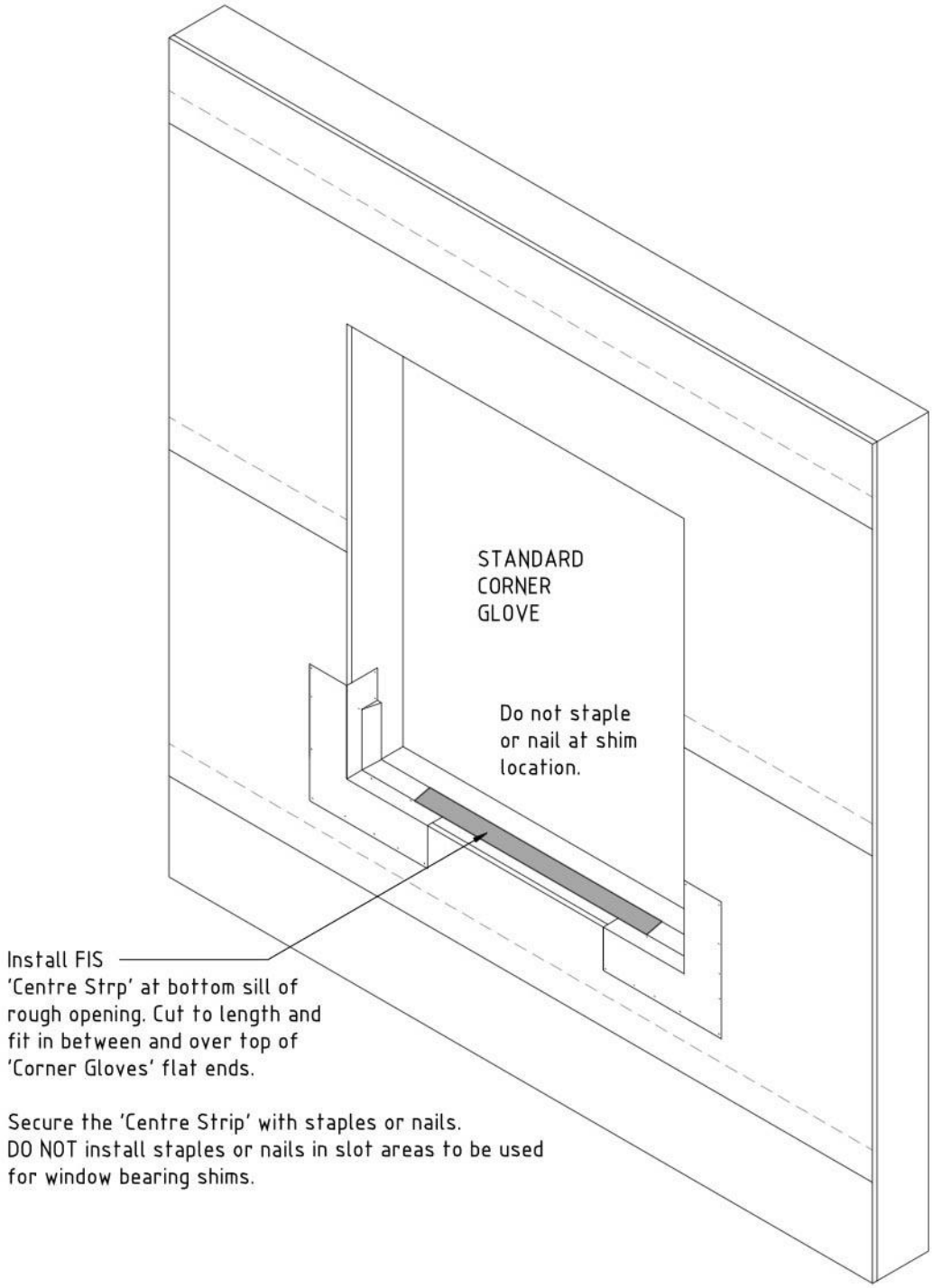
FIS Figure No. 7.2.1 – Method B – Weather Resistive Barrier Applied to Wall.
Weather Resistive Barrier installed ‘before’ installation of fenestration.



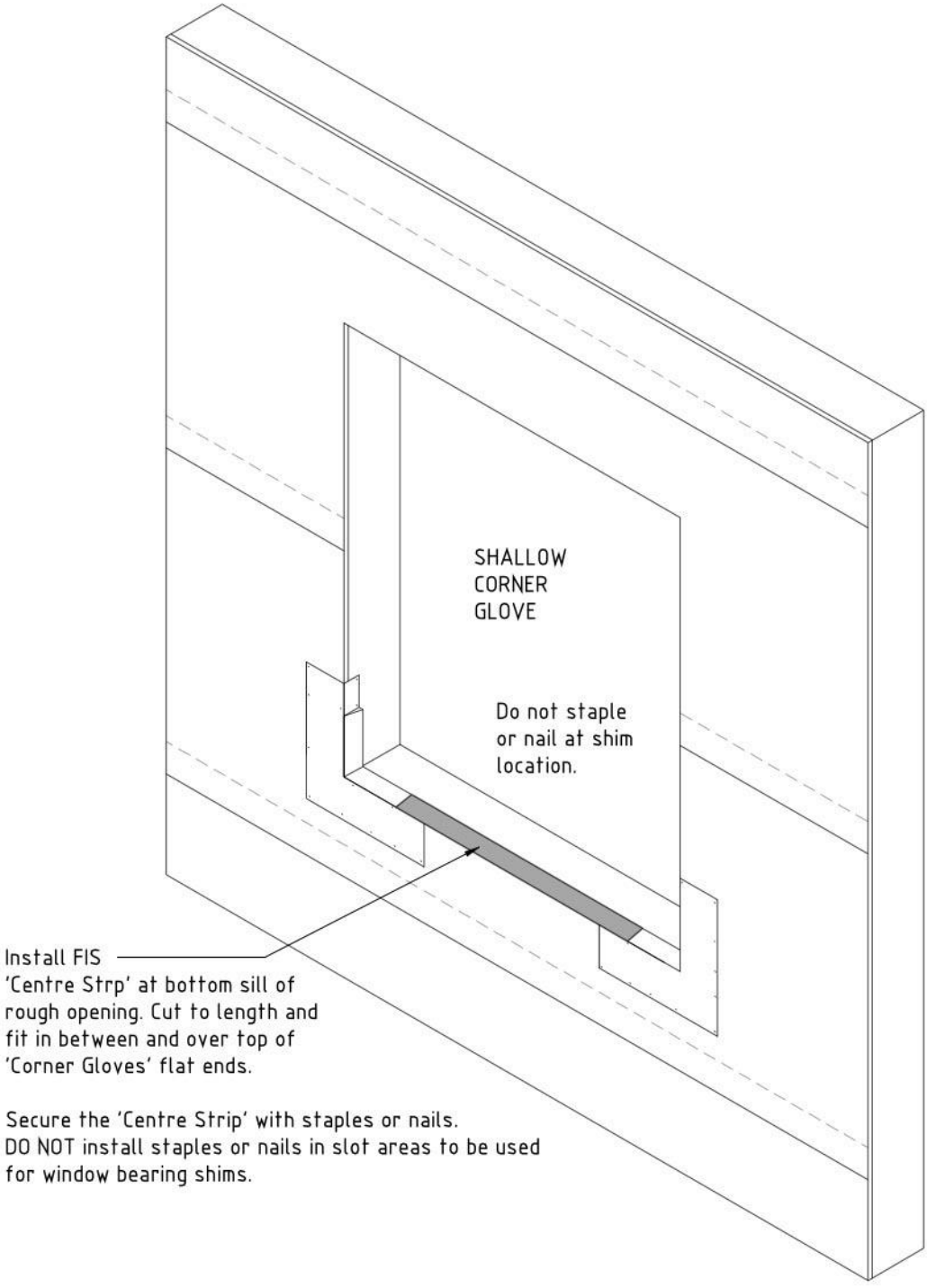
FIS Figure No. 7.2.2 – Method B - Standard ‘’Corner Glove’ for windows with jamb extensions. Weather Resistive Barrier installed ‘before’ installation of fenestration.



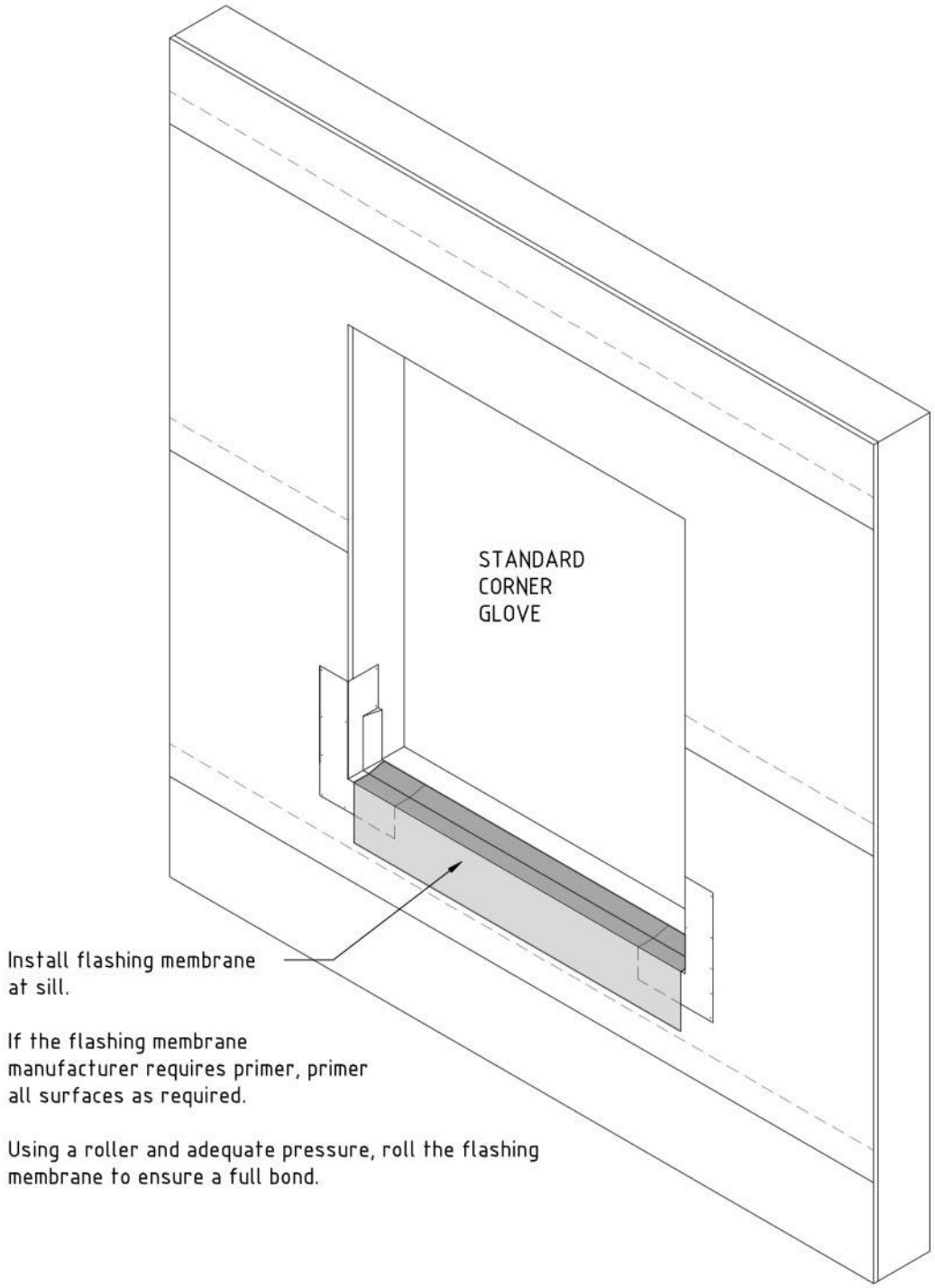
FIS Figure No. 7.2.3 – Method B - Shallow ‘Corner Glove’ for windows without jamb extensions. Weather Resistive Barrier installed ‘before’ installation of fenestration.



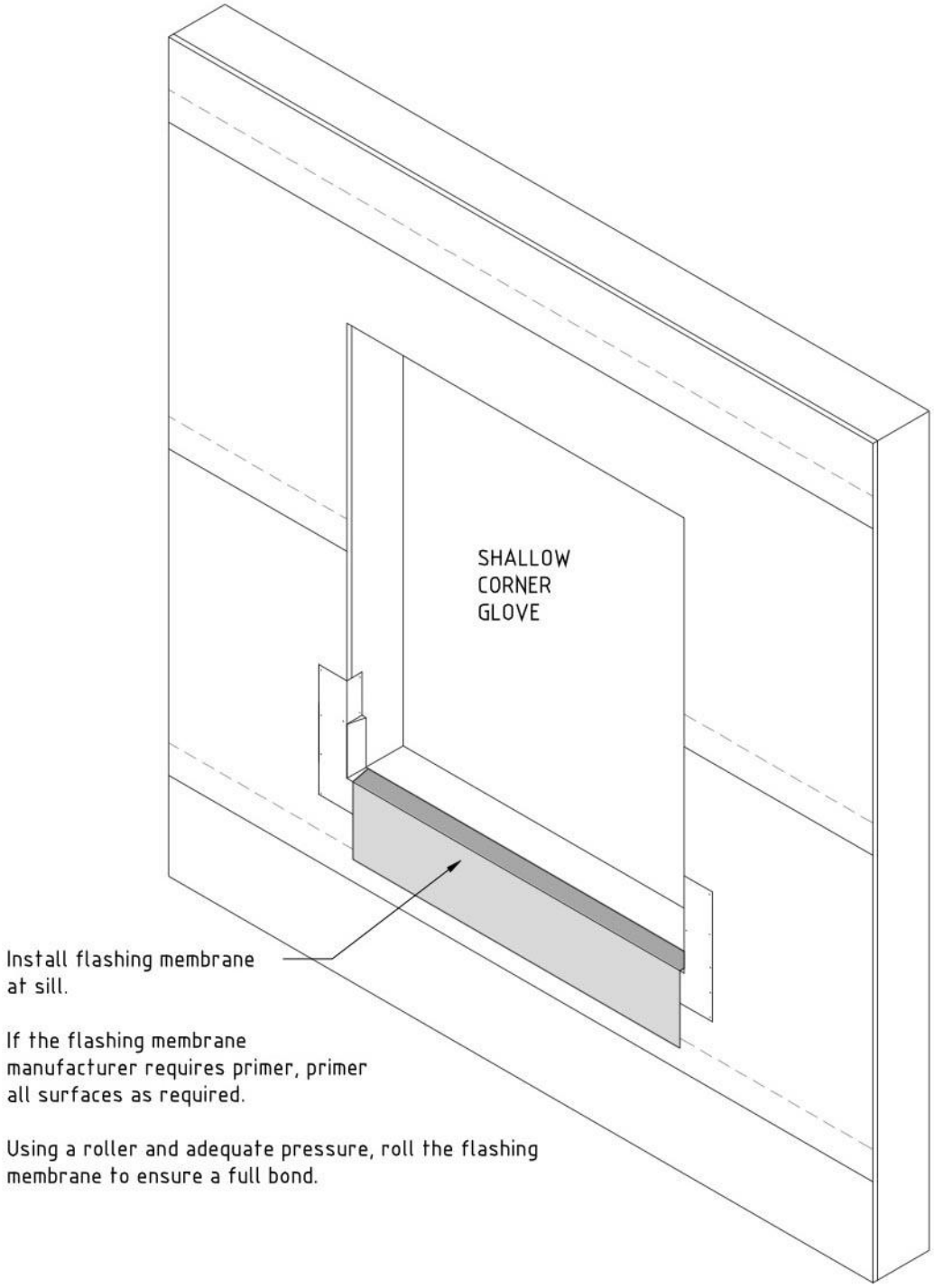
FIS Figure No. 7.2.4 – Method B - Center Strip' installed between standard 'Corner Gloves' Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.2.5 – Method B - Center Strip' installed between shallow 'Corner Gloves'
Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.2.6 - Method B - Sill flashing membrane at standard ‘Corner Gloves’. Weather Resistive Barrier installed ‘before’ installation of fenestration.

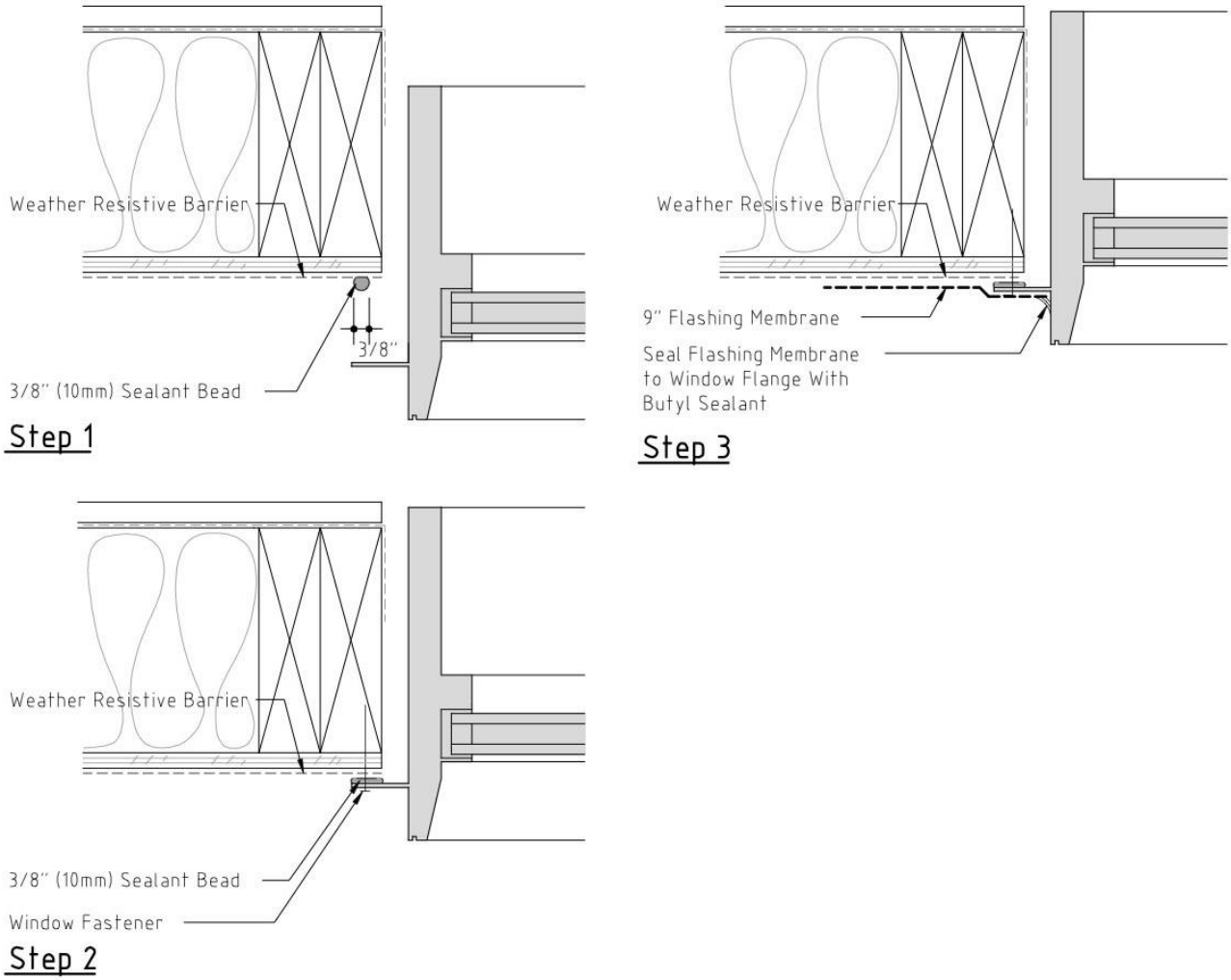


FIS Figure No. 7.2.7 – Method B - Sill flashing membrane at shallow ‘Corner Gloves’.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

Warranty Note: For Method B, the steps to this point conclude the requirements to comply with the FIS product installation warranty. The remaining steps for Method B identified herein, indicate the FIS recommended steps for this fenestration installation method to comply with ASTM E2112-19C.

Warranty Note: If the full installation of the fenestration does not complete with ASTM E2112-19C the FIS Warranty is void.

FIS is compatible with most available sealants. The architect, engineer or installer shall specify or select an appropriate sealant based on ASTM E2112-19C Table A4.1 or CSA A440, to suite the building's adjacent components and follow the sealant manufacturer's written instructions for sealant selection, primers, and installation.



FIS Figure No. 7.2.8 – Method B - Fenestration Bedding Joint and sealing of Weather Resistive Barrier. Weather Resistive Barrier installed 'before' installation of fenestration.

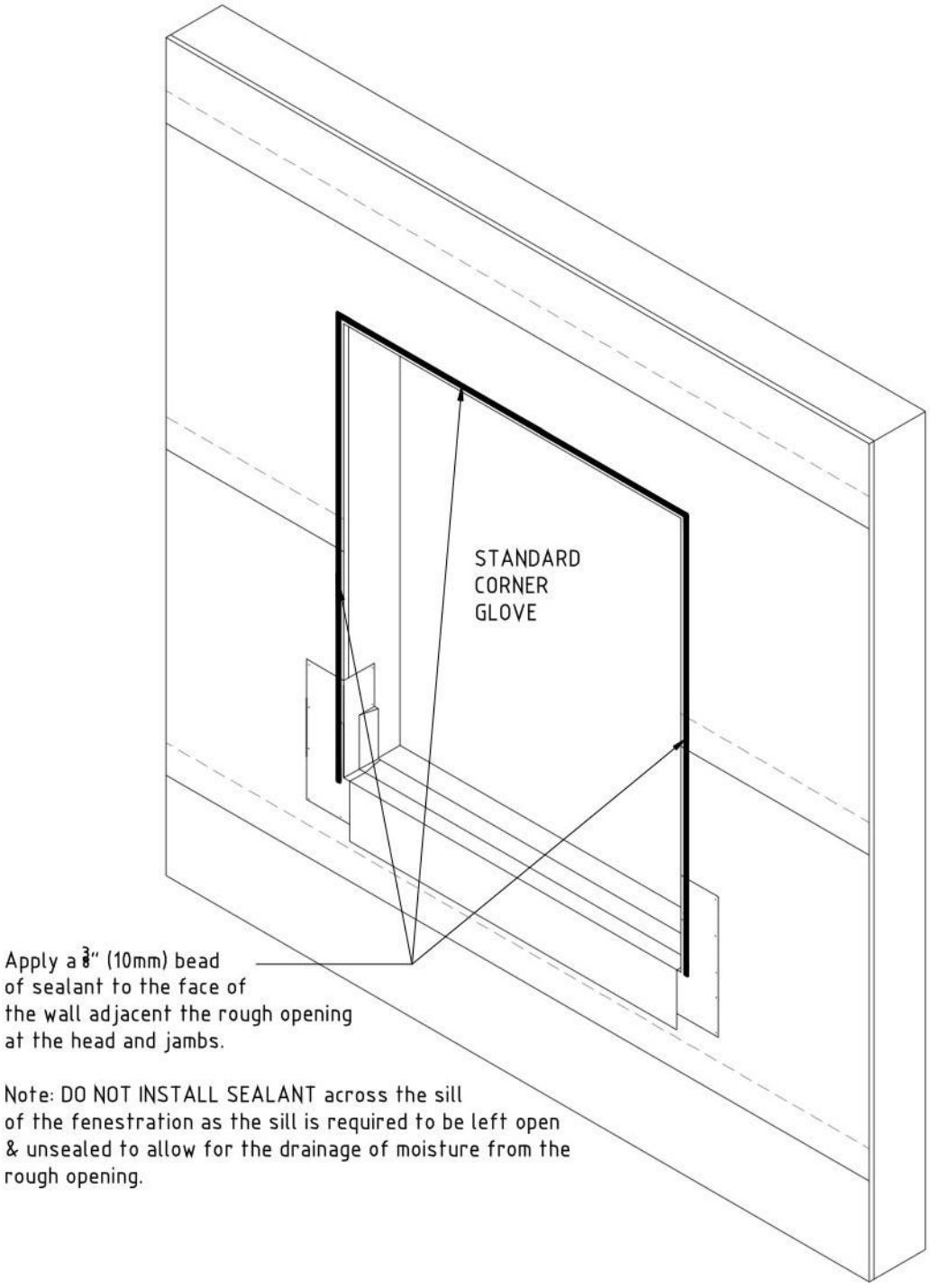
A 3/8" diameter sealant bedding joint shall be applied to the face of the weather resistive barrier at the head and jambs as seen in Step 1 of FIS Figure No. 7.2.8.

DO NOT APPLY SEALANT across the sill of the fenestration's rough opening, as the sill must be left unsealed to allow for moisture drainage from the rough opening at that location.

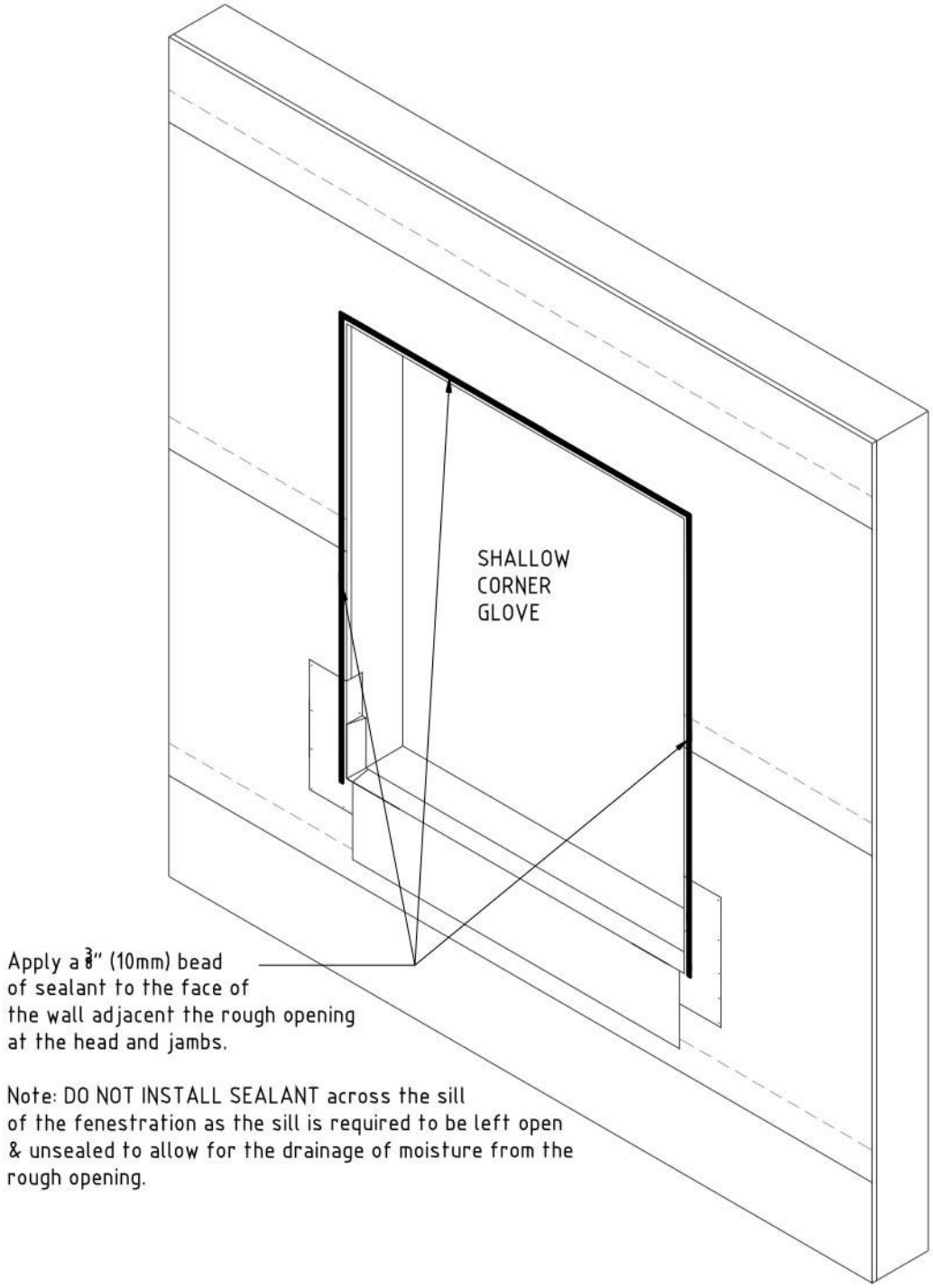
In Step 2, the fenestration unit is installed squishing the sealant bead to become the fenestration sealant bedding joint.

Step 3 requires the installation of a 9" wide flexible flashing membrane to be installed on the face of the wall at the jambs and head, lapping onto the fenestration's flange and sealing the flexible flashing membrane to the fenestration unit with a corner bead of sealant.

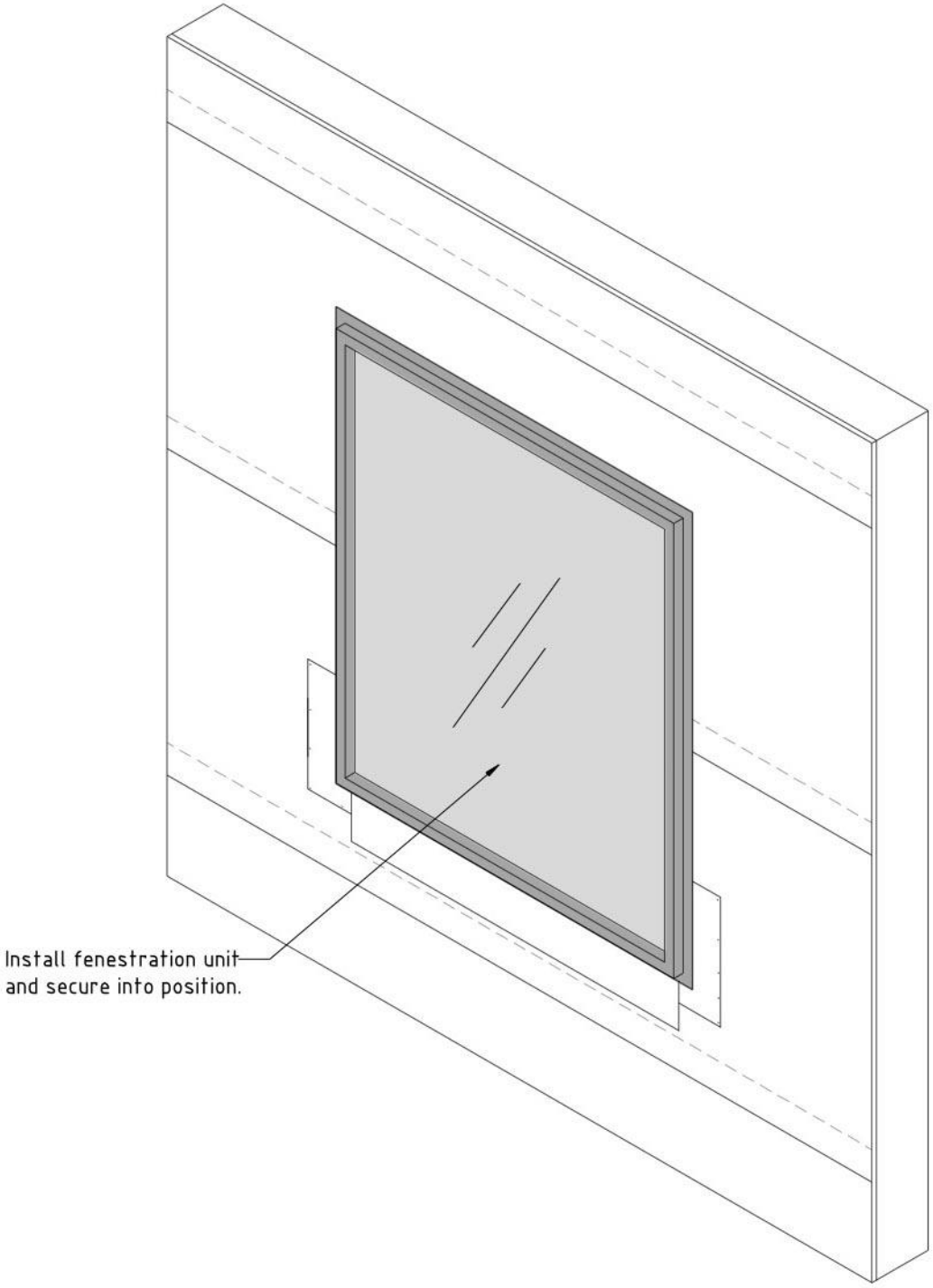
Note: If the fenestration unit does not have integral mounting flanges, the applied flanges will require more elaborate flashing and sealing details to ensure weather protection of the installed unit. When using applied flanges, follow the manufacturers' instructions for sealing the flange to the frame.



FIS Figure No. 7.2.9 – Method B - Standard ‘Corner Glove’ Fenestration Bedding Joint.
Weather Resistive Barrier installed ‘before’ installation of fenestration.



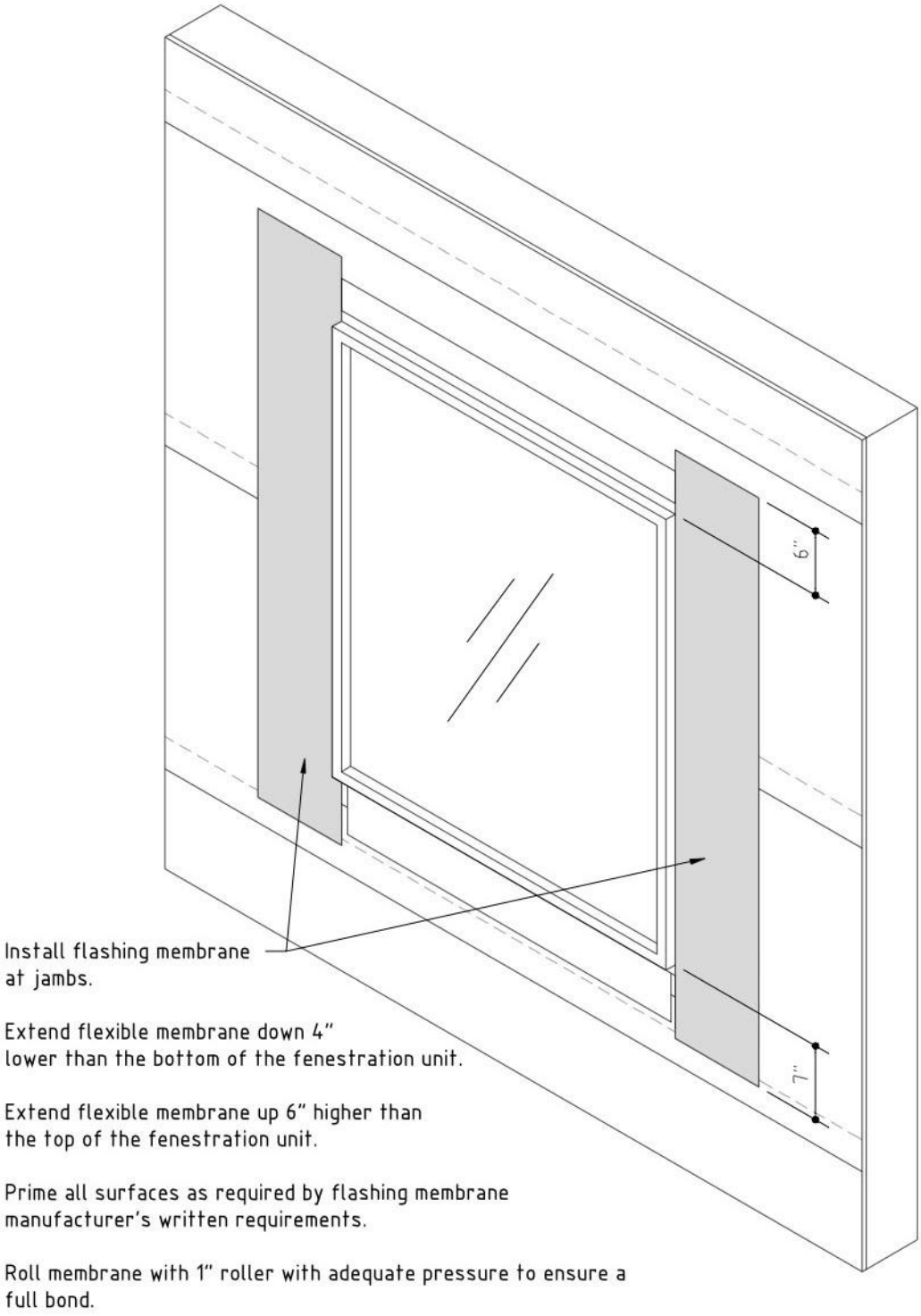
FIS Figure No. 7.2.10 – Method B - Shallow 'Corner Glove' Fenestration Bedding Joint.
Weather Resistive Barrier installed 'before' installation of fenestration.



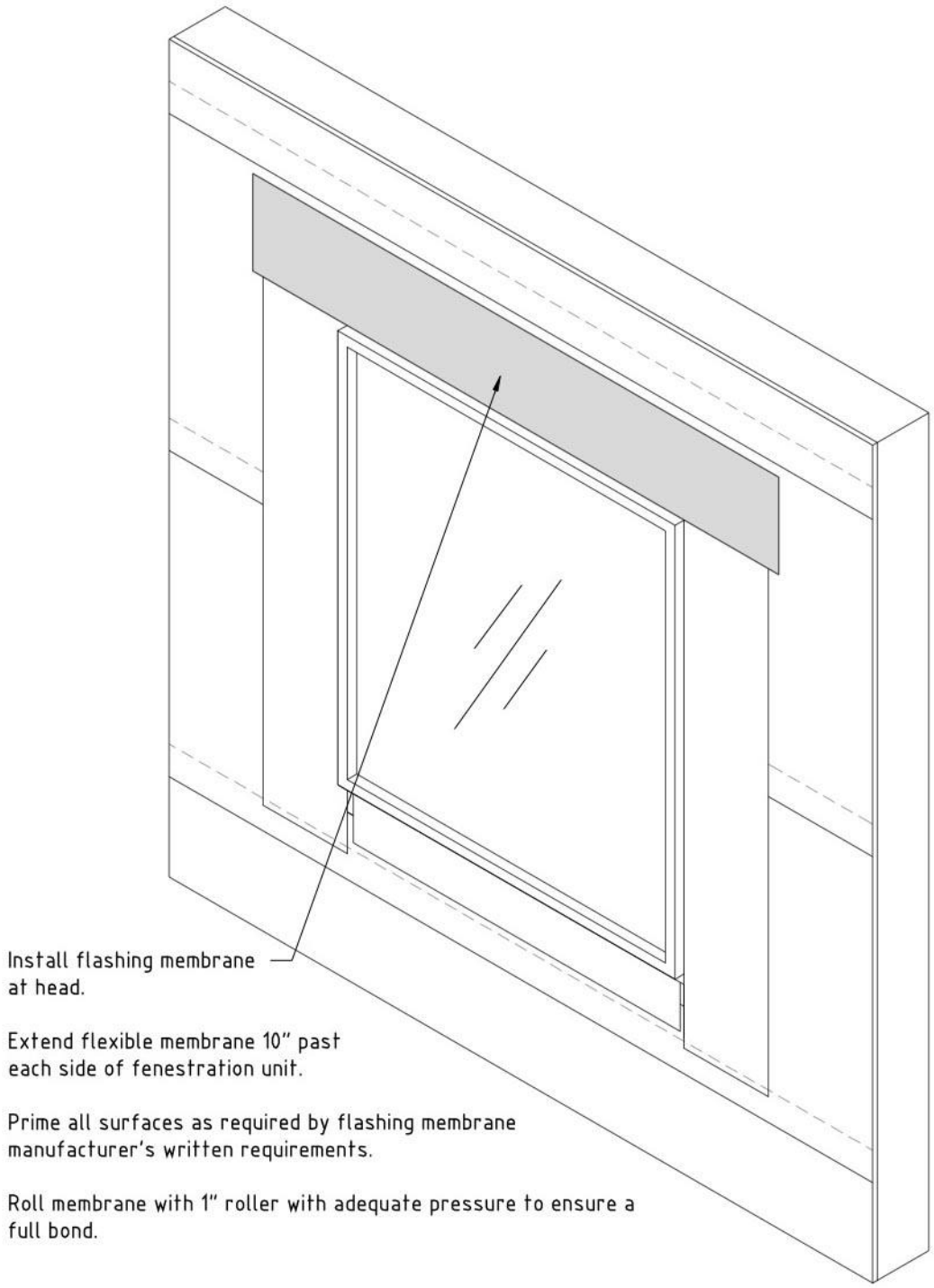
FIS Figure No. 7.2.11 – Method B - Window Installation.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

With the fenestration installed, If desired or required, the interior side of the fenestration’s perimeter cavity should be sealed with low expansion spray foam insulation. The spray foam insulation will seal the fenestration to the to the framing, vapour barrier, and provide thermal separation on all sides of the fenestration unit.
Refer to Section 9.0 for similar foam requirements and recommended installation.

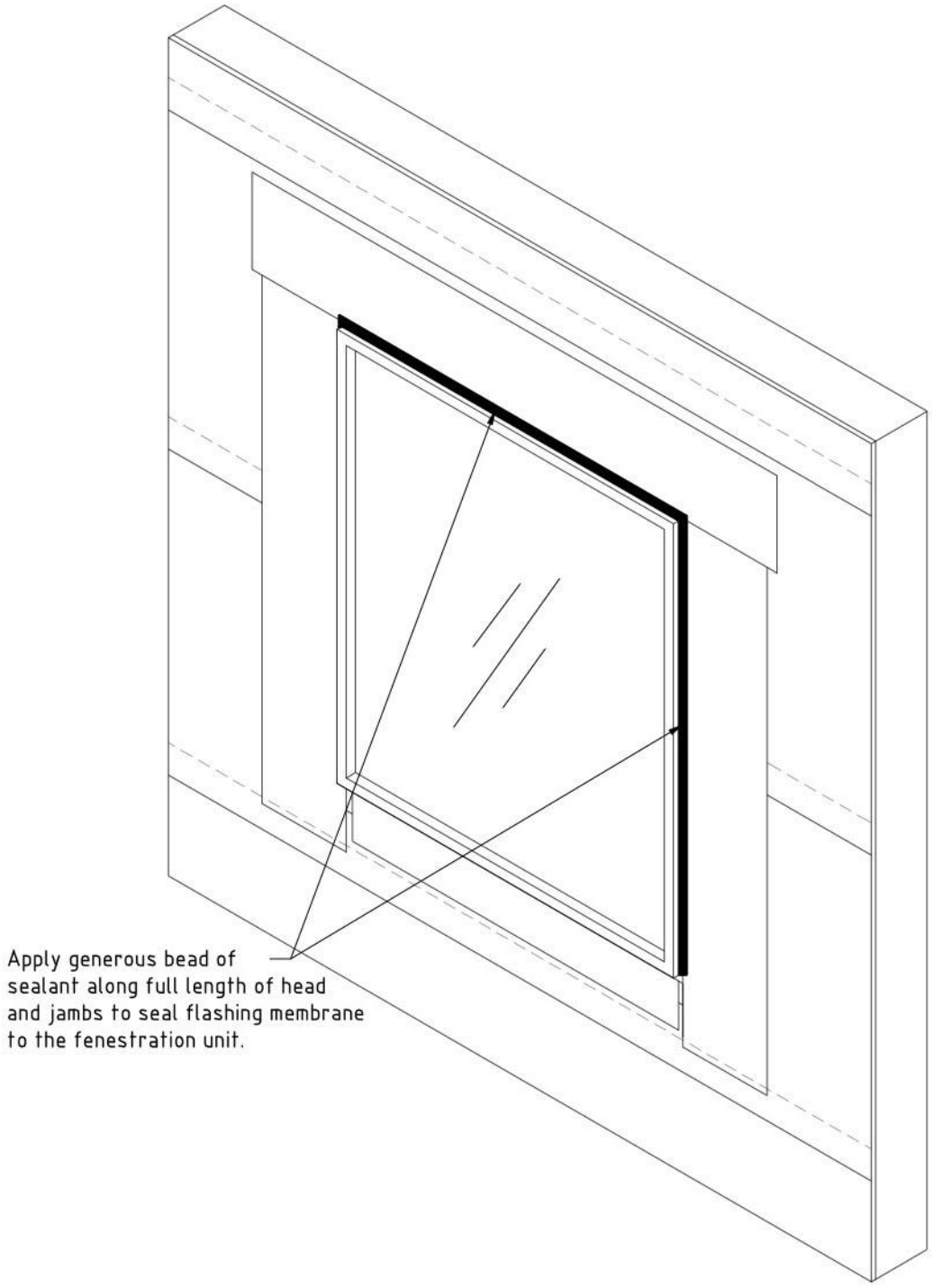
Continue with remaining flashing membrane and WRB installation steps as identified in this section.



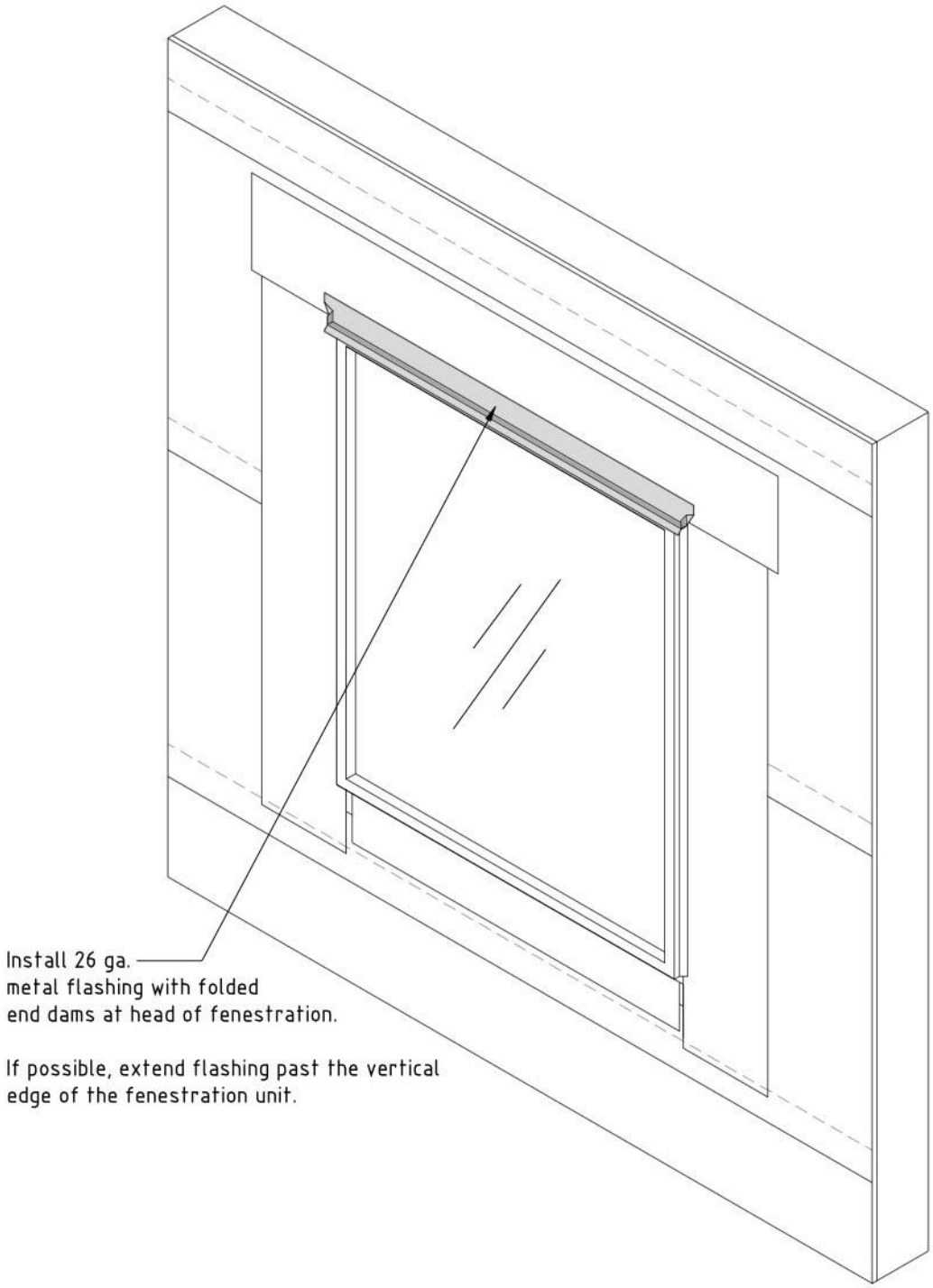
FIS Figure No. 7.2.12 – Method B - Jamb flange flashing membrane installation.
Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.2.13 – Method B - Head flange flashing membrane installation.
Weather Resistive Barrier installed 'before' installation of fenestration.

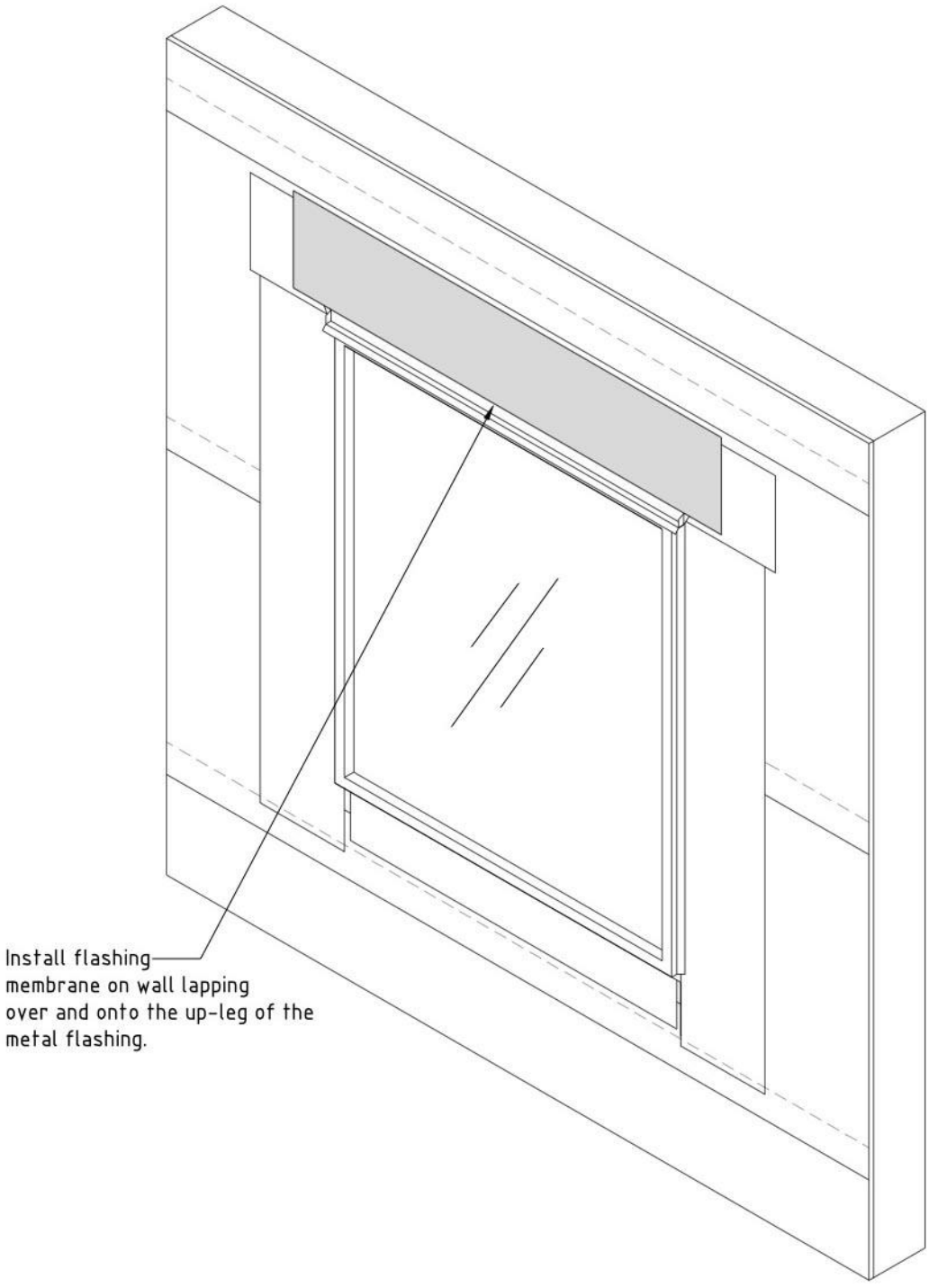


FIS Figure No. 7.2.14 – Method B - Window Sealed to Weather Resistive Barrier.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

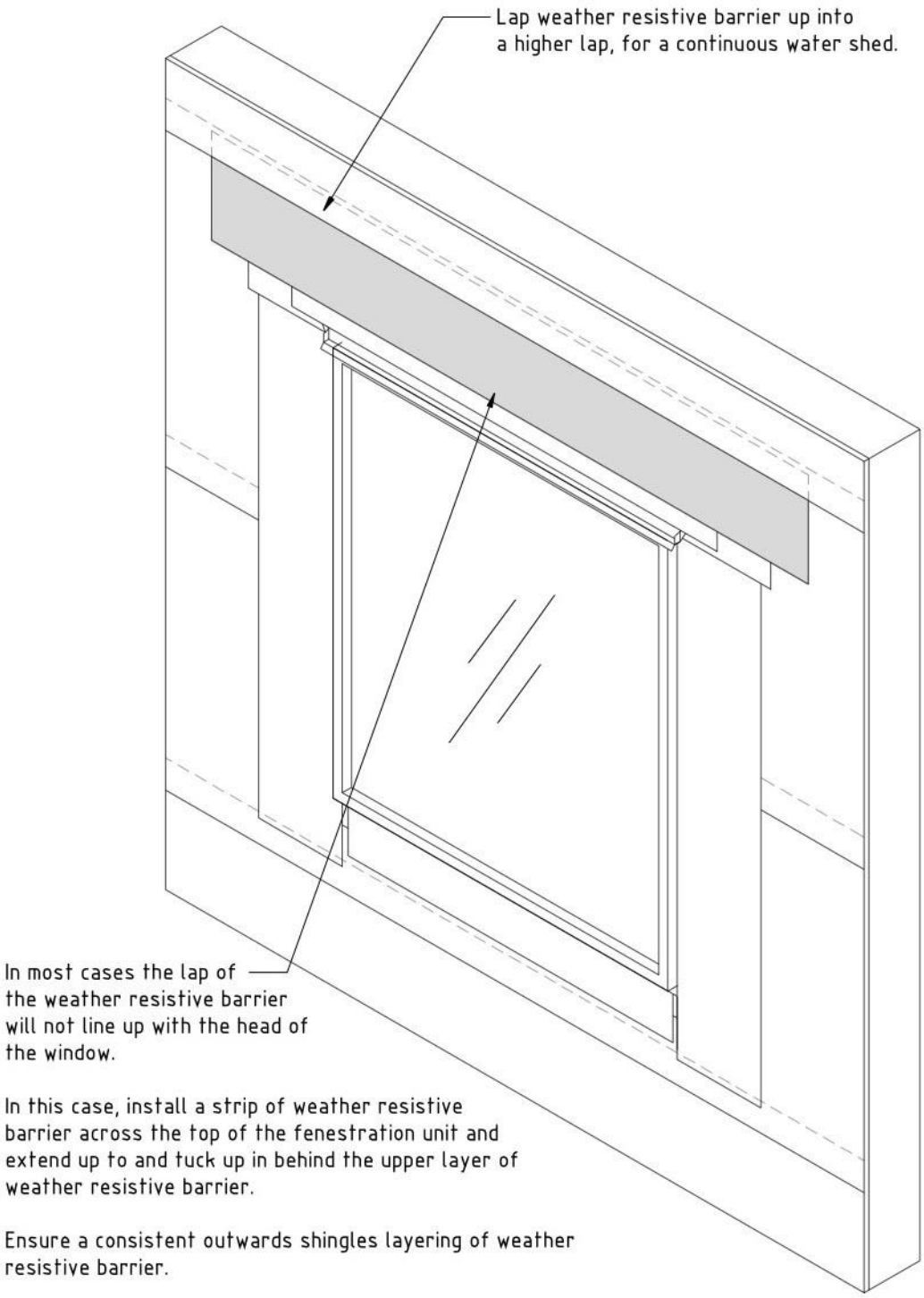


FIS Figure No. 7-2.15 – Method B - Metal Head Flashing Options with Folded End Dams.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

Refer to Section 8.0 for FIS recommended flashing details.



FIS Figure No. 7.2.16 – Method B - Complete the installation of weather resistive barrier. Weather Resistive Barrier installed ‘before’ installation of fenestration.



FIS Figure No. 7.2. 17 – Method B - Complete the installation of weather resistive barrier. Weather Resistive Barrier installed ‘before’ installation of fenestration.

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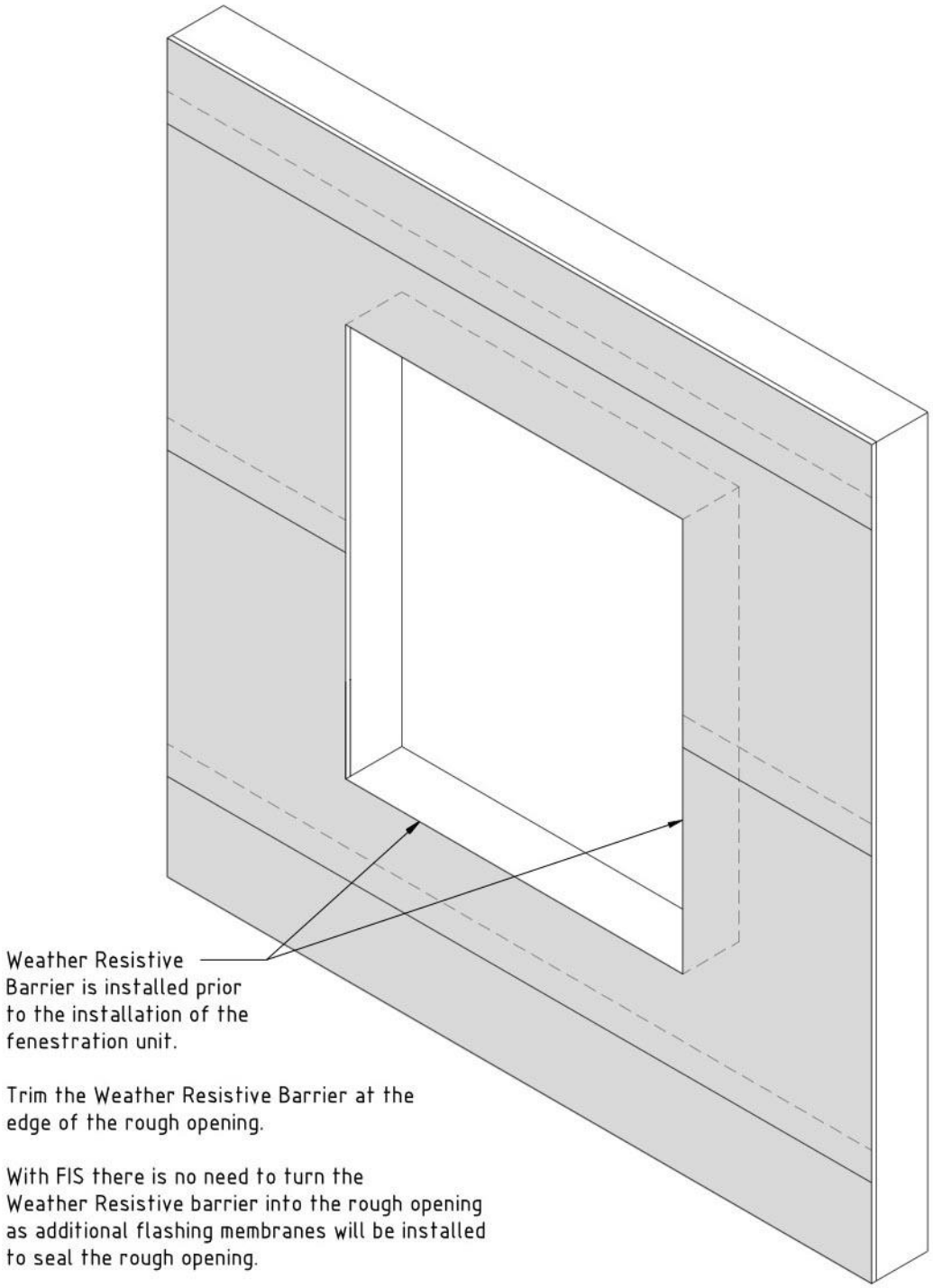
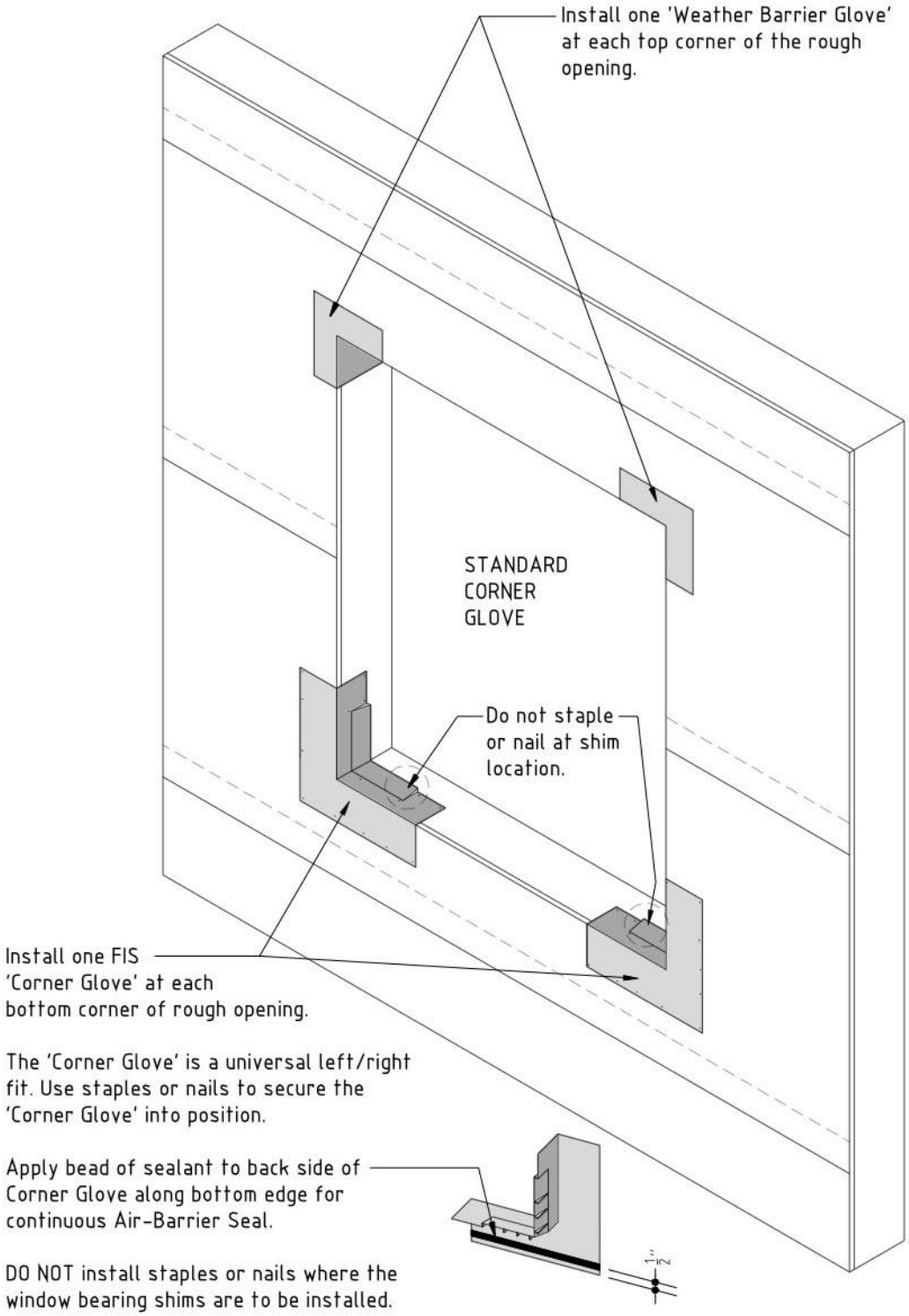
7.3 Requirements for FIS Installation Method BW

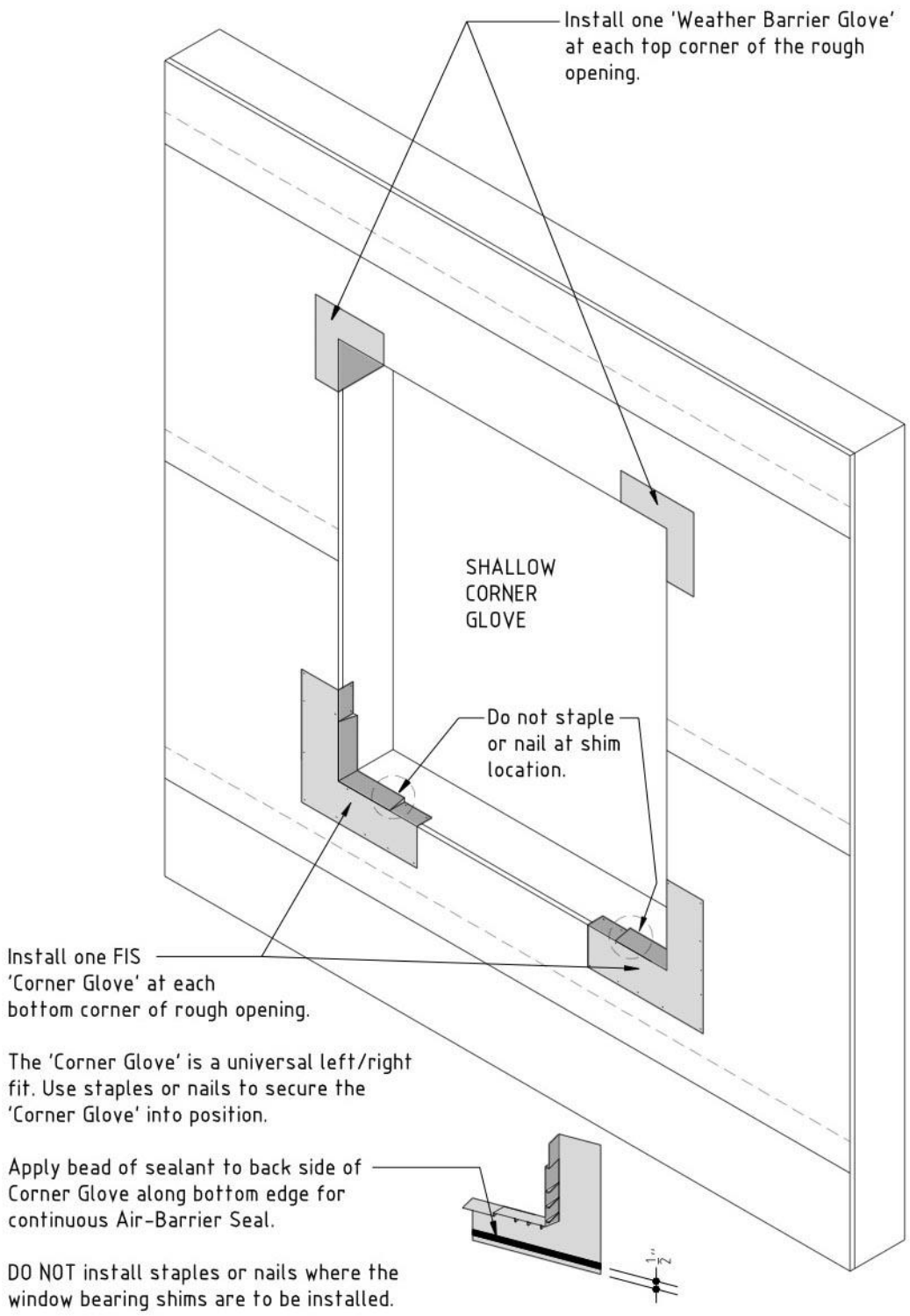
Building paper WRB installed ‘before’ installation of fenestration.
Flashing Applied Behind the Face of the Mounting Flange.
Flashing membranes extend into the rough opening for air barrier tie-in to fenestration.
ASTM E2112-19C compliant.



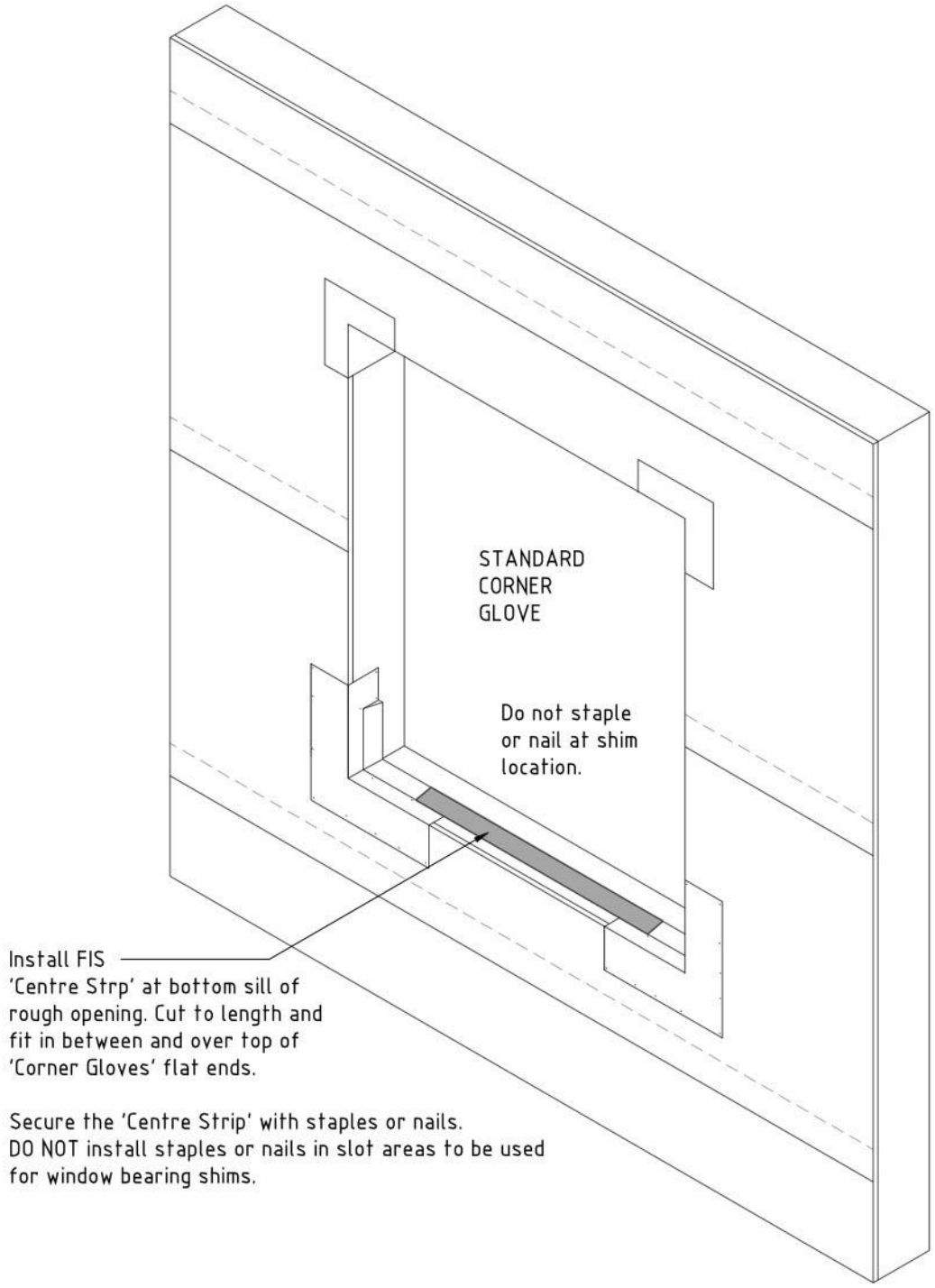
FIS Figure No. 7.3.1 – Method BW - Weather Resistive Barrier Applied to Wall.
Weather Resistive Barrier installed ‘before’ installation of fenestration.



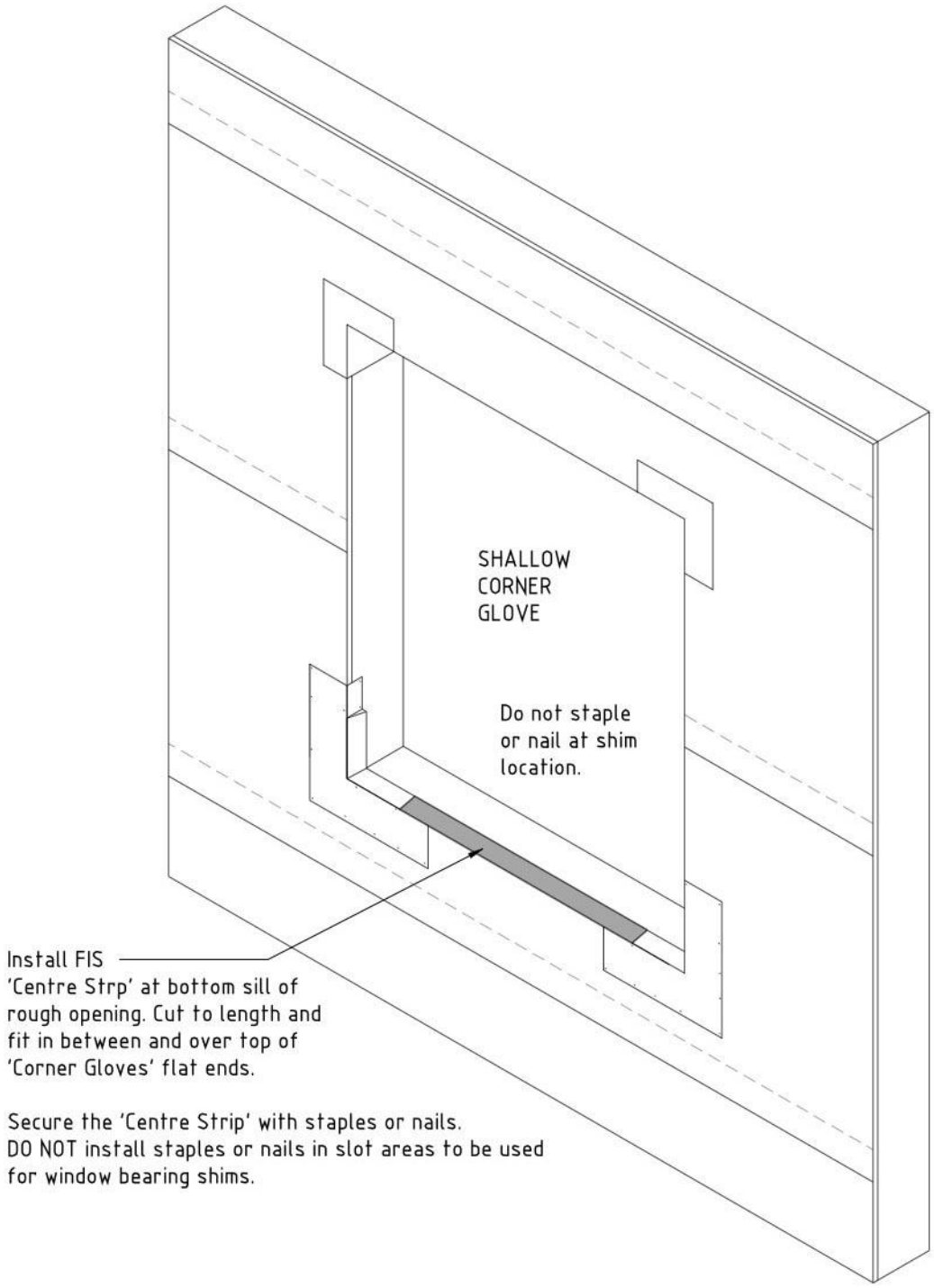
FIS Figure No. 7.3.2 – Method BW - Standard ‘’Corner Glove’ for windows with jamb extensions. Weather Resistive Barrier installed ‘before’ installation of fenestration.



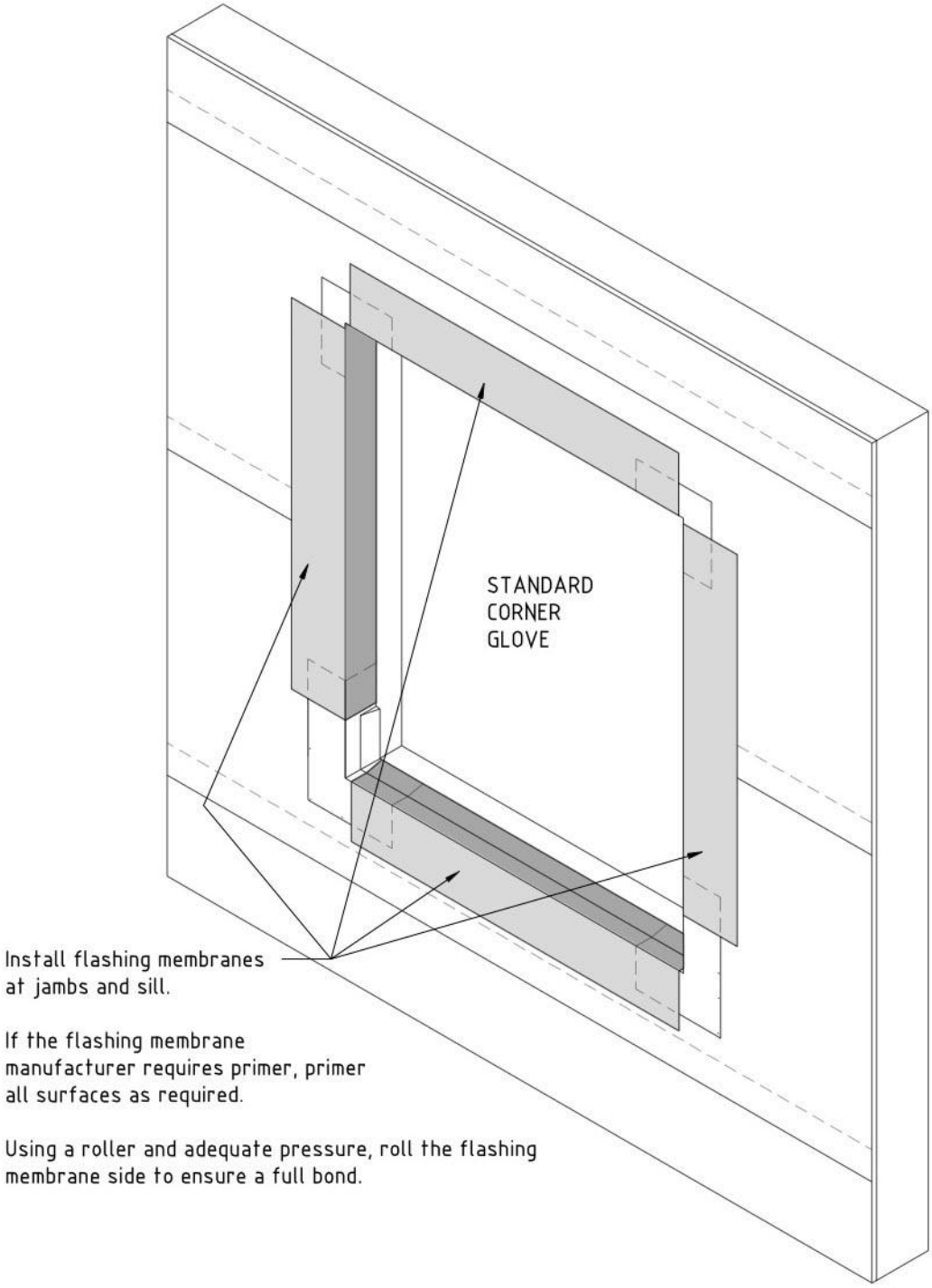
FIS Figure No. 7.3.3 – Method BW - Shallow 'Corner Glove' for windows without jamb extension. Weather Resistive Barrier installed 'before' installation of fenestration.



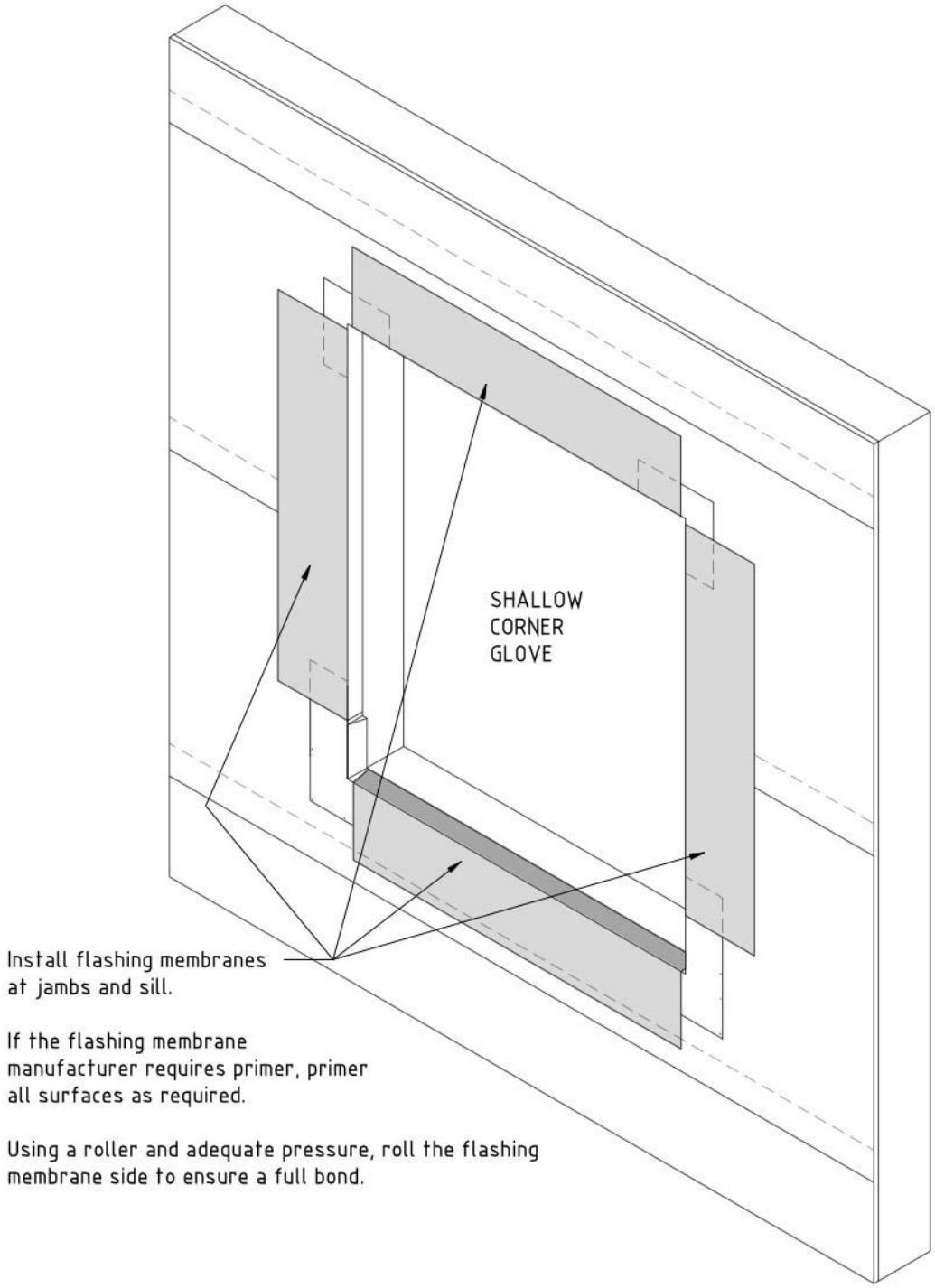
FIS Figure No. 7.3.4 – Method BW – 'Center Strip' installed between standard 'Corner Gloves' Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.3.5 – Method BW – 'Center Strip' installed between shallow 'Corner Gloves' Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.3.6 - Method BW - Sta Head/Jamb/Sill flashing membrane at standard ‘Corner Gloves’. Weather Resistive Barrier installed ‘before’ installation of fenestration.

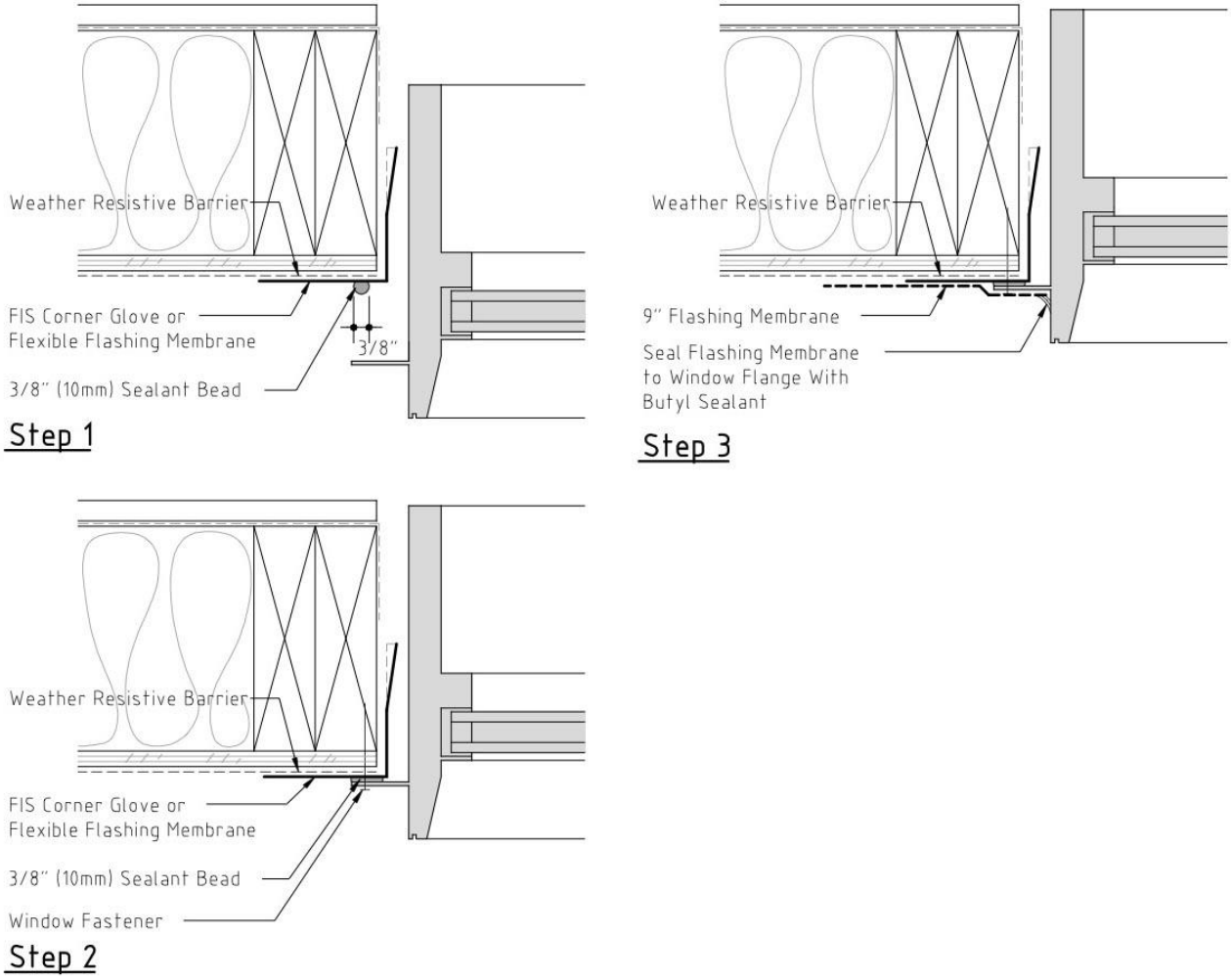


FIS Figure No. 7.3.7 – Head/Jamb/Sill flashing membrane at shallow ‘Corner Gloves’.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

Warranty Note: For Method BW, the steps to this point conclude the requirements to comply with the FIS product installation warranty. The remaining steps for Method BW identified herein, indicate the FIS recommended steps for this fenestration installation method to comply with ASTM E2112-19C.

Warranty Note: If the full installation of the fenestration does not complete with ASTM E2112-19C the FIS Warranty is void.

FIS is compatible with most available sealants. The architect, engineer or installer shall specify or select an appropriate sealant based on ASTM E2112-19C Table A4.1 or CSA A440, to suite the building's adjacent components and follow the sealant manufacturer's written instructions for sealant selection, primers, and installation.



FIS Figure No. 7.3.8 – Method BW- Fenestration Bedding Joint and sealing of Weather Resistive Barrier. Weather Resistive Barrier installed 'before' installation of fenestration.

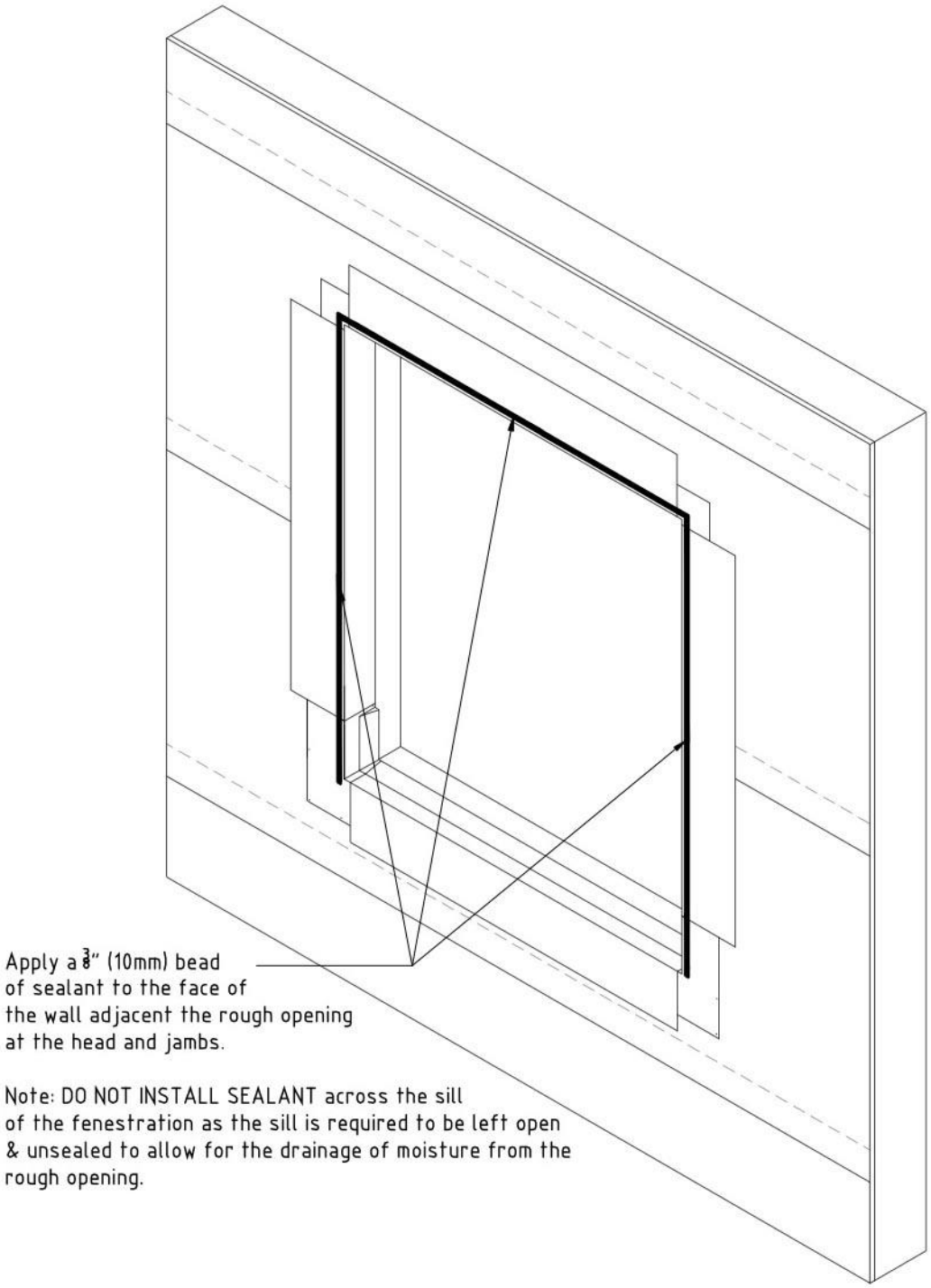
A 3/8" diameter sealant bedding joint shall be applied to the face of the flashing membrane at the head and jambs as seen in Step 1 of FIS Figure No. 7.3.8.

DO NOT APPLY SEALANT across the sill of the fenestration's rough opening, as the sill must be left unsealed to allow for moisture drainage from the rough opening at that location.

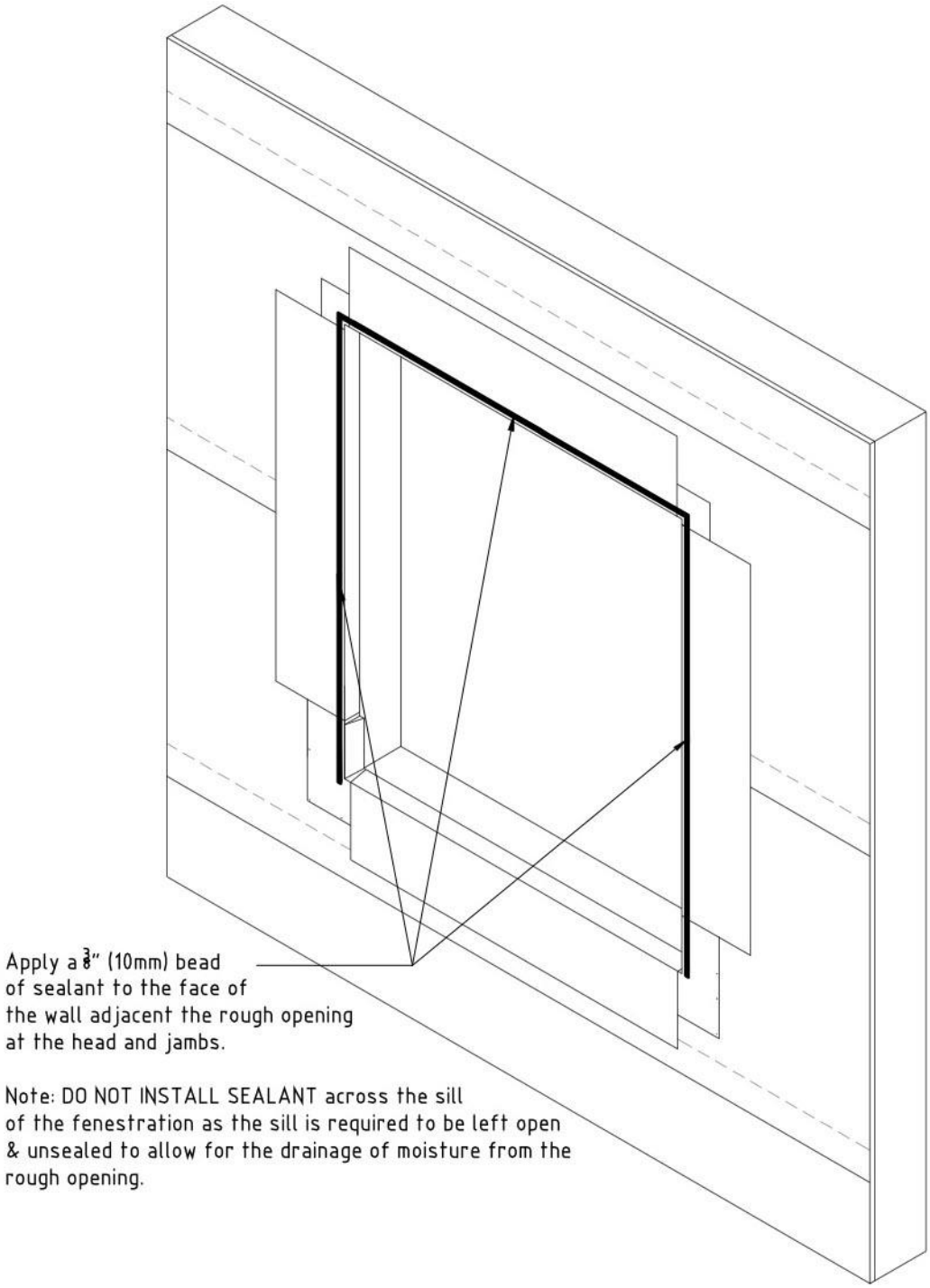
In Step 2, the fenestration unit is installed squishing the sealant bead to become the fenestration sealant bedding joint.

Step 3 requires the installation of a 9" wide flexible flashing membrane to be installed on the face of the wall at the jambs and head, lapping onto the fenestration's flange and sealing the flexible flashing membrane to the fenestration unit with a corner bead of sealant.

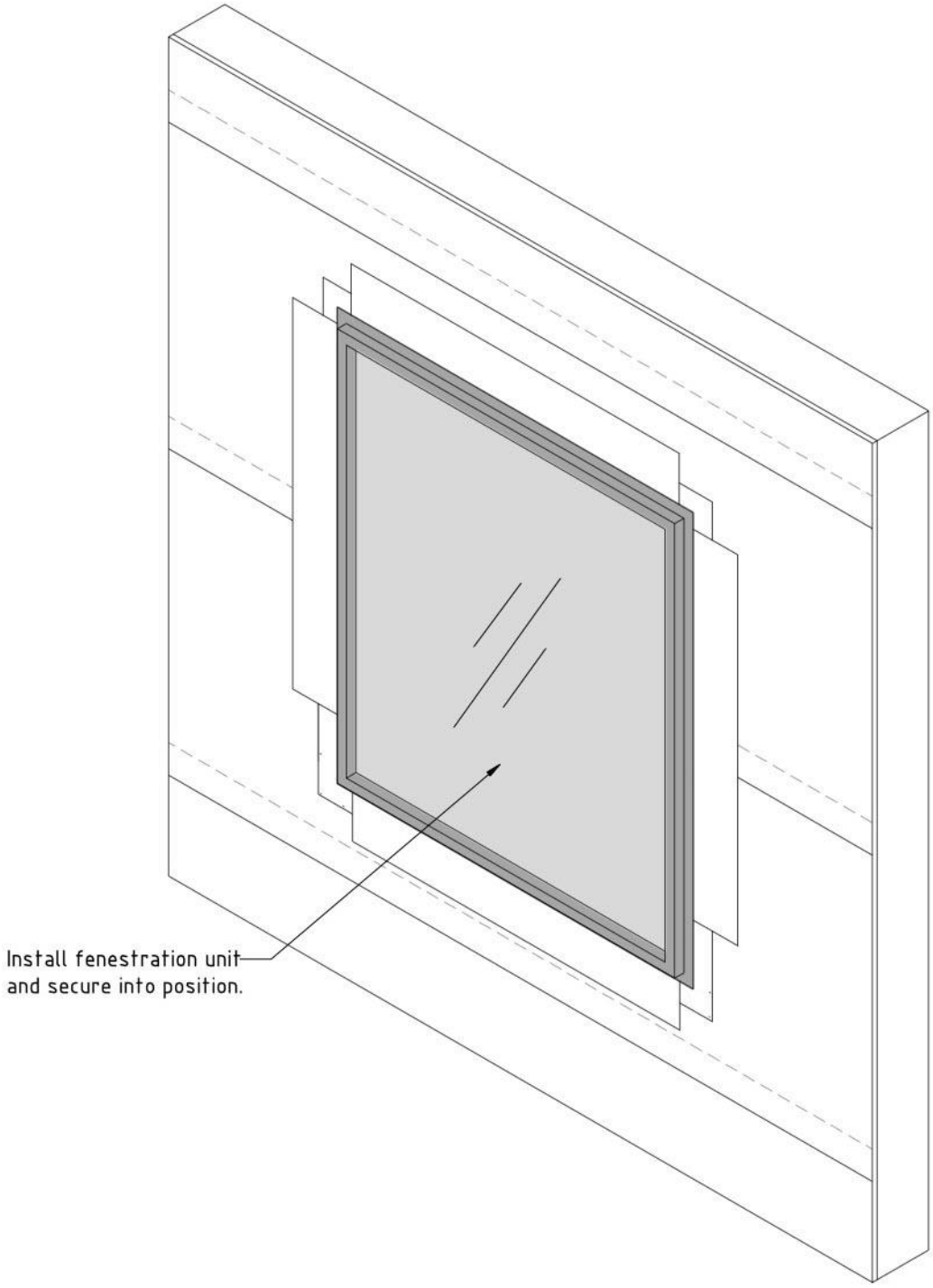
Note: If the fenestration unit does not have integral mounting flanges, the applied flanges will require more elaborate flashing and sealing details to ensure weather protection of the installed unit. When using applied flanges, follow the manufacturers' instructions for sealing the flange to the frame.



FIS Figure No. 7.3.9 – Method BW - Standard 'Corner Glove' Fenestration Bedding Joint.
Weather Resistive Barrier installed 'before' installation of fenestration.



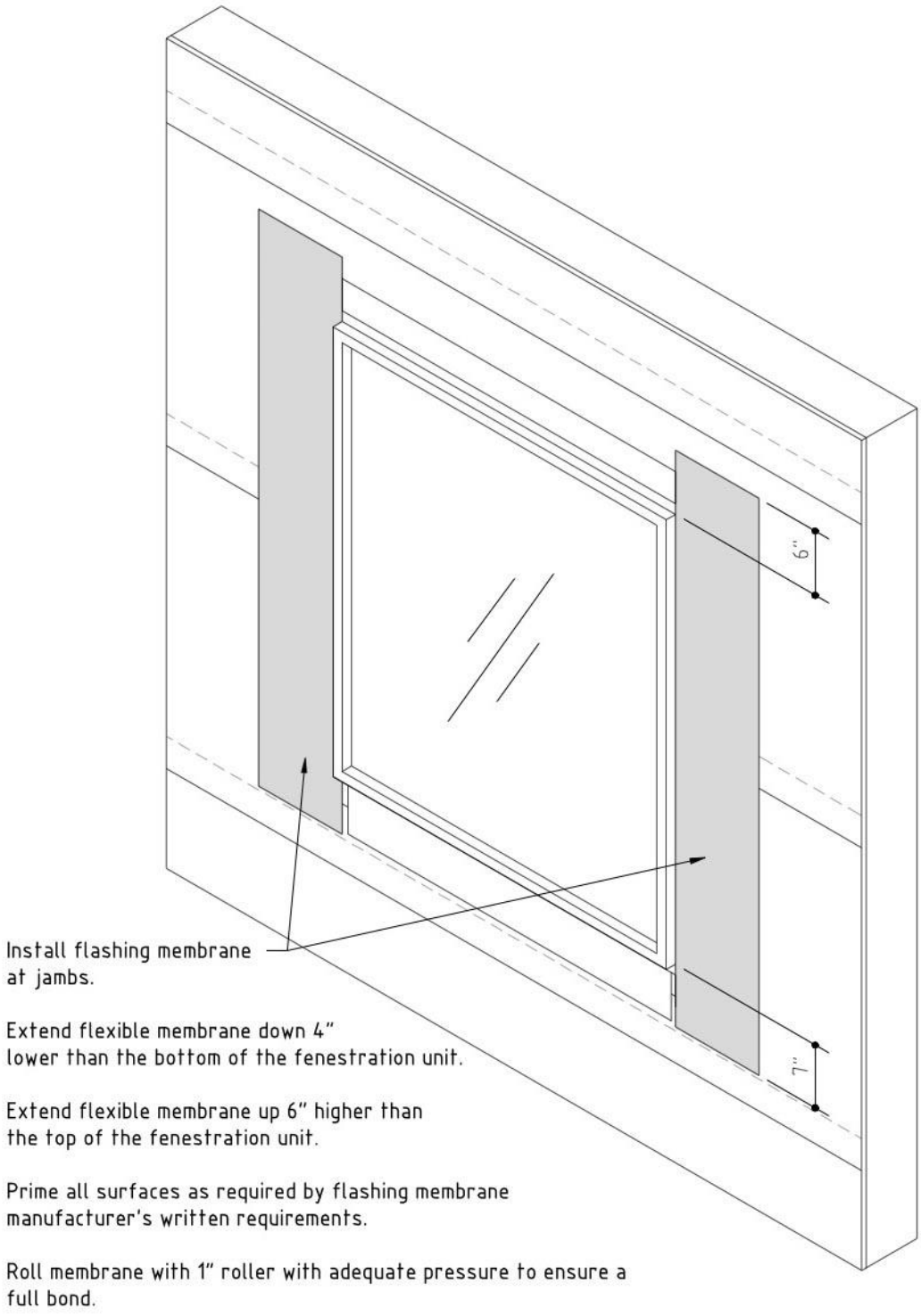
FIS Figure No. 7.3.10 – Method BW - Shallow ‘Corner Glove’ Fenestration Bedding Joint.
Weather Resistive Barrier installed ‘before’ installation of fenestration.



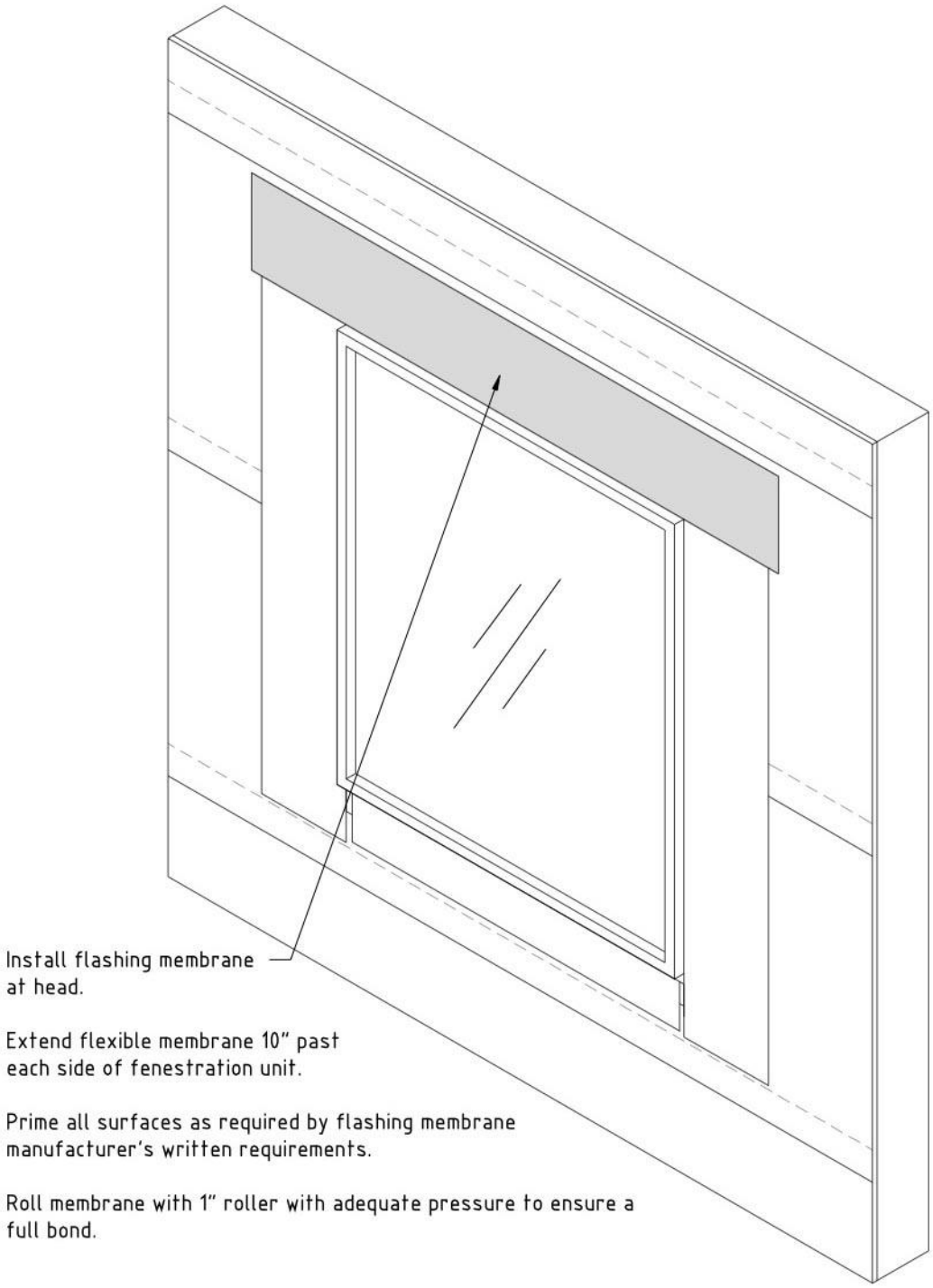
FIS Figure No. 7.3.11 – Method BW - Window Installation.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

With the fenestration installed, the interior side of the fenestration’s perimeter cavity is required to be sealed with low expansion spray foam insulation. The spray foam insulation will seal the fenestration to the WRB on all sides of the fenestration unit. Refer to Section 9.0

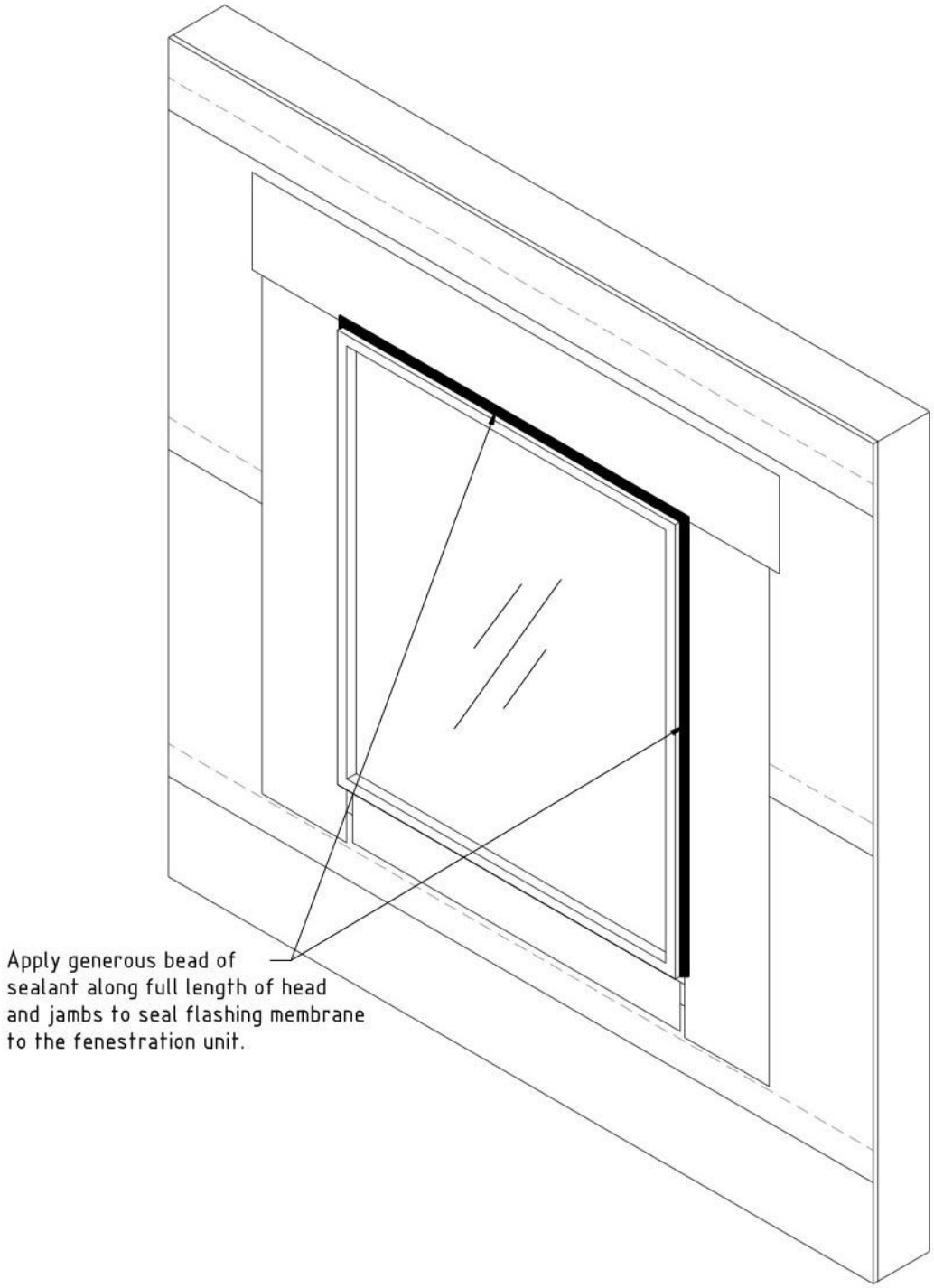
Continue with remaining flashing membrane and WRB installation steps as identified in this section.



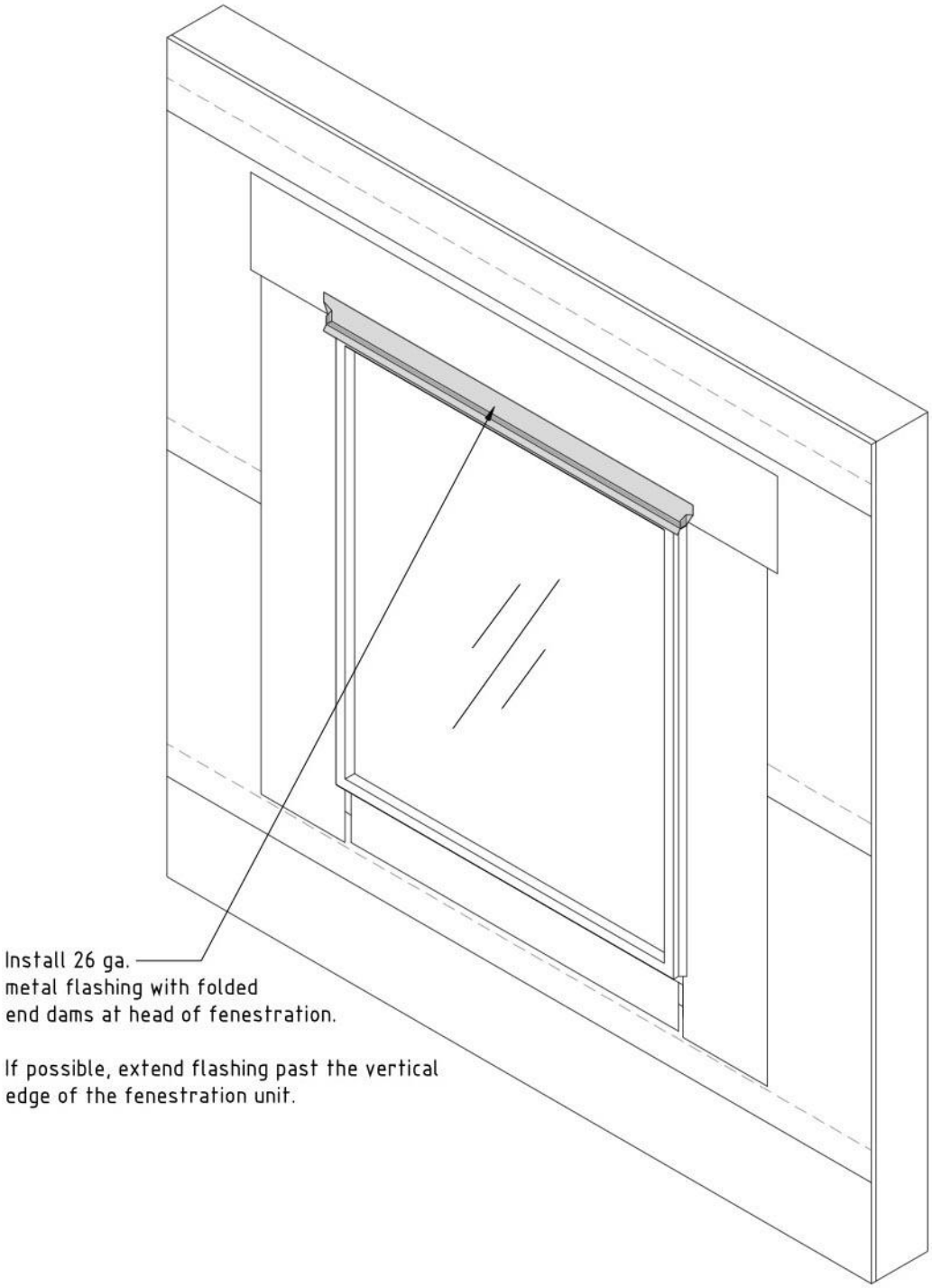
FIS Figure No. 7.3.12 – Method BW - Jamb flange flashing membrane installation.
Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.3.13 – Method BW - Head flange flashing membrane installation.
Weather Resistive Barrier installed 'before' installation of fenestration.

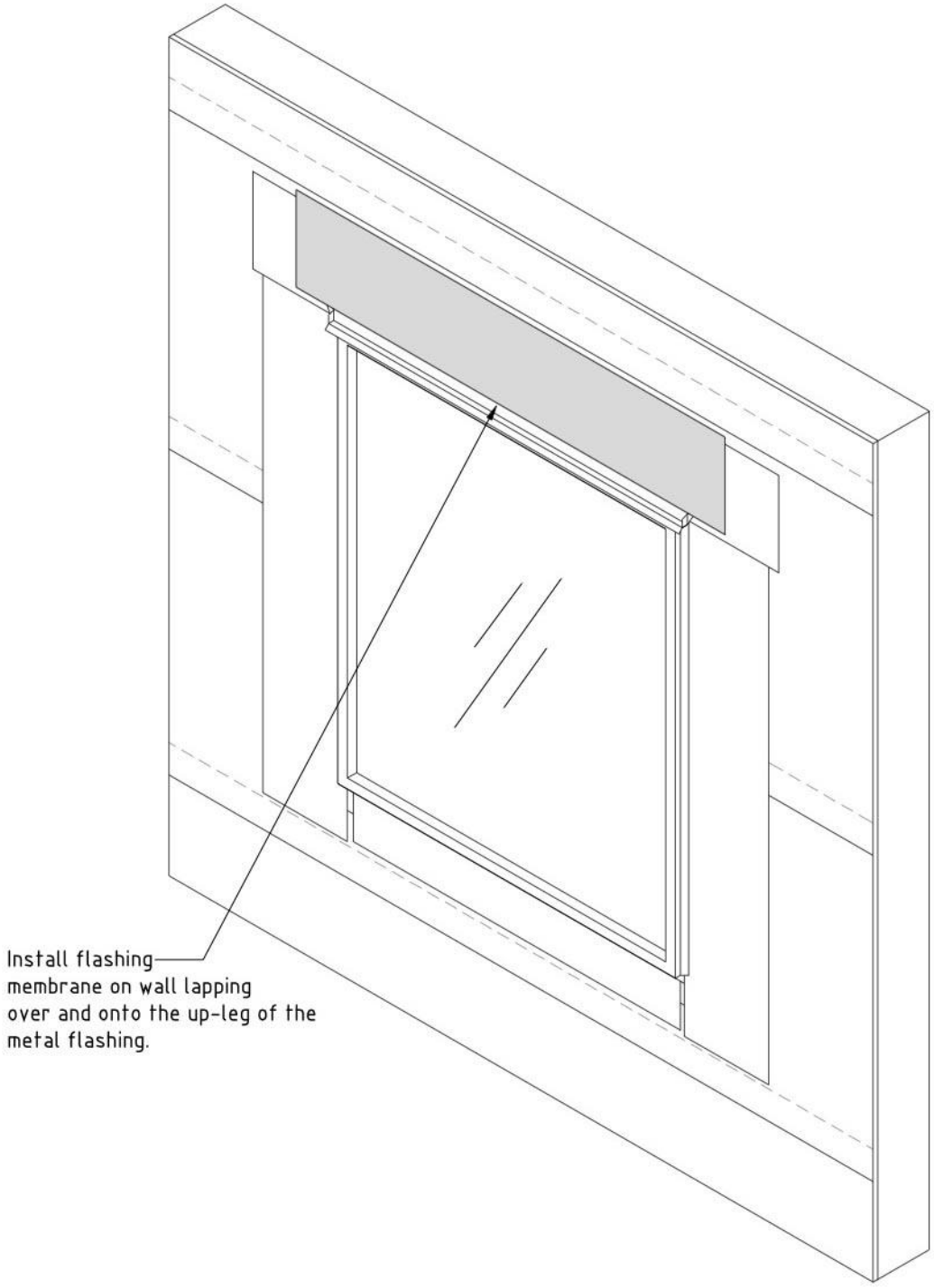


FIS Figure No. 7.3.14 – Method BW - Window Sealed to Weather Resistive Barrier.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

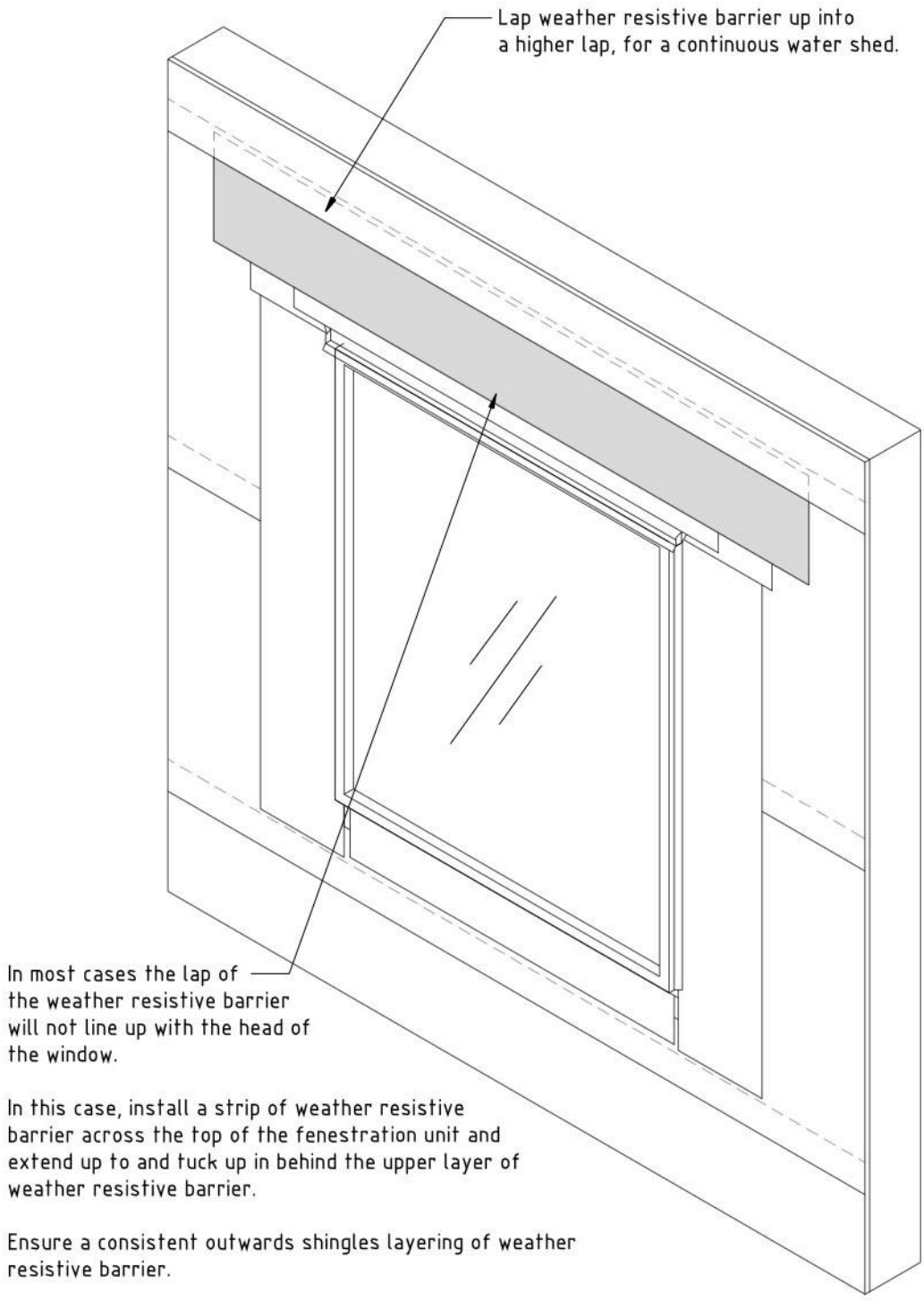


FIS Figure No. 7.3.15 –Method BW - Metal Head Flashing Options with Folded End Dams.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

Refer to Section 8.0 for FIS recommended flashing details.



FIS Figure No. 7.3.16 – Method BW - Complete the installation of weather resistive barrier.
Weather Resistive Barrier installed ‘before’ installation of fenestration.



FIS Figure No. 7.3.17 – Method BW - Complete the installation of weather resistive barrier. Weather Resistive Barrier installed ‘before’ installation of fenestration.

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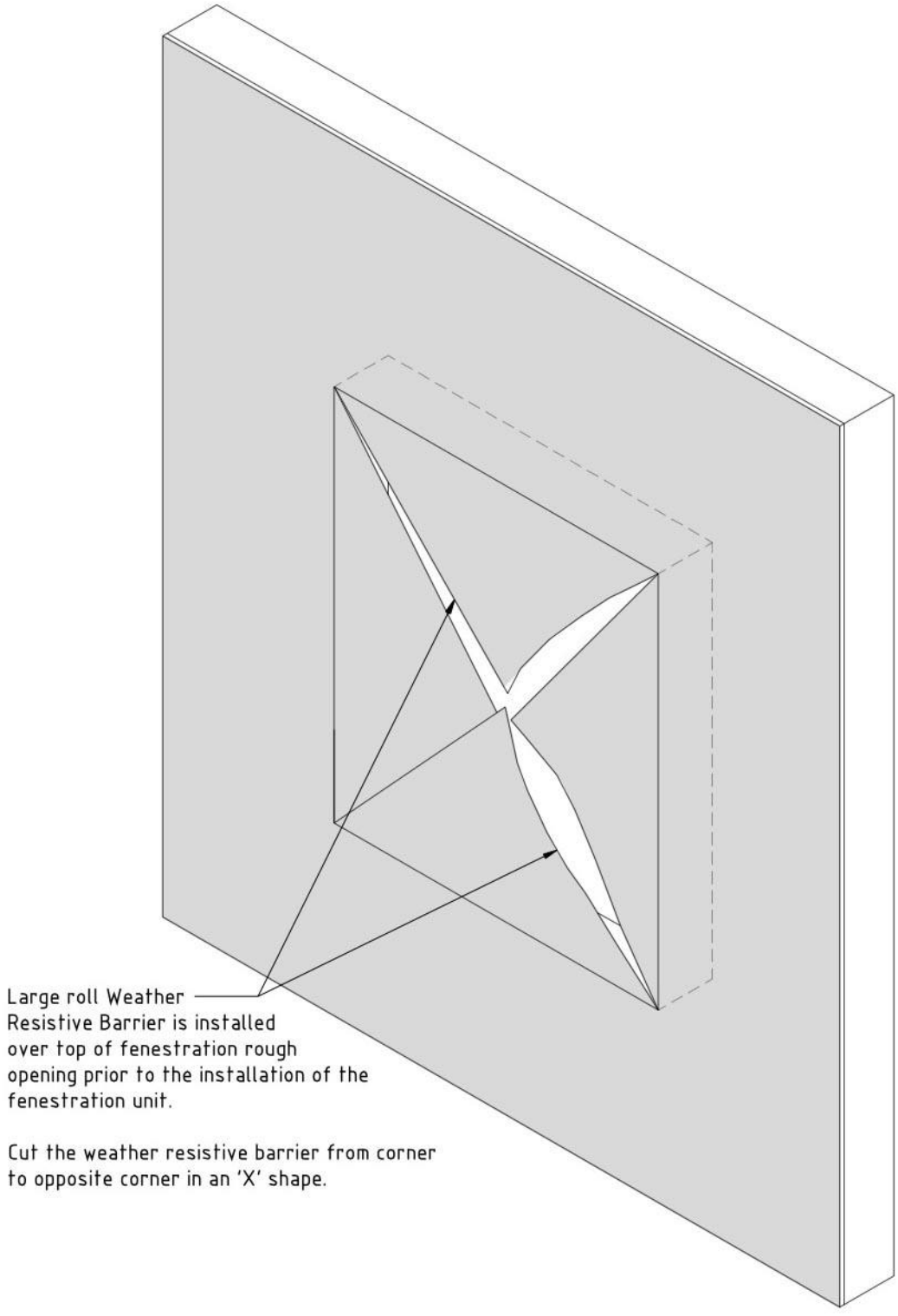
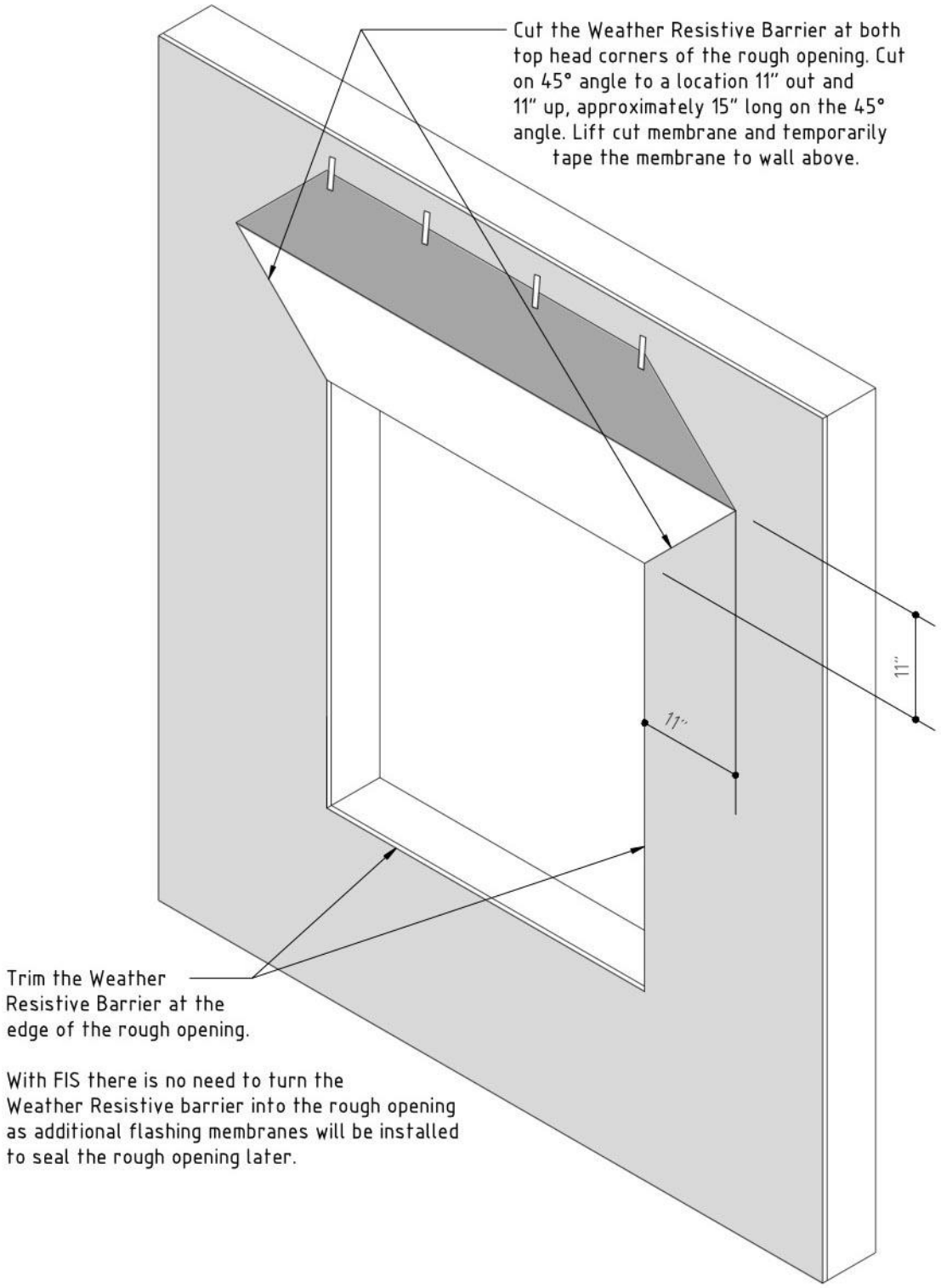
7.4 Requirements for FIS Installation Method C

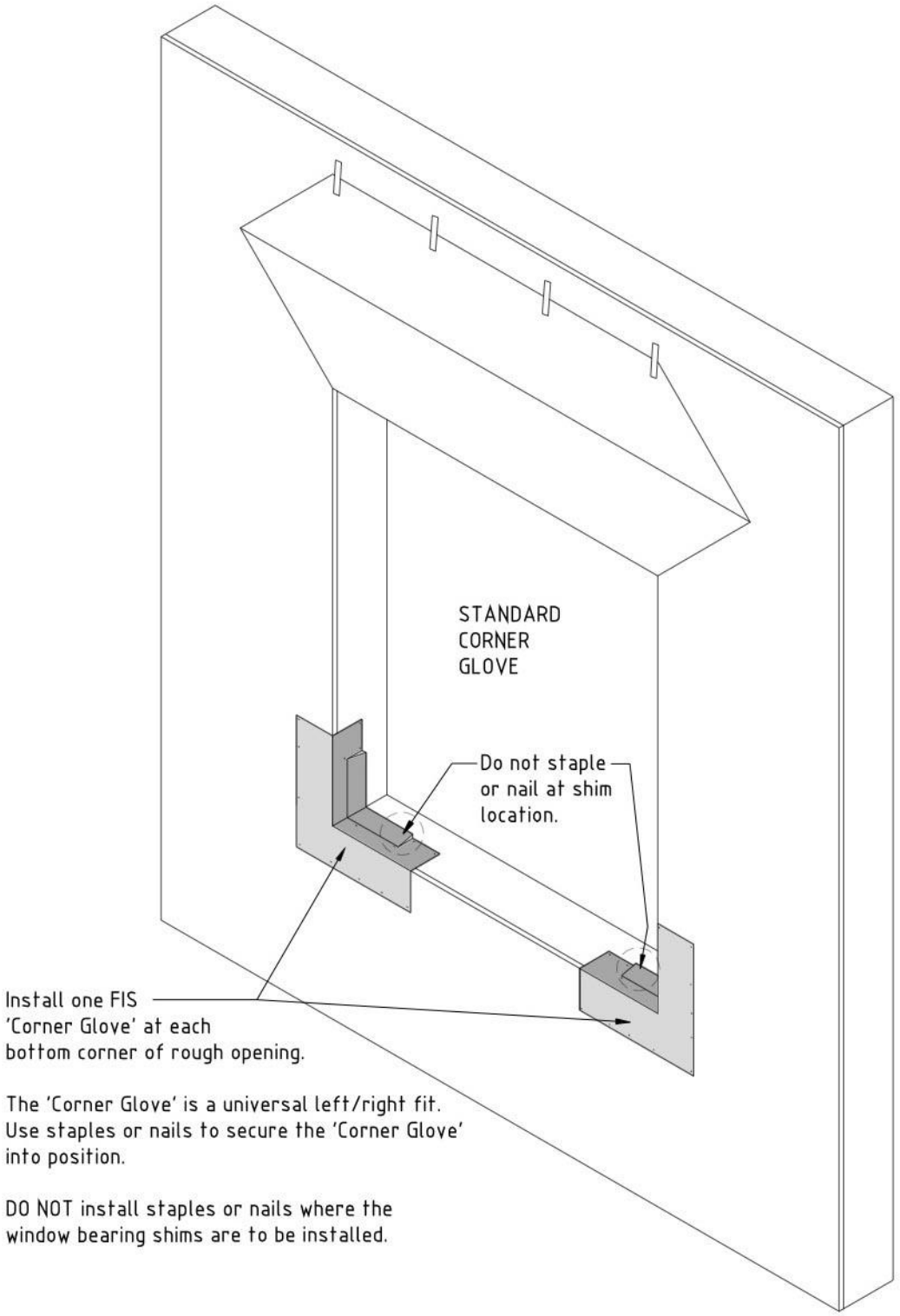
Polymeric-type WRB approx. 9 ft. wide roll WRB installed ‘before’ installation of fenestration.
Flashing Applied Over the Face of the Mounting Flange.
ASTM E2112-19C compliant.



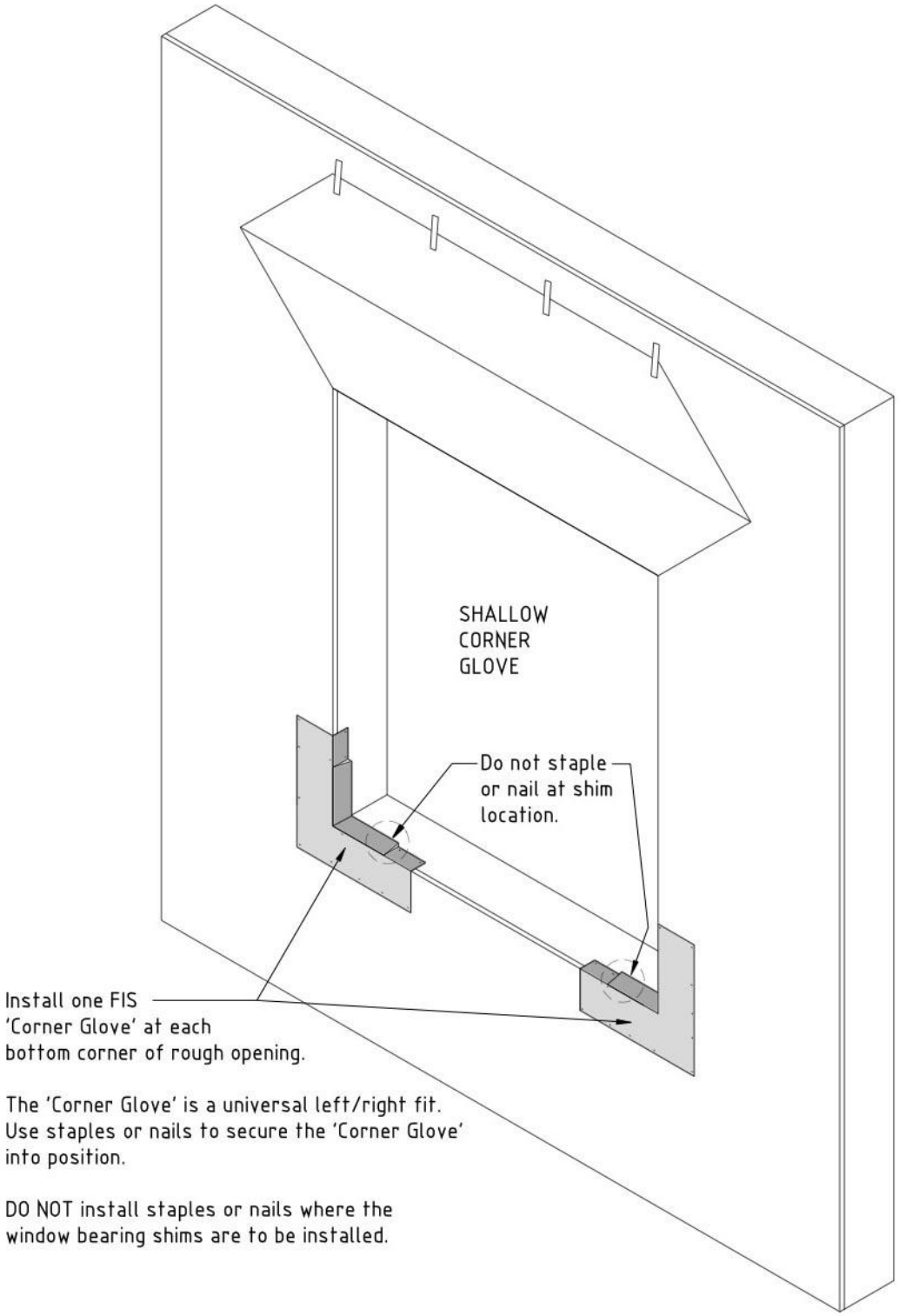
FIS Figure No. 7.4.1 – Method C – Weather Resistive Barrier Applied to Wall.
Weather Resistive Barrier installed ‘before’ installation of fenestration.



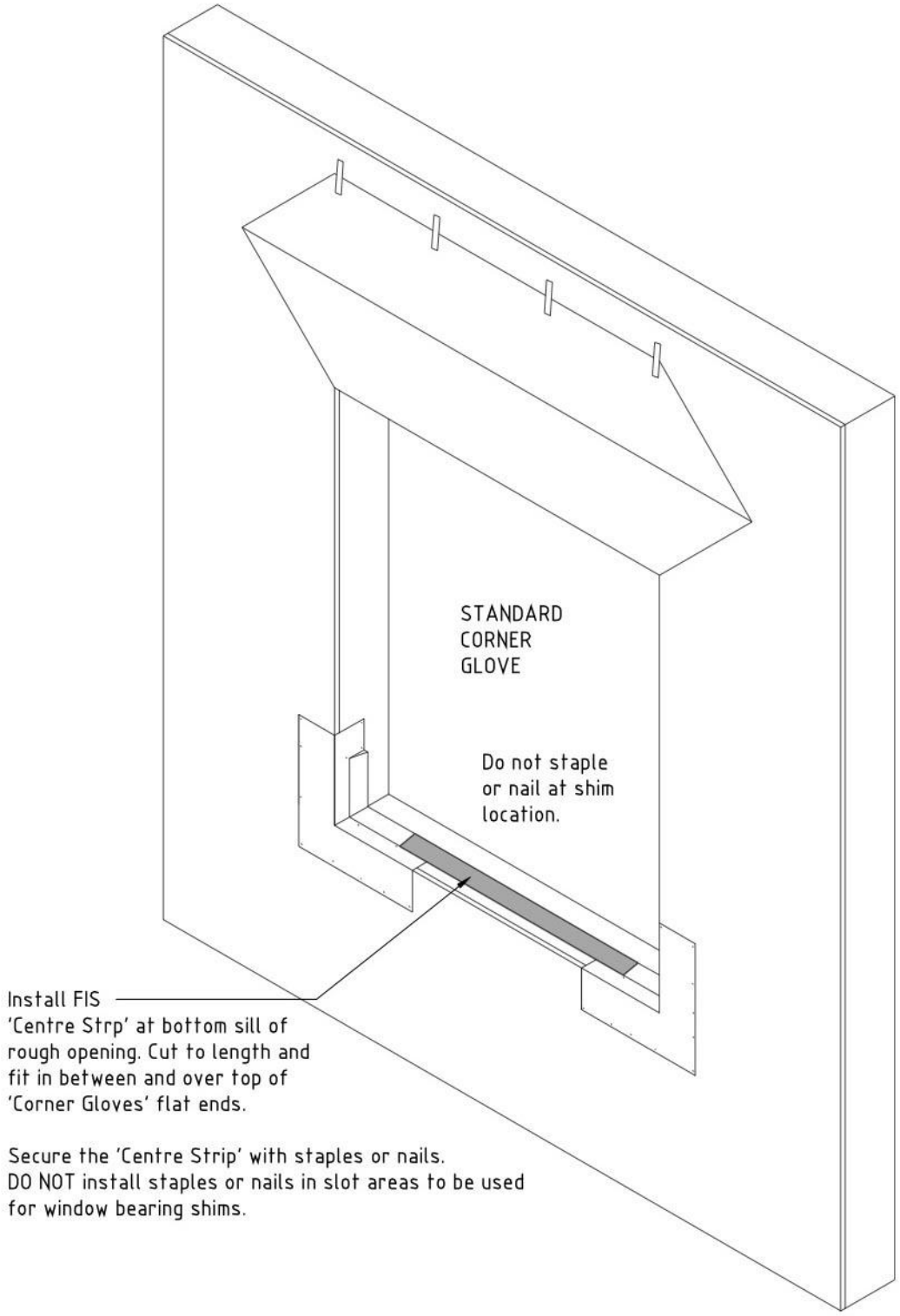
FIS Figure No. 7.4.2 – Method C – Weather Resistive Barrier cut for rough opening. Weather Resistive Barrier installed 'before' installation of fenestration.



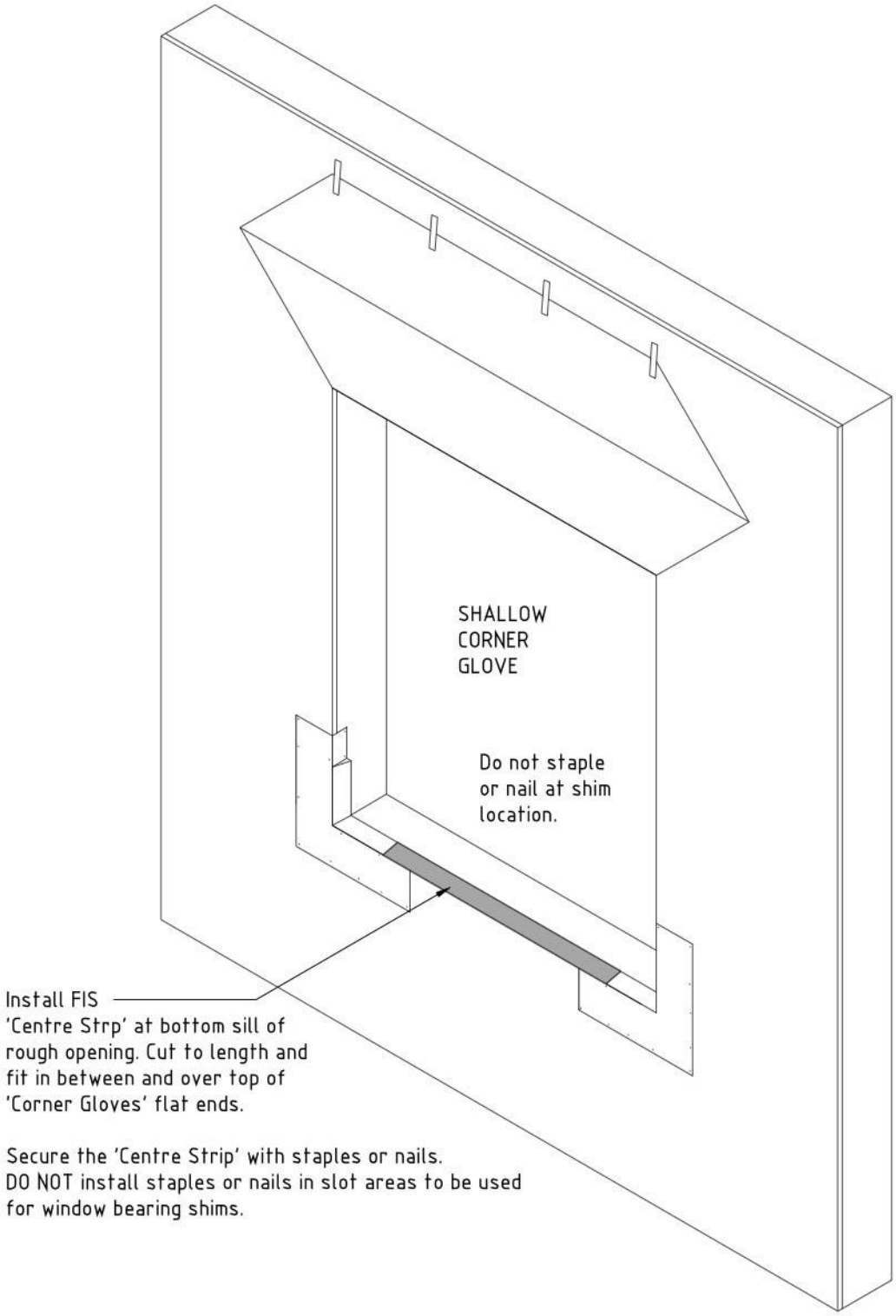
FIS Figure No. 7.4.3 – Method C - Standard ‘’Corner Glove’ for windows with jamb extensions. Weather Resistive Barrier installed ‘before’ installation of fenestration.



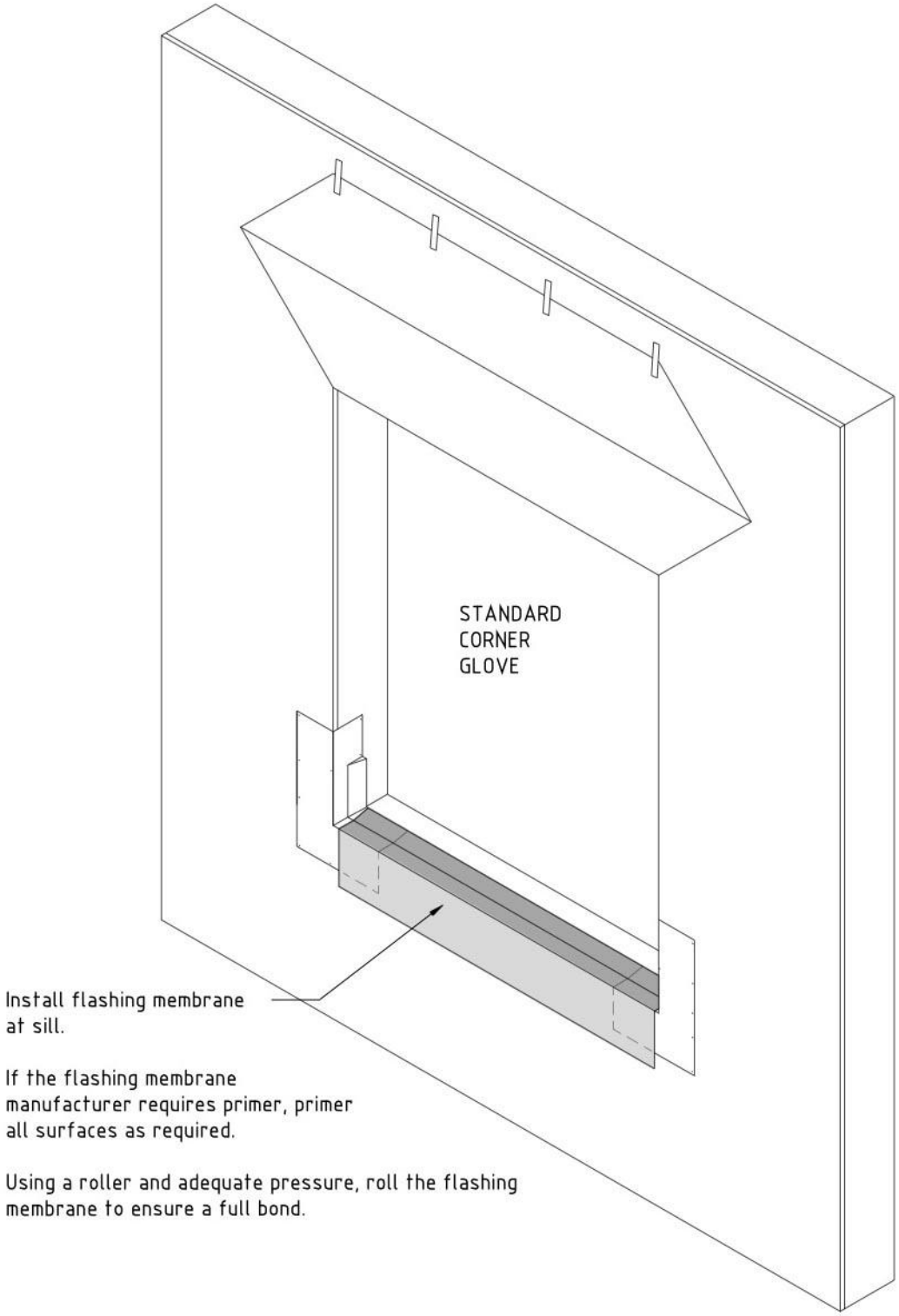
FIS Figure No. 7.4.4 – Method C - Shallow 'Corner Glove' for windows without jamb extensions. Weather Resistive Barrier installed 'before' installation of fenestration.



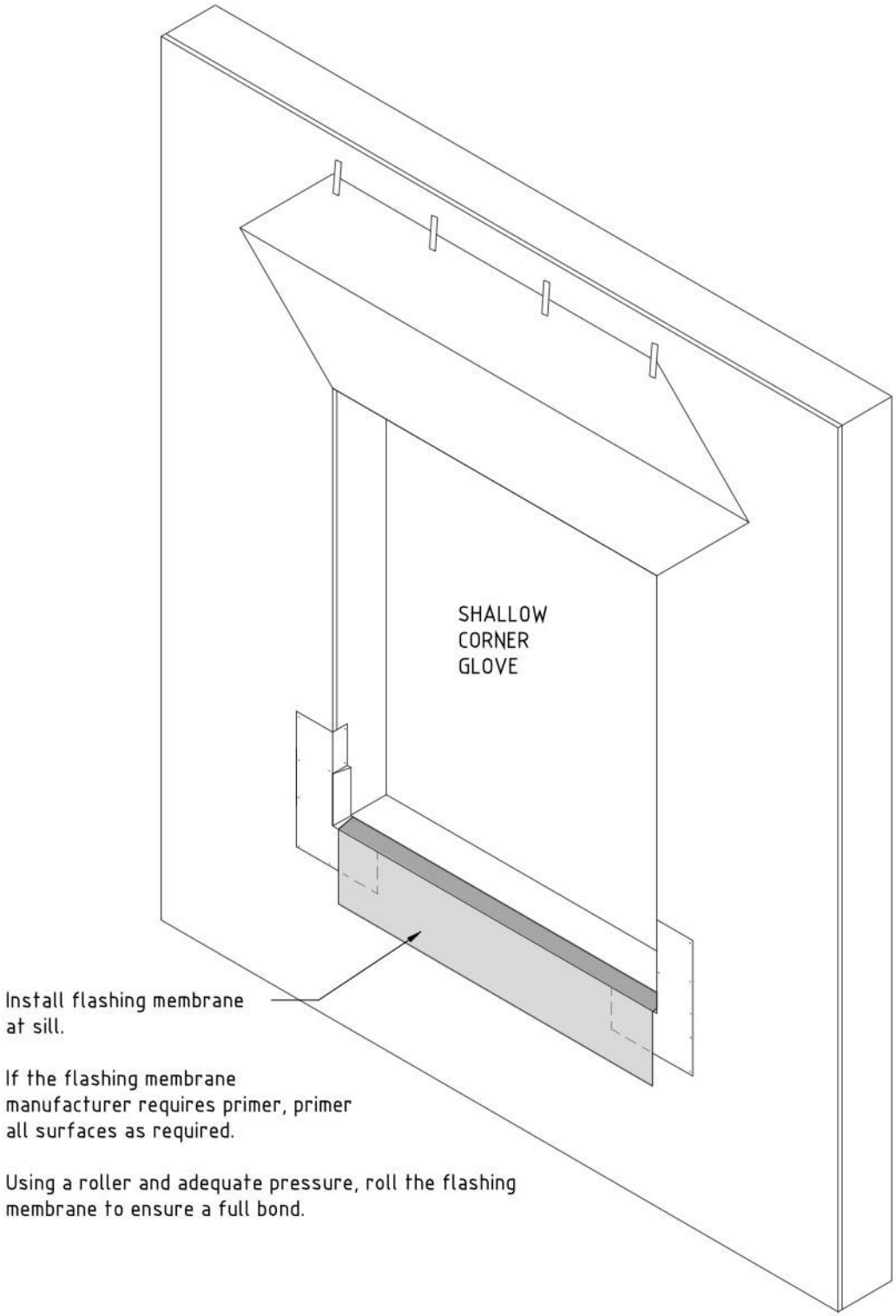
FIS Figure No. 7.4.5 – Method C - Center Strip' installed between standard 'Corner Gloves'
Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.4.6 – Method C - Center Strip' installed between shallow 'Corner Gloves'
Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.4.7 - Method C - Sill flashing membrane at standard ‘Corner Gloves’.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

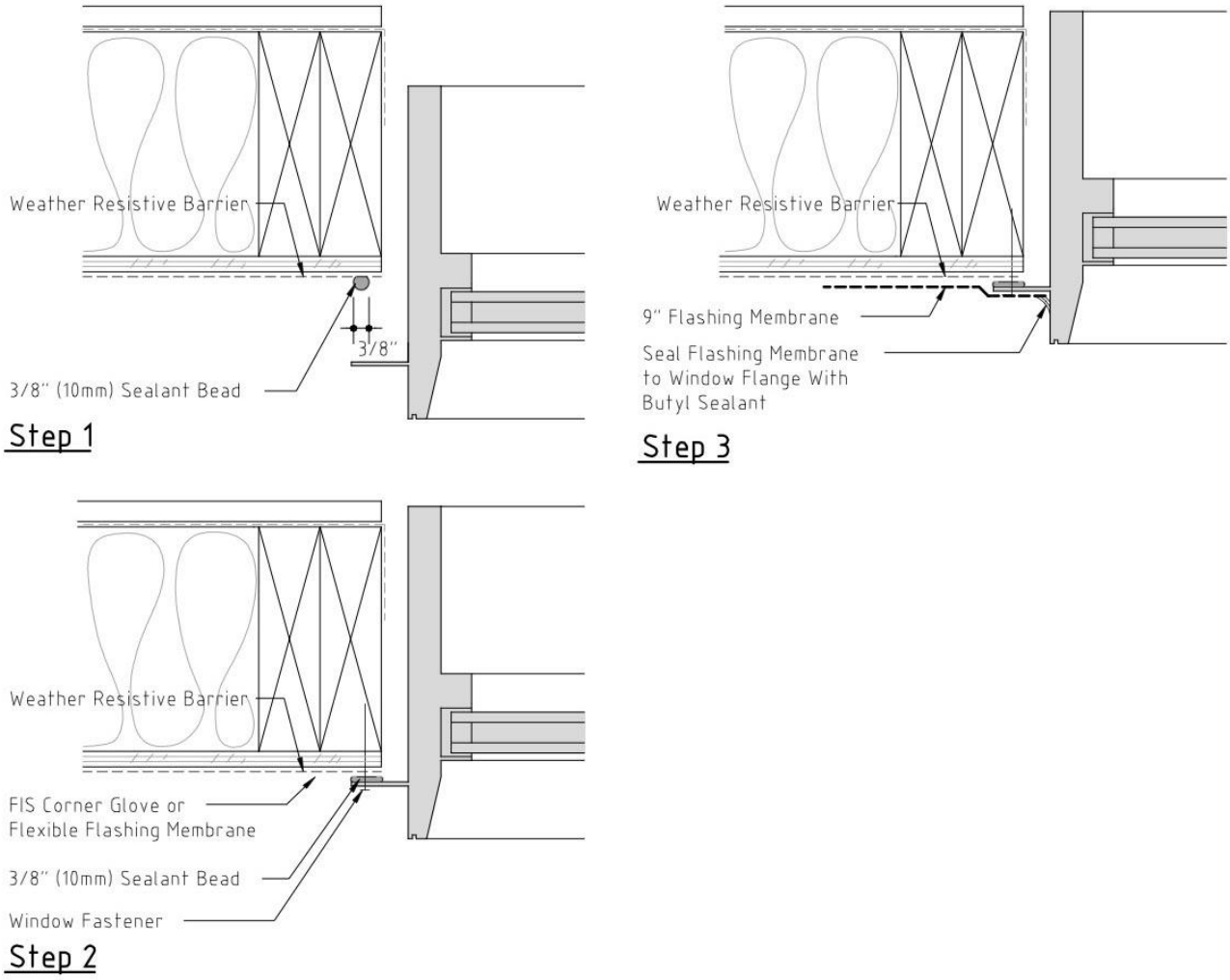


FIS Figure No. 7.4.8 – Method C - Sill flashing membrane at shallow ‘Corner Gloves’.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

Warranty Note: For Method C, the steps to this point conclude the requirements to comply with the FIS product installation warranty. The remaining steps for Method C identified herein, indicate the FIS recommended steps for this fenestration installation method to comply with ASTM E2112-19C.

Warranty Note: If the full installation of the fenestration does not complete with ASTM E2112-19C the FIS Warranty is void.

FIS is compatible with most available sealants. The architect, engineer or installer shall specify or select an appropriate sealant based on ASTM E2112-19C Table A4.1 or CSA A440, to suite the building's adjacent components and follow the sealant manufacturer's written instructions for sealant selection, primers, and installation.



FIS Figure No. 7.4.9 – Method C - Fenestration Bedding Joint and sealing of Weather Resistive Barrier. Weather Resistive Barrier installed 'before' installation of fenestration.

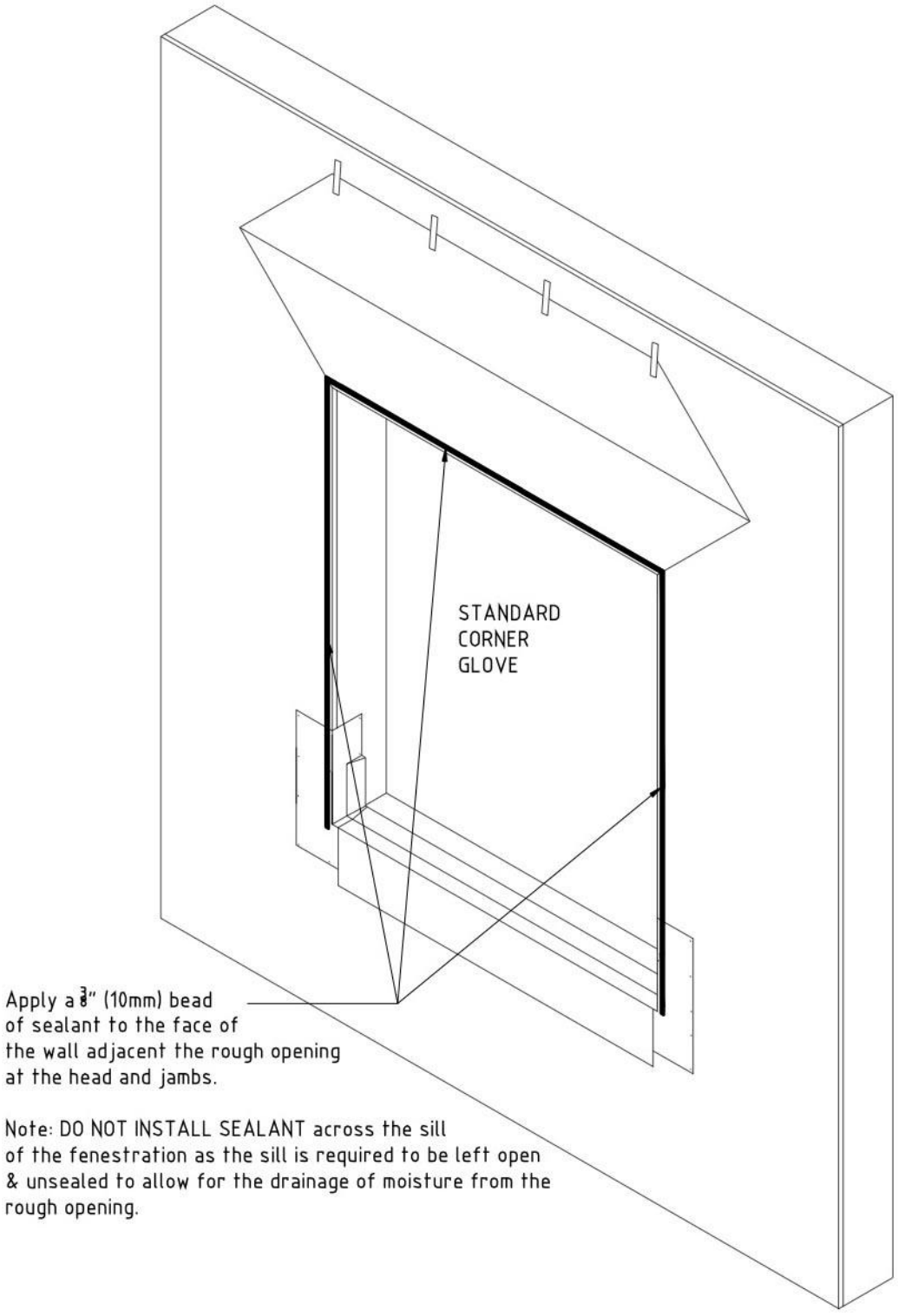
A 3/8" diameter sealant bedding joint shall be applied to the face of the weather resistive barrier at the head and jambs as seen in Step 1 of FIS Figure No. 7.4.9p.

DO NOT APPLY SEALANT across the sill of the fenestration's rough opening, as the sill must be left unsealed to allow for moisture drainage from the rough opening at that location.

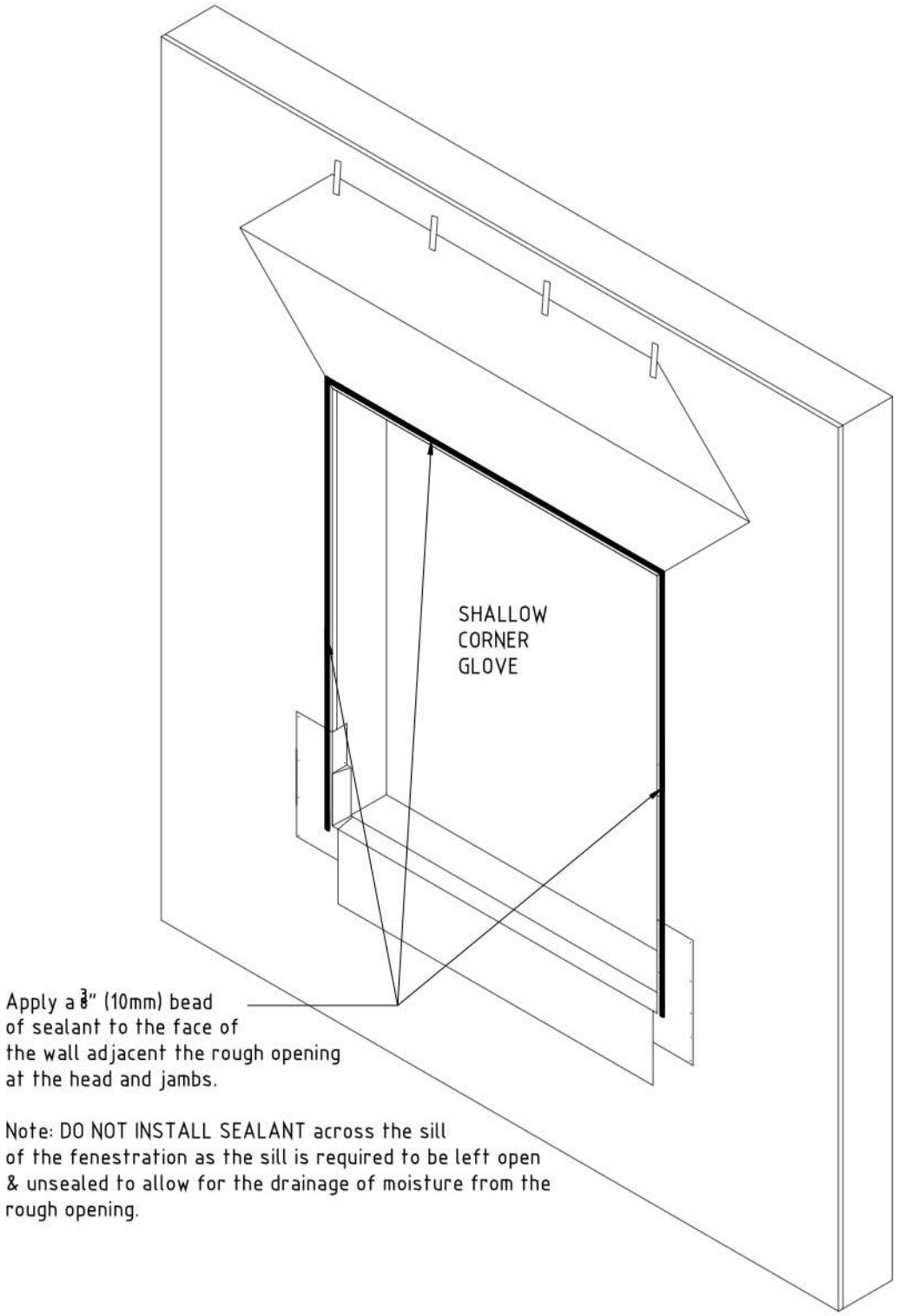
In Step 2, the fenestration unit is installed squishing the sealant bead to become the fenestration sealant bedding joint.

Step 3 requires the installation of a 9" wide flexible flashing membrane to be installed on the face of the wall at the jambs and head, lapping onto the fenestration's flange and sealing the flexible flashing membrane to the fenestration unit with a corner bead of sealant.

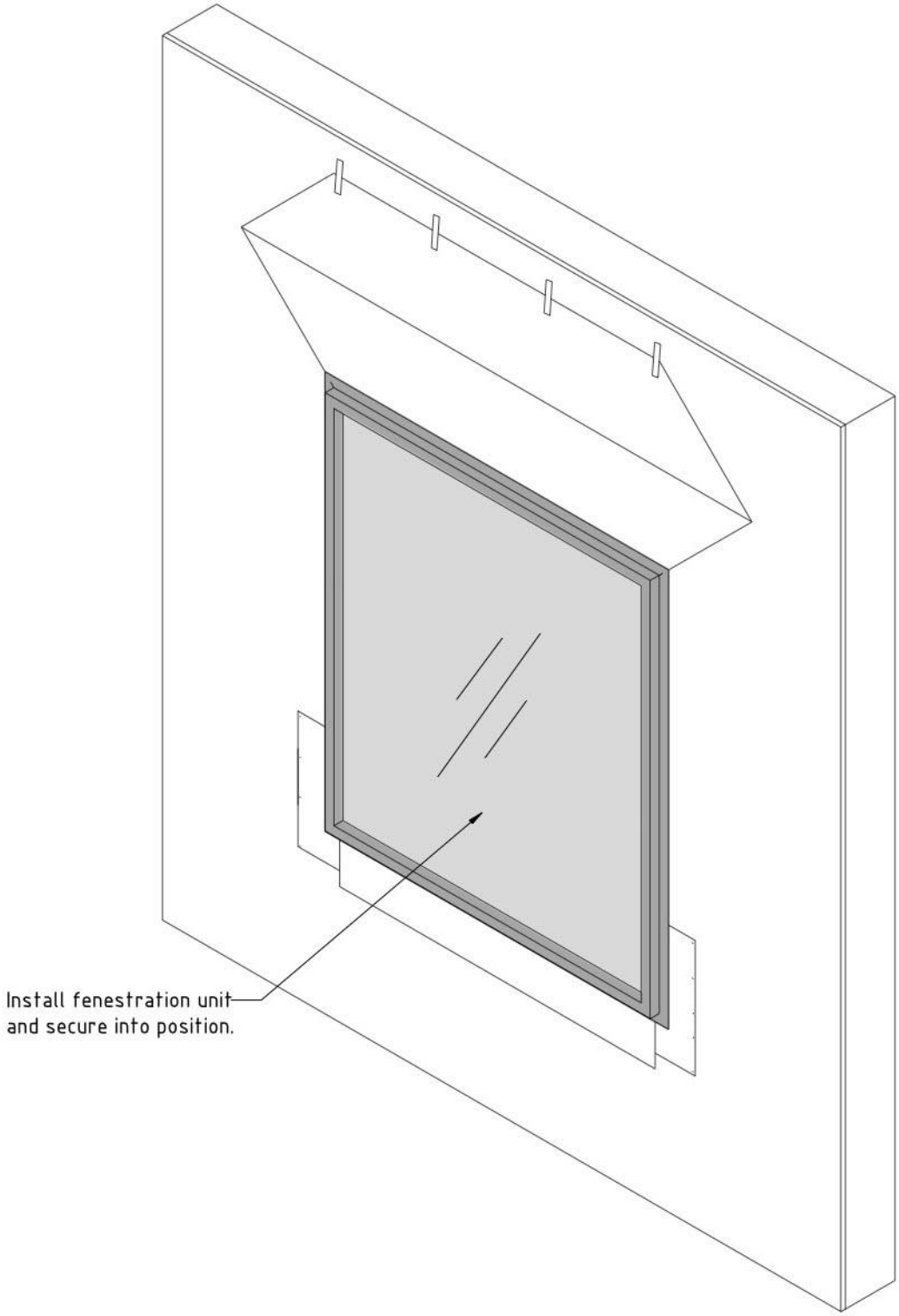
Note: If the fenestration unit does not have integral mounting flanges, the applied flanges will require more elaborate flashing and sealing details to ensure weather protection of the installed unit. When using applied flanges, follow the manufacturers' instructions for sealing the flange to the frame.



FIS Figure No. 7.4.10 – Method C - Standard 'Corner Glove' Fenestration Bedding Joint.
Weather Resistive Barrier installed 'before' installation of fenestration.



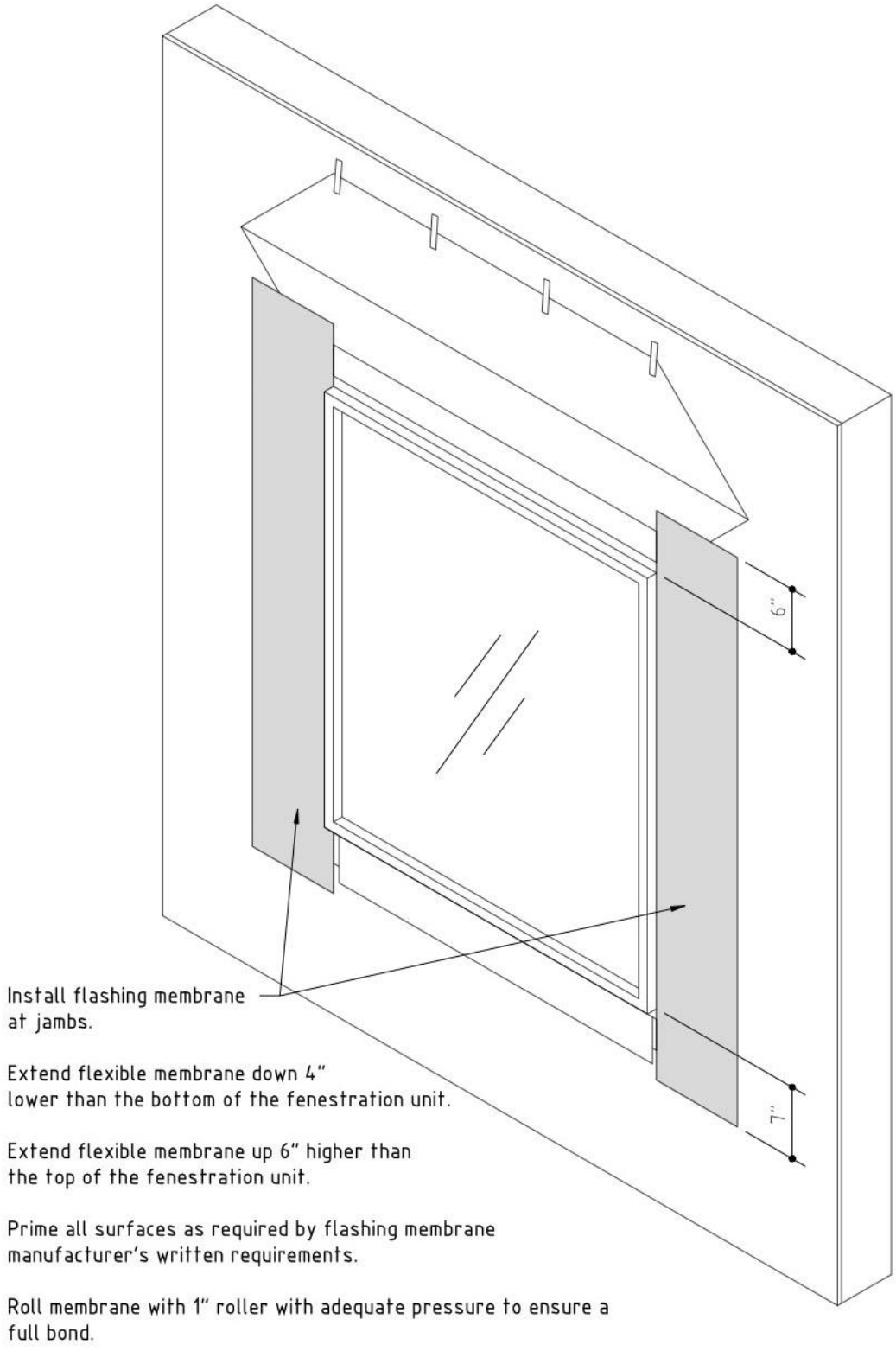
FIS Figure No. 7.4.11 – Method C - Shallow ‘Corner Glove’ Fenestration Bedding Joint.
Weather Resistive Barrier installed ‘before’ installation of fenestration.



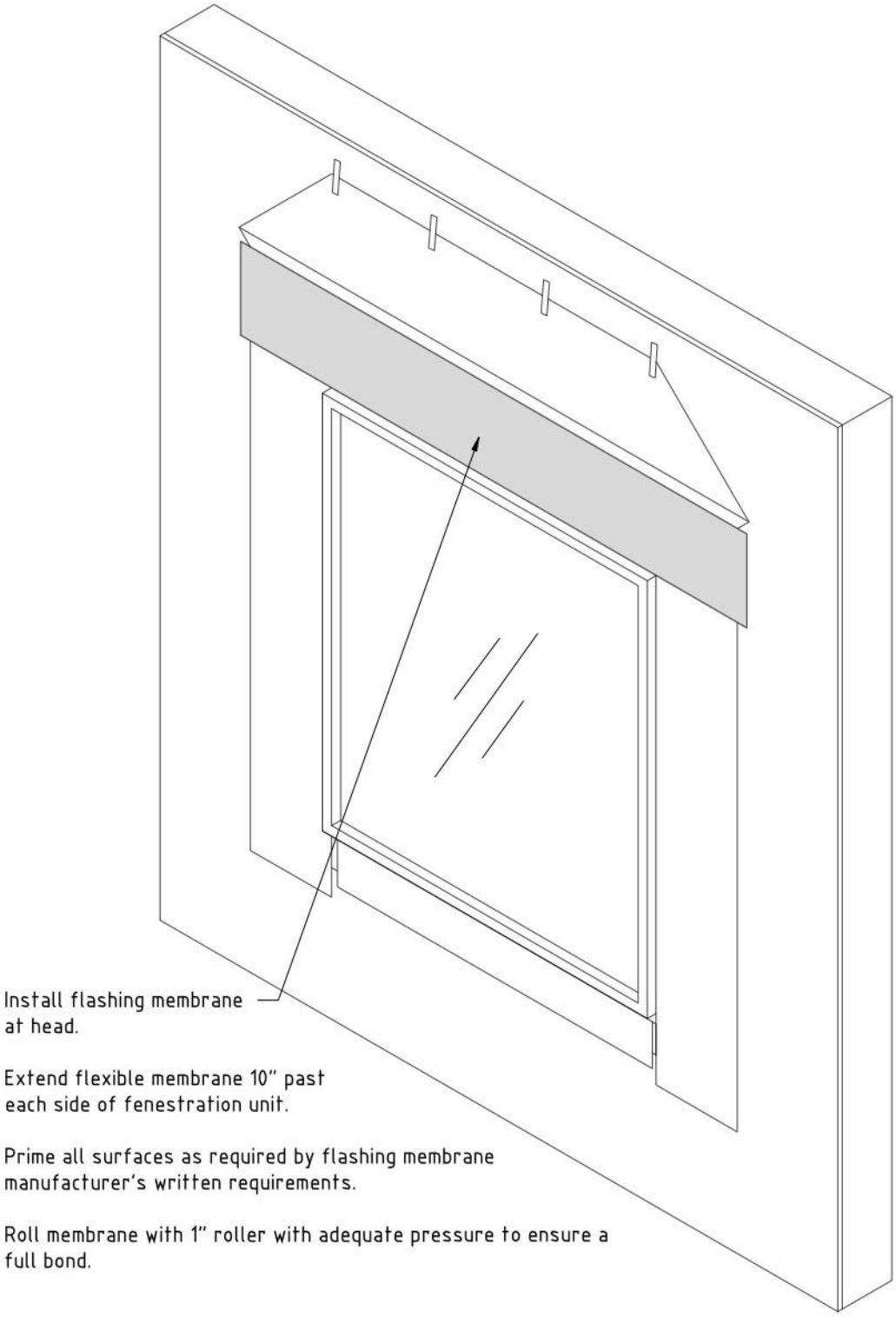
FIS Figure No. 7.4.12 – Method C - Window Installation.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

With the fenestration installed, If desired or required, the interior side of the fenestration’s perimeter cavity should be sealed with low expansion spray foam insulation. The spray foam insulation will seal the fenestration to the to the framing, vapour barrier, and provide thermal separation on all sides of the fenestration unit.
Refer to Section 9.0 for similar foam requirements and recommended installation.

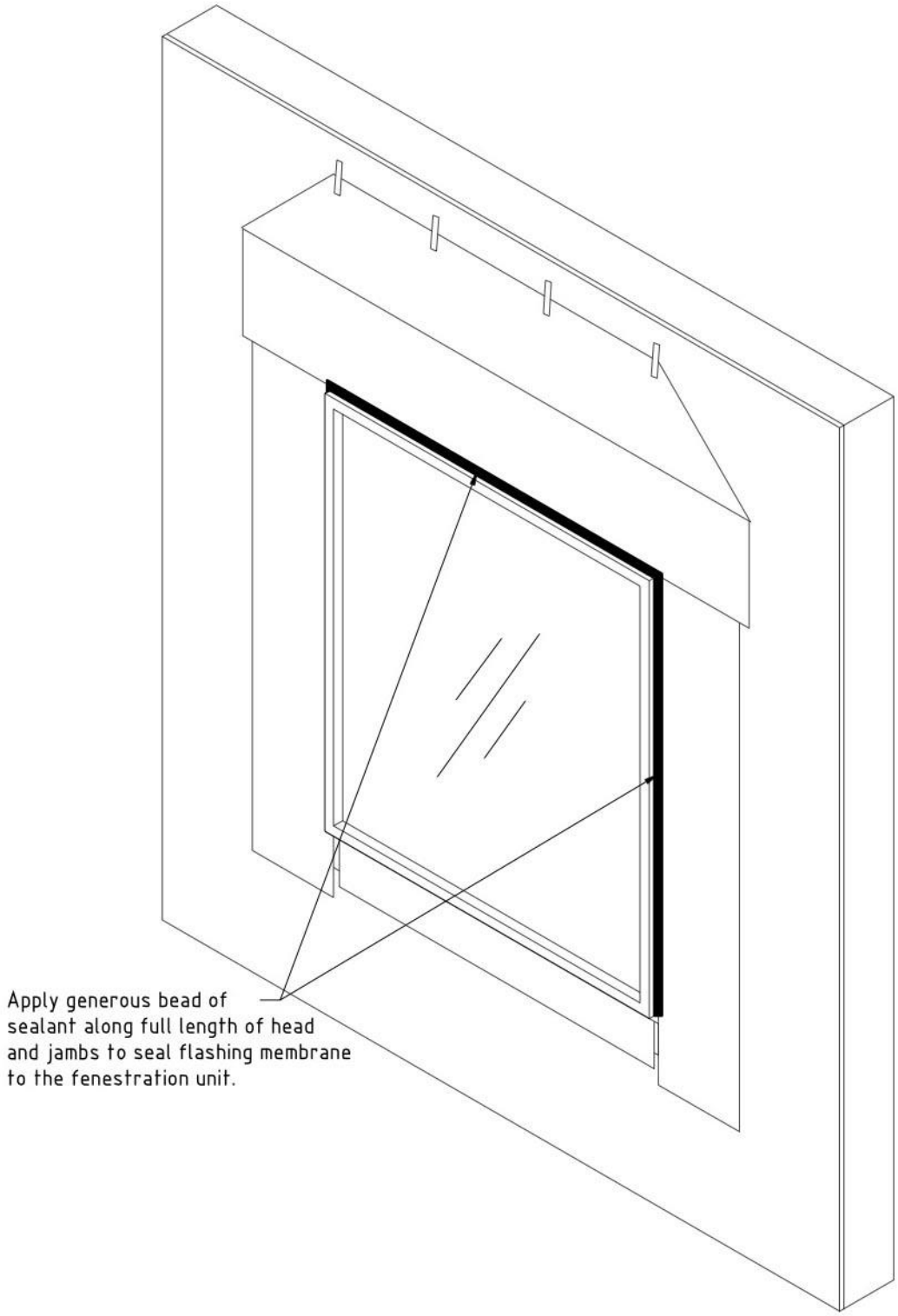
Continue with remaining flashing membrane and WRB installation steps as identified in this section.



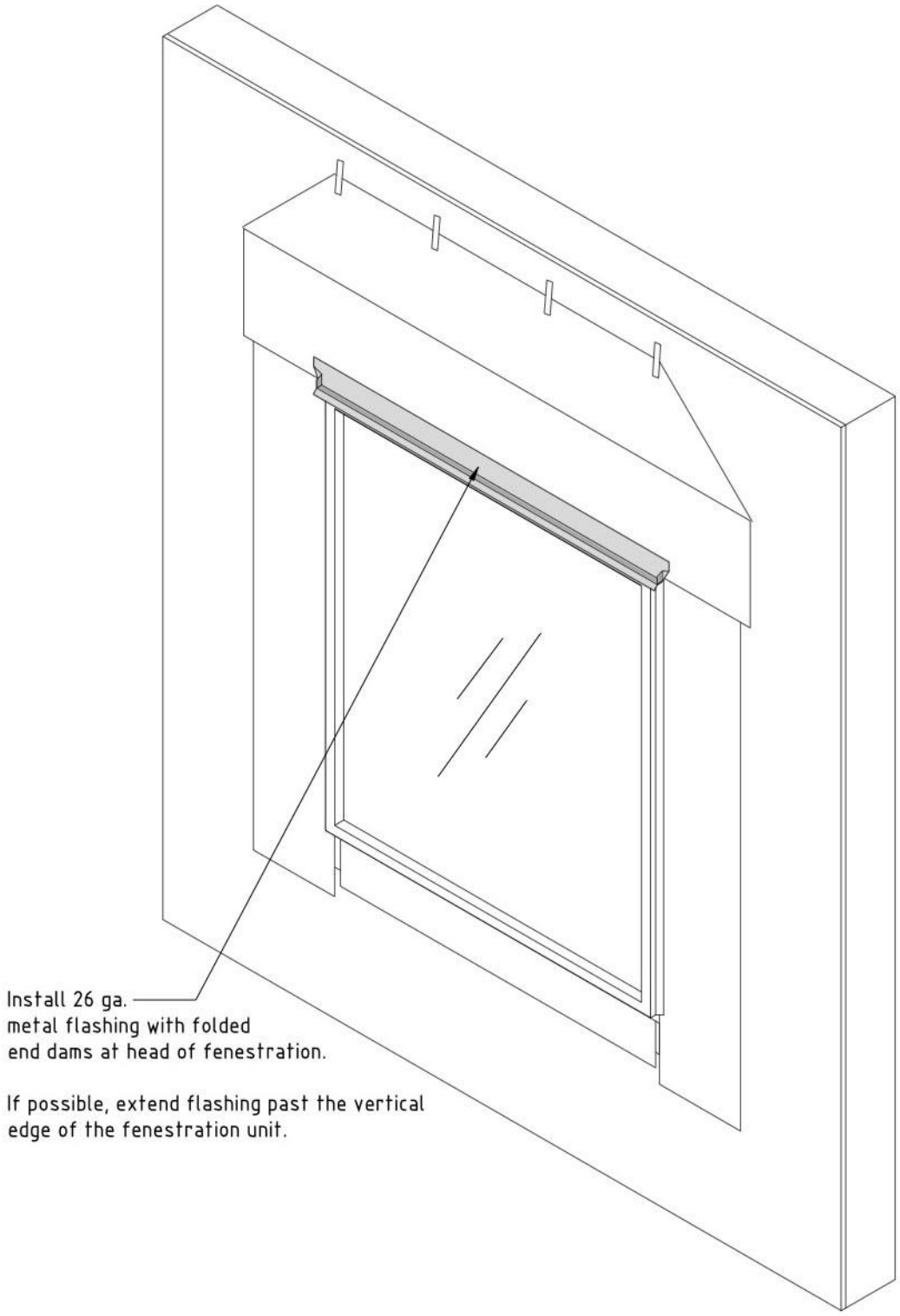
FIS Figure No. 7.4.13 – Method C - Jamb flange flashing membrane installation.
Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.4.14 – Method C - Head flange flashing membrane installation.
Weather Resistive Barrier installed 'before' installation of fenestration.

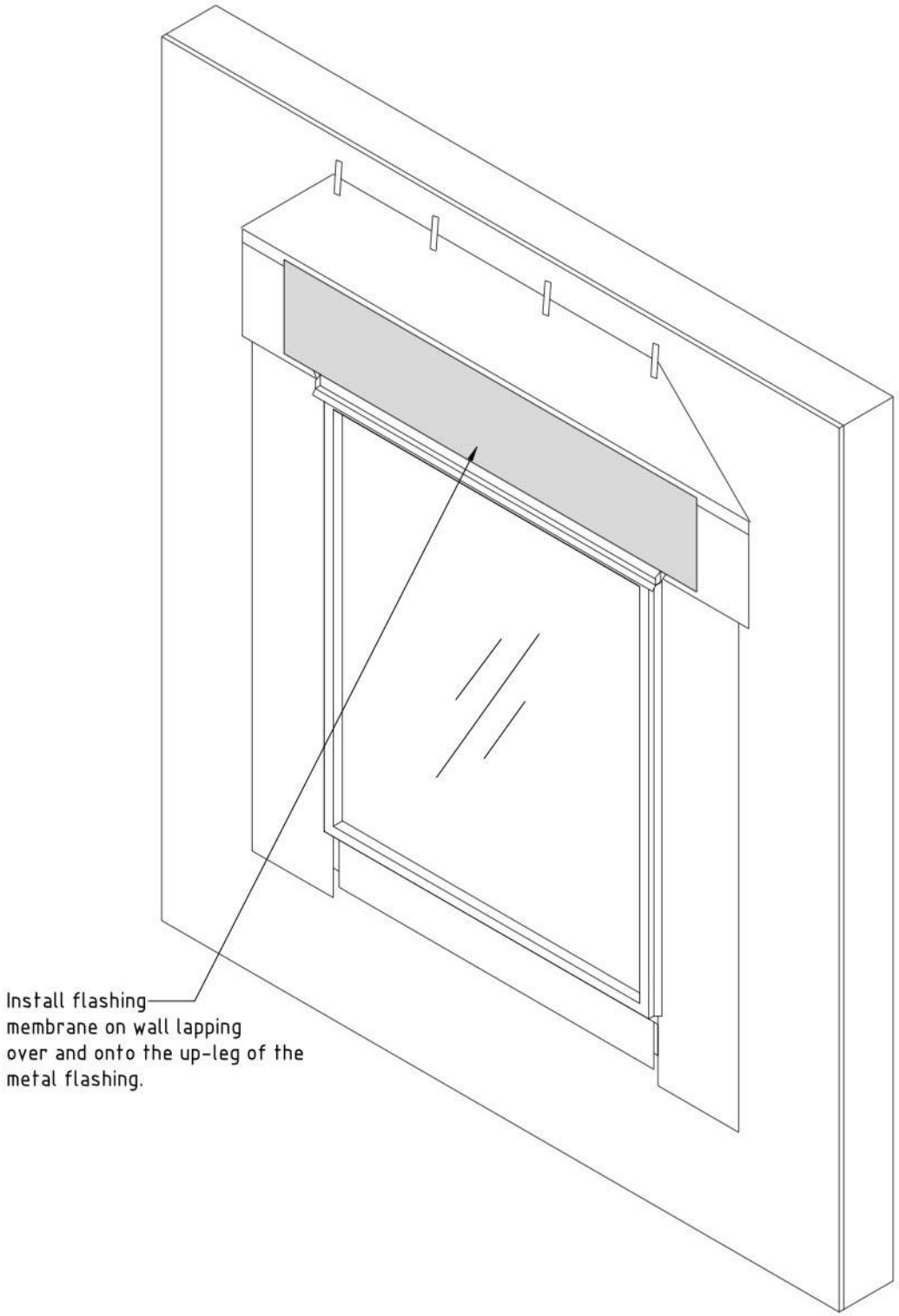


FIS Figure No. 7.4.15 – Method C - Window Sealed to Weather Resistive Barrier.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

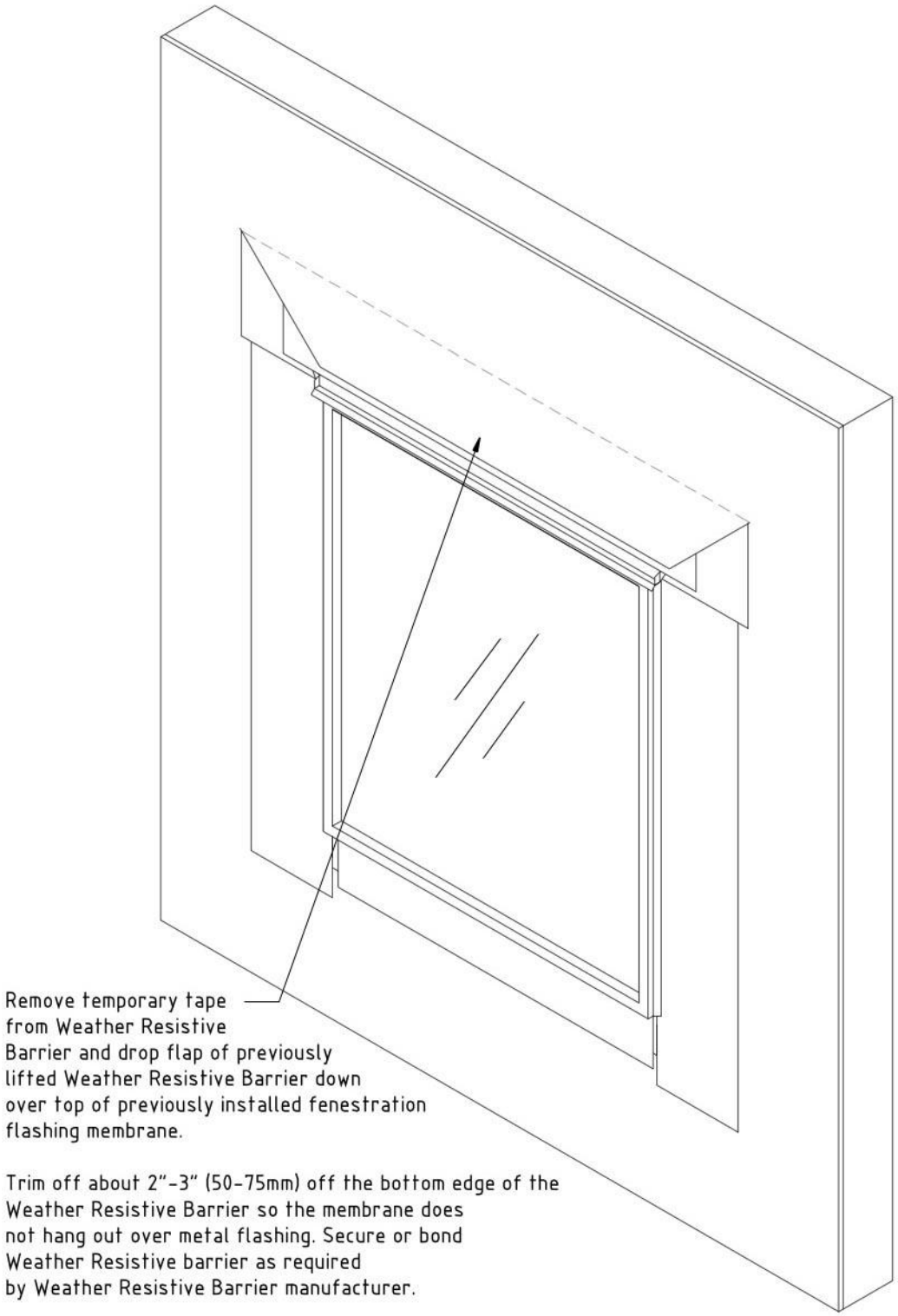


FIS Figure No. 7.4.16 – Method C - Metal Head Flashing Options with Folded End Dams.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

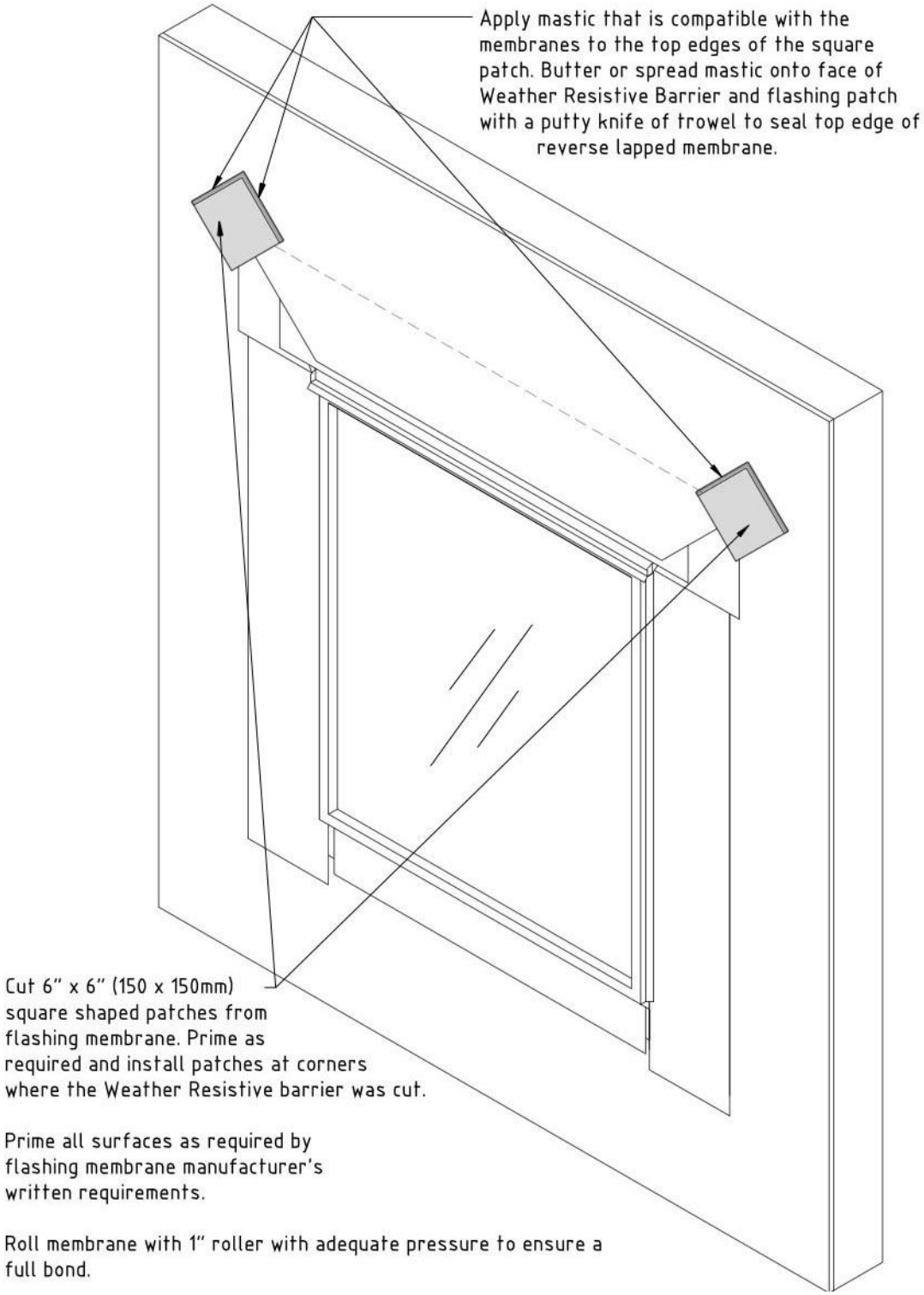
Refer to Section 8.0 for FIS recommended flashing details.



FIS Figure No. 7.4.17 –Method C - Complete the installation of weather resistive barrier. Weather Resistive Barrier installed ‘before’ installation of fenestration.



FIS Figure No. 7.4.18 – Method C - Complete the installation of weather resistive barrier. Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.4.19 – Method C - Complete the installation of weather resistive barrier. Weather Resistive Barrier installed 'before' installation of fenestration.

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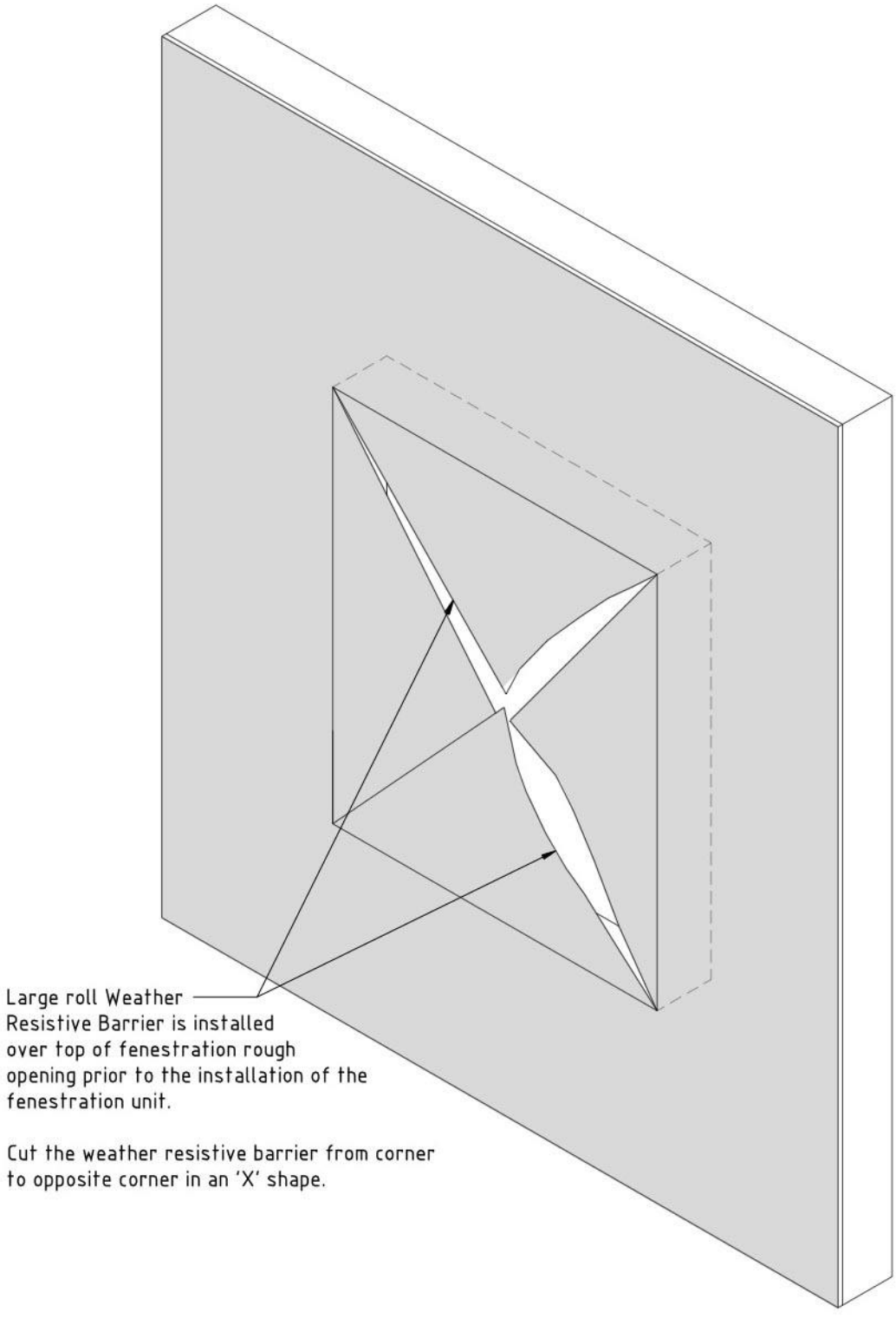
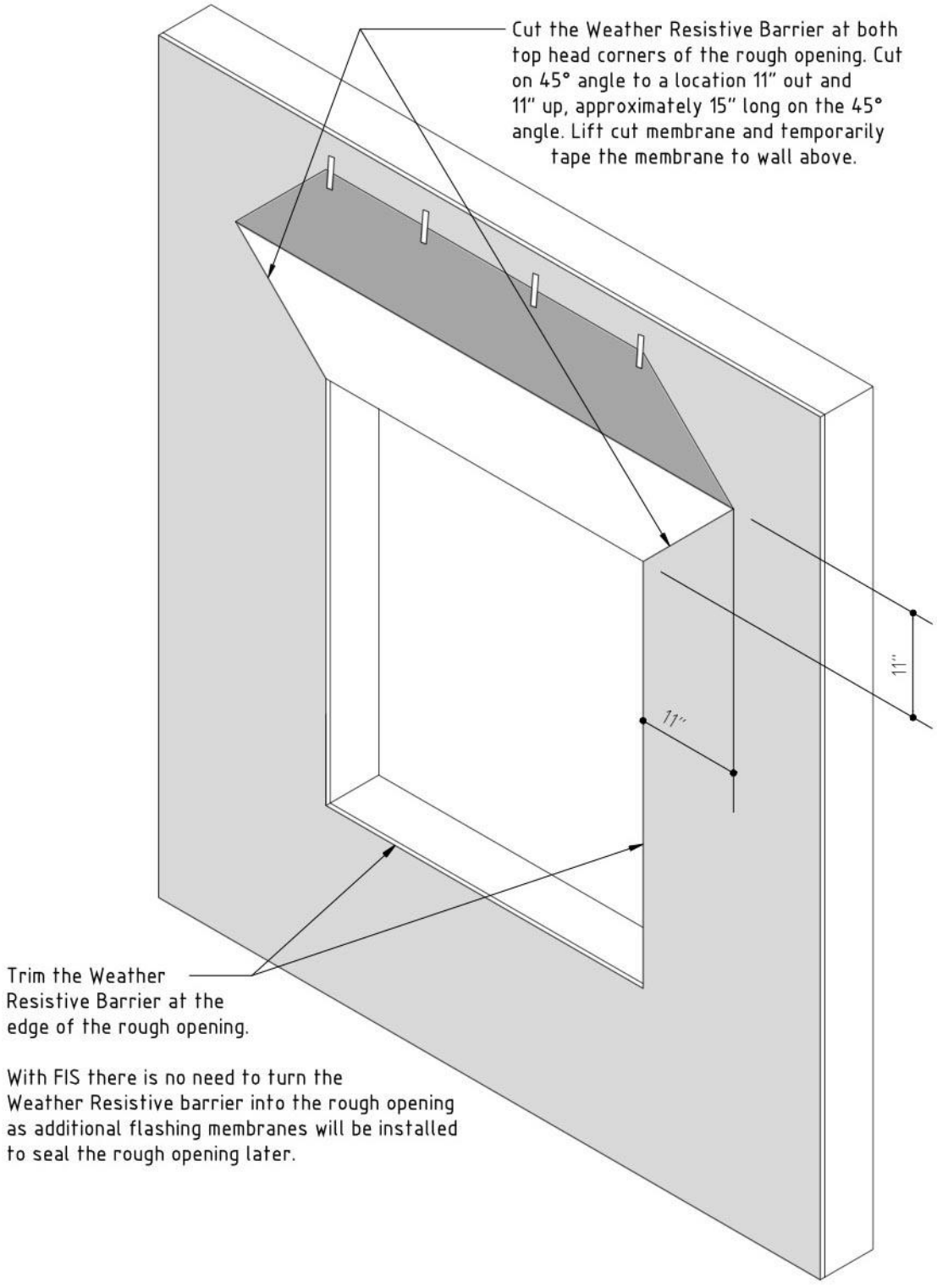
7.5 Requirements for FIS Installation Method CW

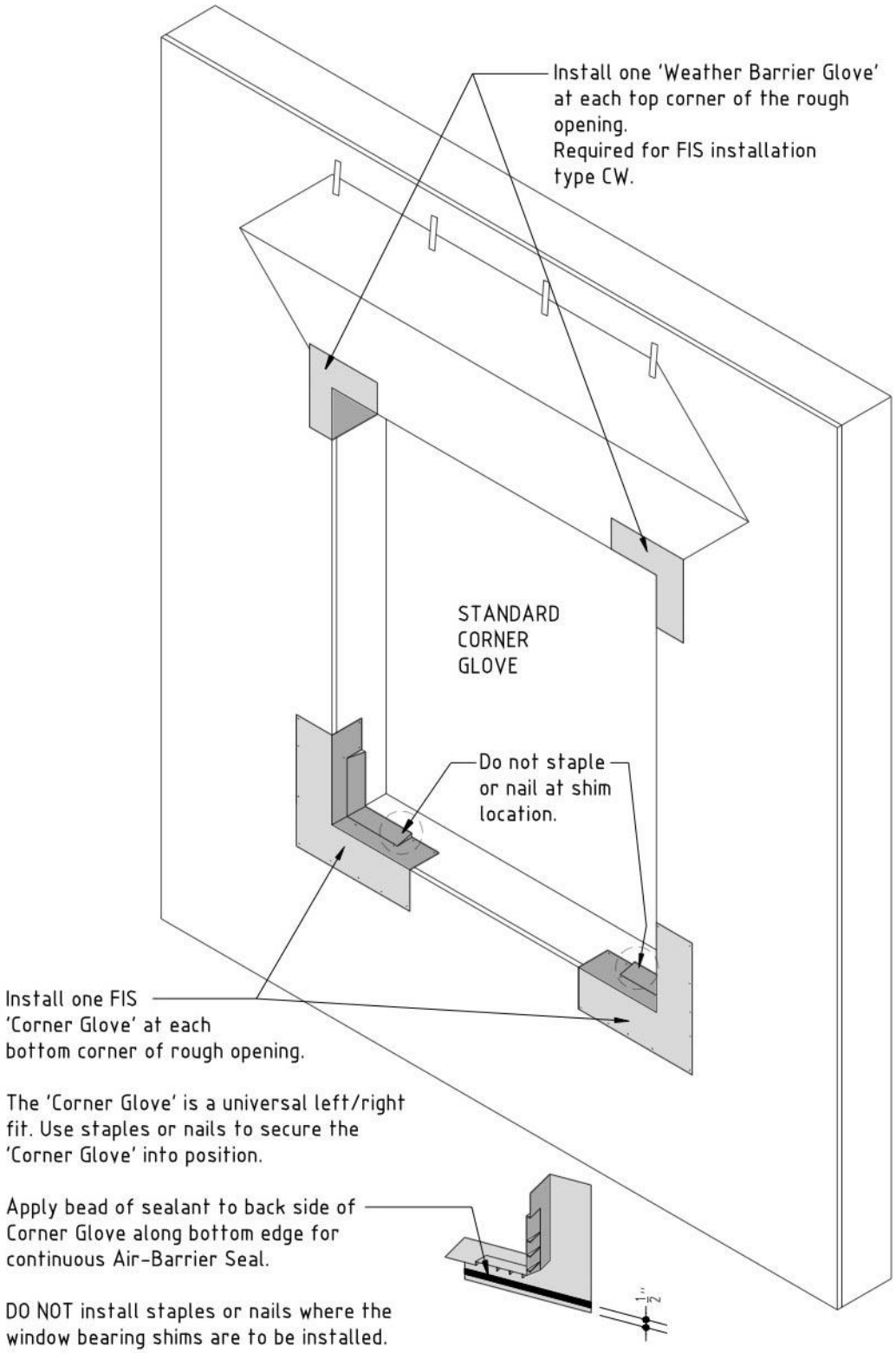
Polymeric-type WRB approx. 9 ft. wide roll WRB installed ‘before’ installation of fenestration.
Flashing Applied Behind the Face of the Mounting Flange.
Flashing membranes extend into the rough opening for air barrier tie-in to fenestration. ASTM E2112-19C compliant.



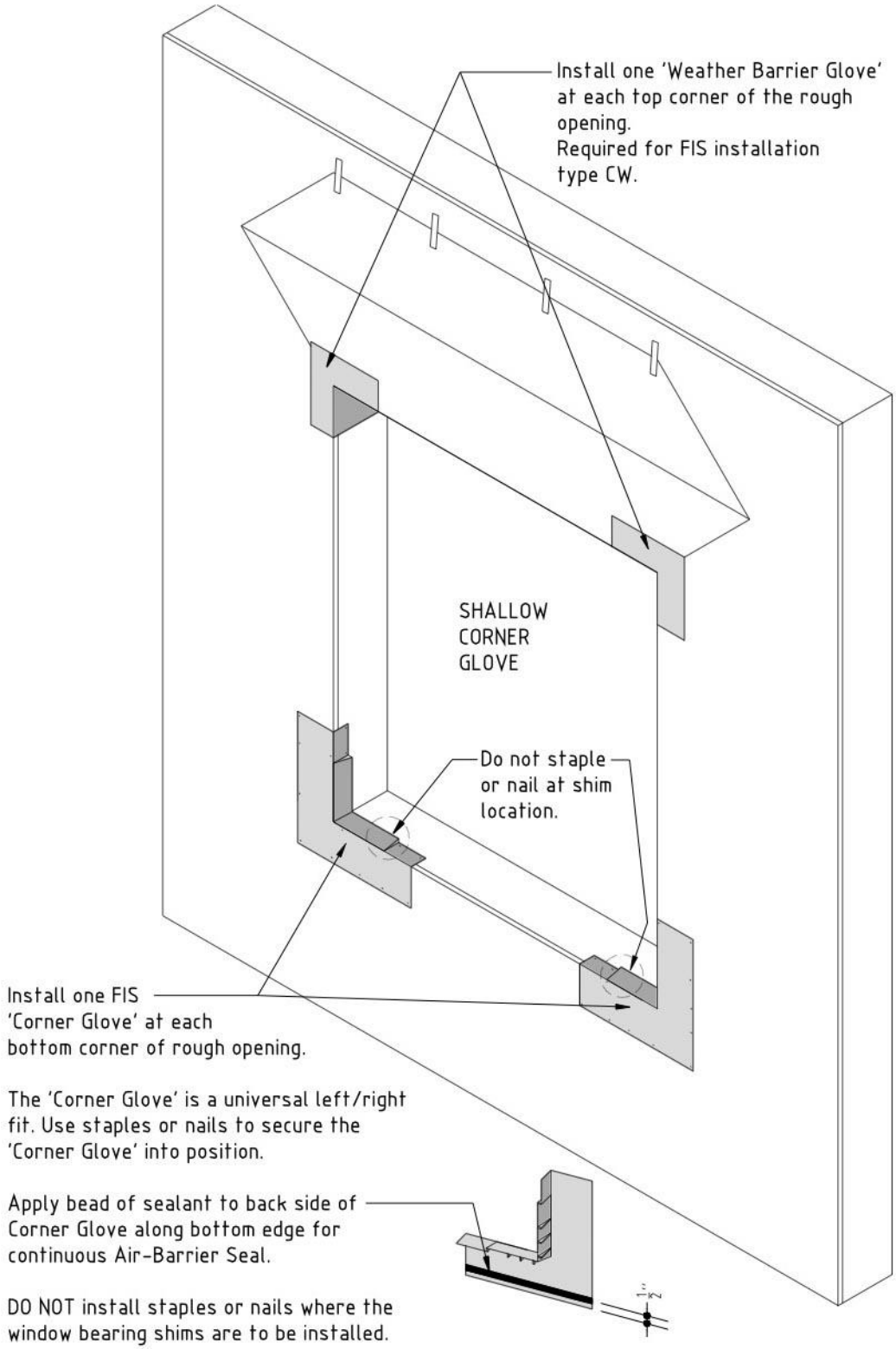
FIS Figure No. 7.5.1 – Method CW - Weather Resistive Barrier Applied to Wall.
Weather Resistive Barrier installed ‘before’ installation of fenestration.



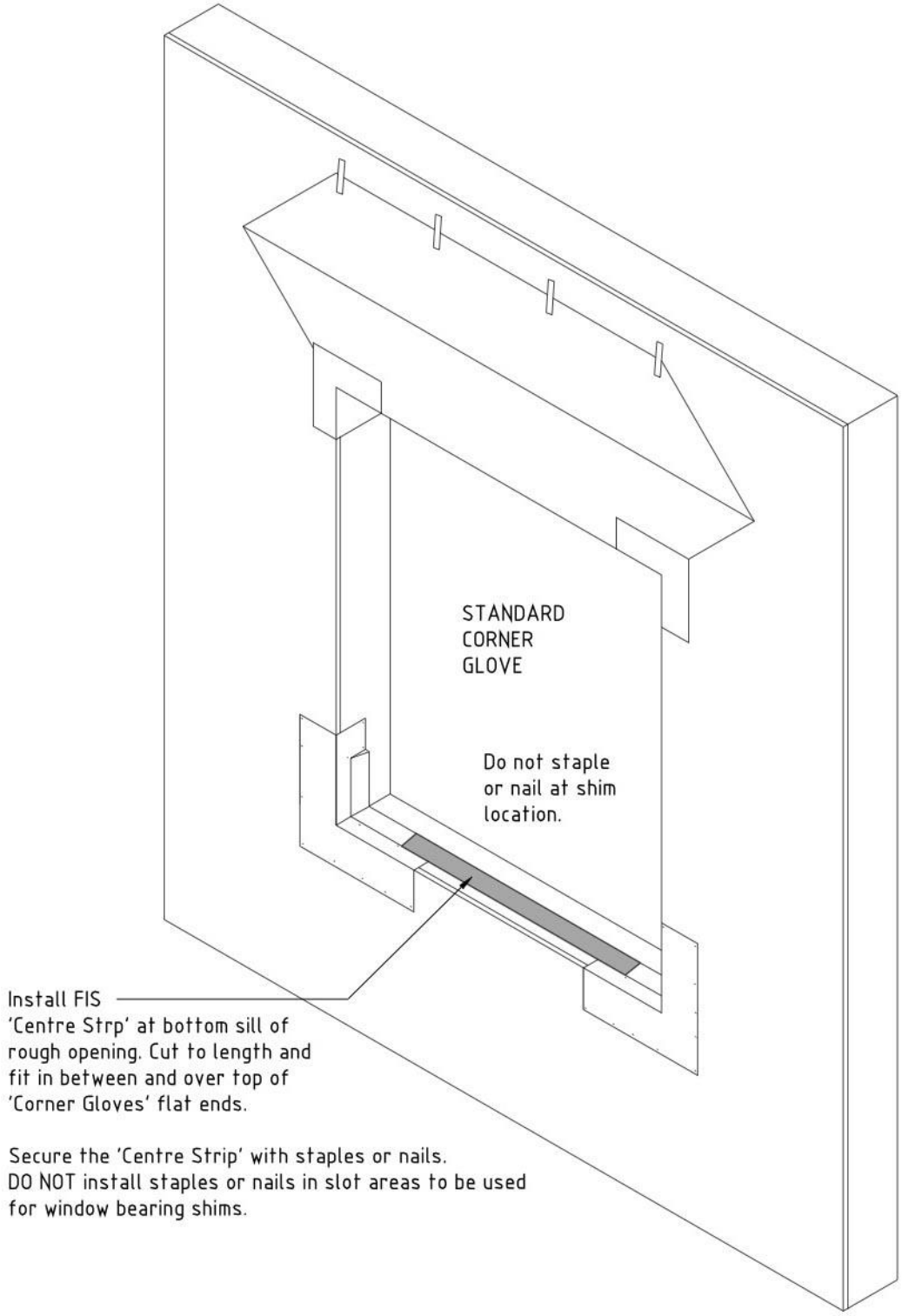
FIS Figure No. 7.5.2 – Method CW - Weather Resistive Barrier cut for rough opening. Weather Resistive Barrier installed 'before' installation of fenestration.



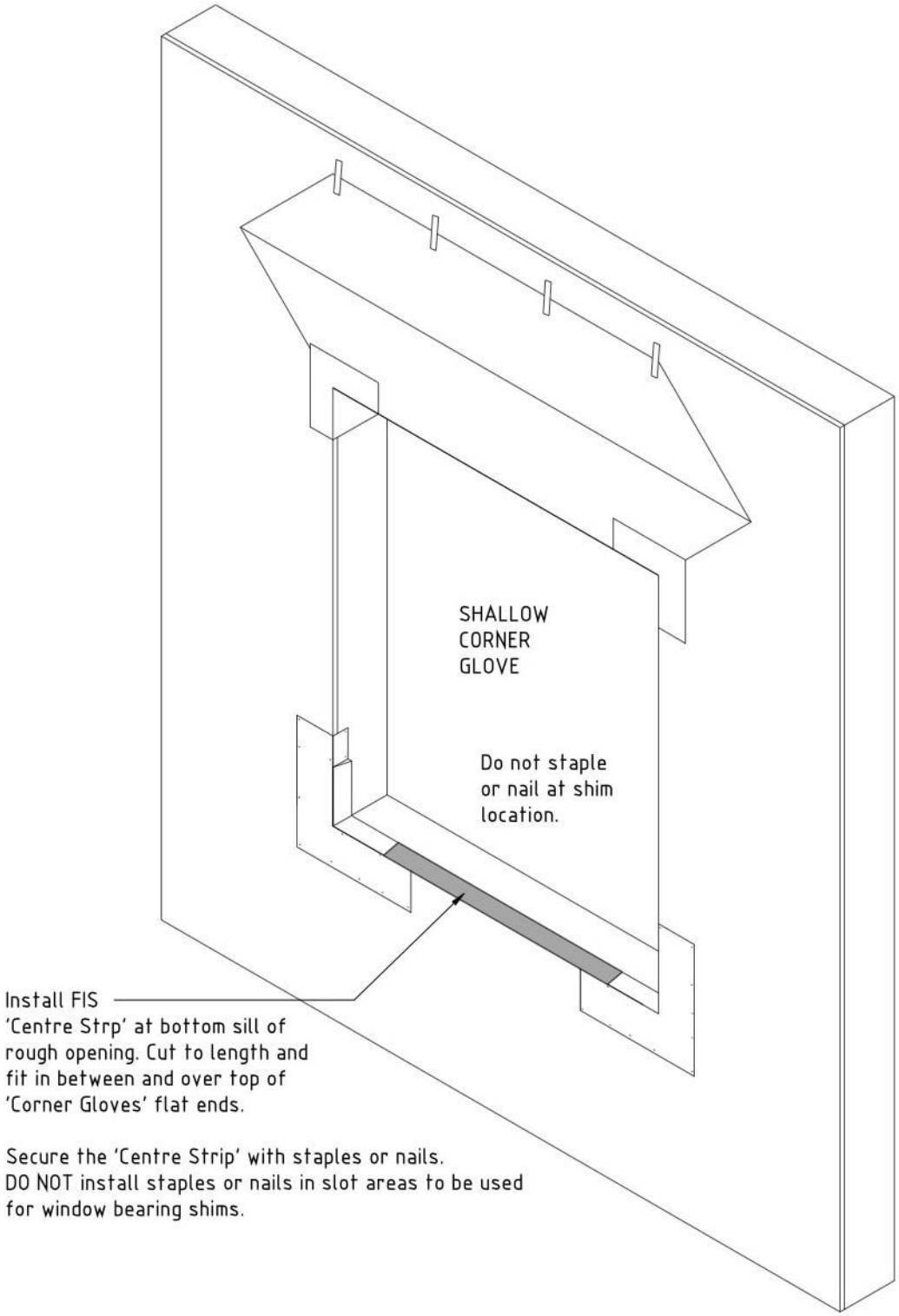
FIS Figure No. 7.5.3 – Method CW - Standard ‘’Corner Glove’ for windows with jamb extensions. Weather Resistive Barrier installed ‘before’ installation of fenestration.



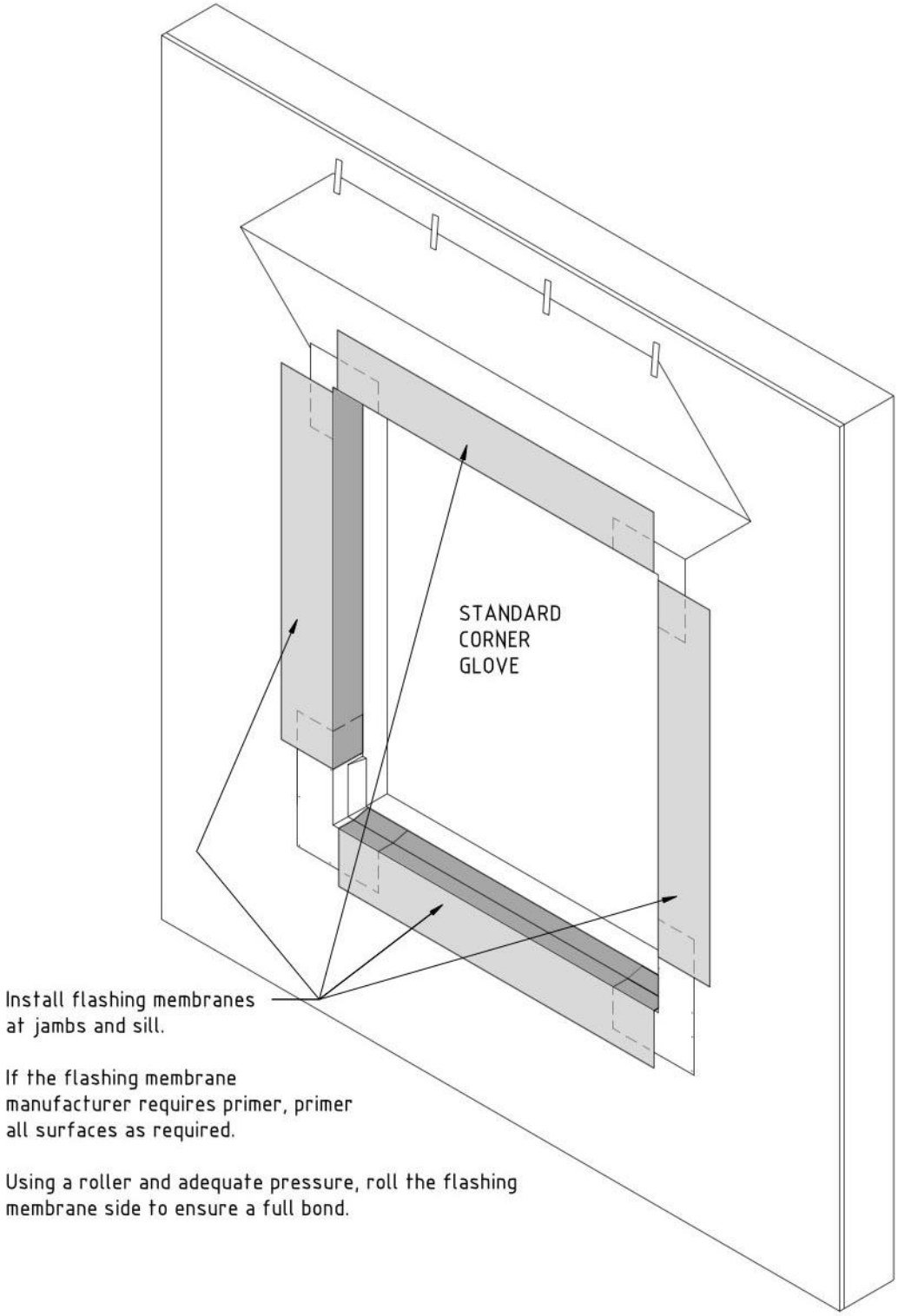
FIS Figure No. 7.5.4 – Method CW - Shallow 'Corner Glove' for windows without jamb extension. Weather Resistive Barrier installed 'before' installation of fenestration.



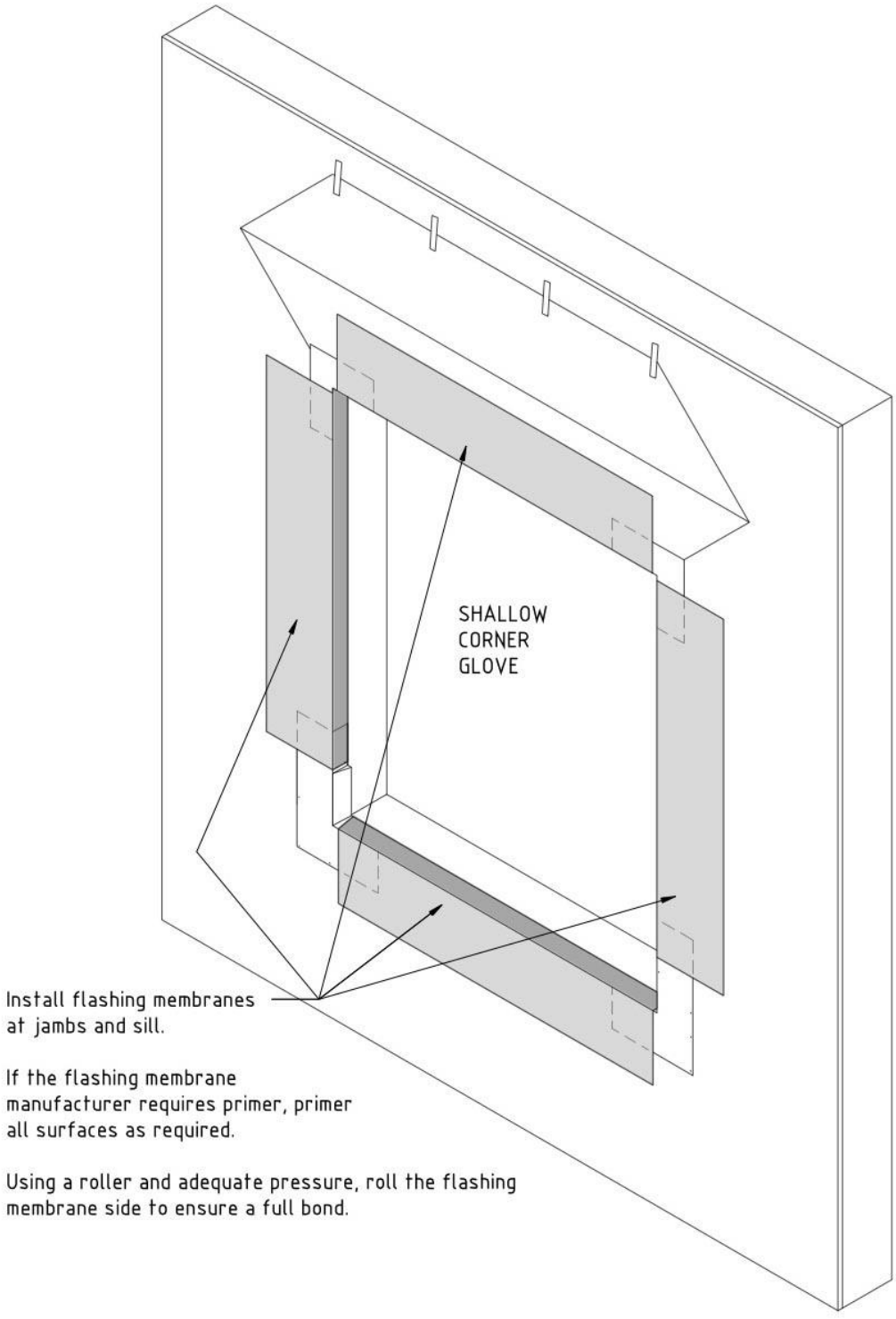
FIS Figure No. 7.5.5 – Method CW – 'Center Strip' installed between standard 'Corner Gloves' Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.5.6 – Method CW – 'Center Strip' installed between shallow 'Corner Gloves'
Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.5.7 - Method CW - Sta Head/Jamb/Sill flashing membrane at standard ‘Corner Gloves’. Weather Resistive Barrier installed ‘before’ installation of fenestration.

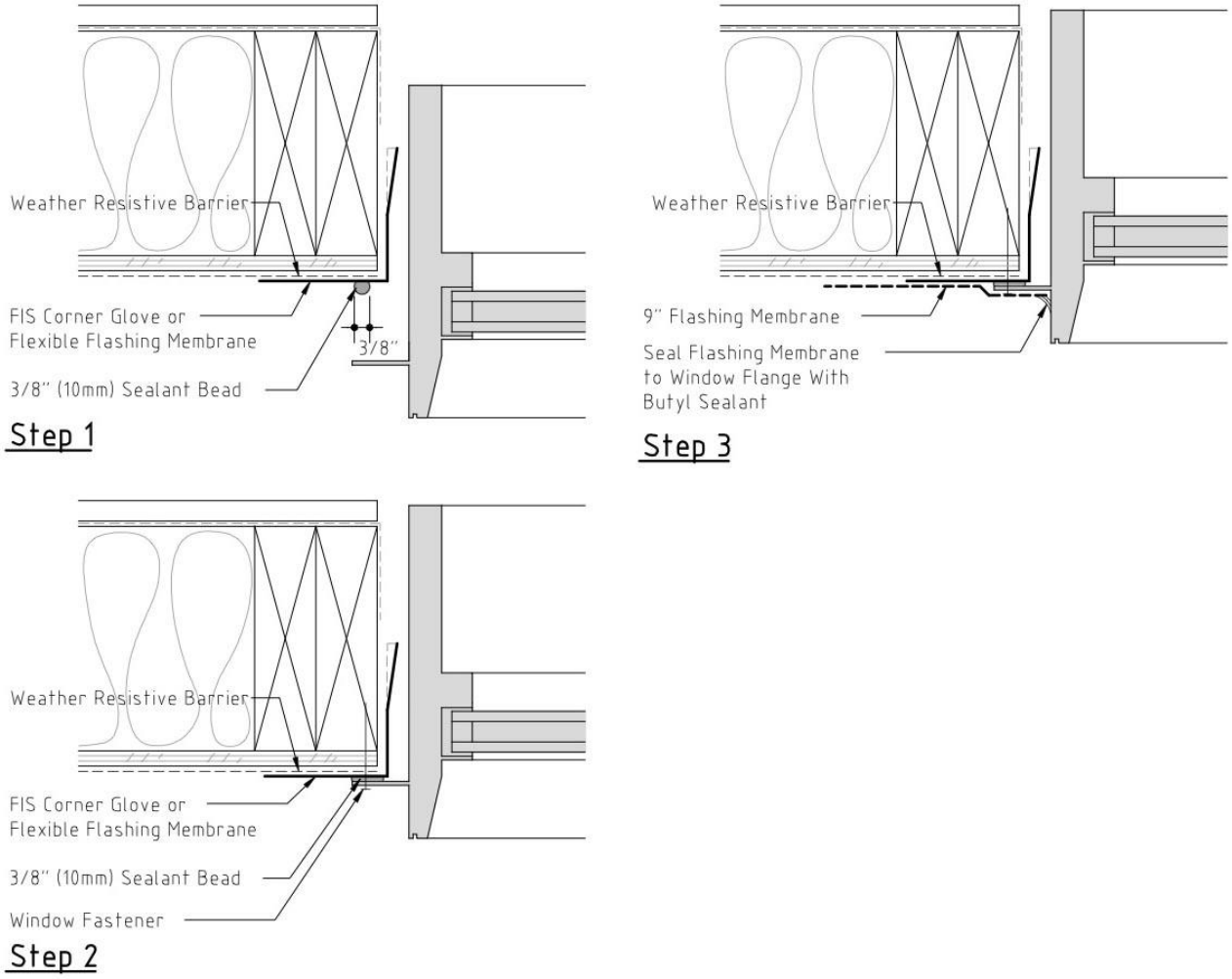


FIS Figure No. 7.5.8 - Method CW – Head/Jamb/Sill flashing membrane at shallow ‘Corner Gloves’. Weather Resistive Barrier installed ‘before’ installation of fenestration.

Warranty Note: For Method CW, the steps to this point conclude the requirements to comply with the FIS product installation warranty. The remaining steps for Method CW identified herein, indicate the FIS recommended steps for this fenestration installation method to comply with ASTM E2112-19C.

Warranty Note: If the full installation of the fenestration does not complete with ASTM E2112-19C the FIS Warranty is void.

FIS is compatible with most available sealants. The architect, engineer or installer shall specify or select an appropriate sealant based on ASTM E2112-19C Table A4.1 or CSA A440, to suite the building's adjacent components and follow the sealant manufacturer's written instructions for sealant selection, primers, and installation.



FIS Figure No. 7.5.9 – Method CW- Fenestration Bedding Joint and sealing of Weather Resistive Barrier. Weather Resistive Barrier installed 'before' installation of fenestration.

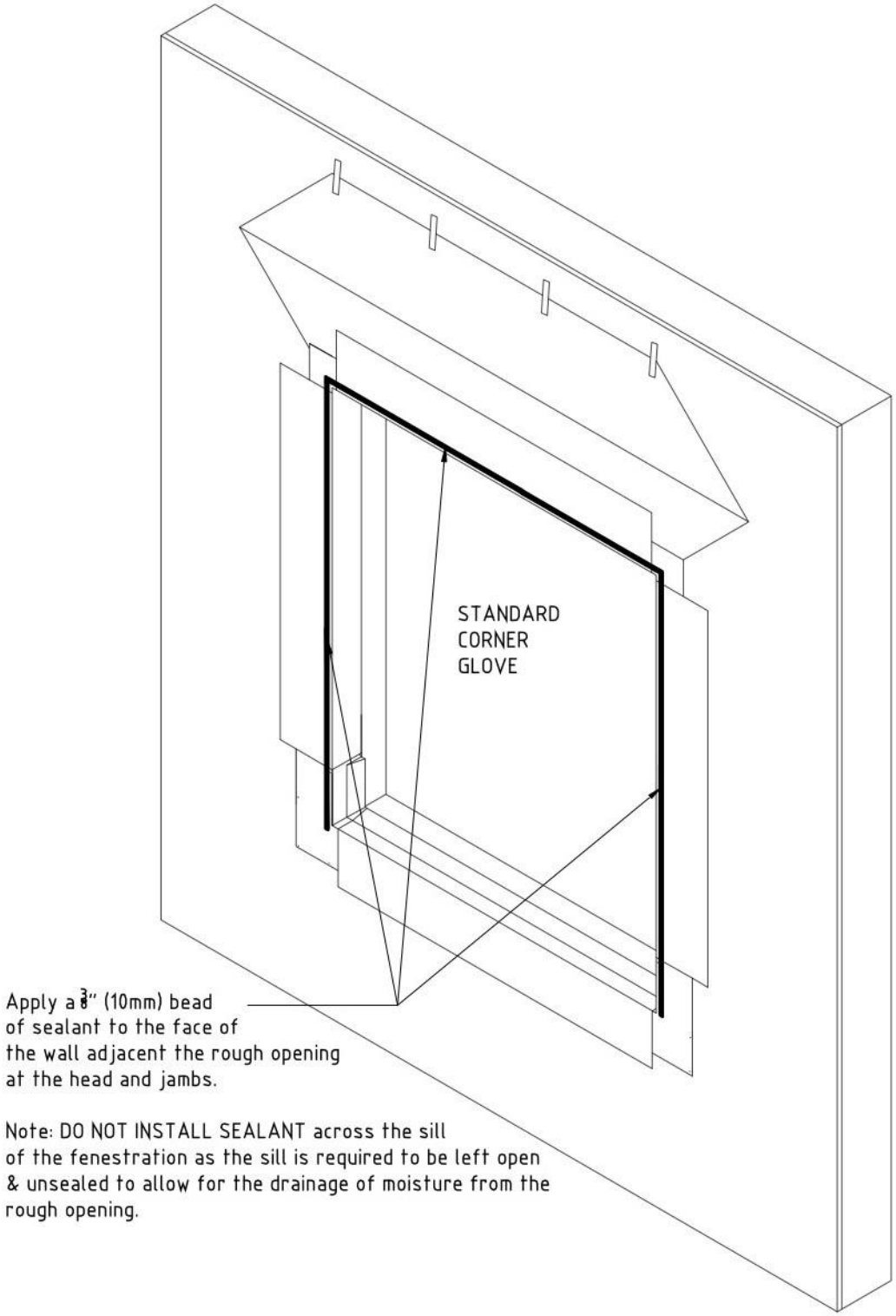
A 3/8" diameter sealant bedding joint shall be applied to the face of the flashing membrane at the head and jambs as seen in Step 1 of FIS Figure No. 7.5.9.

DO NOT APPLY SEALANT across the sill of the fenestration's rough opening, as the sill must be left unsealed to allow for moisture drainage from the rough opening at that location.

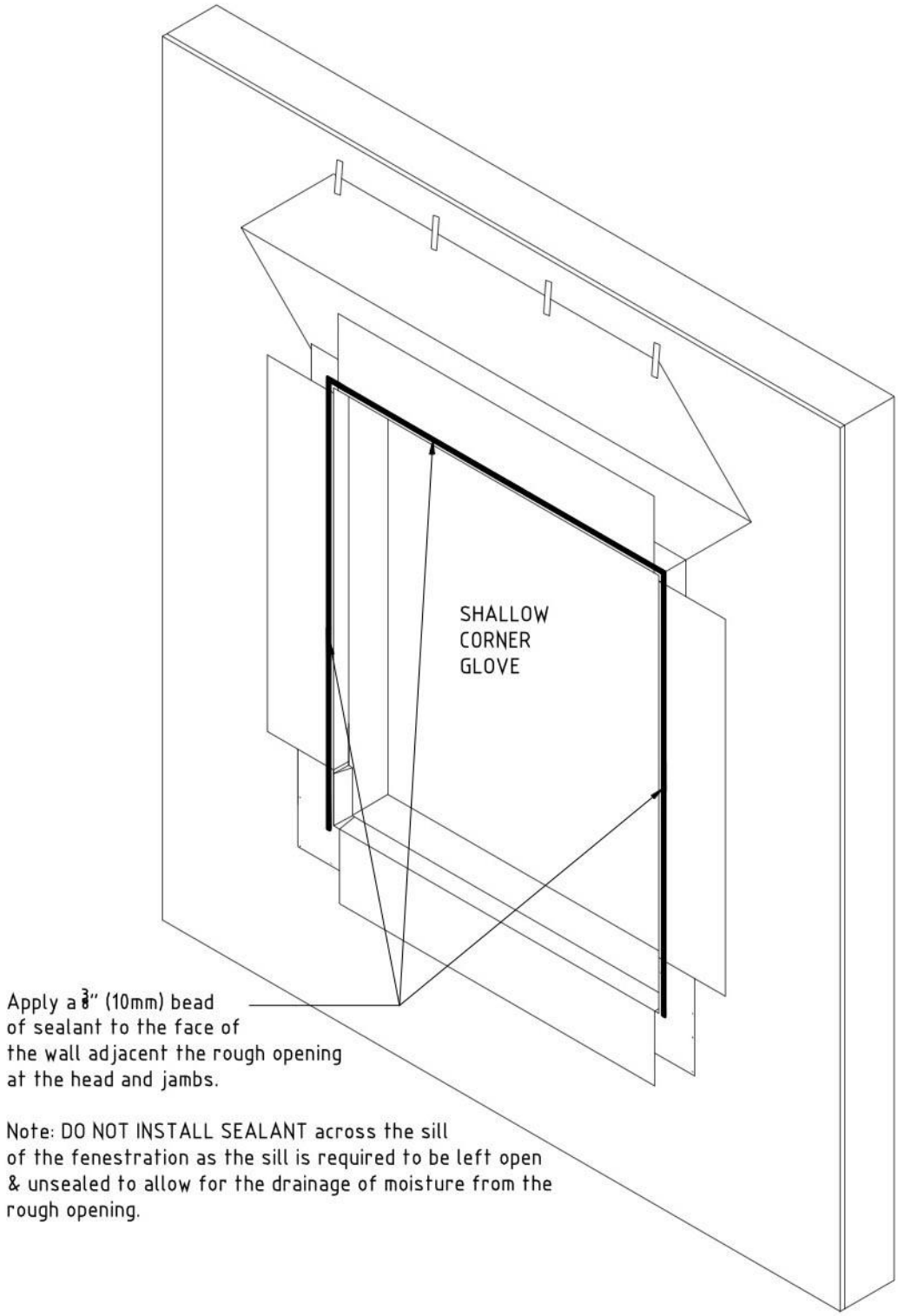
In Step 2, the fenestration unit is installed squishing the sealant bead to become the fenestration sealant bedding joint.

Step 3 requires the installation of a 9" wide flexible flashing membrane to be installed on the face of the wall at the jambs and head, lapping onto the fenestration's flange and sealing the flexible flashing membrane to the fenestration unit with a corner bead of sealant.

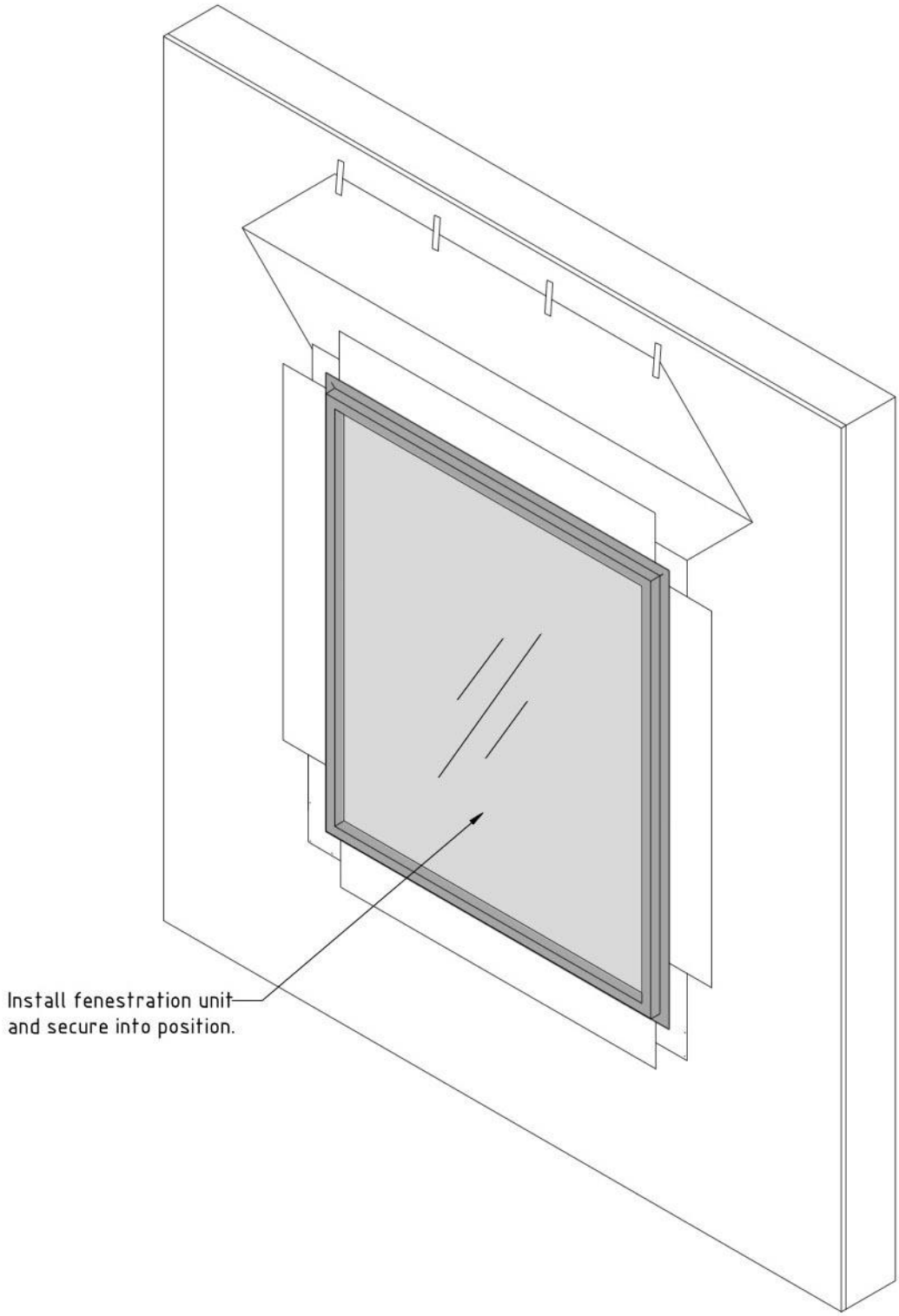
Note: If the fenestration unit does not have integral mounting flanges, the applied flanges will require more elaborate flashing and sealing details to ensure weather protection of the installed unit. When using applied flanges, follow the manufacturers' instructions for sealing the flange to the frame.



FIS Figure No. 7.5.10 – Method CW - Standard 'Corner Glove' Fenestration Bedding Joint. Weather Resistive Barrier installed 'before' installation of fenestration.



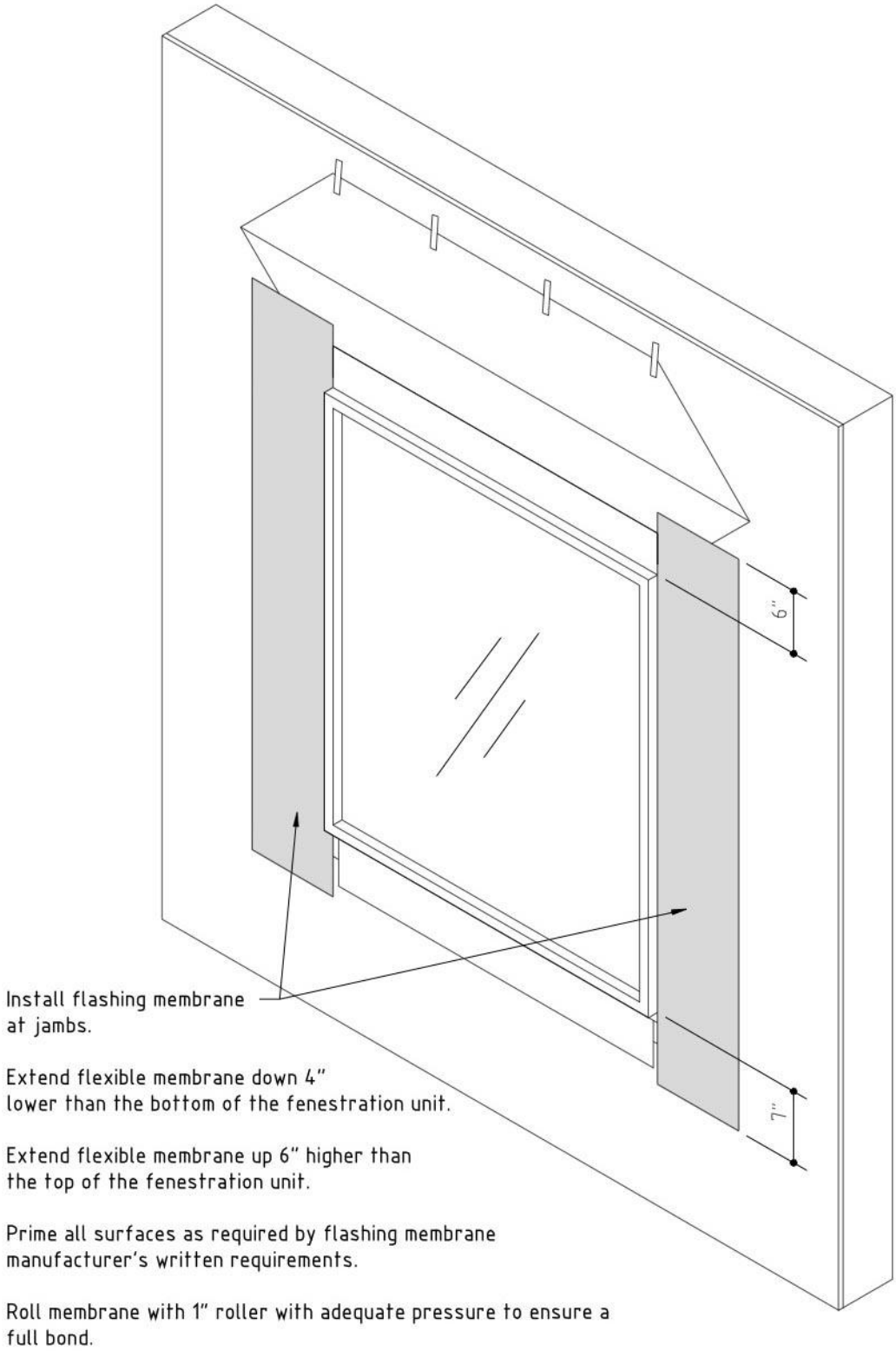
FIS Figure No. 7.5.11 – Method CW - Shallow 'Corner Glove' Fenestration Bedding Joint.
Weather Resistive Barrier installed 'before' installation of fenestration.



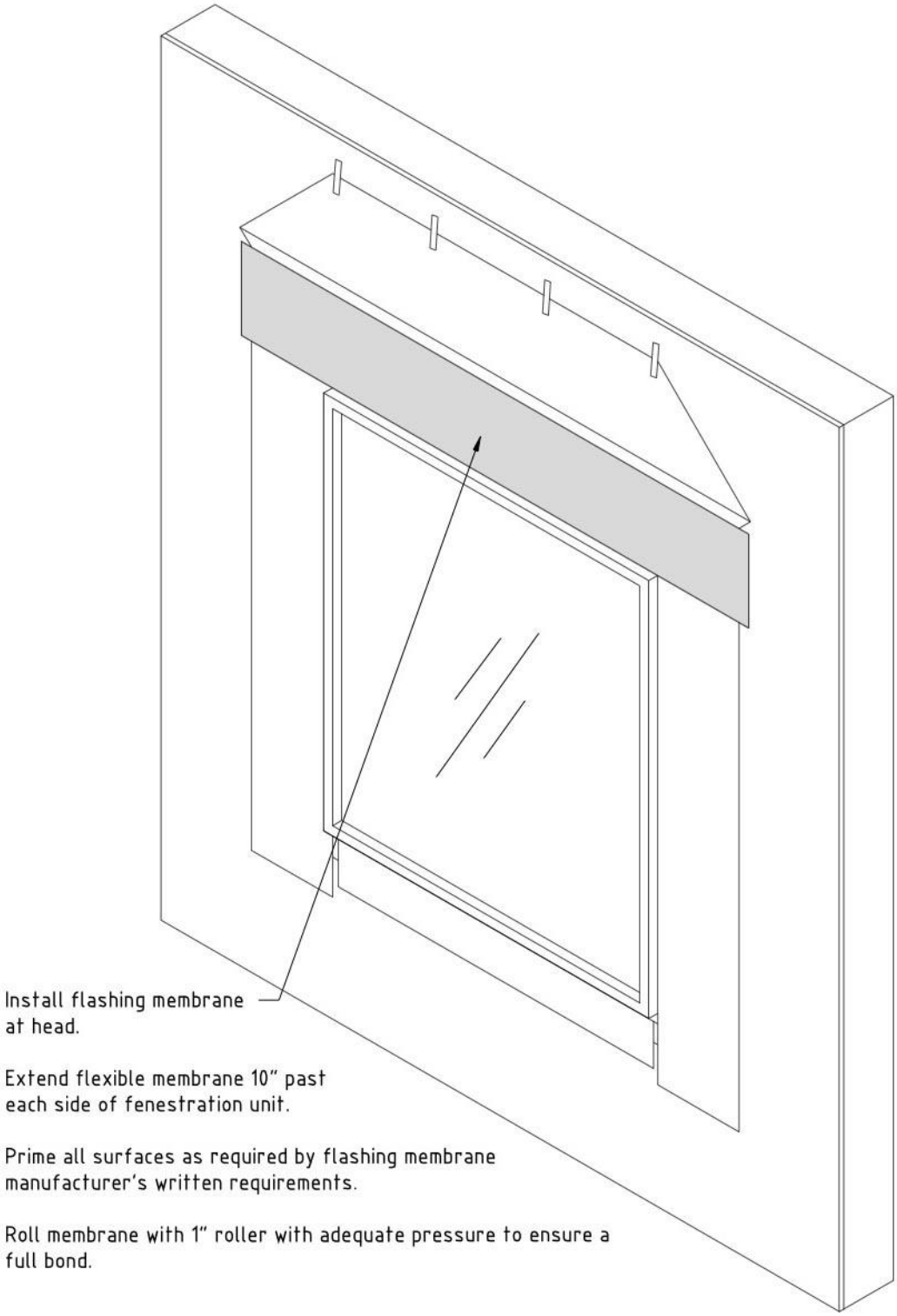
FIS Figure No. 7.5.12 – Method CW - Window Installation.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

With the fenestration installed, the interior side of the fenestration’s perimeter cavity is required to be sealed with low expansion spray foam insulation. The spray foam insulation will seal the fenestration to the WRB on all sides of the fenestration unit. Refer to Section 9.0

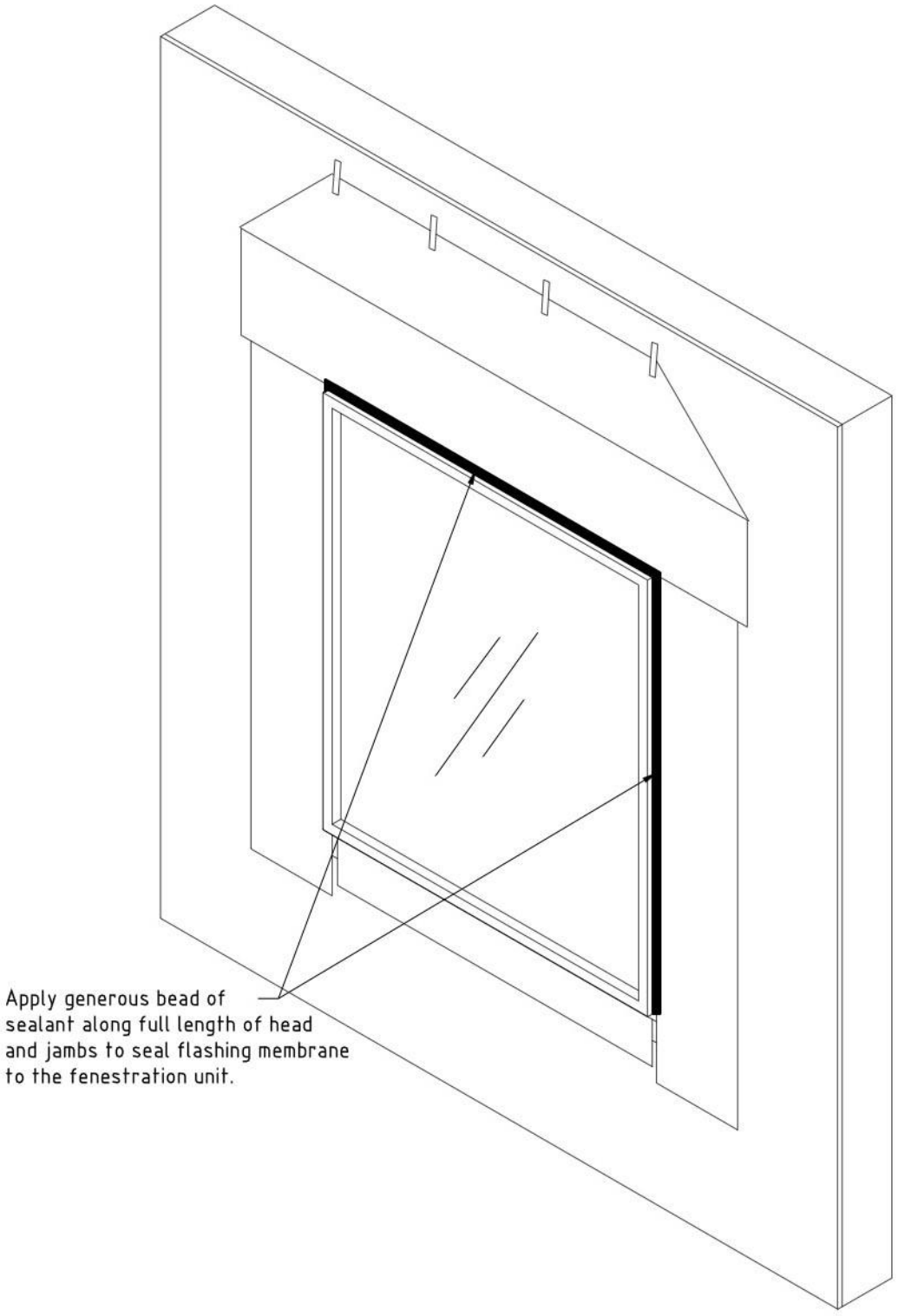
Continue with remaining flashing membrane and WRB installation steps as identified in this section.



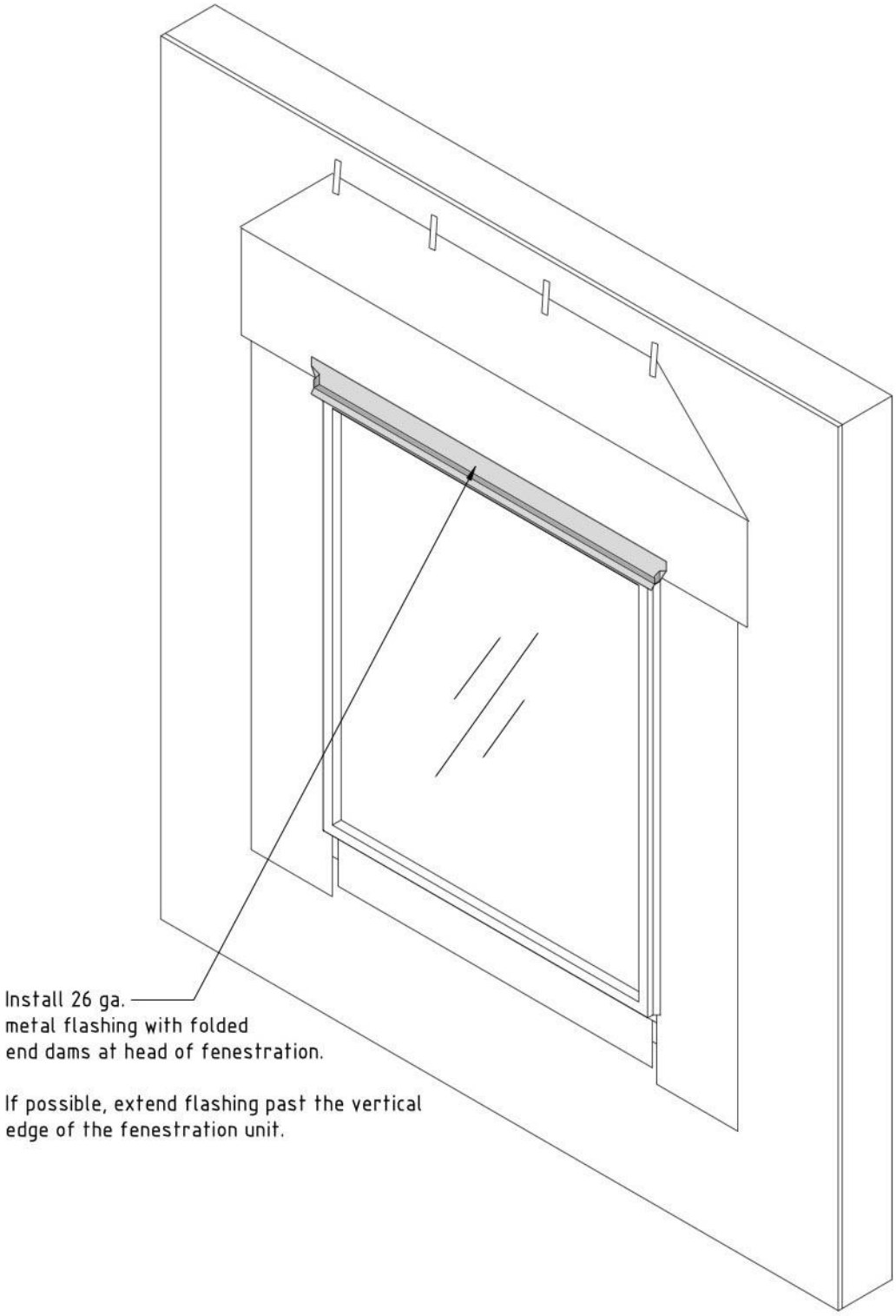
FIS Figure No. 7.5.13 – Method CW - Jamb flange flashing membrane installation.
Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.5.14 – Method CW - Head flange flashing membrane installation.
Weather Resistive Barrier installed 'before' installation of fenestration.

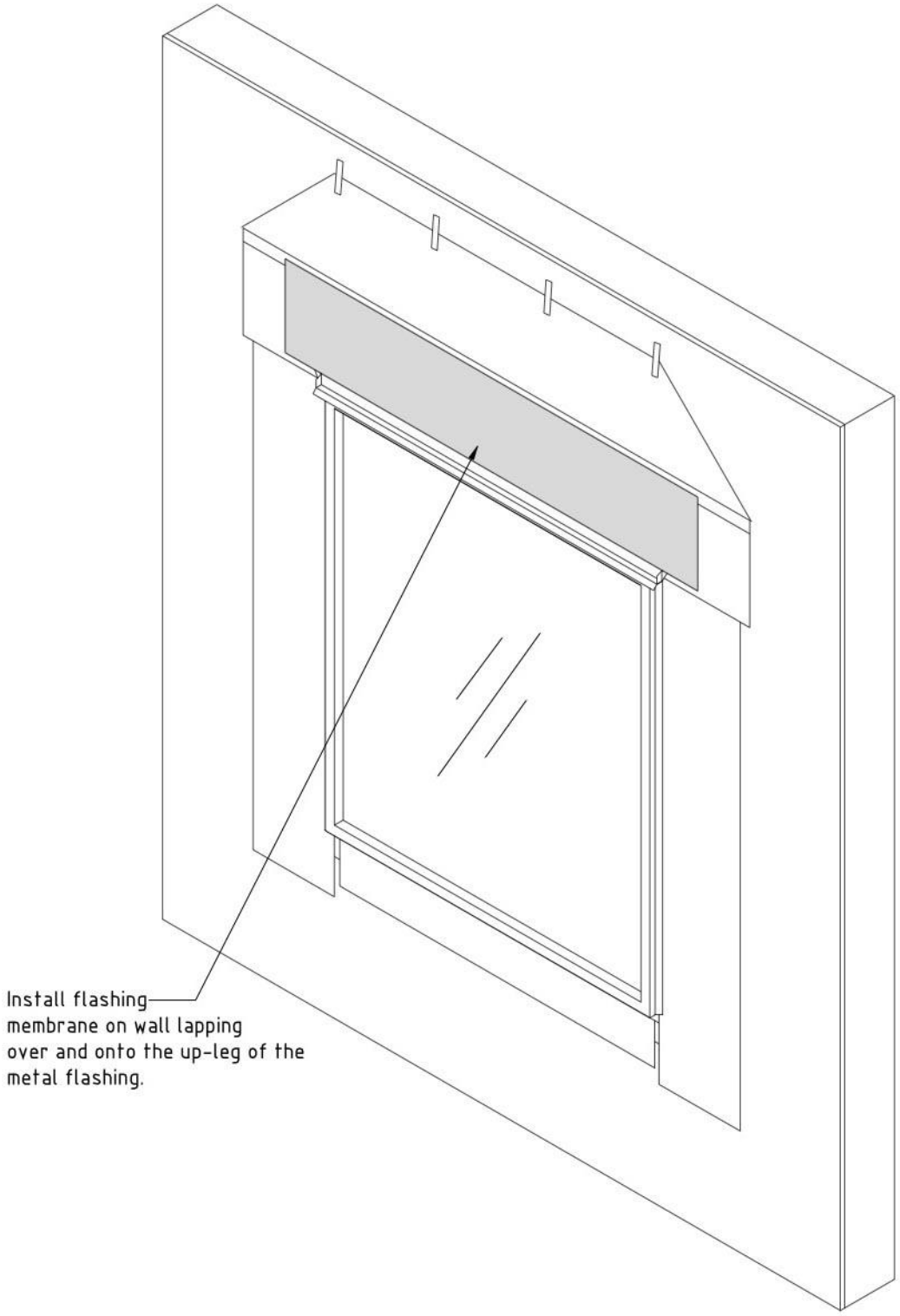


FIS Figure No. 7.5.15– Method CW - Window Sealed to Weather Resistive Barrier.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

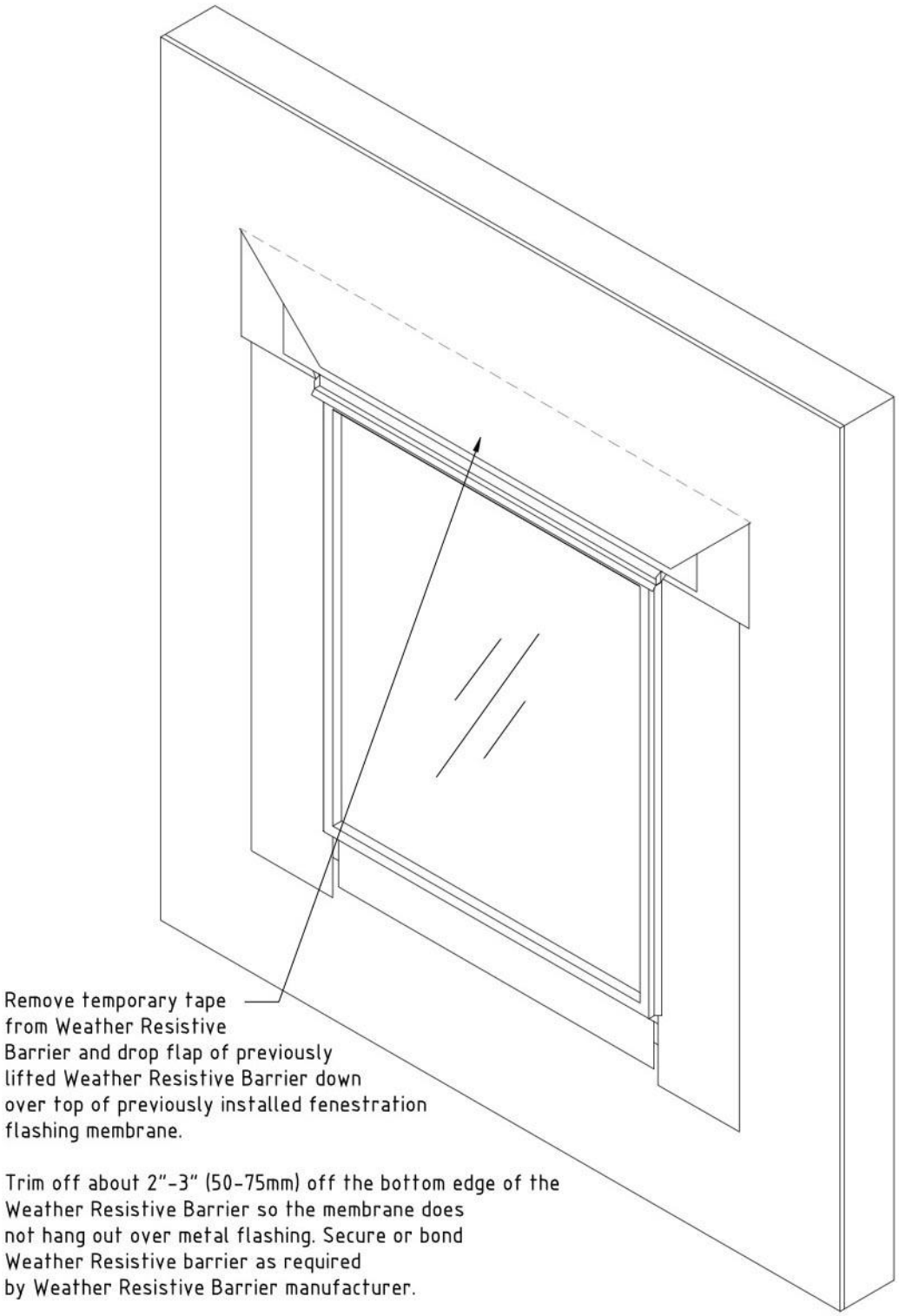


FIS Figure No. 7.5.16 – Method CW - Metal Head Flashing Options with Folded End Dams.
Weather Resistive Barrier installed ‘before’ installation of fenestration.

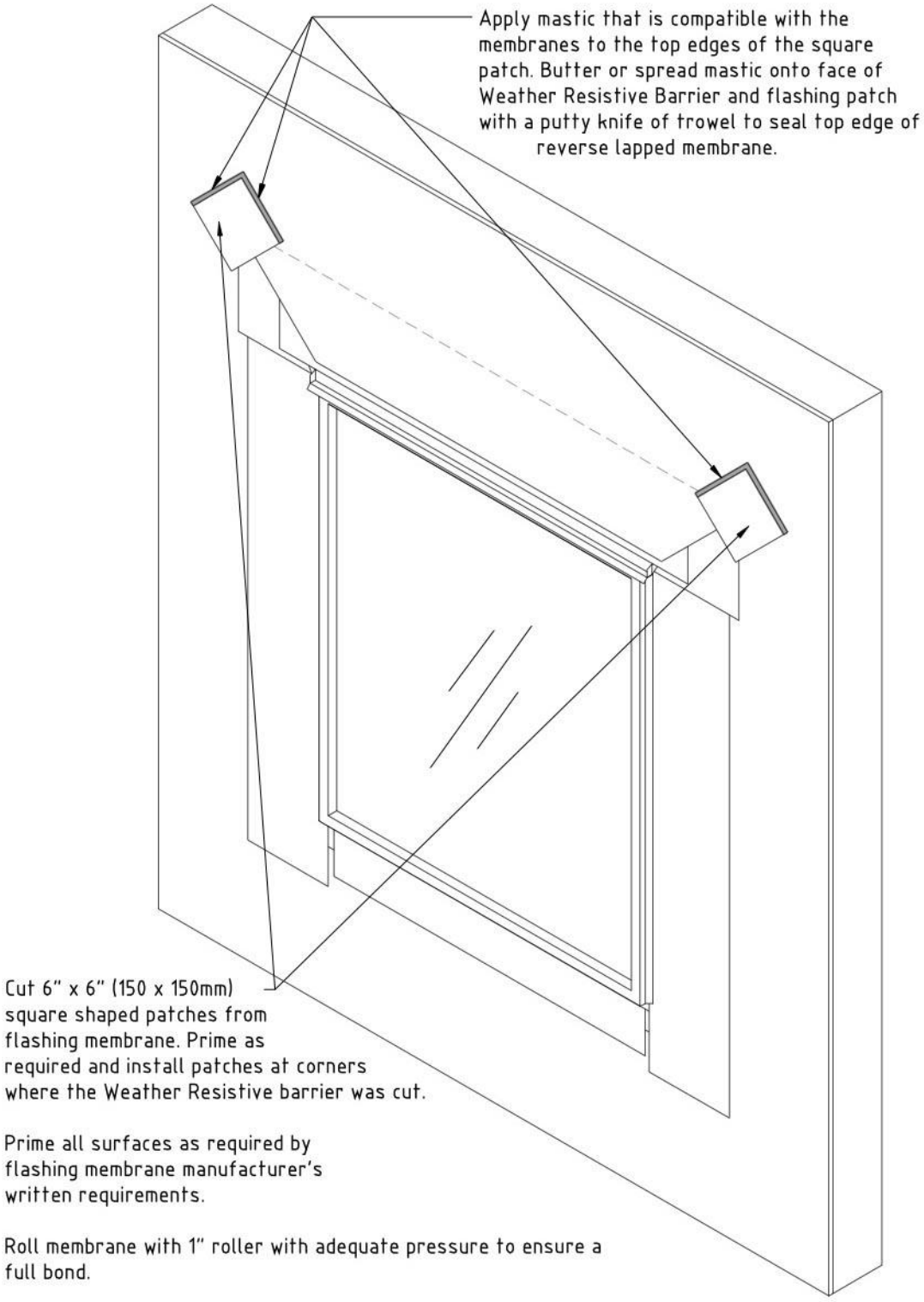
Refer to Section 8.0 for FIS recommended flashing details.



FIS Figure No. 7.5.17 –Method CW - Complete the installation of weather resistive barrier. Weather Resistive Barrier installed ‘before’ installation of fenestration.



FIS Figure No. 7.5.18 – Method CW - Complete the installation of weather resistive barrier. Weather Resistive Barrier installed 'before' installation of fenestration.



FIS Figure No. 7.5.19 – Method CW - Complete the installation of weather resistive barrier. Weather Resistive Barrier installed 'before' installation of fenestration.

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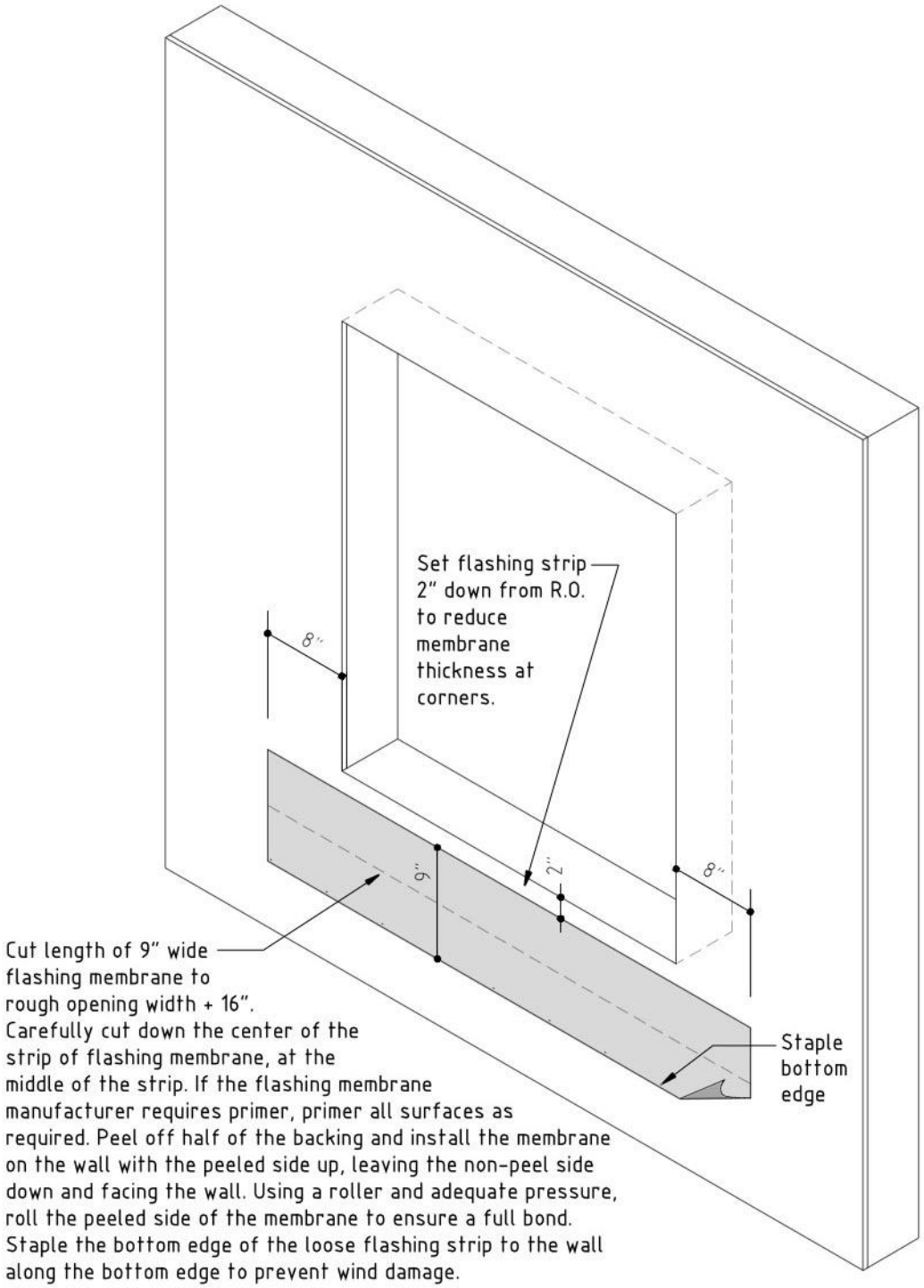
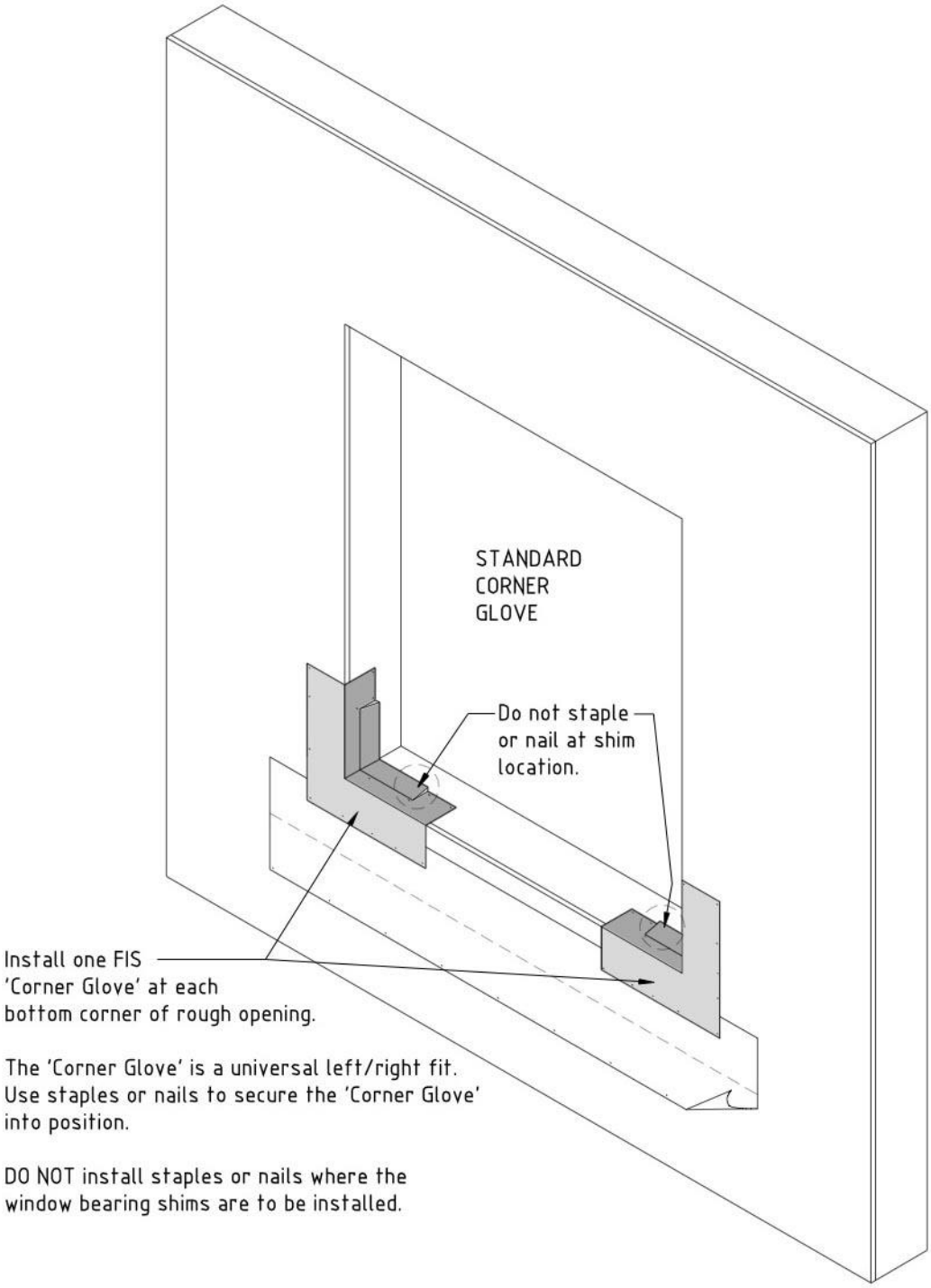
7.6 Requirements for FIS Installation Method D

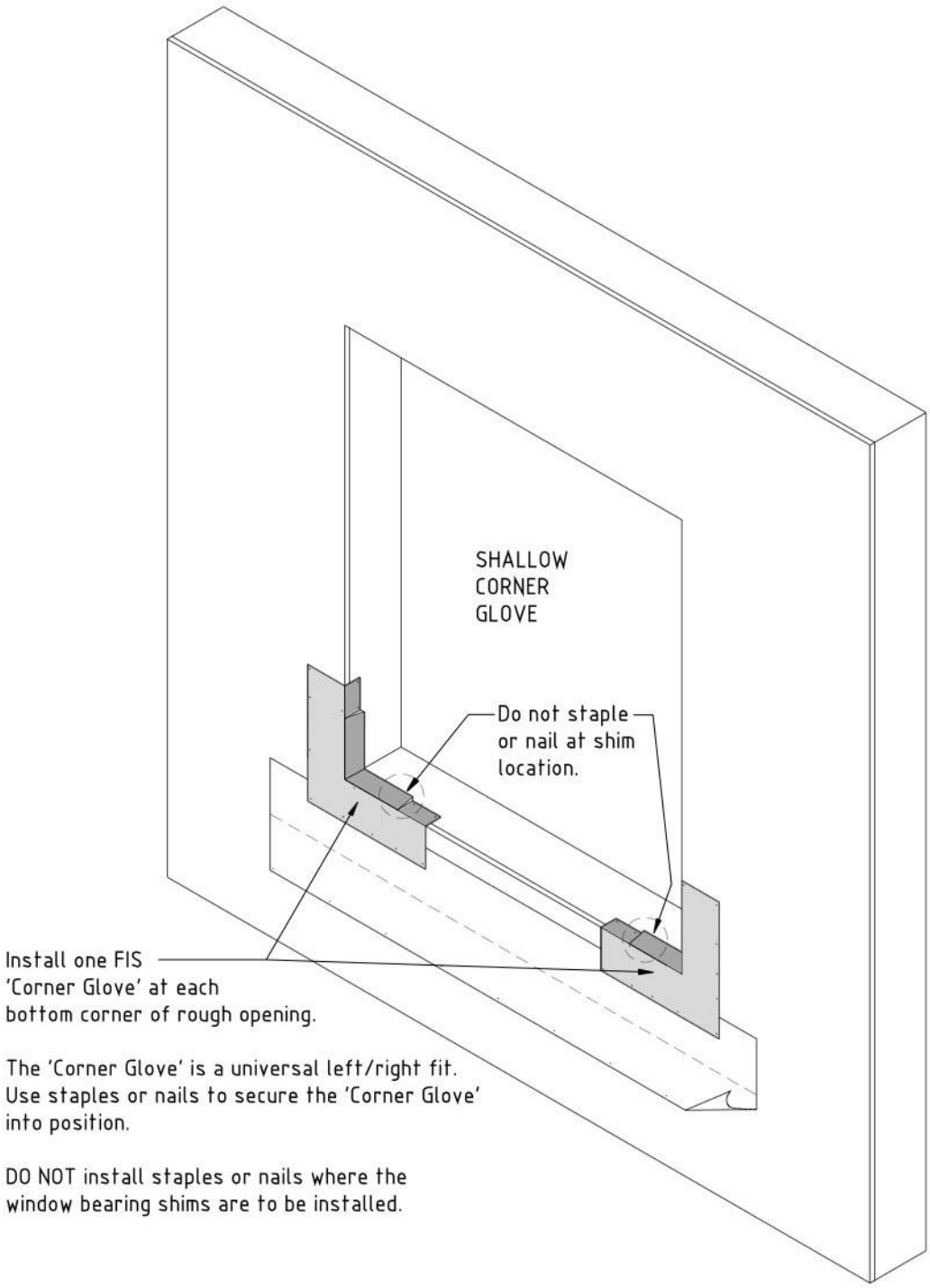
Polymeric-type WRB approx. 9 ft. wide roll WRB installed ‘after’ installation of fenestration.
Flashing Applied Over the Face of the Mounting Flange.
ASTM E2112-19C compliant.



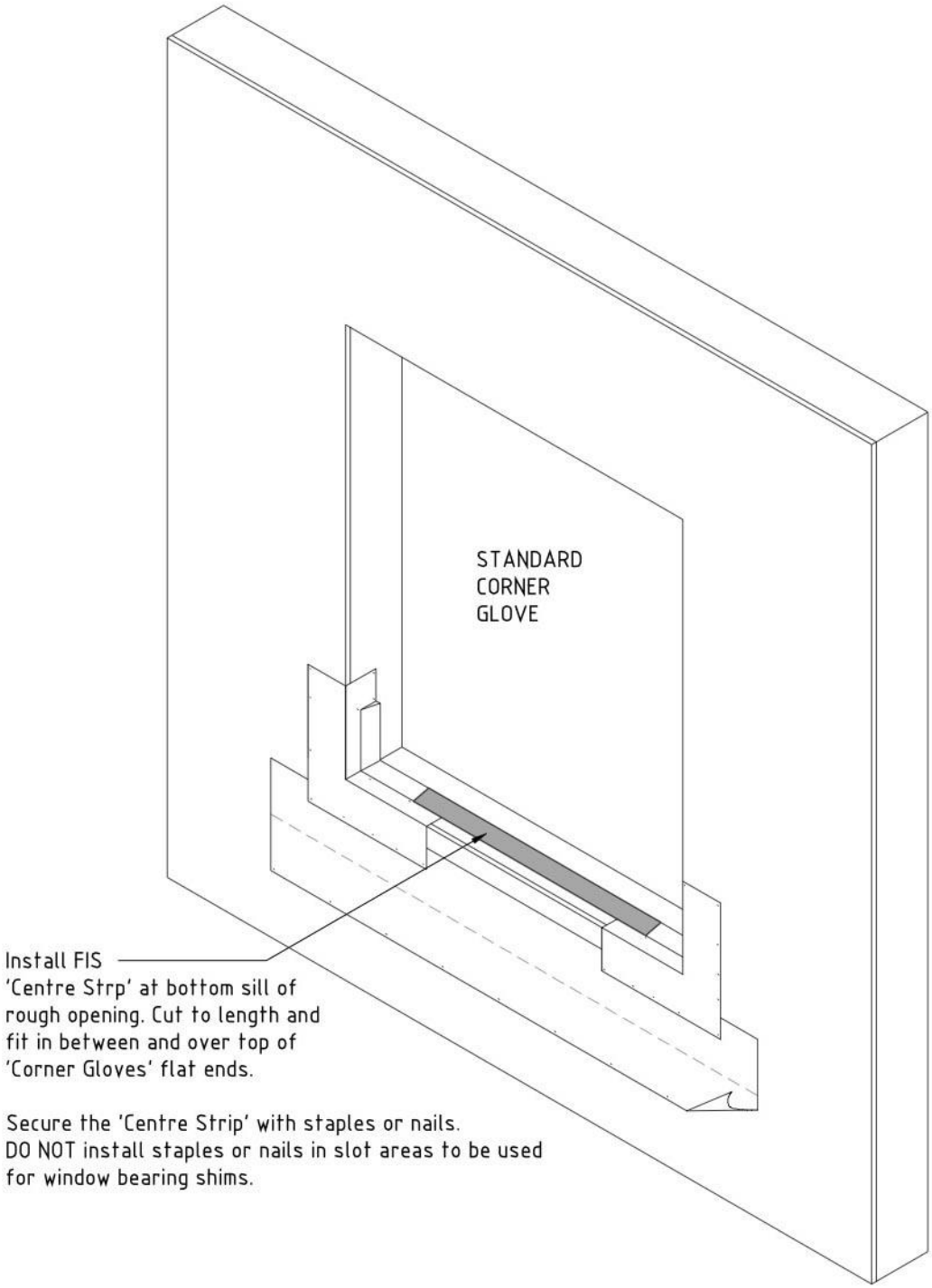
FIS Figure No. 7.6.1 – Method D - Weather Resistive Barrier Applied to Wall.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



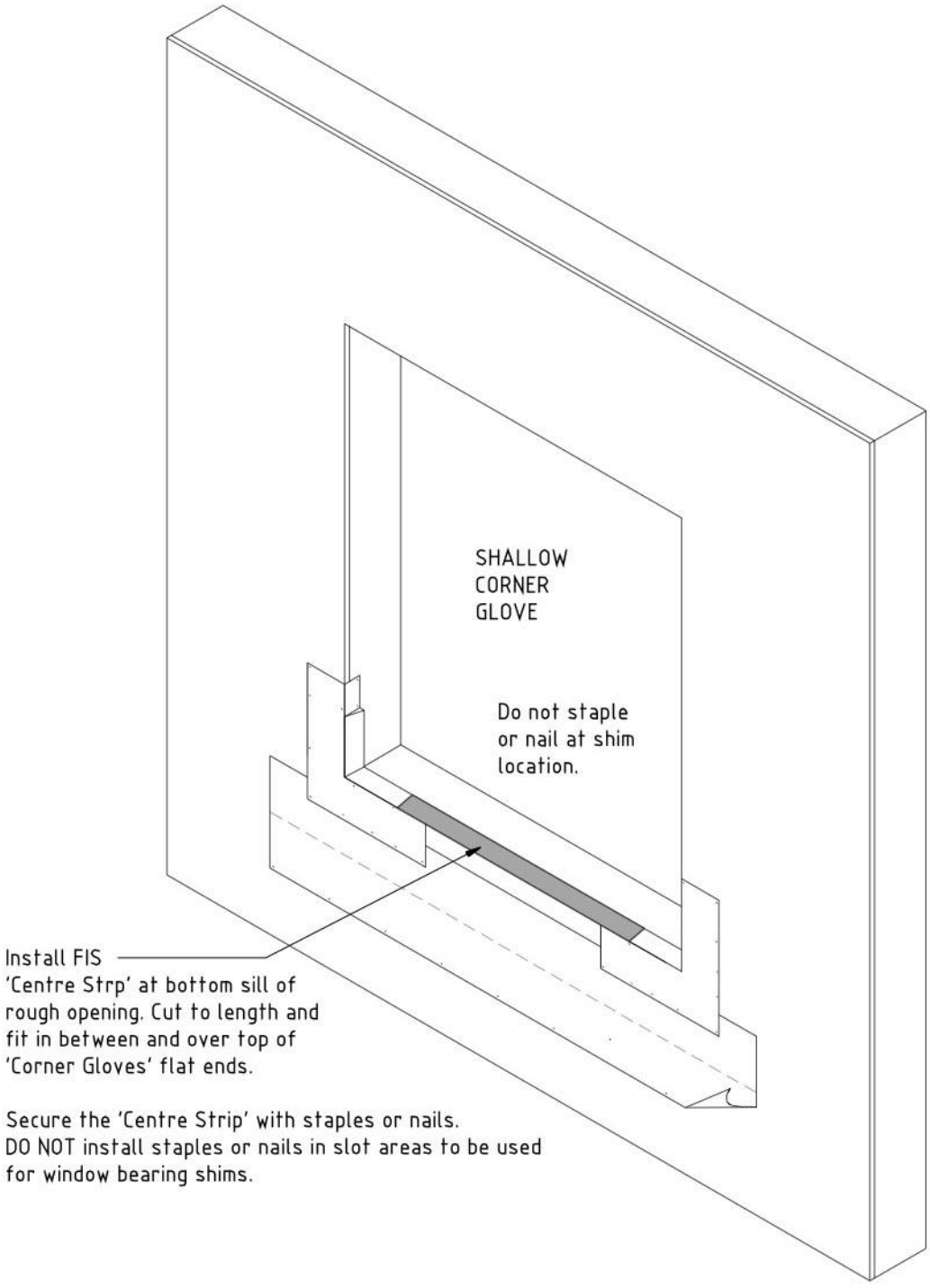
FIS Figure No. 7.6.2 – Method D - Standard ‘’Corner Glove’ for windows with jamb extensions. Weather Resistive Barrier installed ‘after’ installation of fenestration.



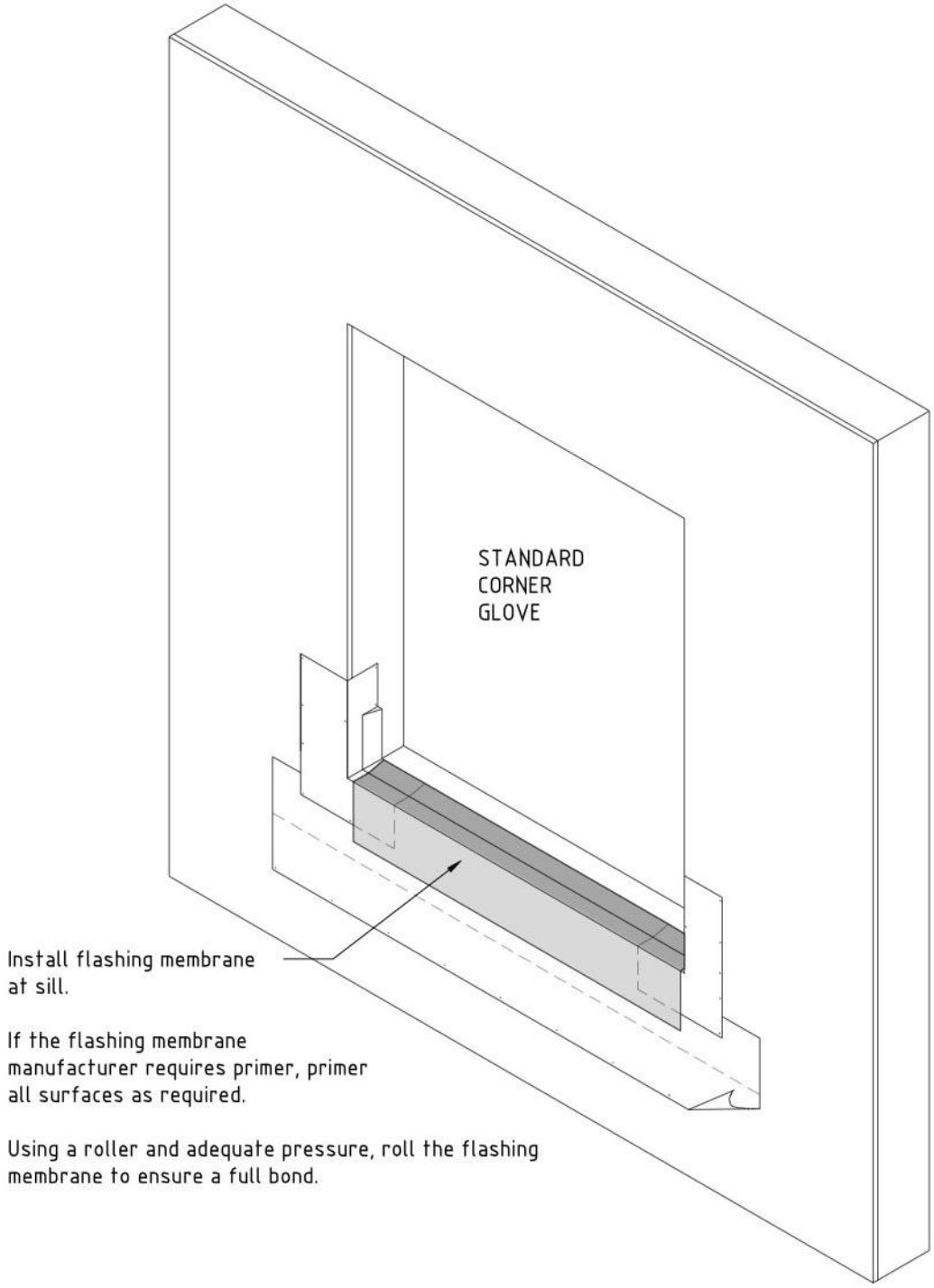
FIS Figure No. 7.6.3 – Method D - Shallow 'Corner Glove' for windows without jamb extension. Weather Resistive Barrier installed 'after' installation of fenestration.



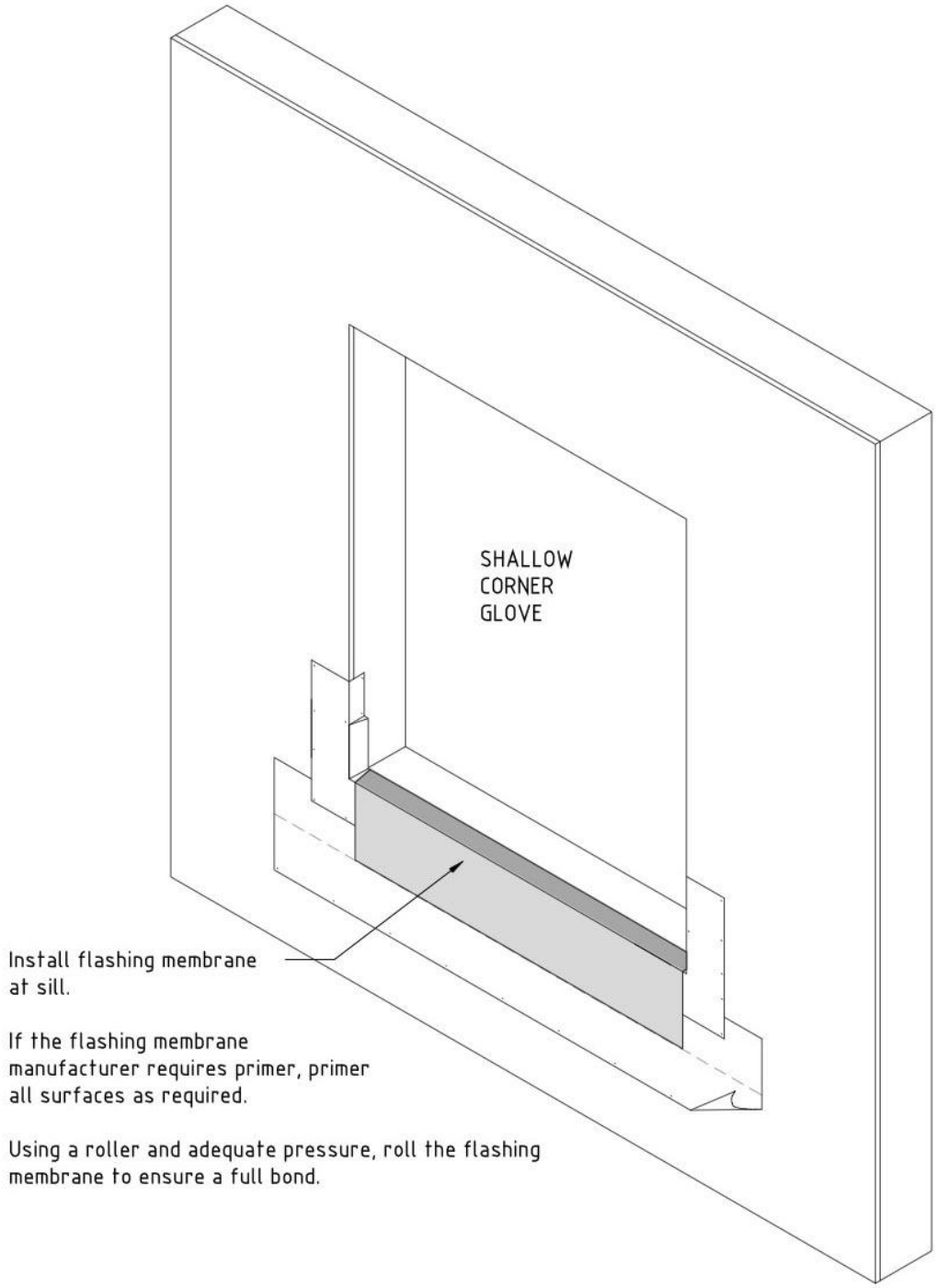
FIS Figure No. 7.6.4 – Method D - 'Center Strip' installed between standard 'Corner Gloves' Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.6.5 – Method D – 'Center Strip' installed between shallow 'Corner Gloves' Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.6.6 – Method D – Sill flashing membrane at standard ‘Corner Gloves’.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

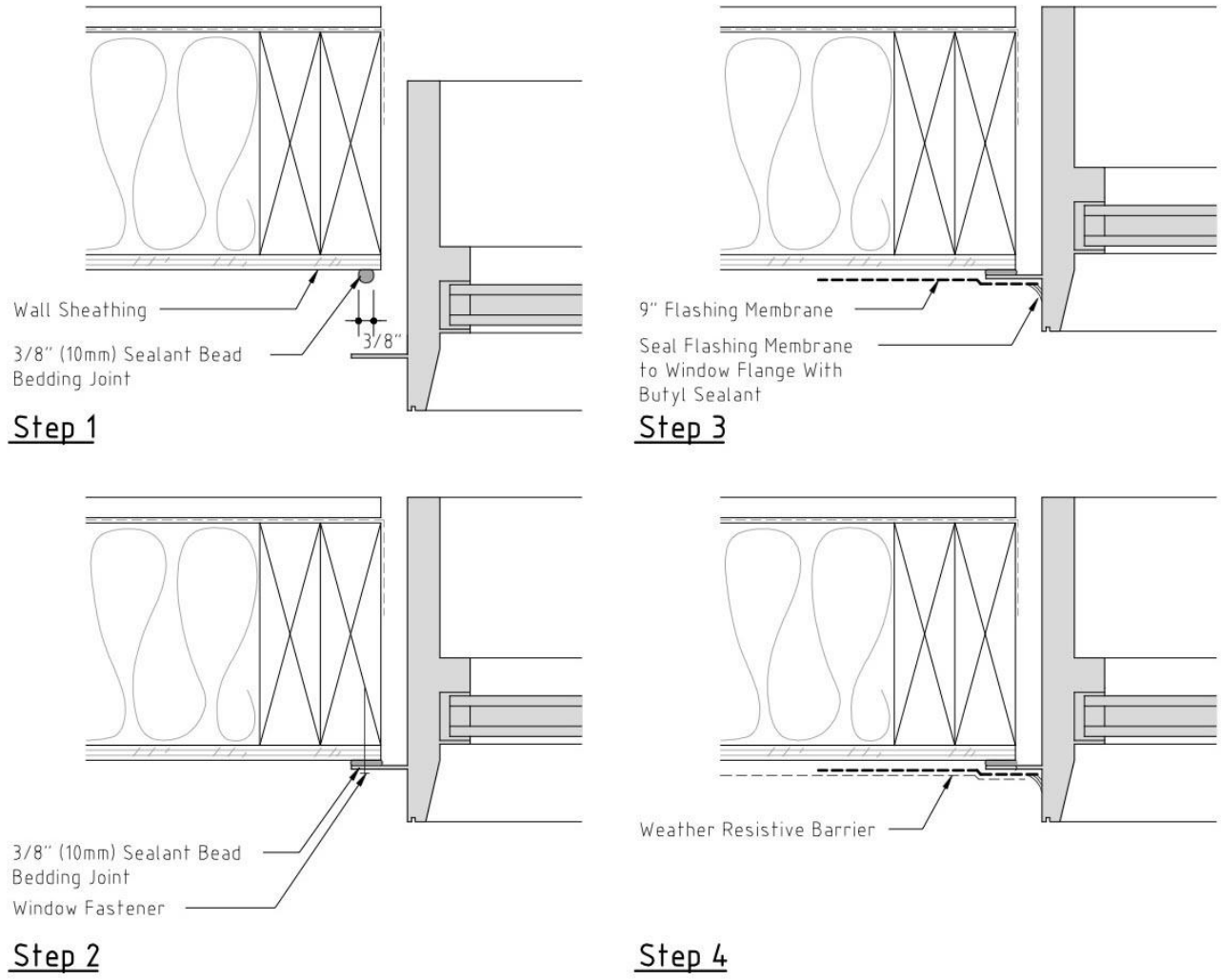


FIS Figure No. 7.6.7 - Method D - Sill flashing membrane at shallow ‘Corner Gloves’.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

Warranty Note: For Method D, the steps to this point conclude the requirements to comply with the FIS product installation warranty. The remaining steps for Method D identified herein, indicate the FIS recommended steps for this fenestration installation method to comply with ASTM E2112-19C.

Warranty Note: If the full installation of the fenestration does not complete with ASTM E2112-19C the FIS Warranty is void.

FIS is compatible with most available sealants. The architect, engineer or installer shall specify or select an appropriate sealant based on ASTM E2112-19C Table A4.1 or CSA A440, to suite the building's adjacent components and follow the sealant manufacturer's written instructions for sealant selection, primers, and installation.



FIS Figure No. 7.6.8 - Method D – Fenestration Bedding Joint and sealing of Weather Resistive Barrier. Weather Resistive Barrier installed 'after' installation of fenestration.

A 3/8" diameter sealant bedding joint shall be applied to the face of the wall sheathing at the head and jambs as seen in Step 1 of FIS Figure No. 7.6.9.

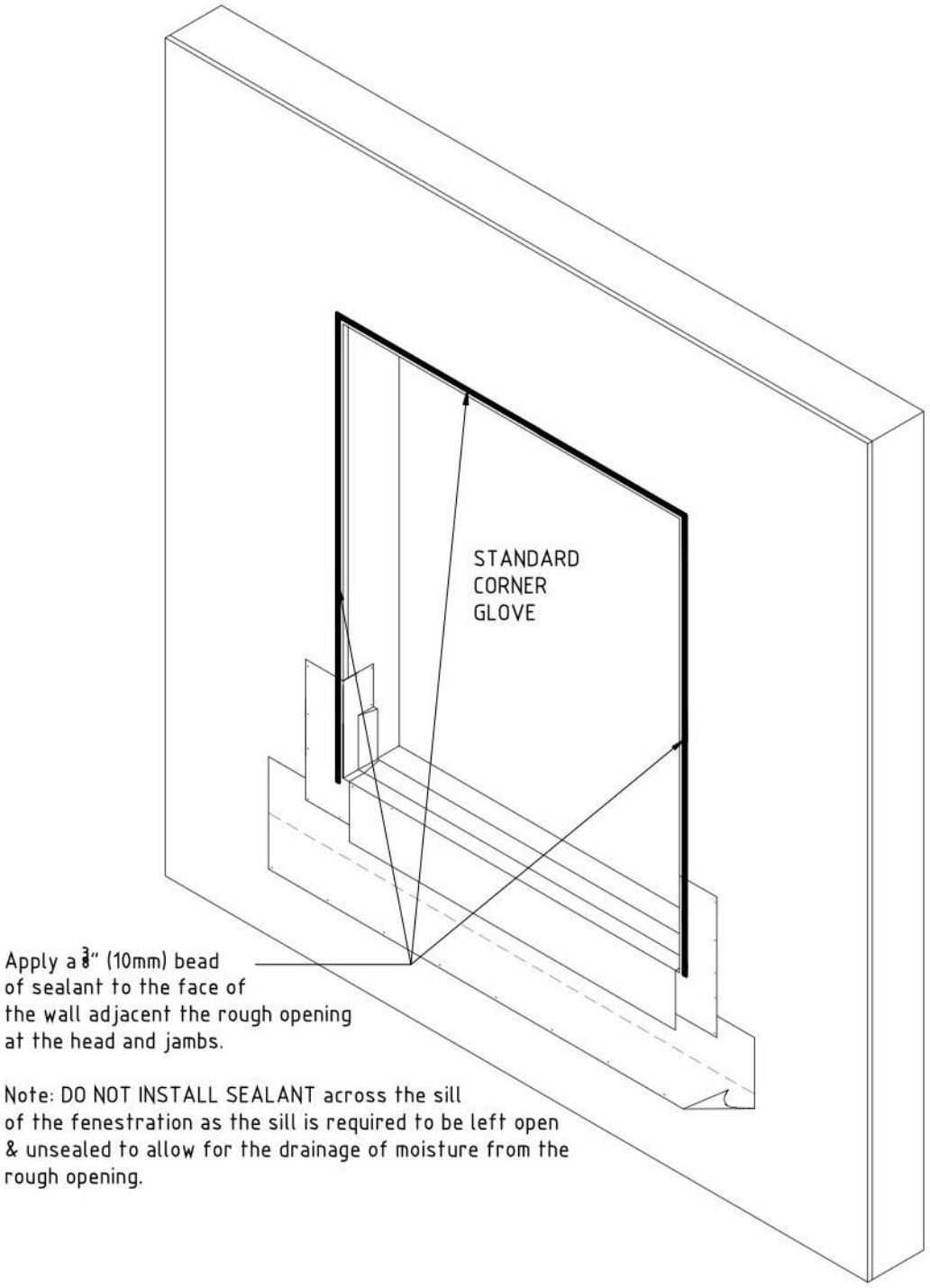
DO NOT APPLY SEALANT across the sill of the fenestration's rough opening, as the sill must be left unsealed to allow for moisture drainage from the rough opening at that location.

In Step 2, the fenestration unit is installed squishing the sealant bead to become the fenestration sealant bedding joint.

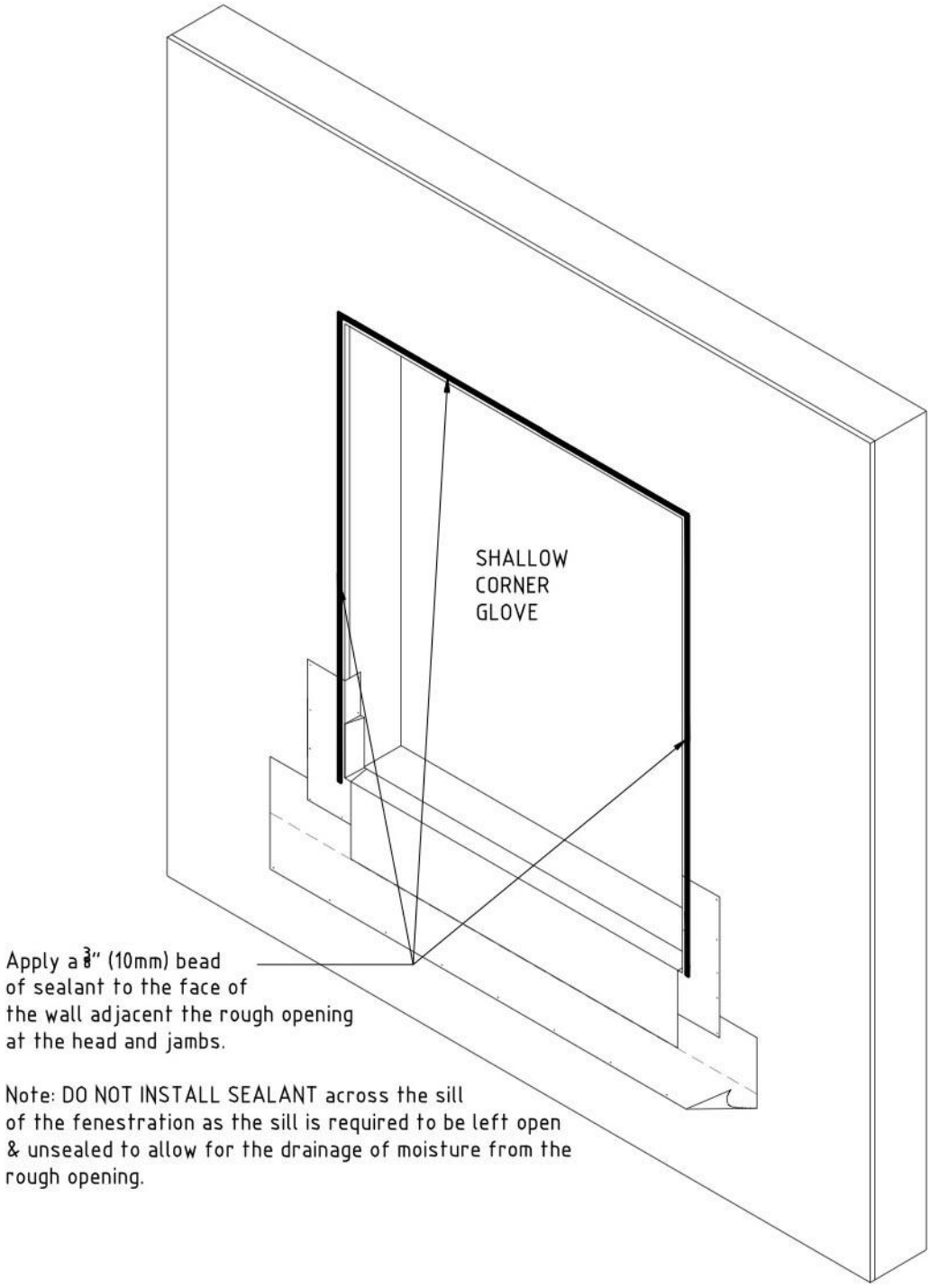
Step 3 requires the installation of a 9" wide flexible flashing membrane to be installed on the face of the wall at the jambs and head, lapping onto the fenestration's flange and sealing the flexible flashing membrane to the fenestration unit with a corner bead of sealant.

Step 4 requires the weather resistive barrier to be installed and lapped tight to the fenestration unit. This weather resistive barrier can be a 9 ft. roll product like house wrap.

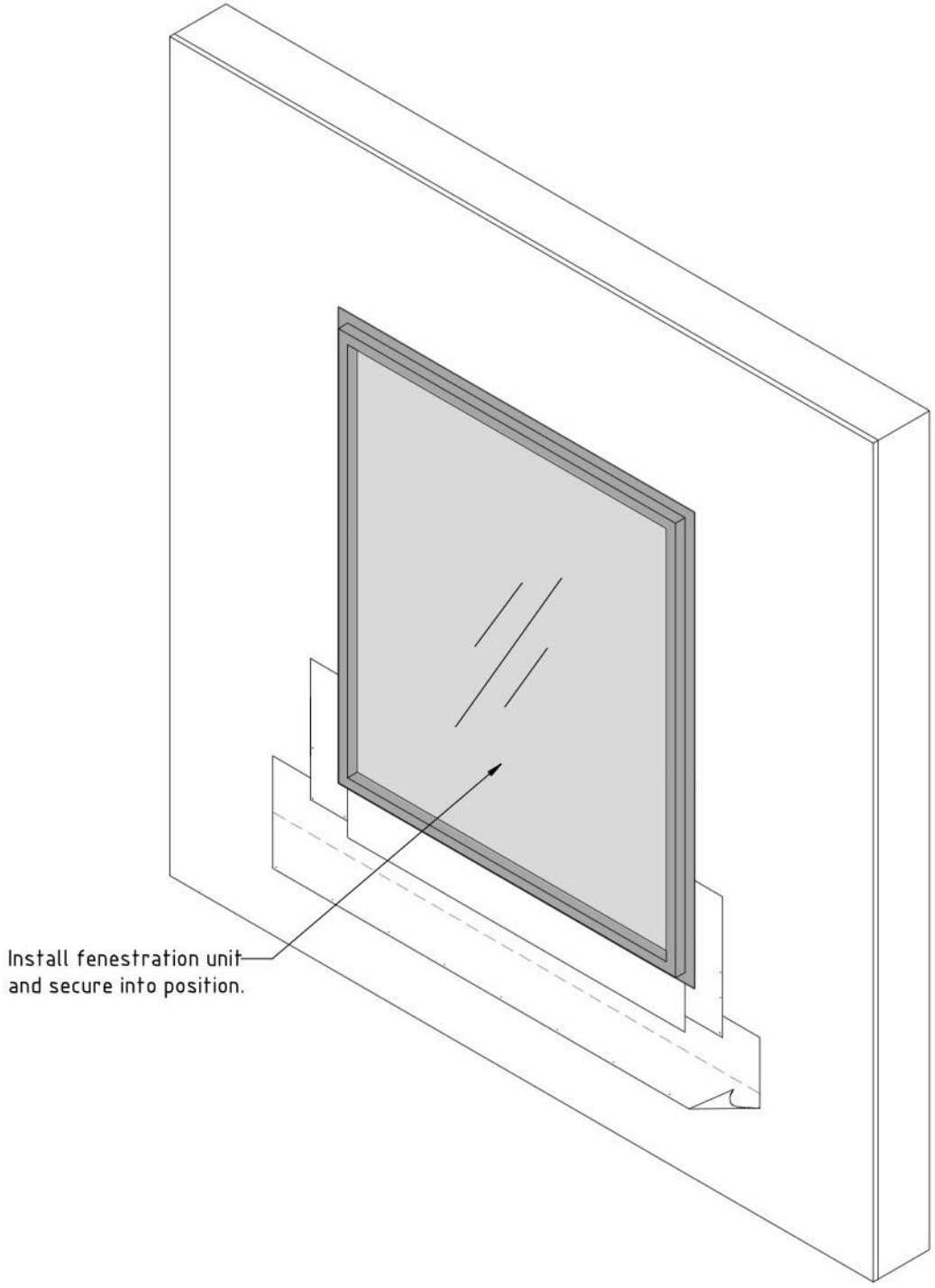
Note: If the fenestration unit does not have integral mounting flanges, the applied flanges will require more elaborate flashing and sealing details to ensure weather protection of the installed unit. When using applied flanges, follow the manufacturers' instructions for sealing the flange to the frame.



FIS Figure No. 7.6.9 – Method D - Standard 'Corner Glove' Fenestration Bedding Joint. Weather Resistive Barrier installed 'after' installation of fenestration.



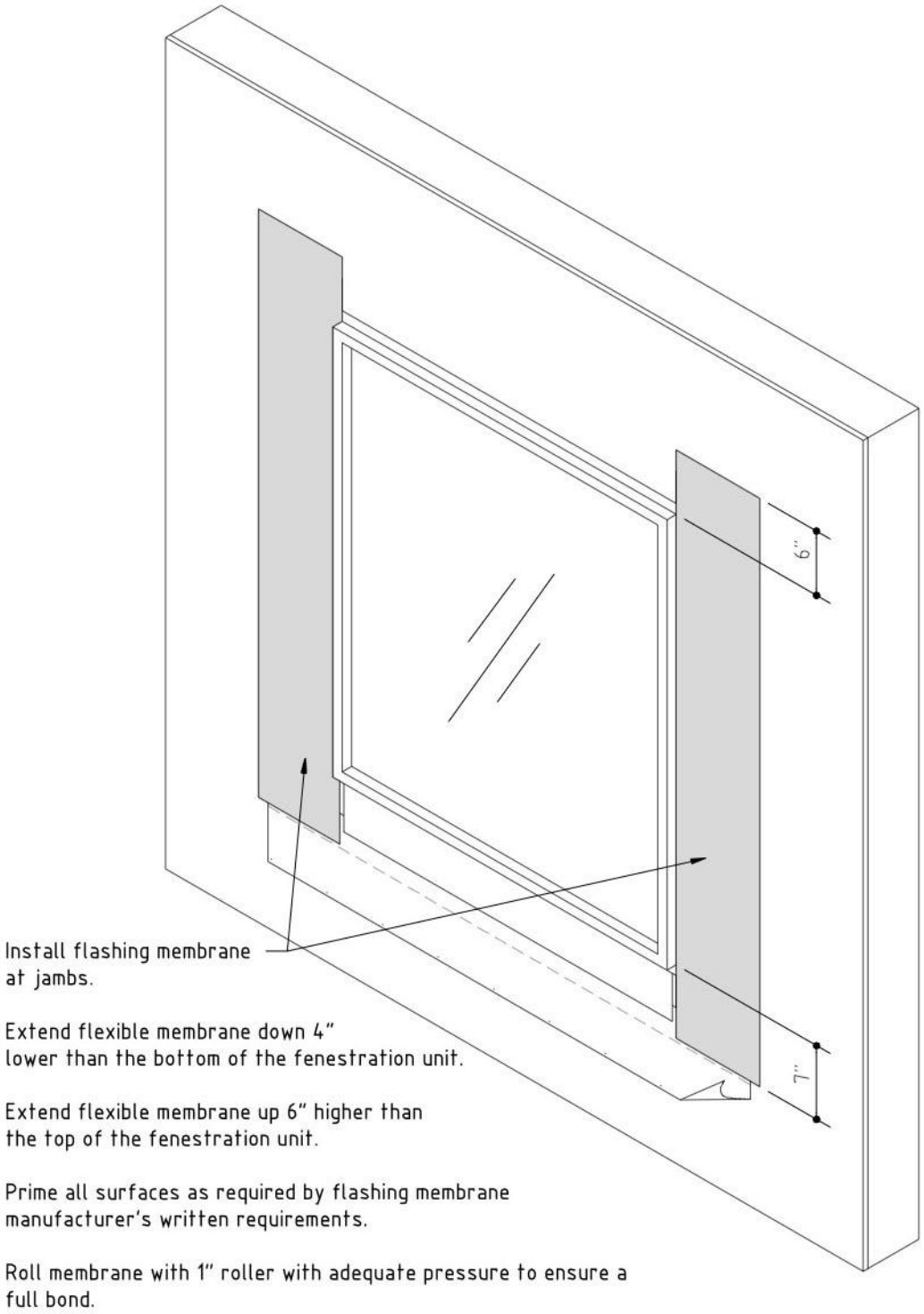
FIS Figure No. 7.6.10 – Method D - Shallow ‘Corner Glove’ Fenestration Bedding Joint.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



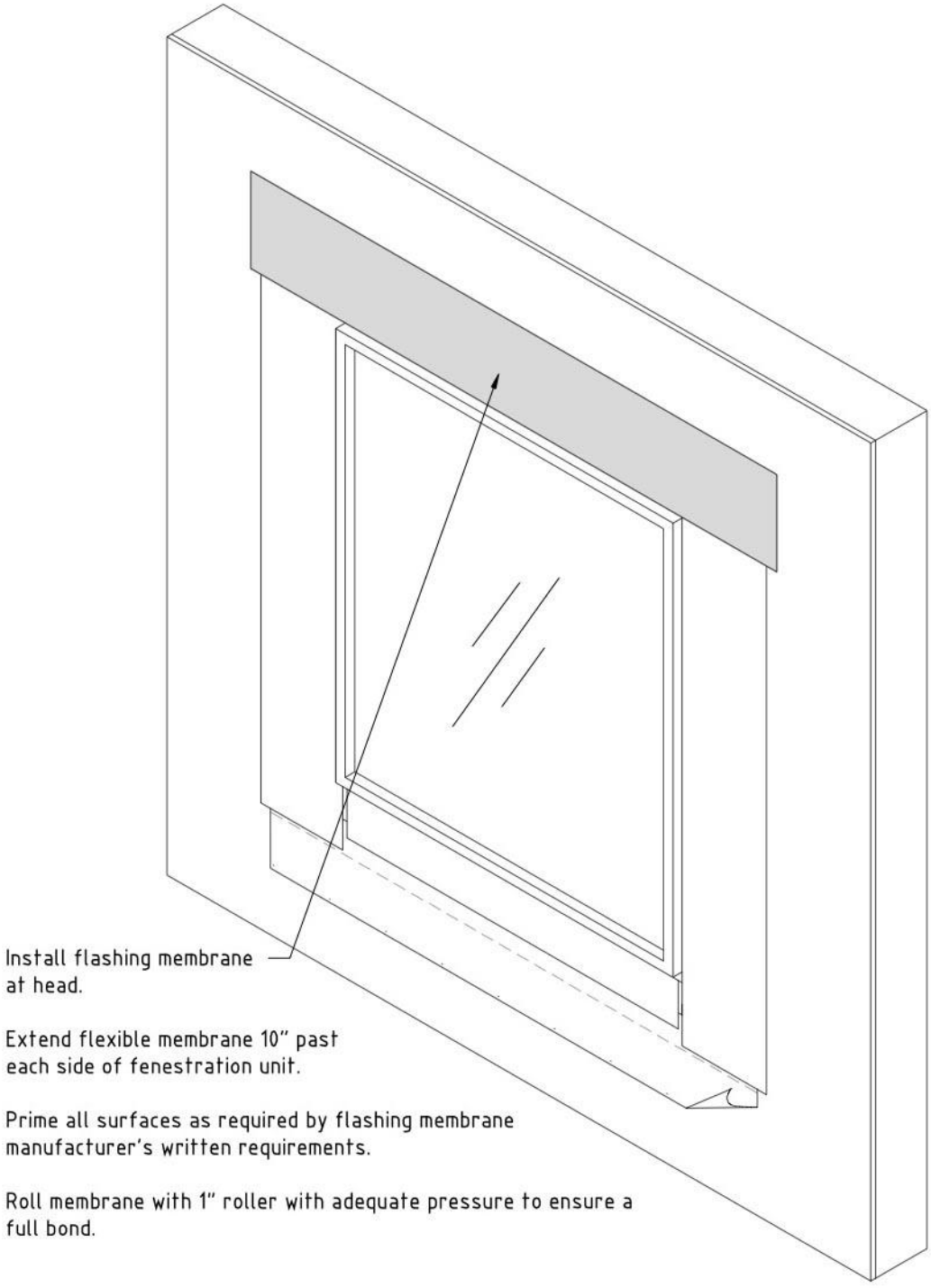
FIS Figure No. 7.6.11 – Method D - Window Installation.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

With the fenestration installed, If desired or required, the interior side of the fenestration’s perimeter cavity should be sealed with low expansion spray foam insulation. The spray foam insulation will seal the fenestration to the to the framing, vapour barrier, and provide thermal separation on all sides of the fenestration unit.
Refer to Section 9.0 for similar foam requirements and recommended installation.

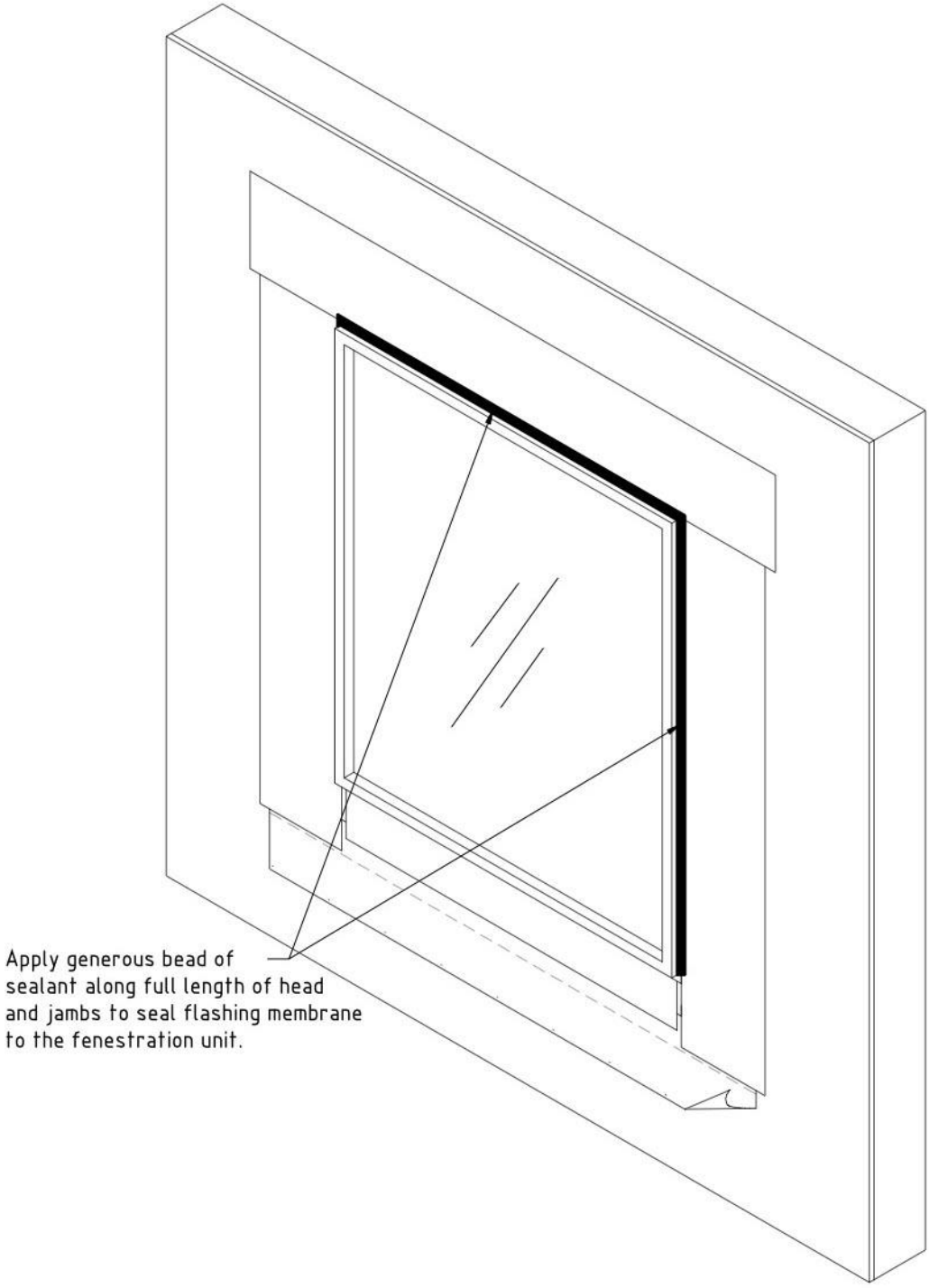
Continue with remaining flashing membrane and WRB installation steps as identified in this section.



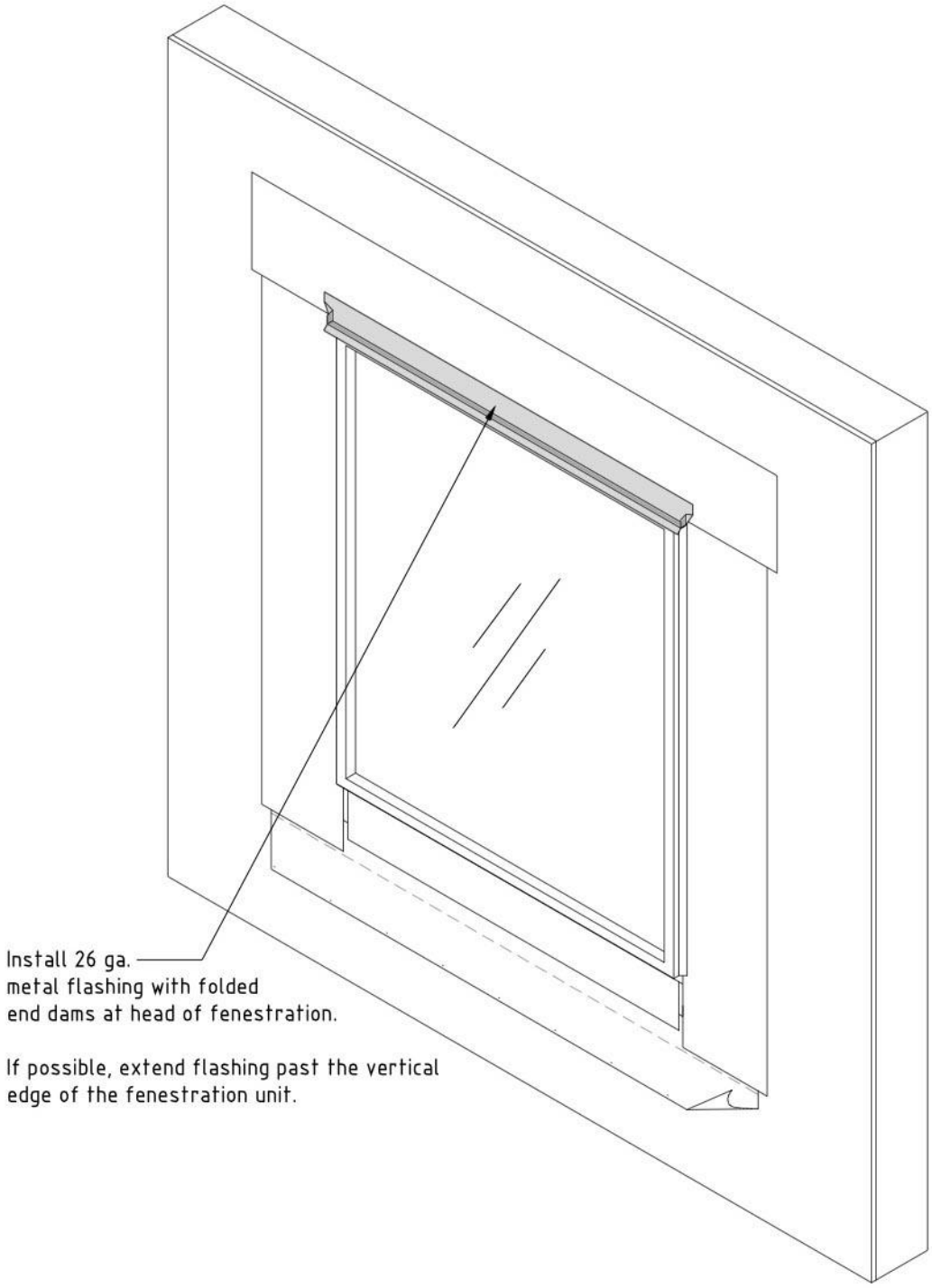
FIS Figure No. 7.6.12 – Method D - Jamb flange flashing membrane installation.
Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.6.13 – Method D – Head flange flashing membrane installation.
Weather Resistive Barrier installed 'after' installation of fenestration.

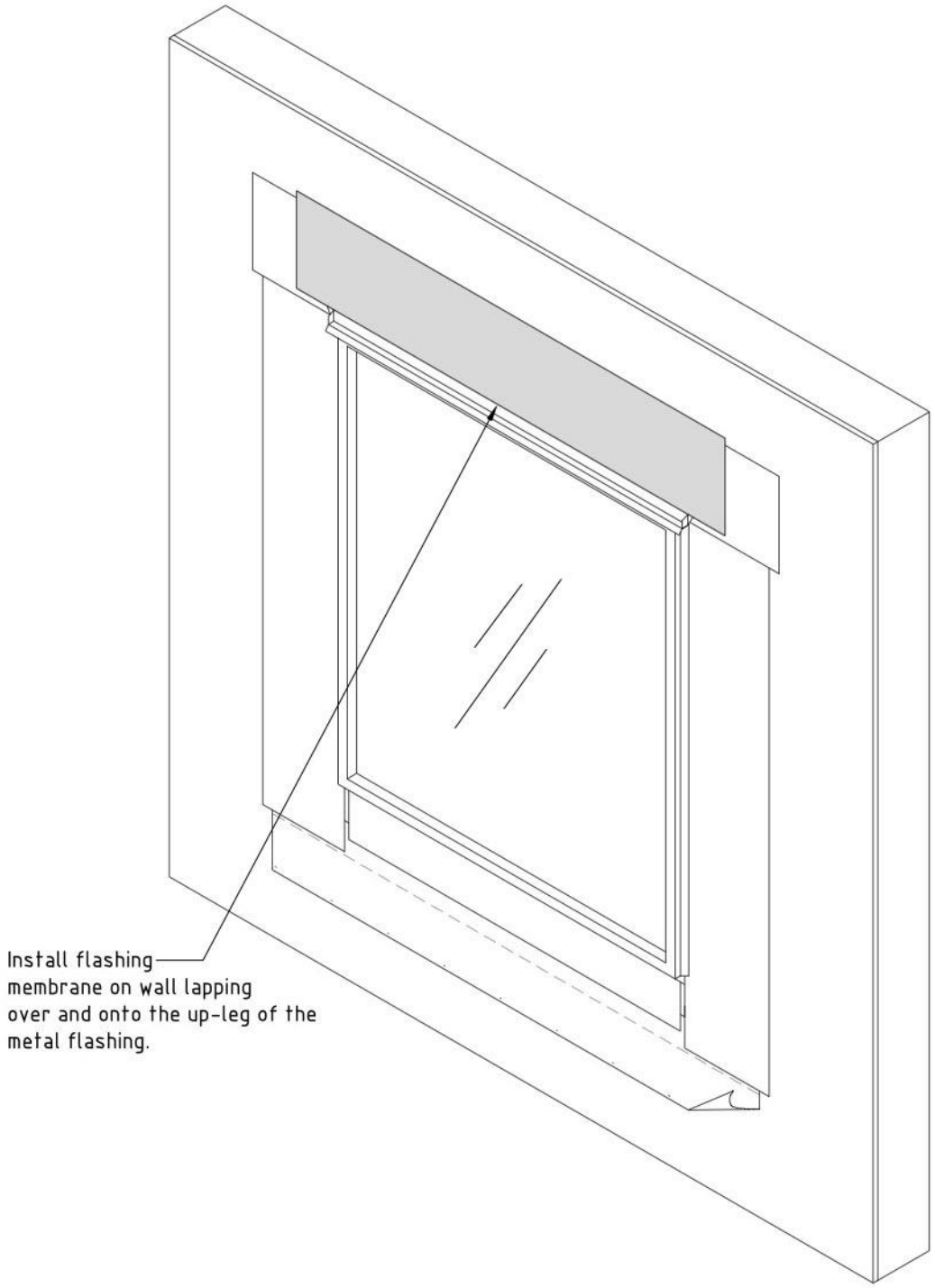


FIS Figure No. 7.6.14 – Method D - Window Sealed to Weather Resistive Barrier.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

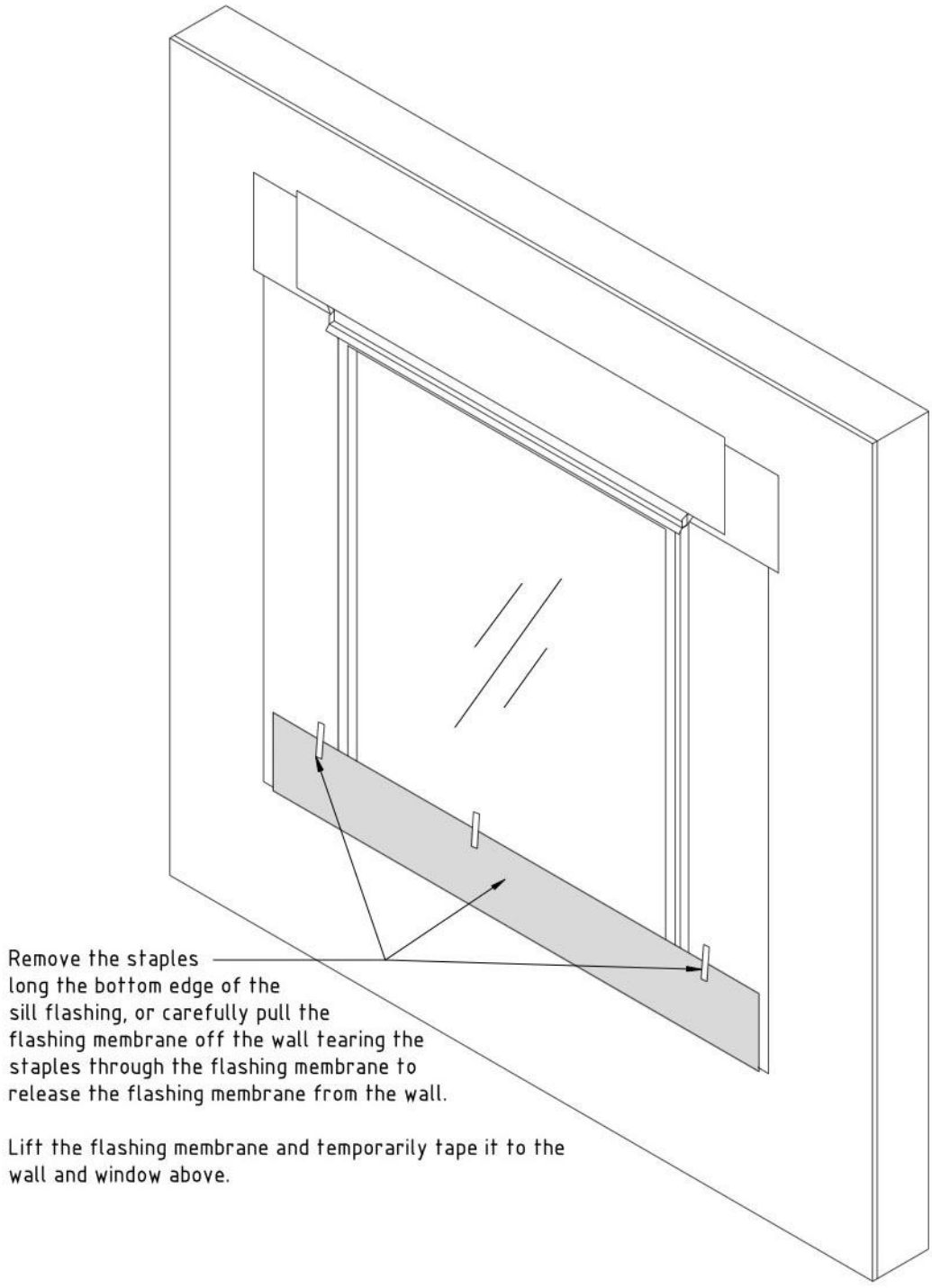


FIS Figure No. 7.6.15 – Method D - Metal Head Flashing Options with Folded End Dams.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

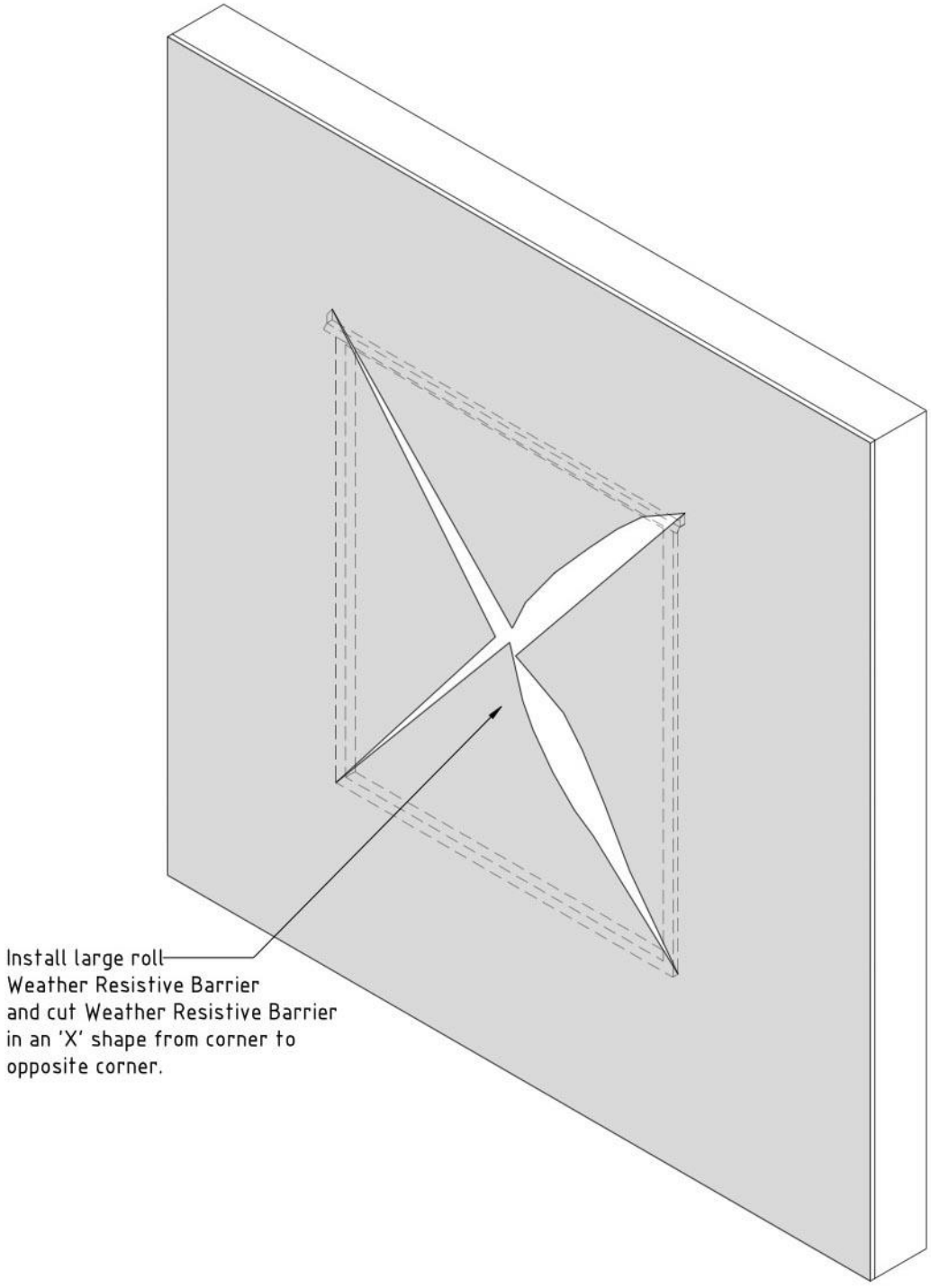
Refer to Section 8.0 for FIS recommended flashing details.



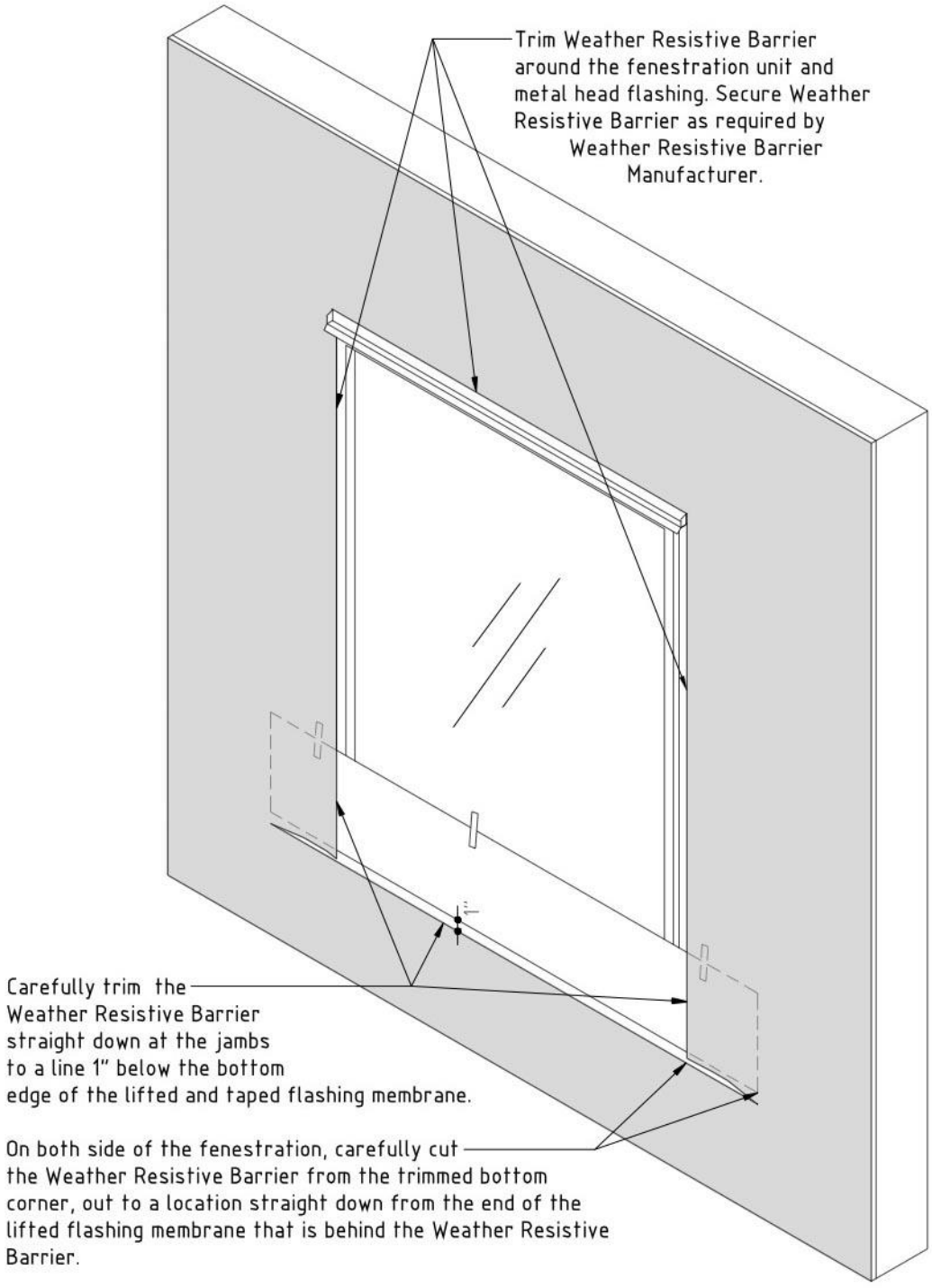
FIS Figure No. 7.6.16 – Method D - Flashing membrane installation lapping metal flashing up-leg. Weather Resistive Barrier installed ‘after’ installation of fenestration.



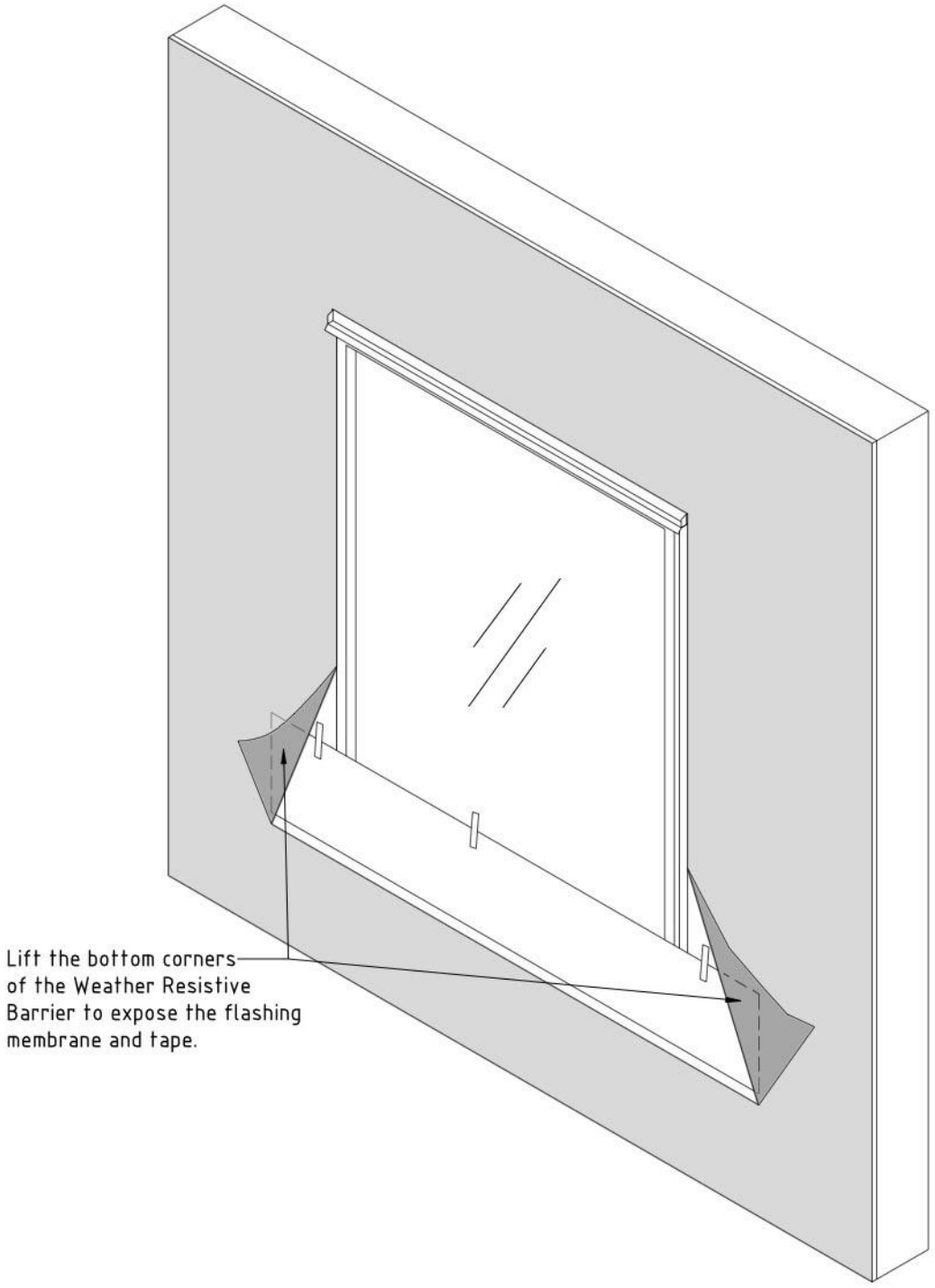
FIS Figure No. 7.6.17 – Method D - Weather Resistive Barrier lifted and taped to wall.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



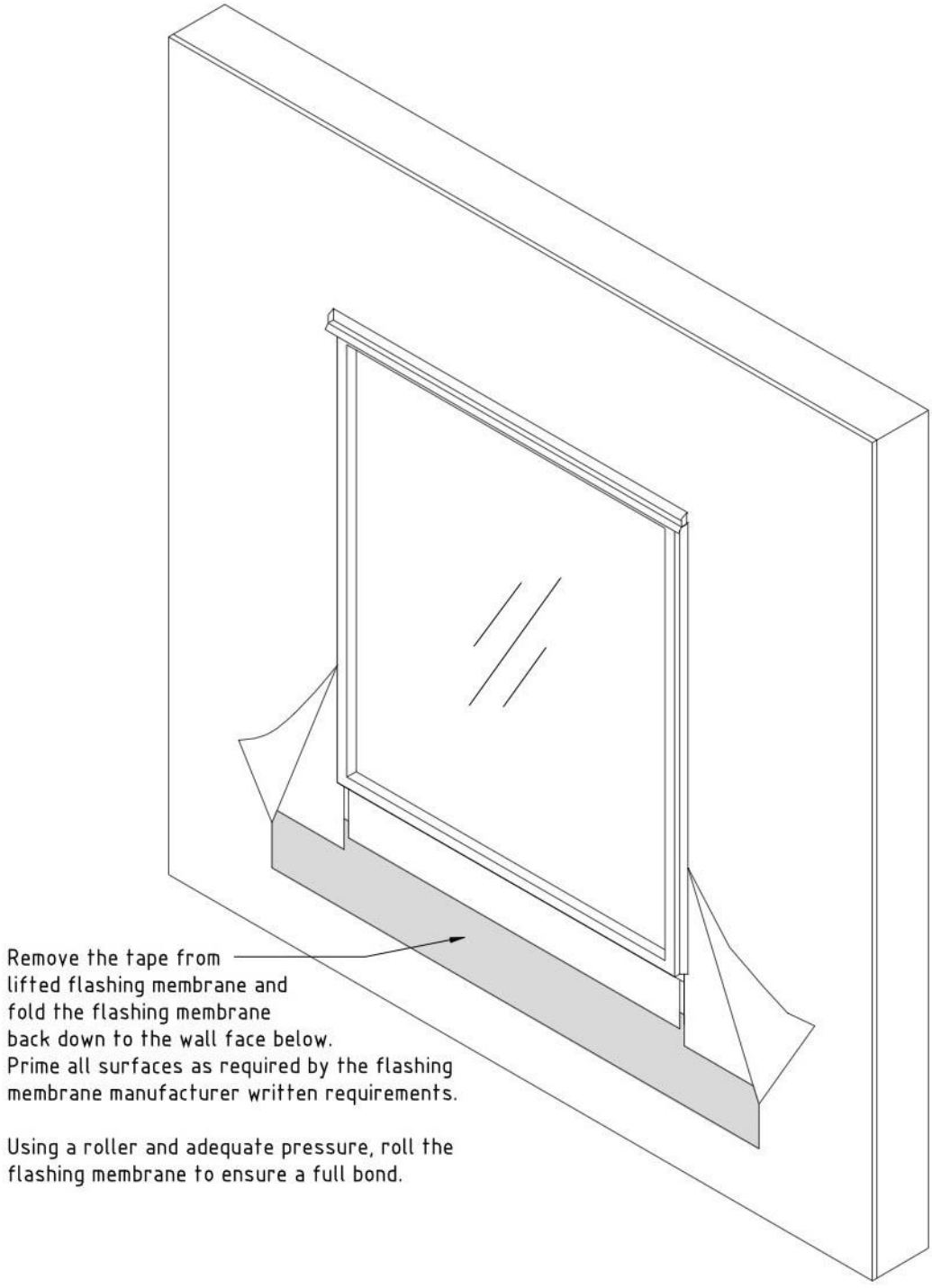
FIS Figure No. 7.6.18 – Method D - Weather Resistive Barrier cut for rough opening.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



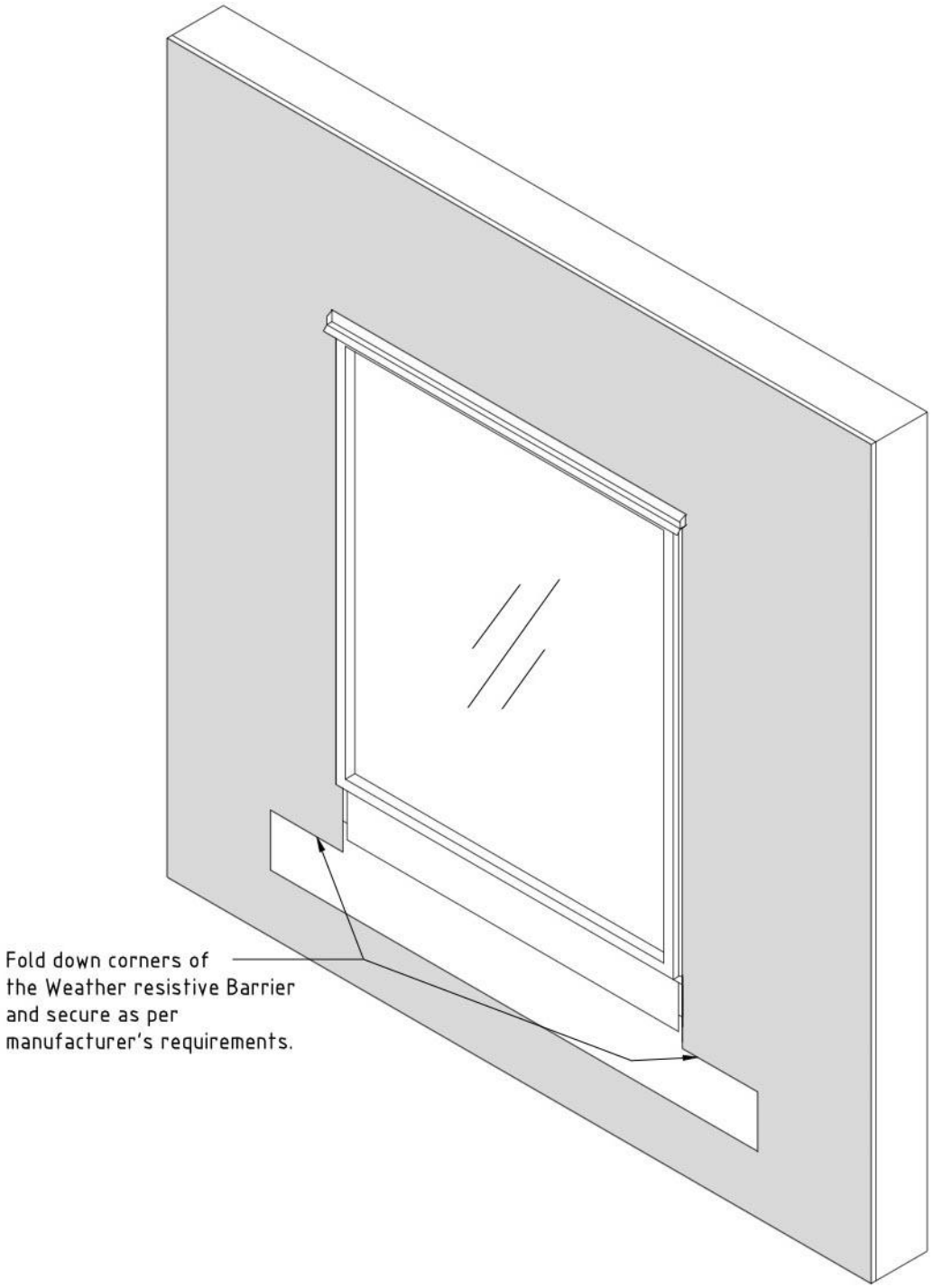
FIS Figure No. 7.6.19 – Method D - Weather Resistive Barrier trimmed for sill flashing lap. Weather Resistive Barrier installed 'after' installation of fenestration.



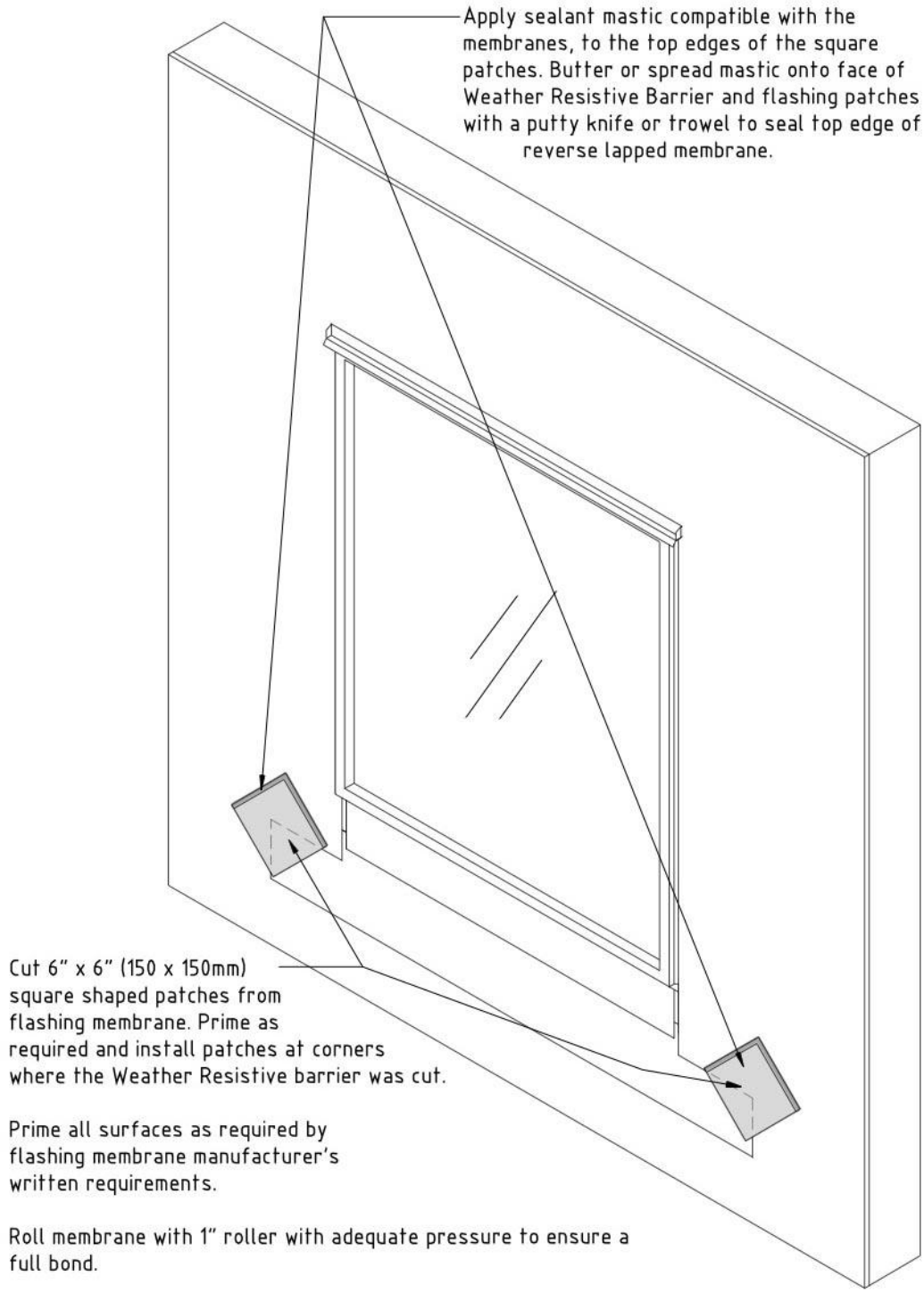
FIS Figure No. 7.20 – Method D - Weather Resistive Barrier lifted for access to flashing membrane. Weather Resistive Barrier installed ‘after’ installation of fenestration.



FIS Figure No. 7.6.21 – Method D - Flashing membrane dropped and secured.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



FIS Figure No. 7.6.22 – Method D - Weather Resistive Barrier dropped and secured.
Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.6.23 – Method D - Complete Weather Resistive Barrier install with corner patches. Weather Resistive Barrier installed 'after' installation of fenestration.

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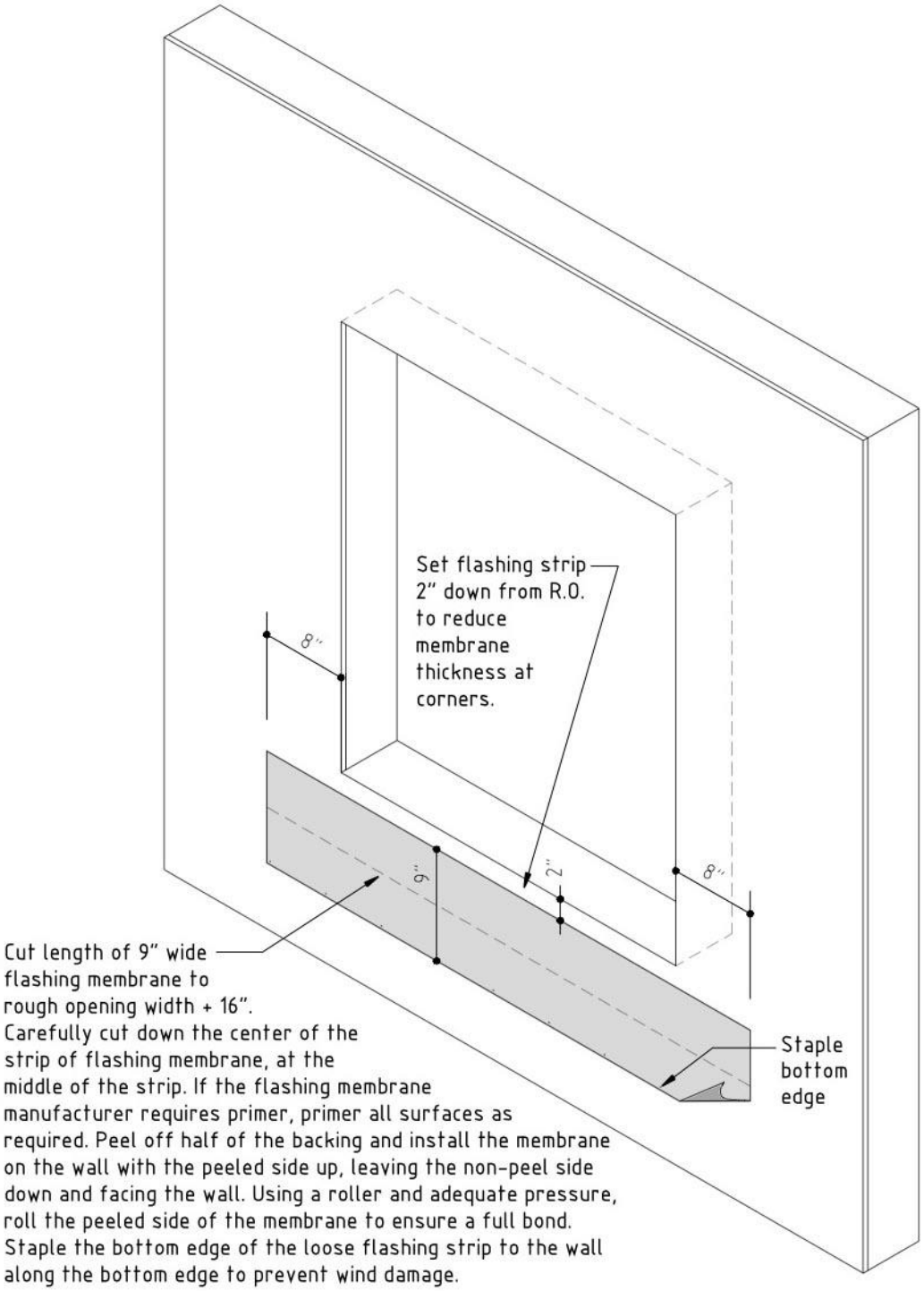
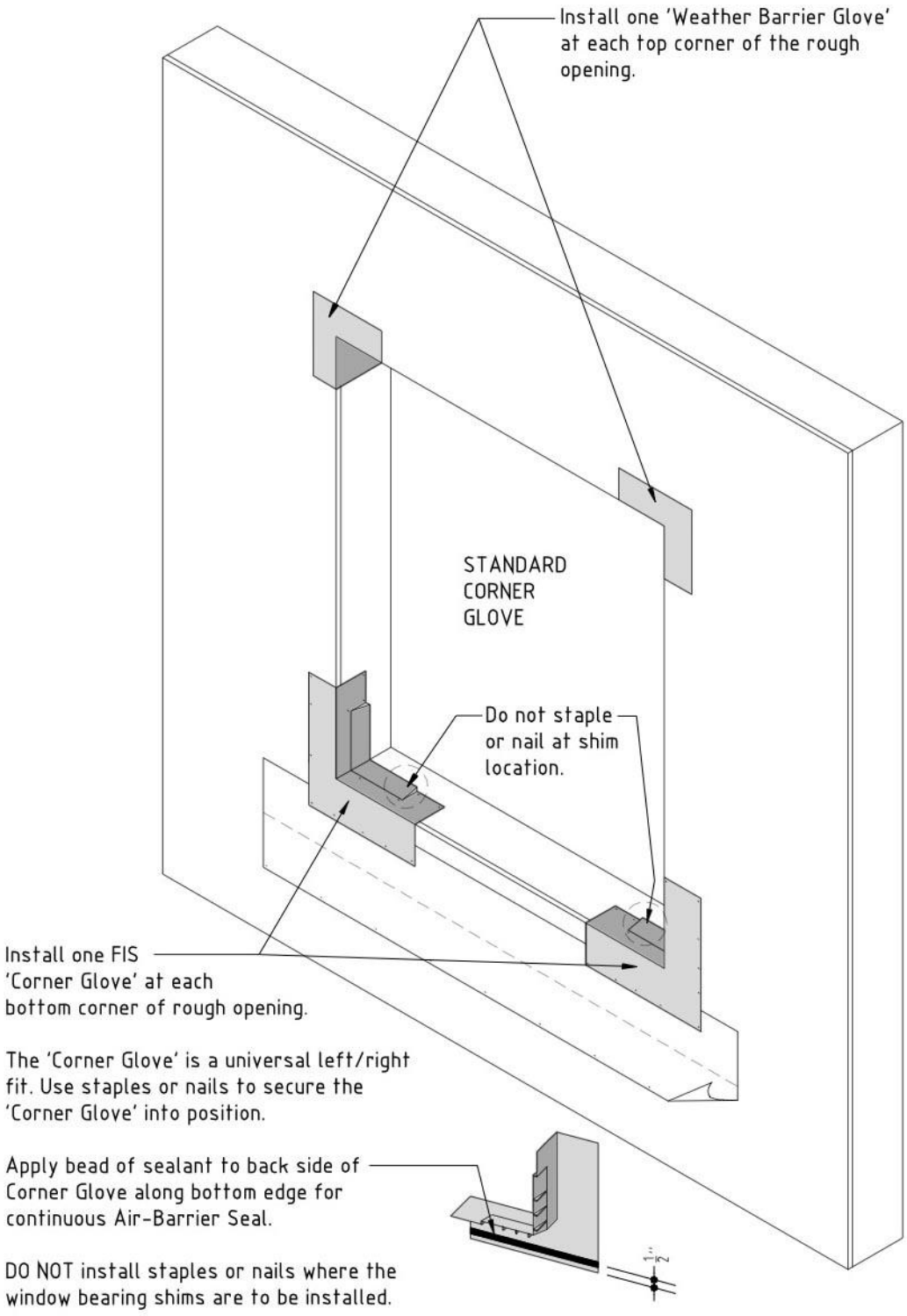
7.7 Requirements for FIS Installation Method DW

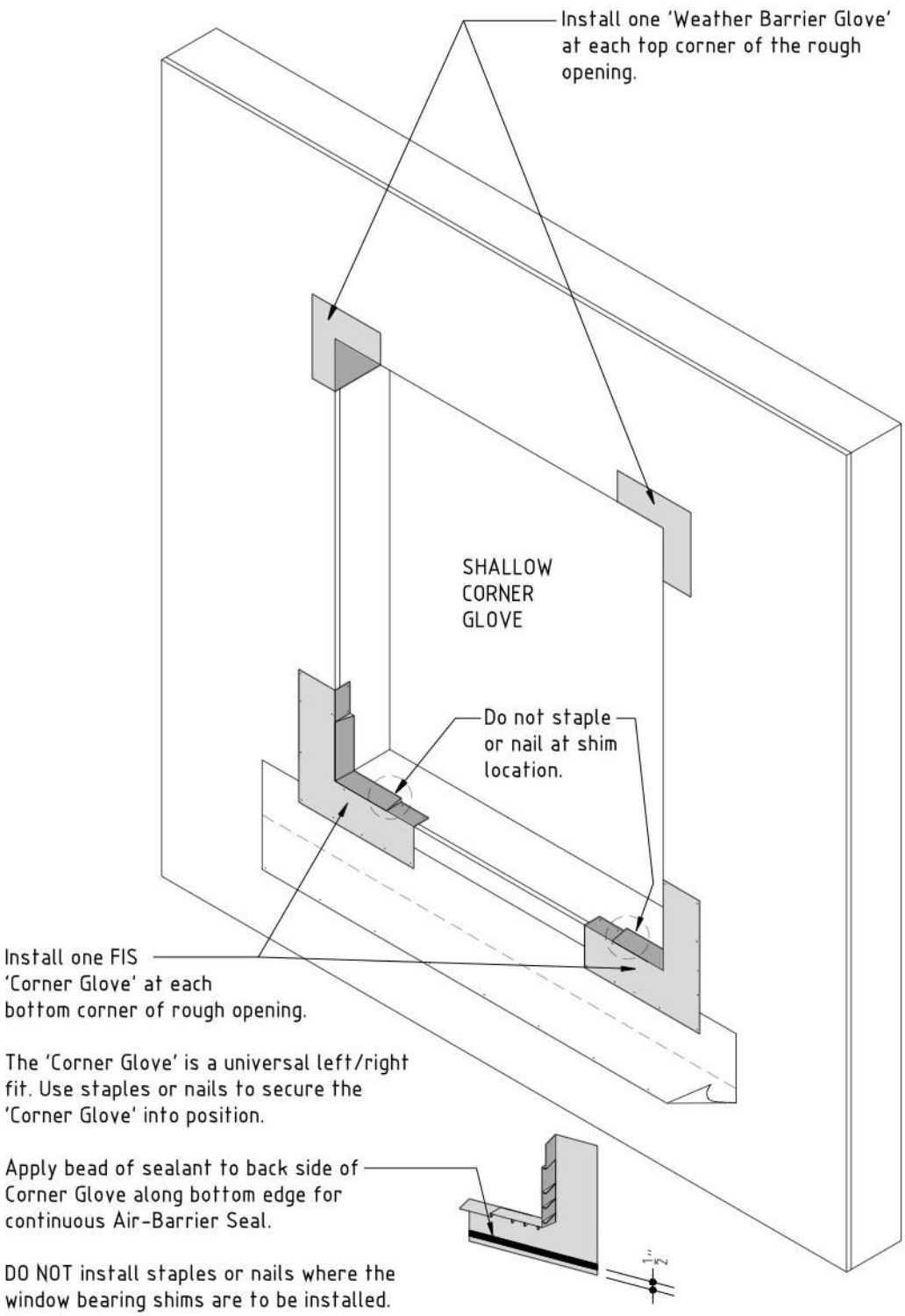
Polymeric-type WRB approx. 9 ft. wide roll WRB installed ‘after’ installation of fenestration.
Flashing Applied Behind the Face of the Mounting Flange.
Flashing membranes extend into the rough opening for air barrier tie-in to fenestration.
ASTM E2112-19C compliant.



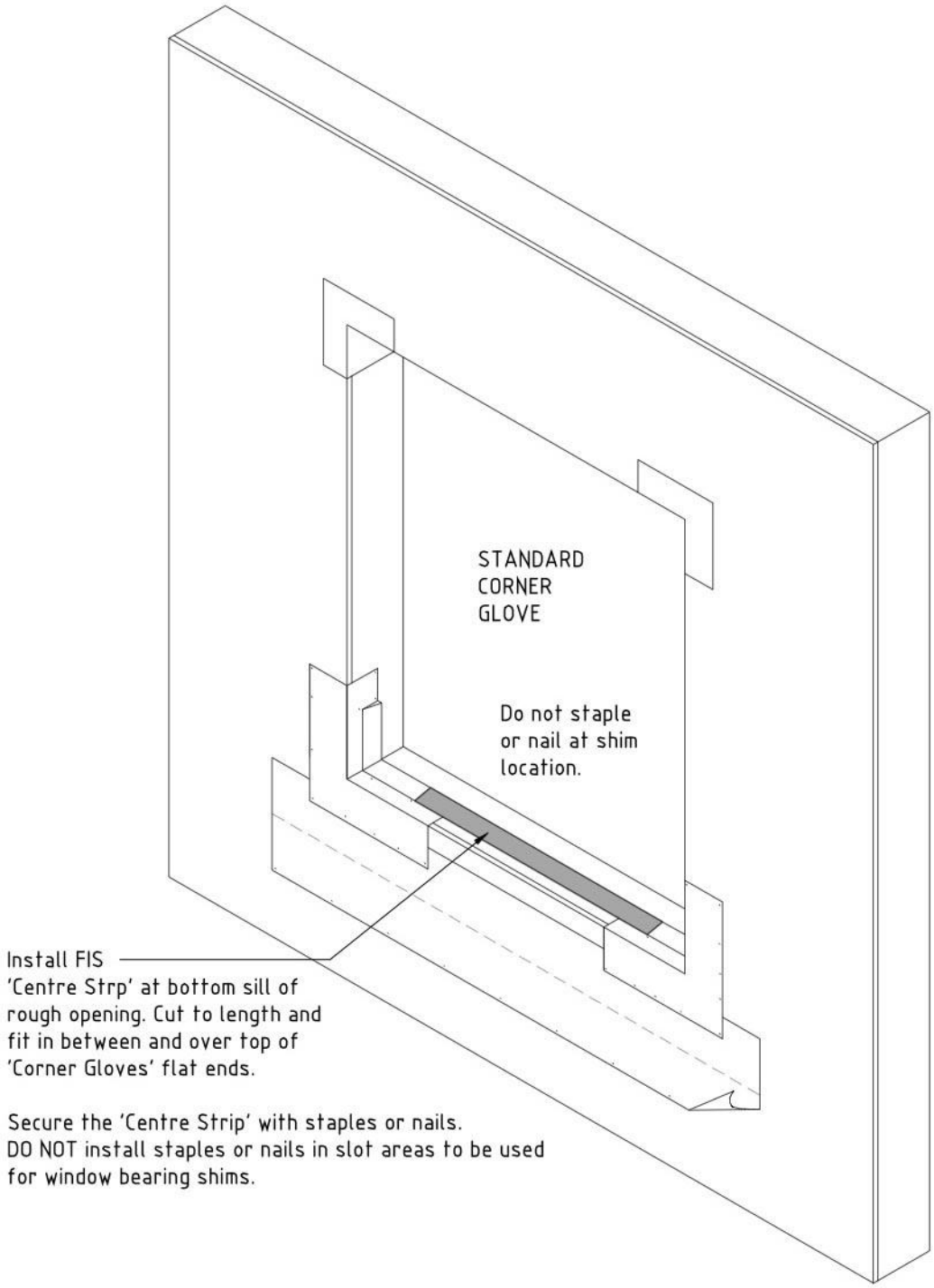
FIS Figure No. 7.7.1 – Method DW - Weather Resistive Barrier Applied to Wall.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



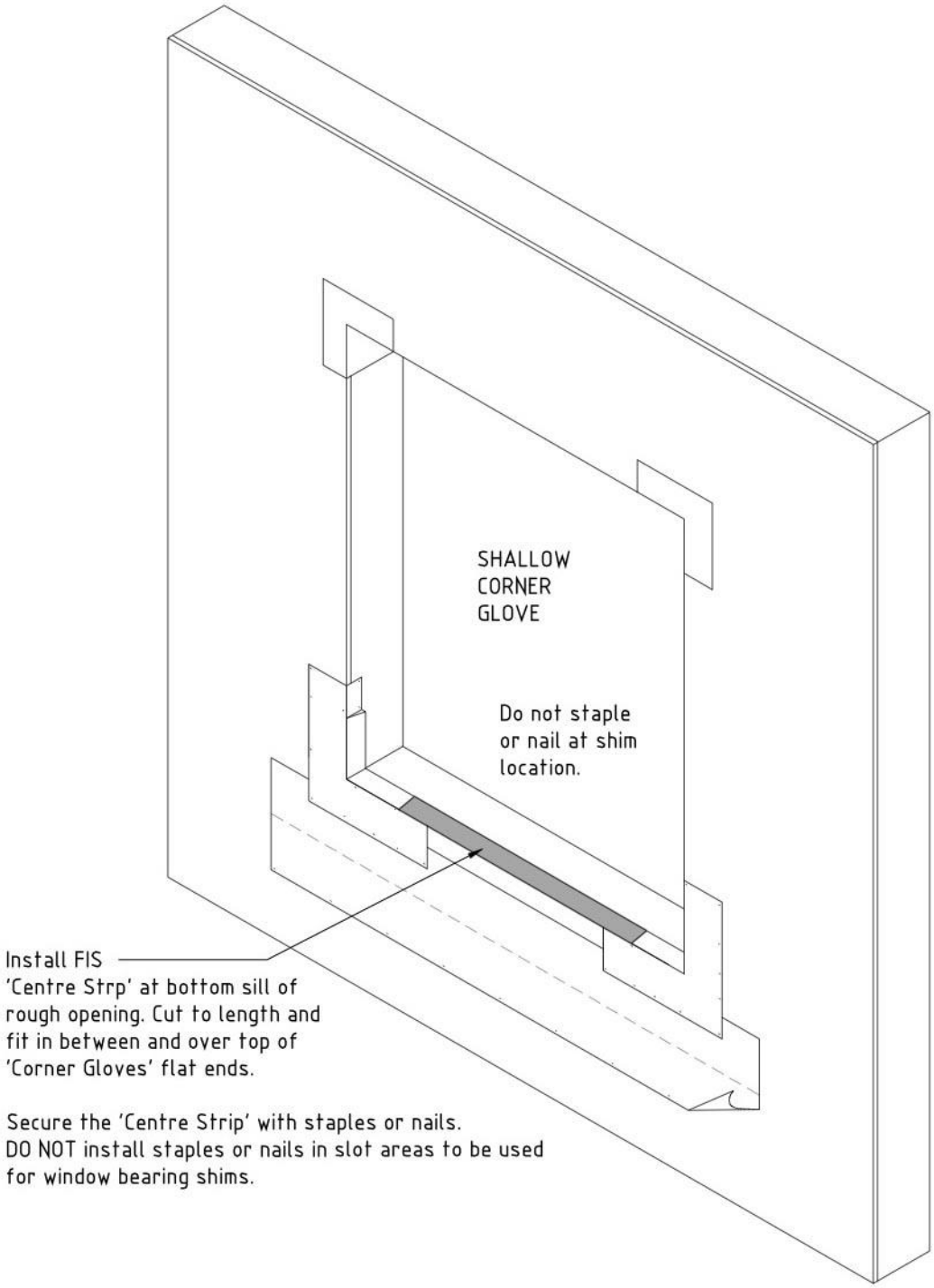
FIS Figure No. 7.7.2 – Method DW - Standard ''Corner Glove' for windows with jamb extensions. Weather Resistive Barrier installed 'after' installation of fenestration.



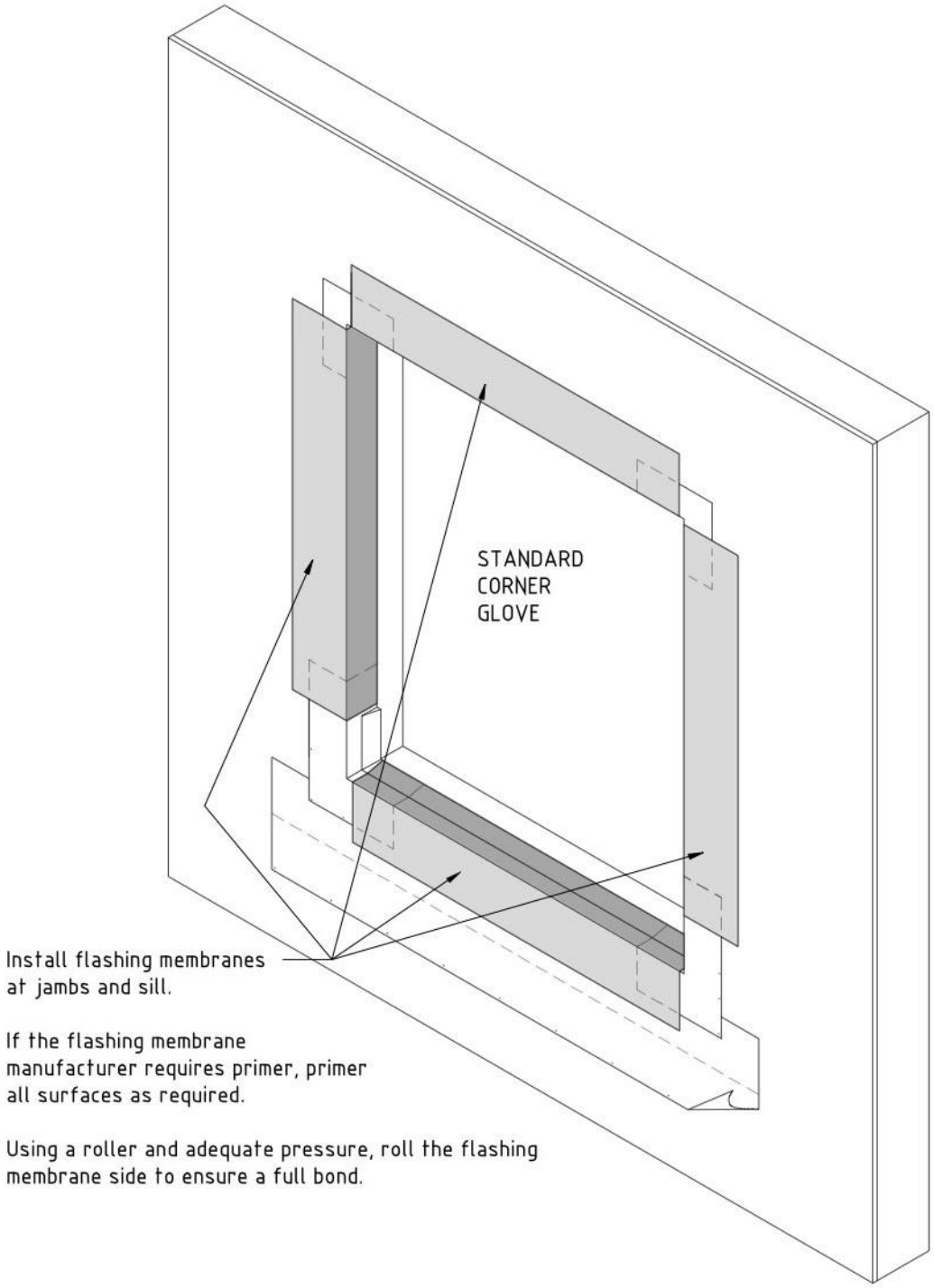
FIS Figure No. 7.7.3 – Method DW - Shallow 'Corner Glove' for windows without jamb extensions. Weather Resistive Barrier installed 'after' installation of fenestration.



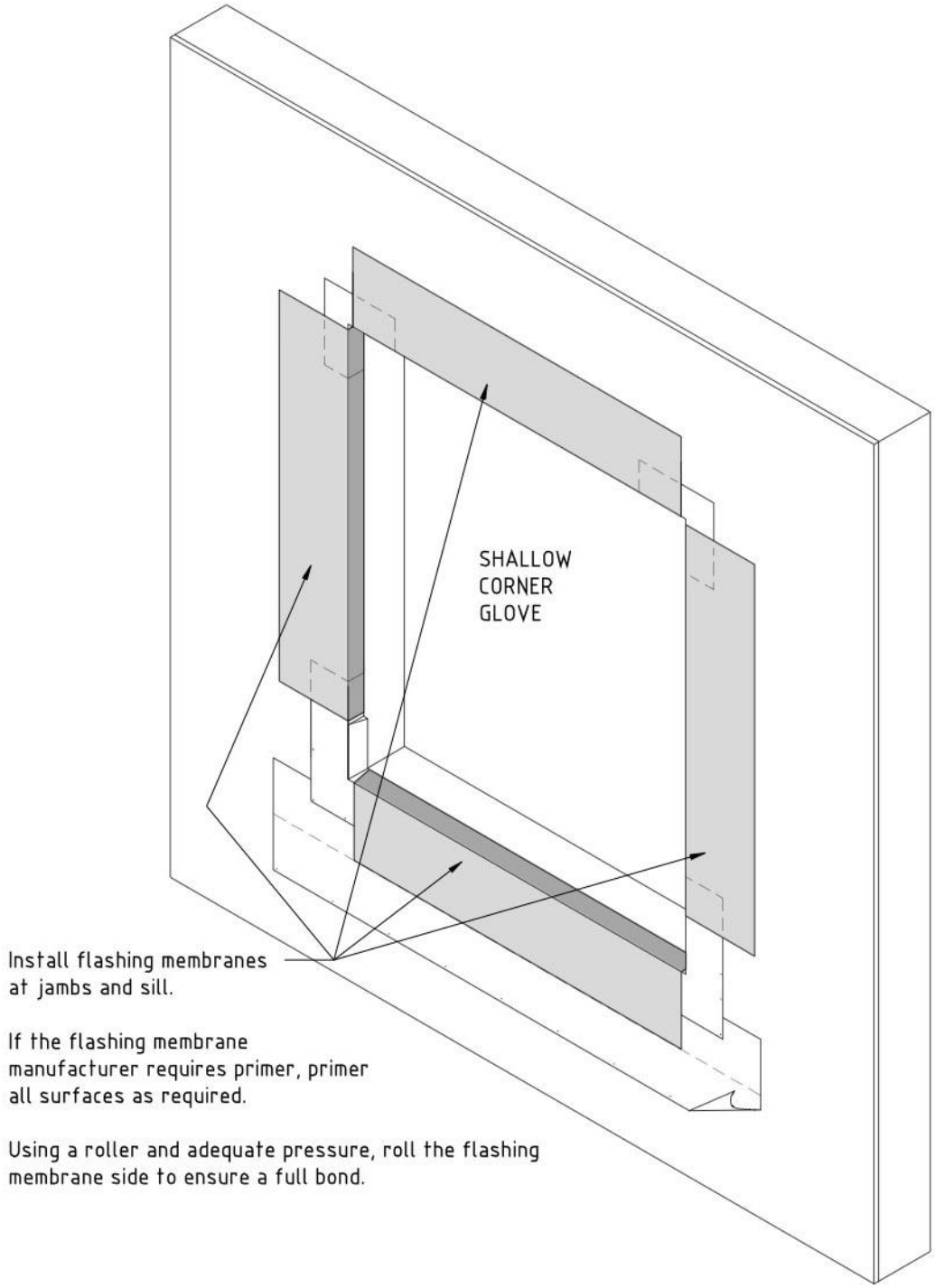
FIS Figure No. 7.7.4 – Method DW - Center Strip' installed between standard 'Corner Gloves' Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.7.5 – Method DW – 'Center Strip' installed between shallow 'Corner Gloves'
Weather Resistive Barrier installed 'after' installation of fenestration.



FIS Figure No. 7.7.6 – Method DW – Head/Jamb/Sill flashing membrane at standard ‘Corner Gloves’. Weather Resistive Barrier installed ‘after’ installation of fenestration.

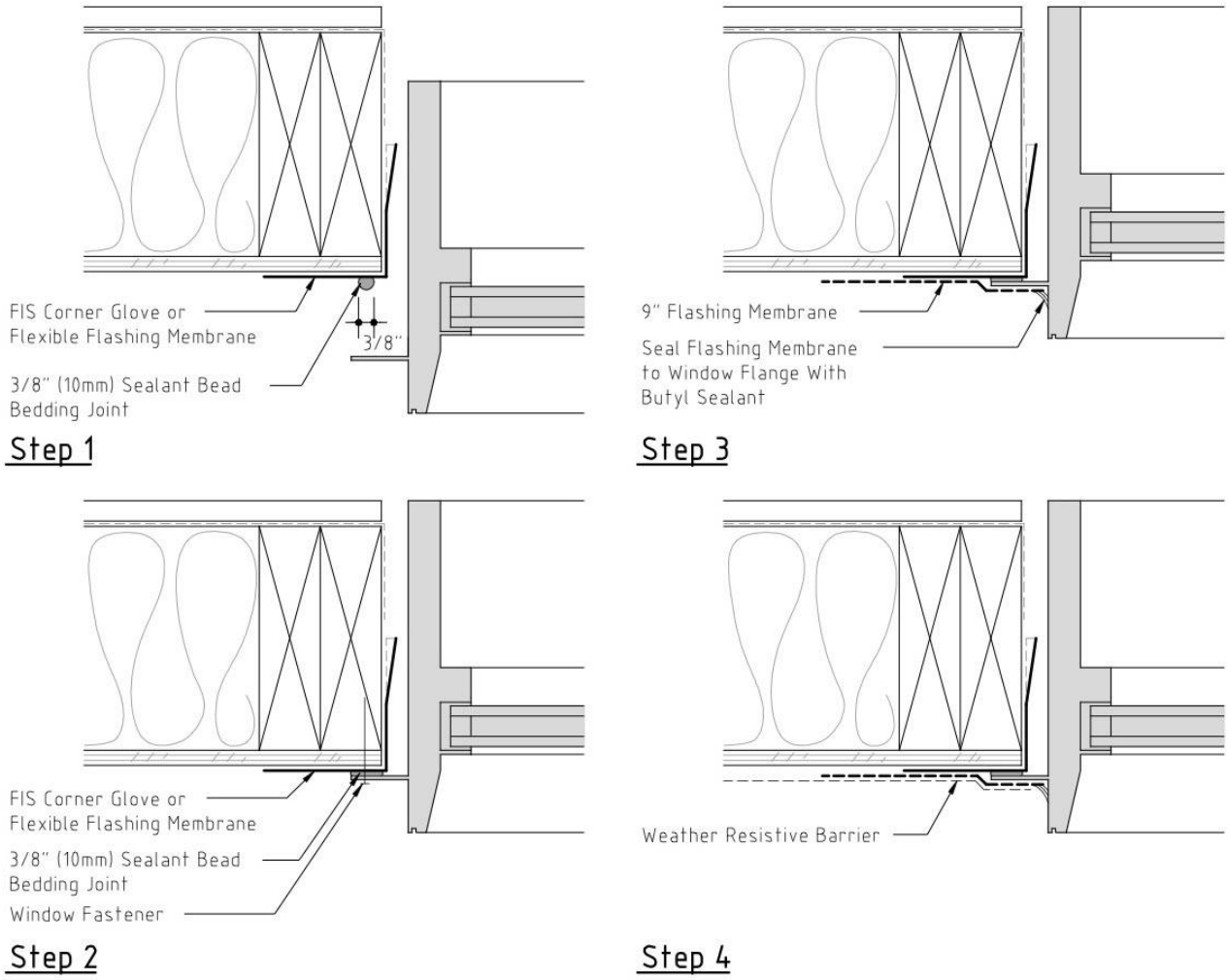


FIS Figure No. 7.7.7 - Method DW - Head/Jamb/Sill flashing membrane at shallow ‘Corner Gloves’. Weather Resistive Barrier installed ‘after’ installation of fenestration.

Warranty Note: For Method DW, the steps to this point conclude the requirements to comply with the FIS product installation warranty. The remaining steps for Method DW identified herein, indicate the FIS recommended steps for this fenestration installation method to comply with ASTM E2112-19C.

Warranty Note: If the full installation of the fenestration does not complete with ASTM E2112-19C the FIS Warranty is void.

FIS is compatible with most available sealants. The architect, engineer or installer shall specify or select an appropriate sealant based on ASTM E2112-19C Table A4.1 or CSA A440, to suite the building's adjacent components and follow the sealant manufacturer's written instructions for sealant selection, primers, and installation.



FIS Figure No. 7.7.8 - Method DW – Fenestration Bedding Joint and sealing of Weather Resistive Barrier. Weather Resistive Barrier installed 'after' installation of fenestration.

A 3/8" diameter sealant bedding joint shall be applied to the face of the flashing membrane at the head and jambs as seen in Step 1 of FIS Figure No. 7.1.8.

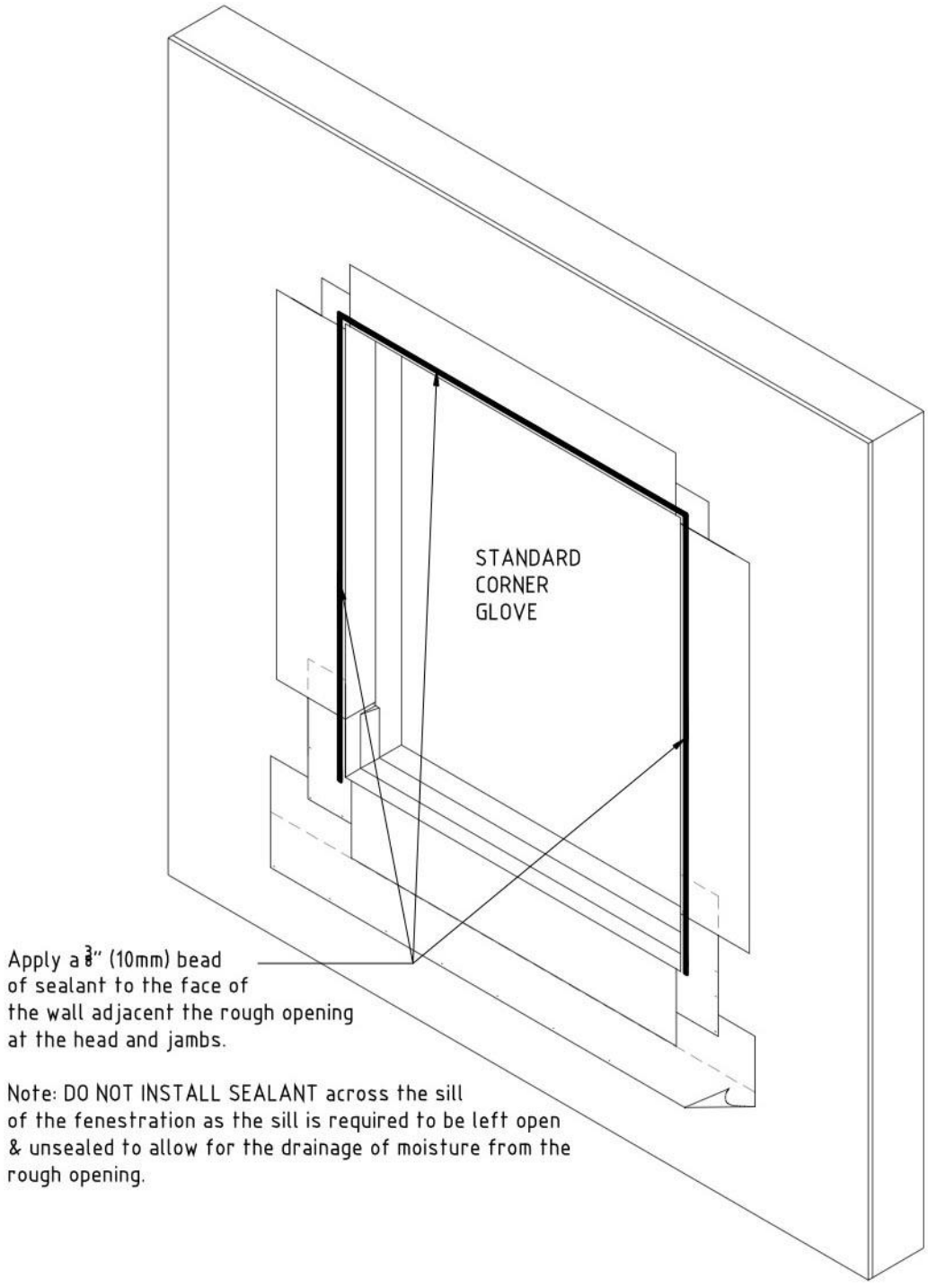
DO NOT APPLY SEALANT across the sill of the fenestration's rough opening, as the sill must be left unsealed to allow for moisture drainage from the rough opening at that location.

In Step 2, the fenestration unit is installed squishing the sealant bead to become the fenestration sealant bedding joint.

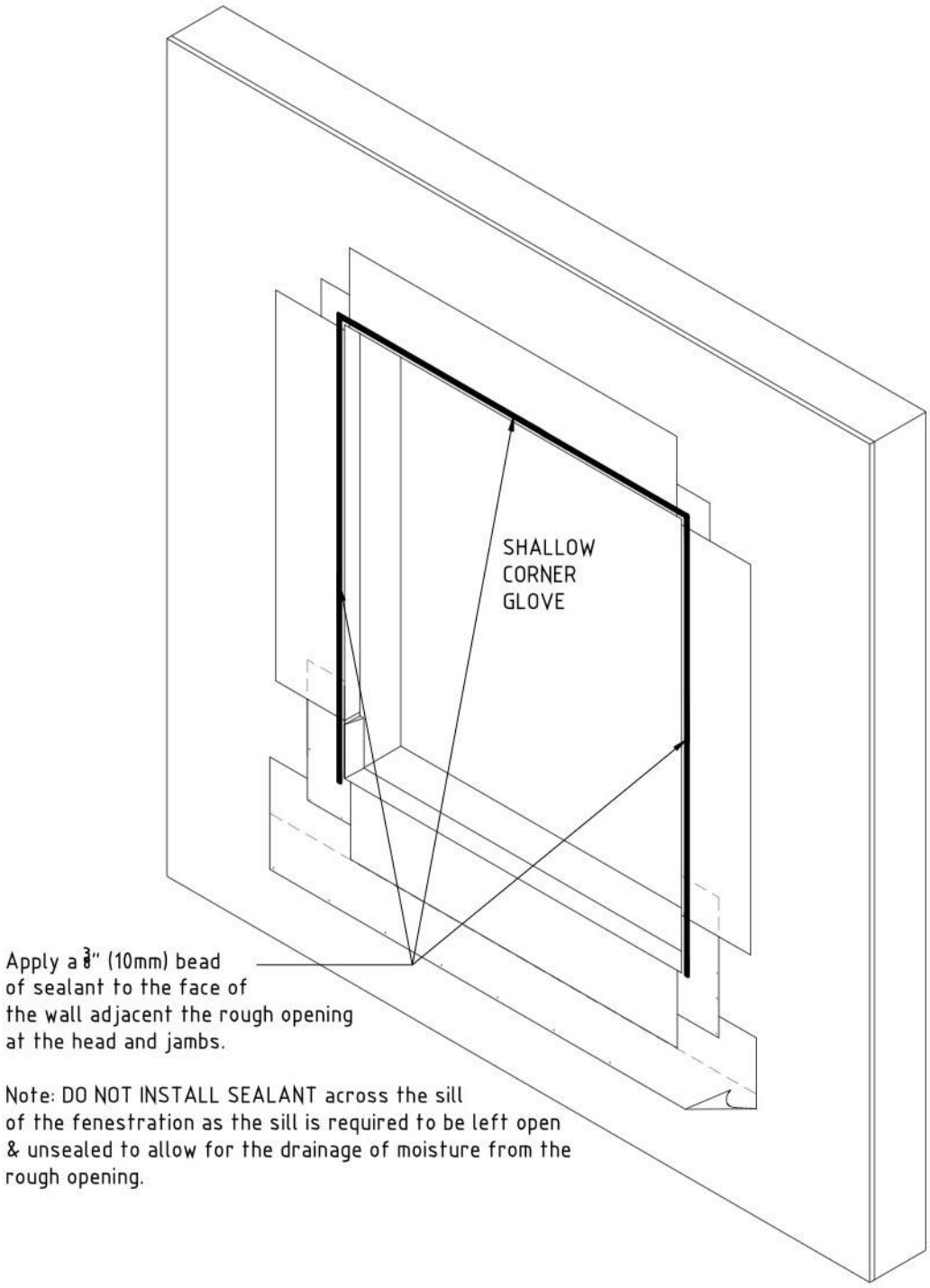
Step 3 requires the installation of a 9" wide flexible flashing membrane to be installed on the face of the wall at the jambs and head, lapping onto the fenestration's flange and sealing the flexible flashing membrane to the fenestration unit with a corner bead of sealant.

Step 4 requires the weather resistive barrier to be installed and lapped tight to the fenestration unit. This weather resistive barrier can be a 9 ft. roll product like house wrap.

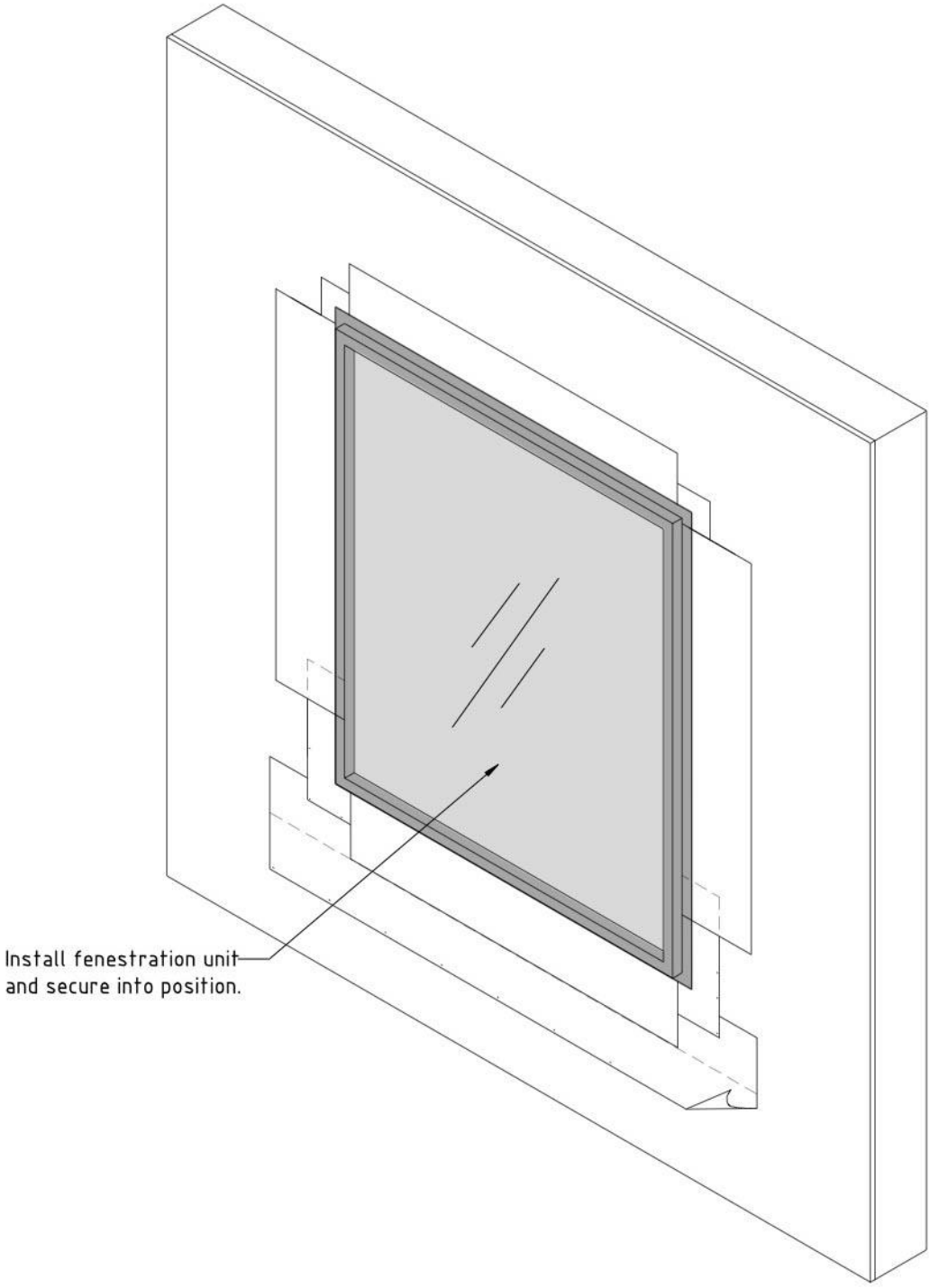
Note: If the fenestration unit does not have integral mounting flanges, the applied flanges will require more elaborate flashing and sealing details to ensure weather protection of the installed fenestration unit. When using applied flanges, follow the manufacturers' instructions for sealing the flange to the frame.



FIS Figure No. 7.7.9 – Method DW- Standard 'Corner Glove' Fenestration Bedding Joint. Weather Resistive Barrier installed 'after' installation of fenestration.



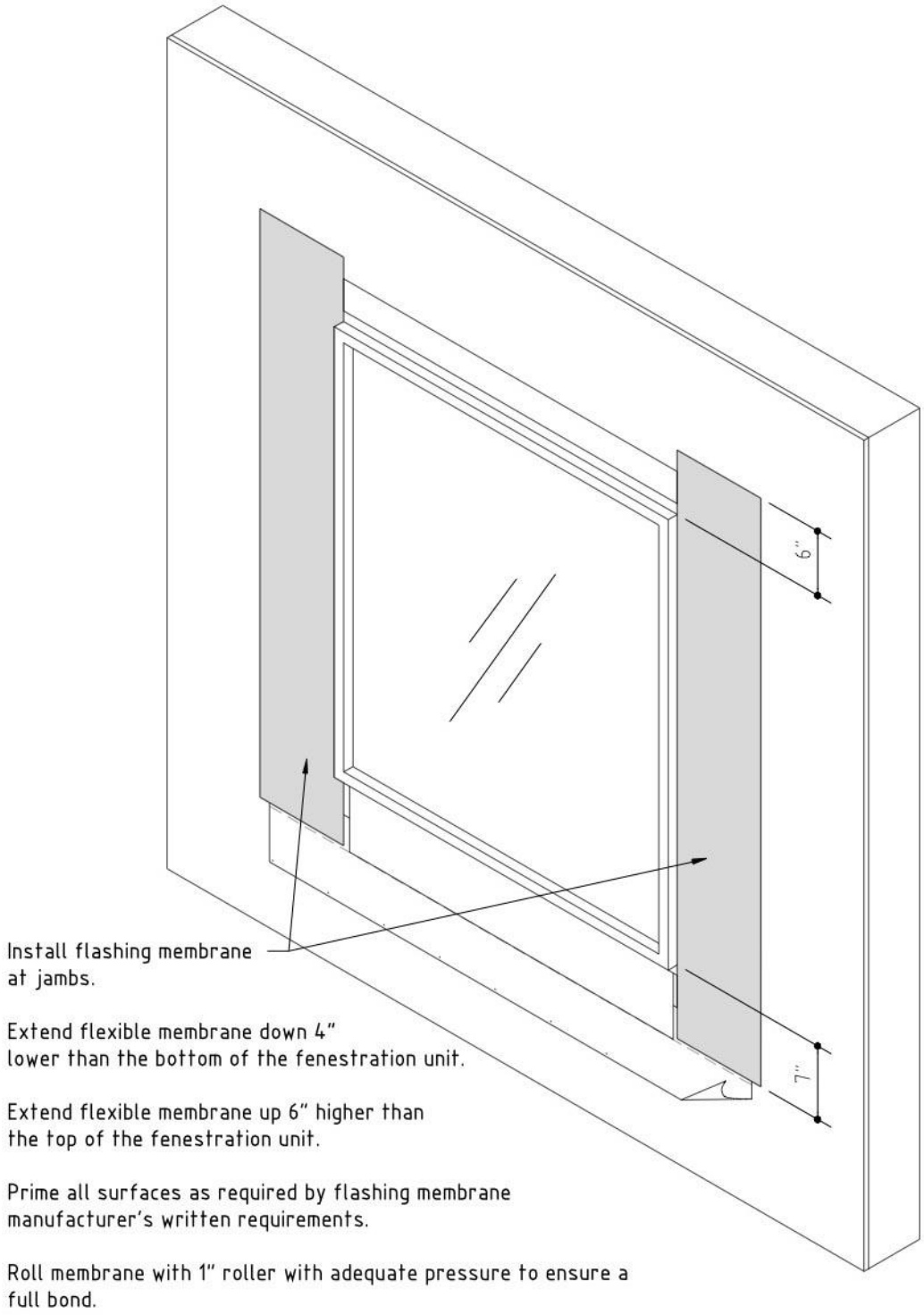
FIS Figure No. 7.7.10 – Method DW - Shallow ‘Corner Glove’ Fenestration Bedding Joint.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



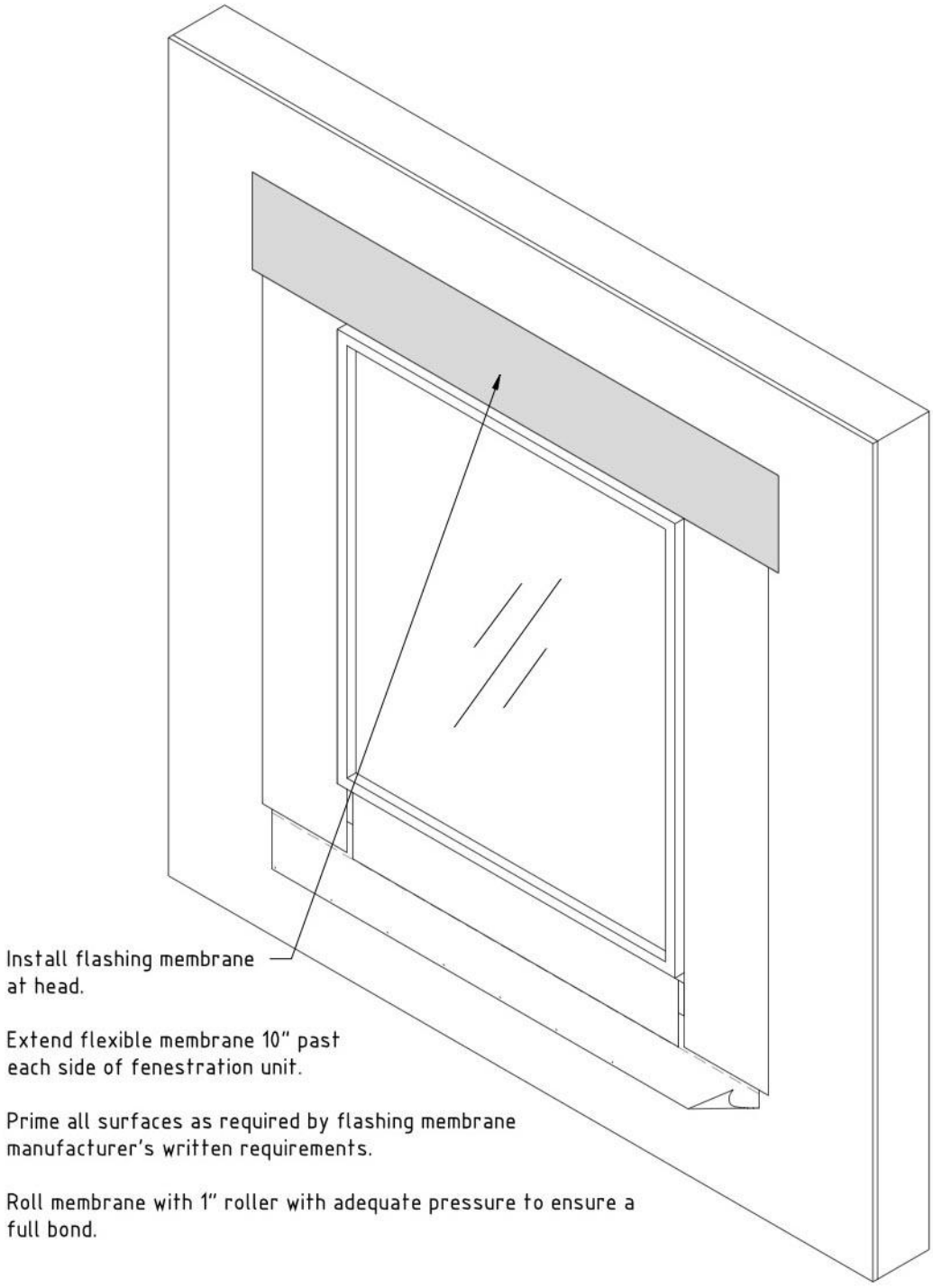
FIS Figure No. 7.7.11 – Method DW - Method AW – Window Installation.
Weather Resistive Barrier installed ‘after’ installation of fenestration.

With the fenestration installed, the interior side of the fenestration’s perimeter cavity is required to be sealed with low expansion spray foam insulation. The spray foam insulation will seal the fenestration to the WRB on all sides of the fenestration unit. Refer to Section 9.0

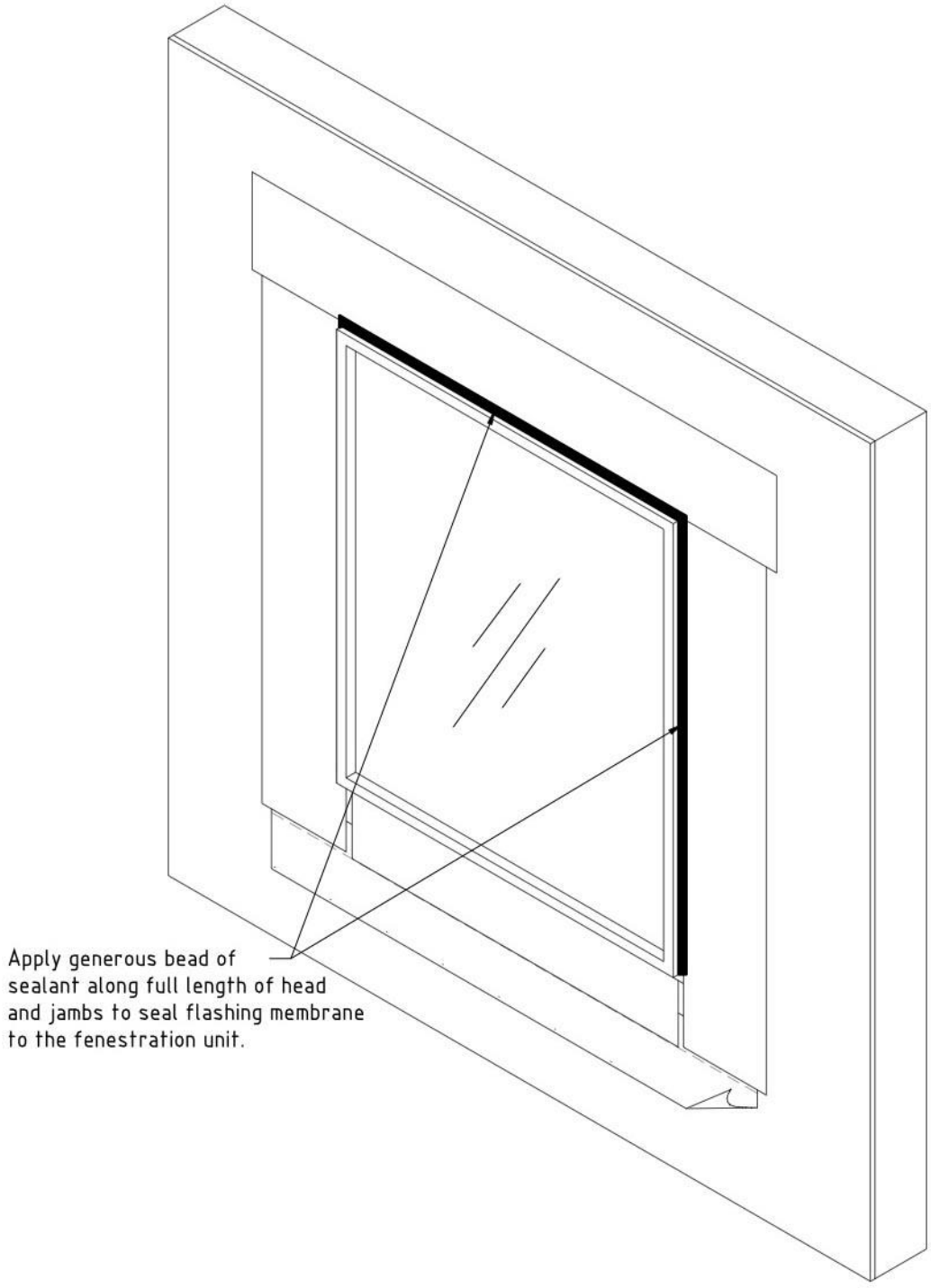
Continue with remaining flashing membrane and WRB installation steps as identified in this section.



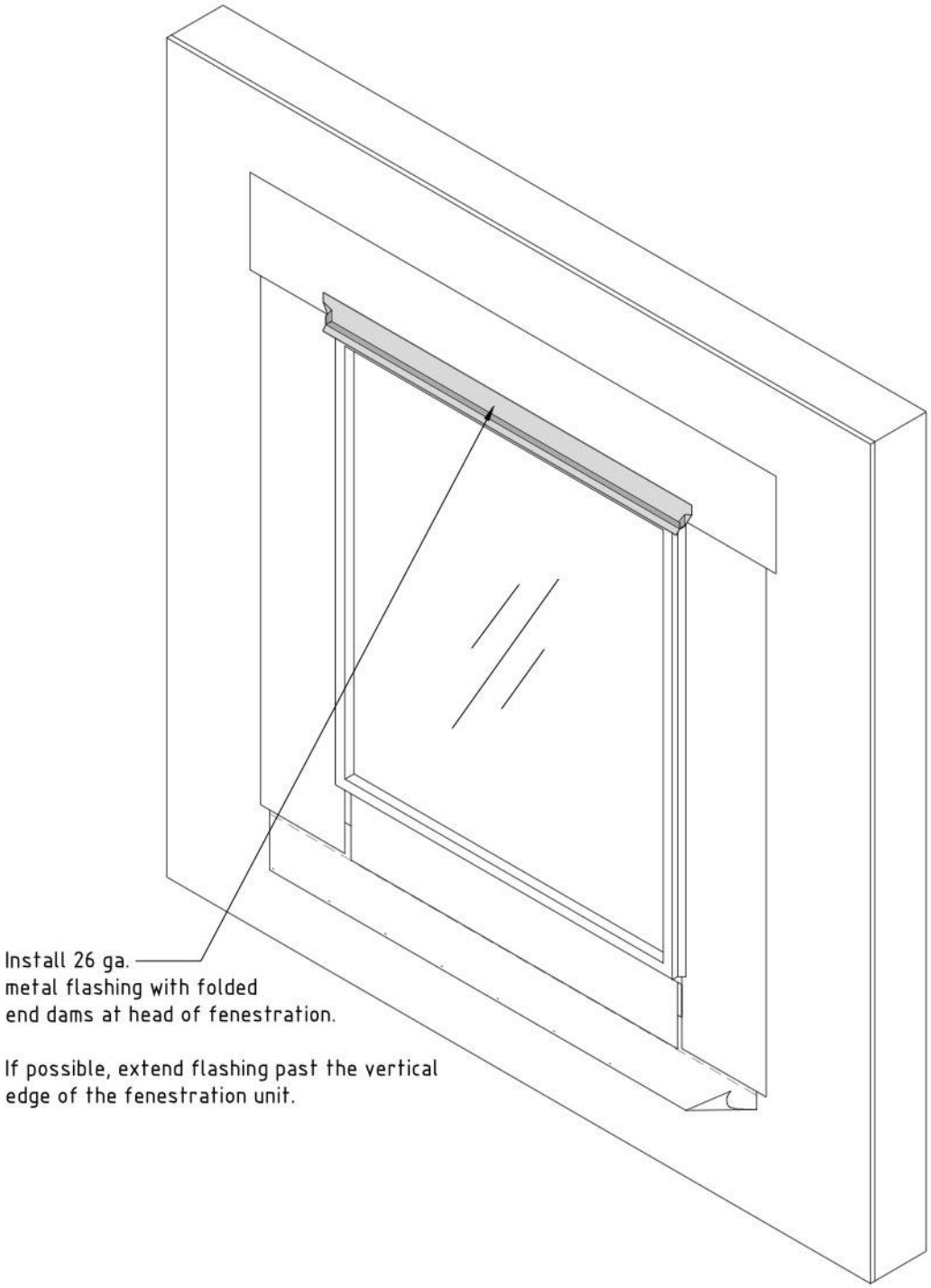
FIS Figure No. 7.7.12 – Method DW - Jamb flange flashing membrane installation.
Weather Resistive Barrier installed 'after' installation of fenestration.



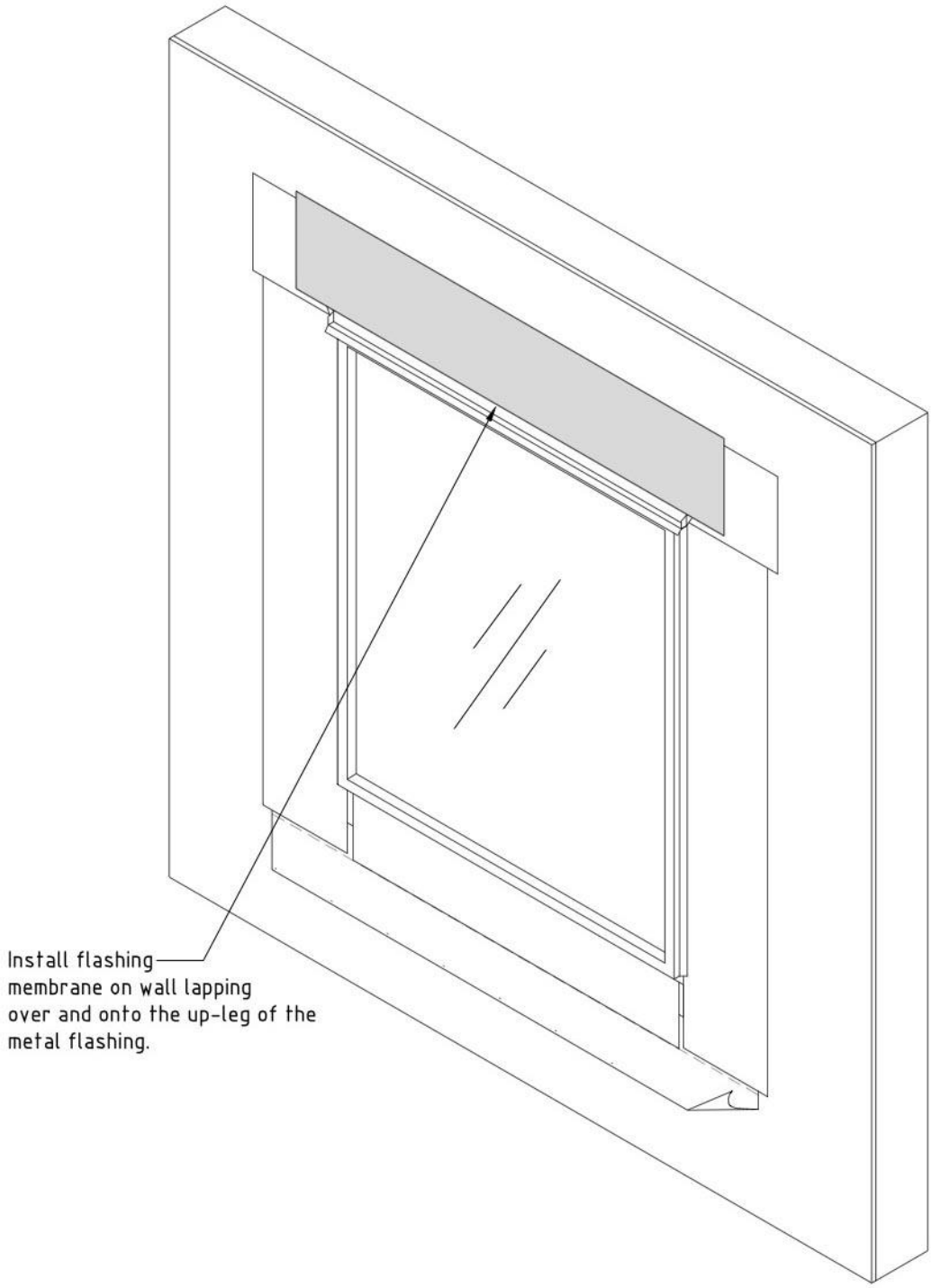
FIS Figure No. 7.7.13 – Method DW - Head flange flashing membrane installation.
Weather Resistive Barrier installed 'after' installation of fenestration.



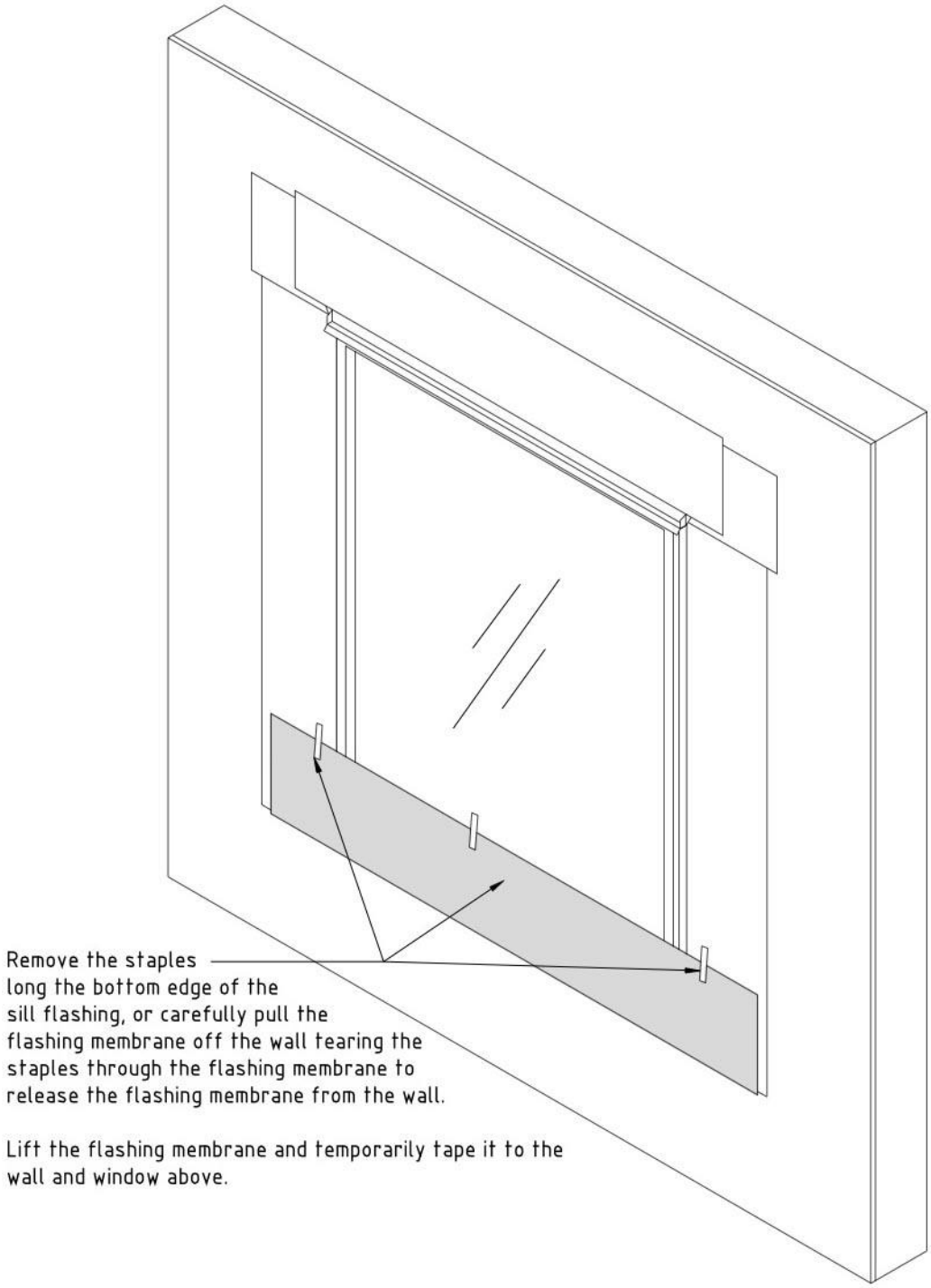
FIS Figure No. 7.7.14 – Method DW - Window Sealed to Weather Resistive Barrier
Weather Resistive Barrier installed ‘after’ installation of fenestration.



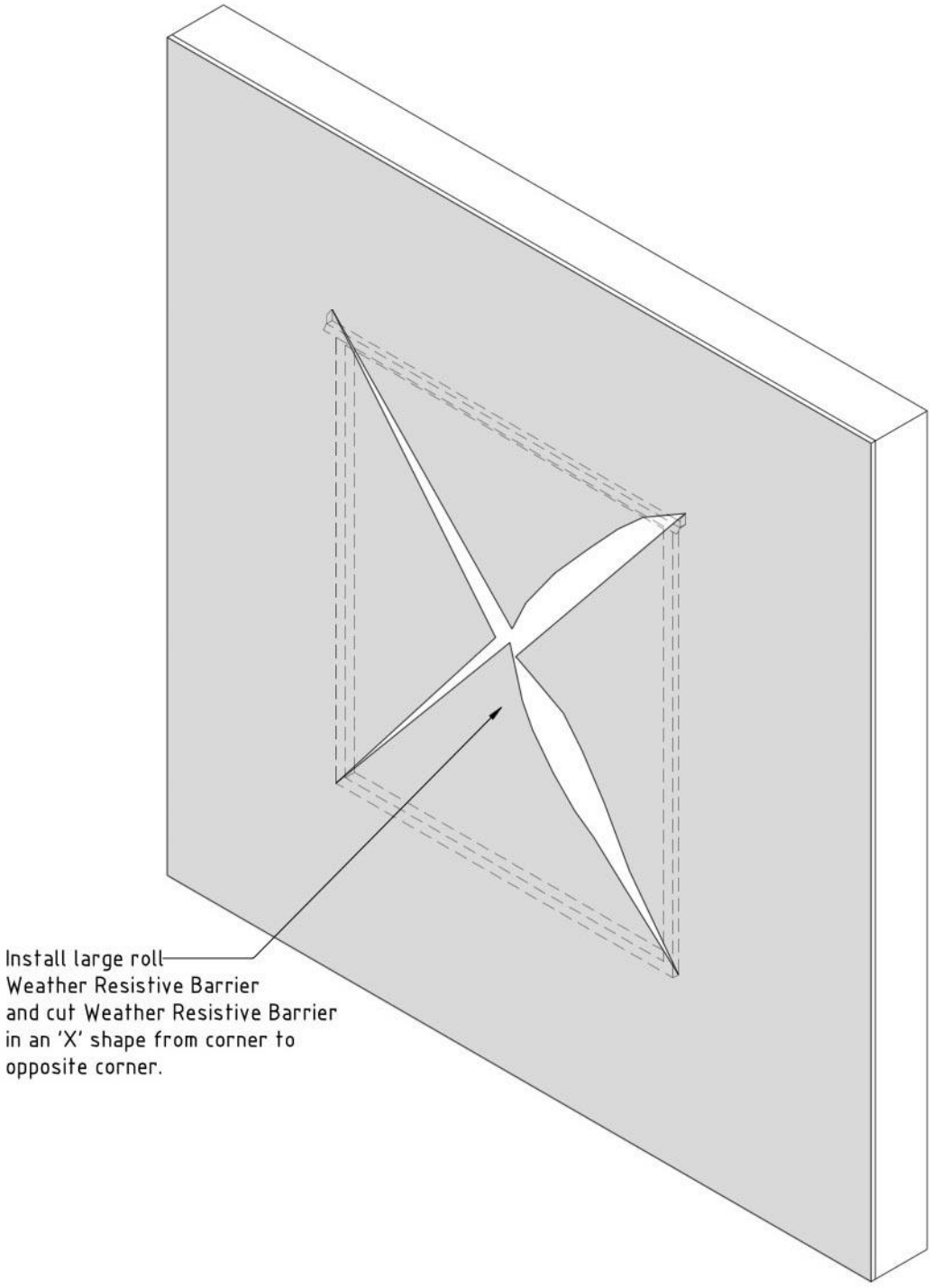
FIS Figure No. 7.7.15 – Method DW - Metal Head Flashing Options with Folded End Dams.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



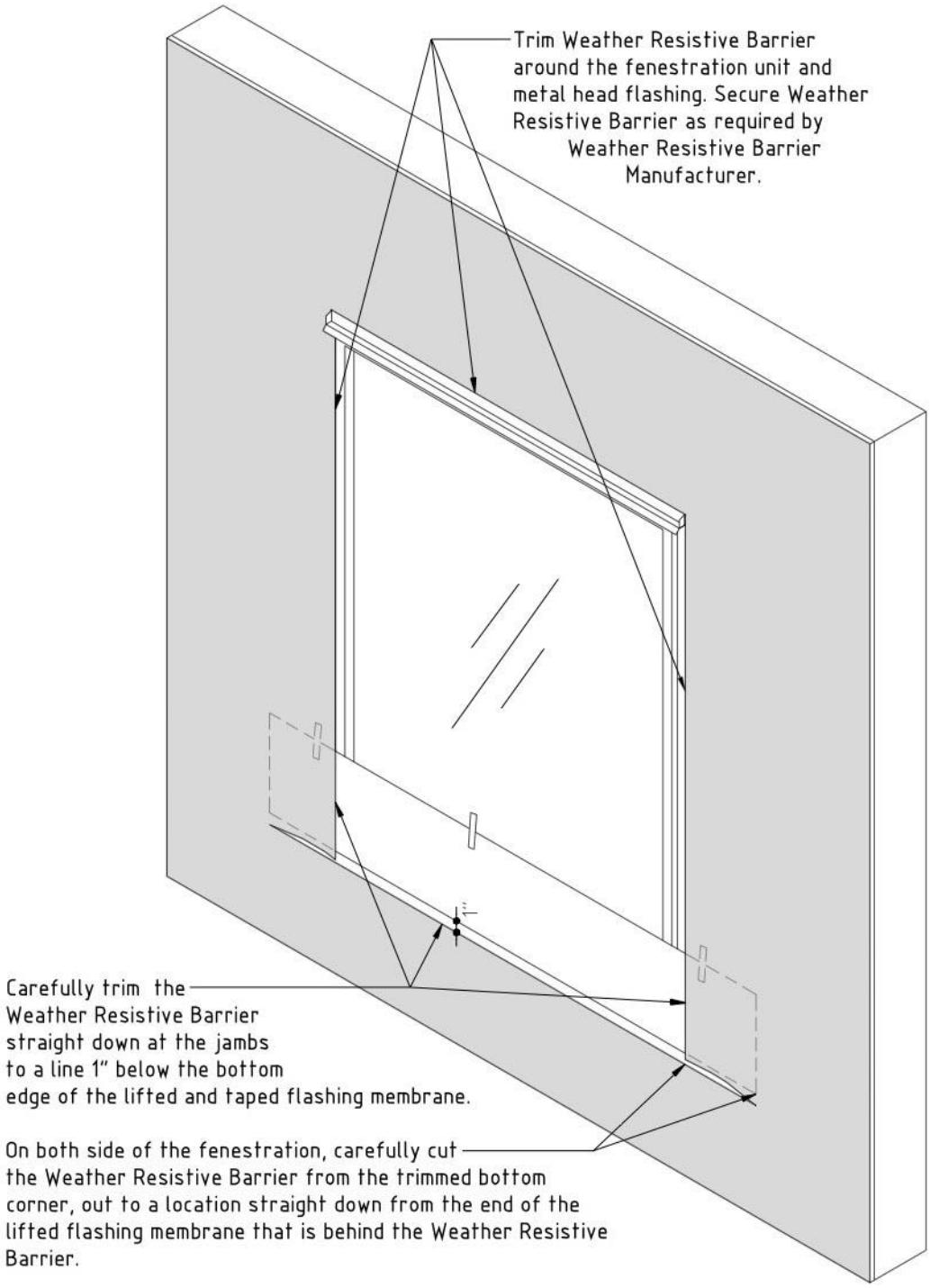
FIS Figure No. 7.7.16 – Method DW - Flashing membrane installation lapping metal flashing up-leg. Weather Resistive Barrier installed ‘after’ installation of fenestration.



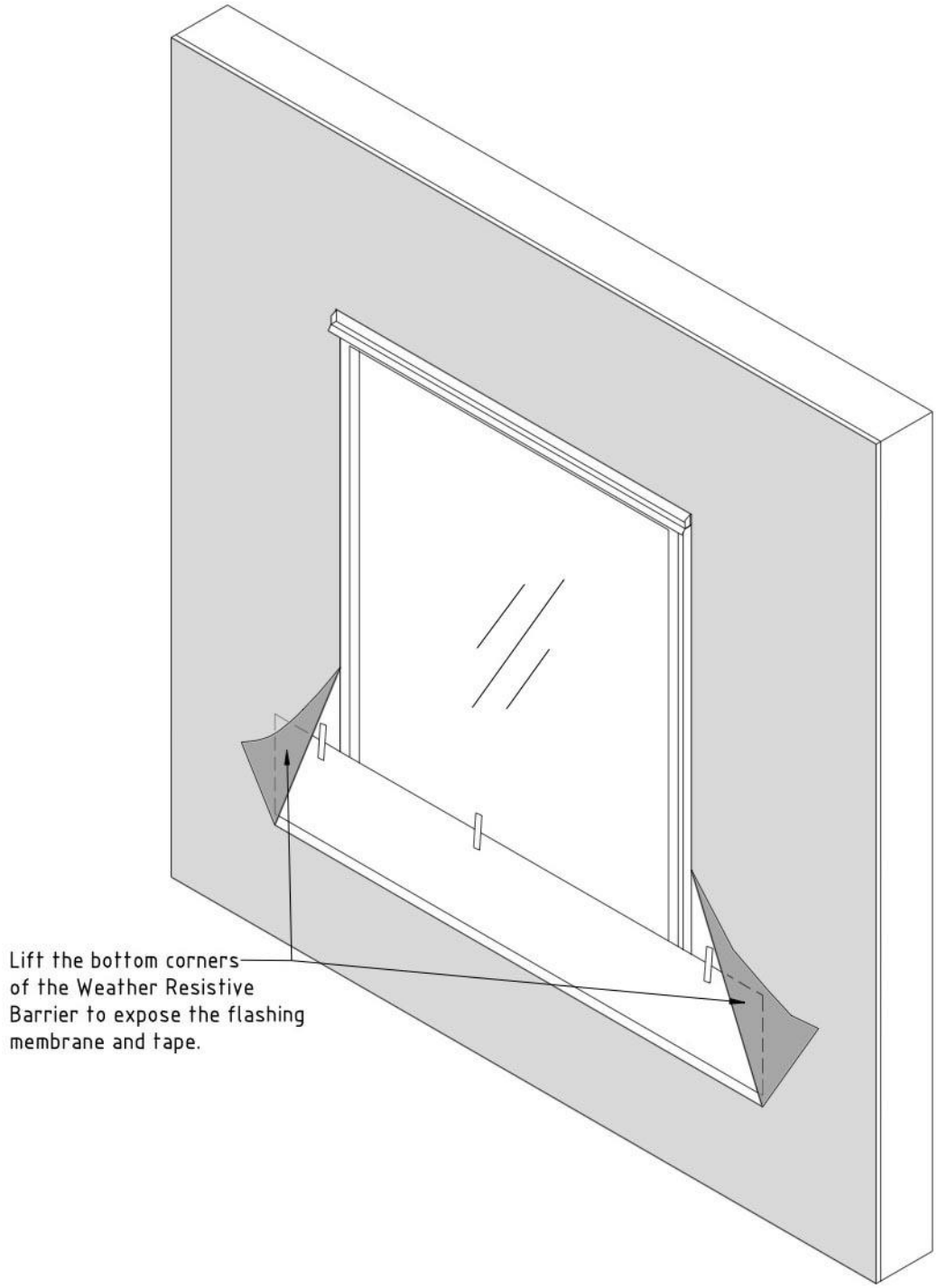
FIS Figure No. 7.7.17 – Method DW - Weather Resistive Barrier lifted and taped to wall.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



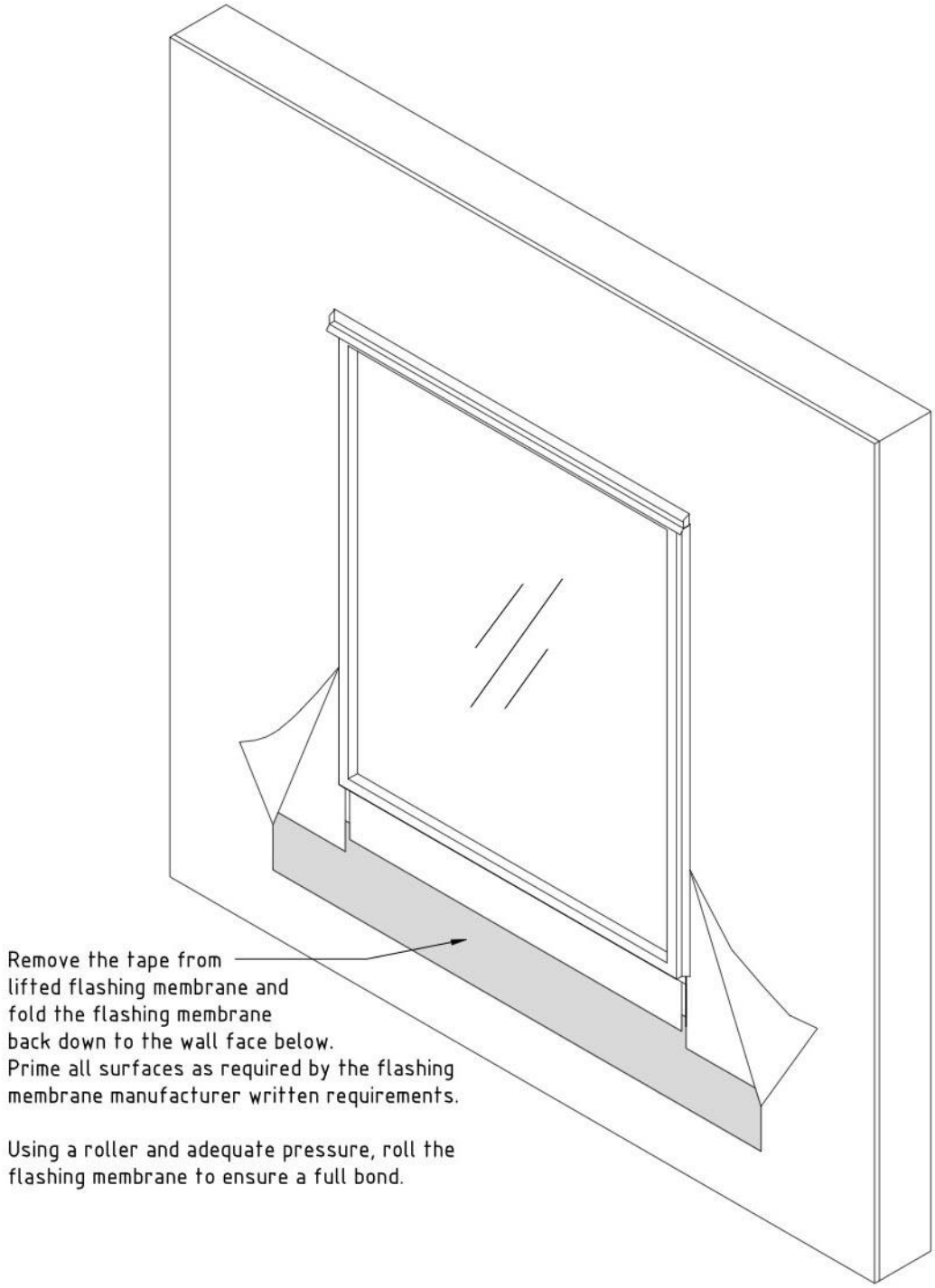
FIS Figure No. 7.7.18 – Method DW - Weather Resistive Barrier cut for rough opening. Weather Resistive Barrier installed 'after' installation of fenestration.



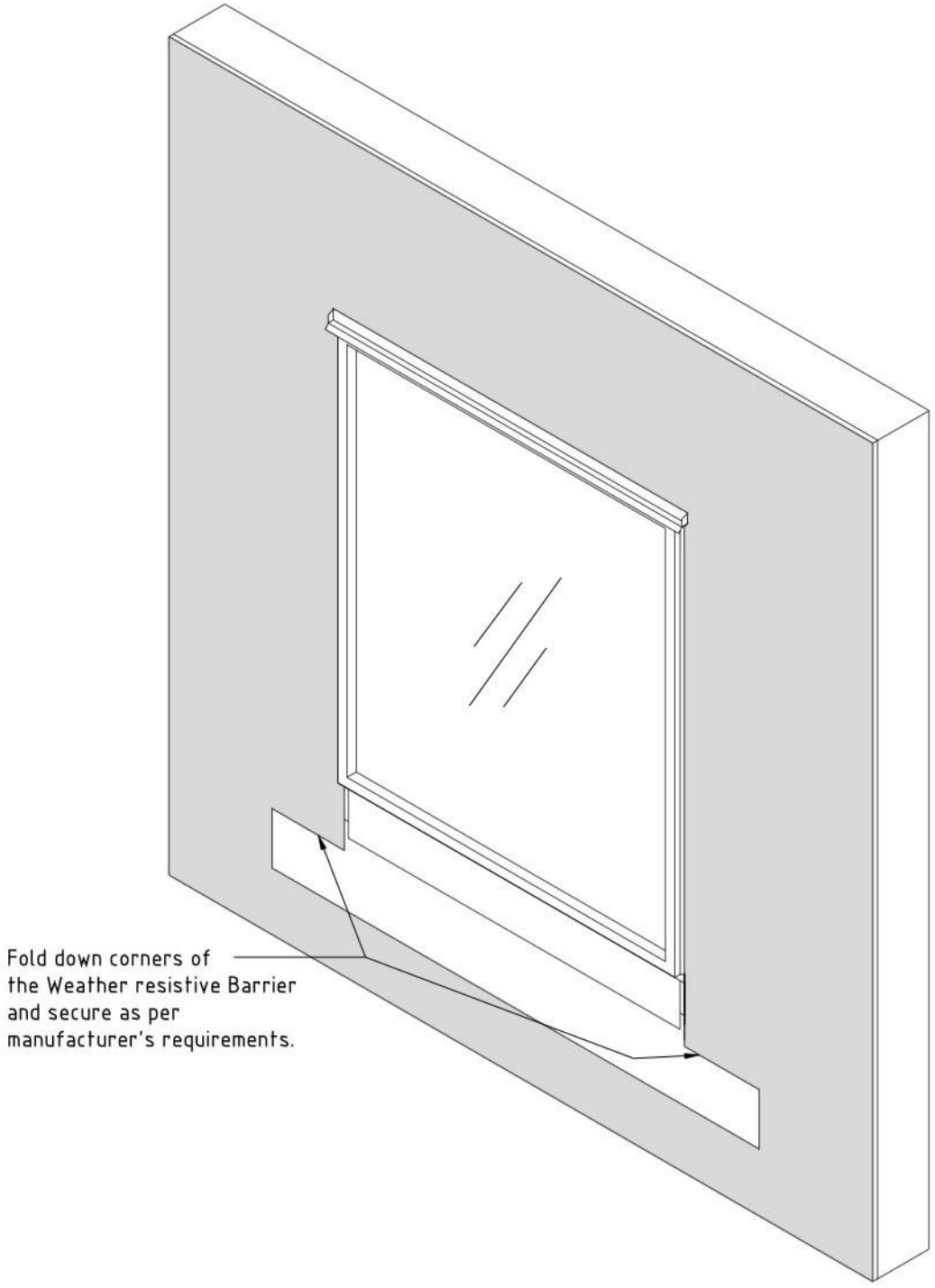
FIS Figure No. 7.7.19 – Method DW - Weather Resistive Barrier trimmed for sill flashing lap. Weather Resistive Barrier installed 'after' installation of fenestration.



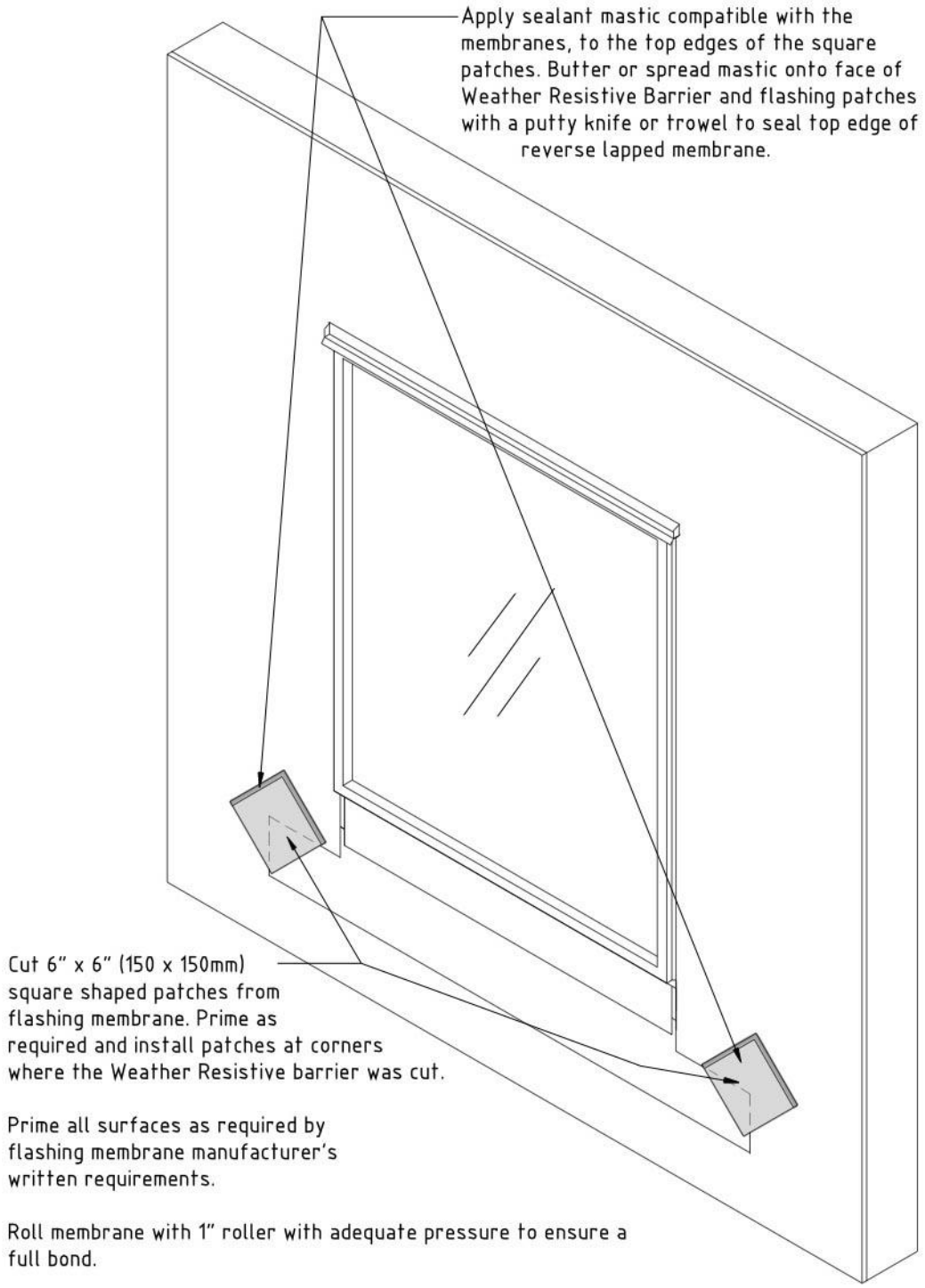
FIS Figure No. 7.7.20 – Method DW - Weather Resistive Barrier lifted for access to flashing membrane. Weather Resistive Barrier installed ‘after’ installation of fenestration.



FIS Figure No. 7.7.21 – Method DW – Flashing membrane dropped and secured.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



FIS Figure No. 7.7.22 – Method DW - Weather Resistive Barrier dropped and secured.
Weather Resistive Barrier installed ‘after’ installation of fenestration.



FIS Figure No. 7.7.23 – Method DW – Complete Weather Resistive Barrier install with corner patches. Weather Resistive Barrier installed 'after' installation of fenestration.

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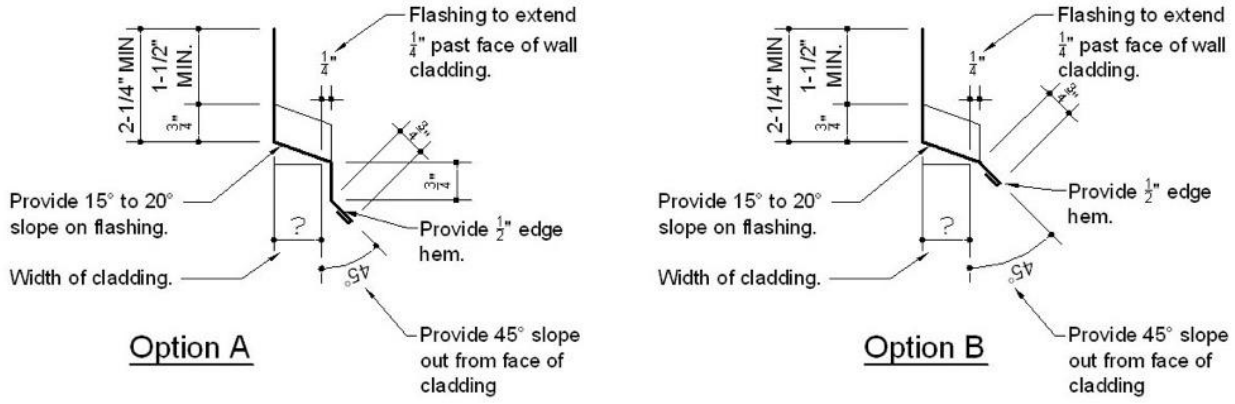
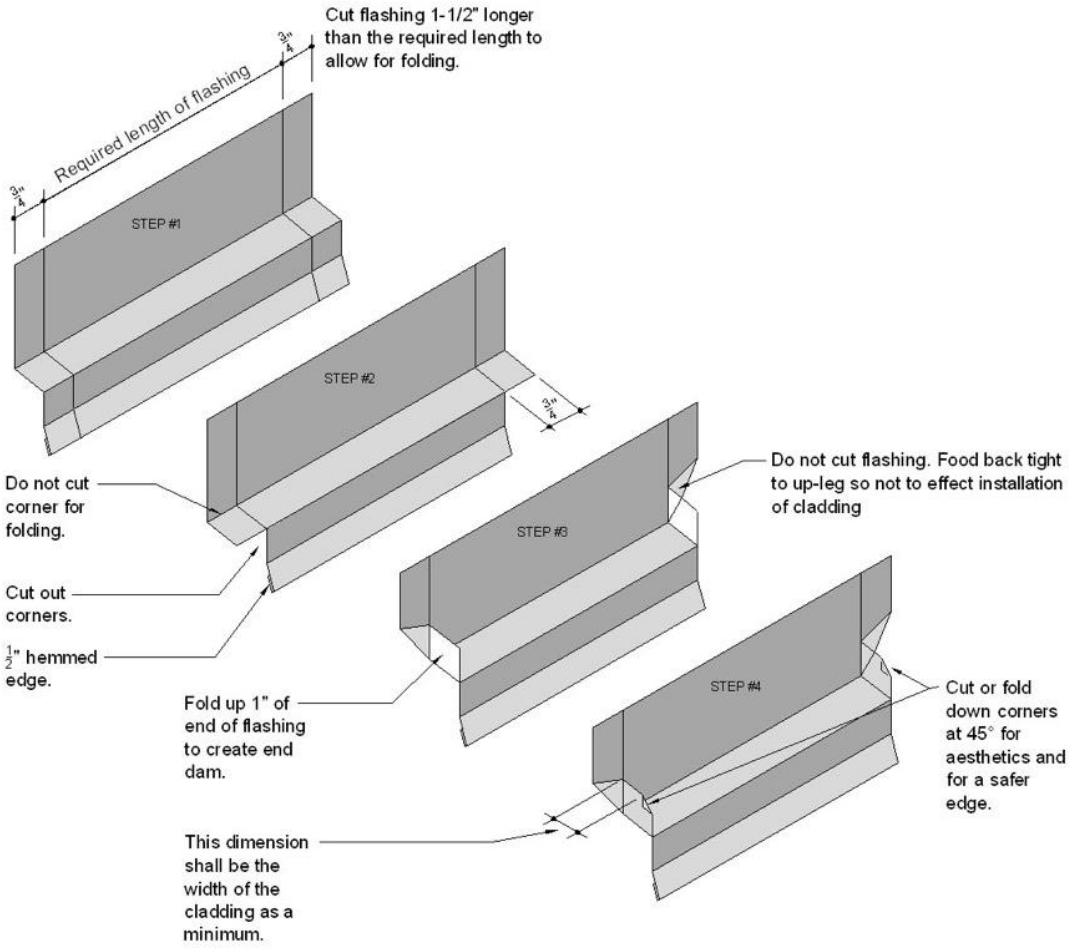
8.0 FIS Fenestration Metal Head Flashing Recommendations

FIS requires the design and installation of metal head flashing to meet with the minimal requirements of the local building codes.

FIS recommends the following optional metal head flashing details that may exceed the local building codes.



FIS Figure No. 8-1 – Recommended Head Flashing Options with Folded End Dams.



FIS Figure No. 8-2 – Recommended folded end dams.

This type of flashing with folded end dams is not an FIS Warranty requirement but is highly recommended by FIS as the end dams significantly reduce the ability for moisture to run along the back of a flashing and down in behind the cladding assembly.

9.0 Low Pressure Aerosol Foam Sealants and Pre-Compressed Foam Tapes Used for Air Control in the Rough Opening gap.

FIS WARRANTY requires the use of spray-in-place low pressure expansion foam as described in this section.

All low expansion spray foams are not made equal.

FIS Warranty requires the use of high performance low pressure aerosol foam sealants that meet the following requirements:

- Low pressure expansion
- Minimum R-value of 4.2 per inch
- High percentage closed cell structure
- Develop a final cured skin of high closed cell percentage that resists air, moisture and vapour penetration.

The following products are acceptable products for the FIS WARRANTY

- Handifoam Low Expansion One-Component Polyurethane Foam Sealant (OCF)
  (www.handifoam.com)
  R-Value: R-4.7 per inch
  Density 1.1lb./ft3 (17.7 kg.m3)
  67% Closed Cell
  Application temperature range:
  Ready to cut > 1 hour

- Hilti CF 812 Window & Door Low Pressure Filler Foam
  R-Value: R-4.27 per inch
  High percentage closed cell structure
  Application temperature range: 41 °F to 95 °F (5 °C to 35 °C)
  Ready to cut after 20 minutes

- LaPage Quad Foam Window and Door Installation Foam
  R-Value: R-5 per inch
  High percentage closed cell structure
  Product should be stored above 5°C (41°F) at least 12 hours before application. During application, working environment and substrates should be between -10°C (14°F) and 30°C (86°F).
  Ready to cut in 25-35 minutes
  Does not bond to polyethylene, polytetrafluoroethylene (PTFE)/Teflon® or siliconized surfaces

- Sika Boom AS, All Season, Multipurpose, Low Expansion Polyurethane Foam
  R-Value: R-4.7 per inch
  Density: 22 kg.m3
  High percentage closed cell structure
  Application temperature range: May be applied year around at temperatures ranging between -12 °C and 30 °C
  Ready to cut 30-45 minutes

DO NOT OVER FILL THE PERIMETER CAVITY GAP.

FIS WARRANTY requires that the low pressure expansion foam be installed in smaller applications as seen in FIS Figure No. 9.1.1 and FIS Figure No. 9.2.1 and the related following details in this section, where smaller widths of foam are installed to fill the perimeter cavity in multiple applications.

The reason for smaller and more applications is that the skin of the expanded foam MUST REMAIN ENTACT as the skin is the densest with the highest percentage of closed cells. The skin provides the highest resistance to air, moisture, and vapour penetration. While the skins of the higher performance low pressure expansion spray foam are not rated as less than 1 PERM to function as a Type II vapour retarder, the vapour permeability of the skin is significantly lower than the core of the low pressure expansion foam, significantly reducing the vapour drive into

the fenestration's perimeter cavity. The increased number of skins within the perimeter cavity serves to further increase resistance to air, moisture, and vapour penetration.

Therefore, DO NOT over fill the entire cavity with one heavy spray and have it expand out of the perimeter cavity and then must cut off the excess foam, as then the air, moisture, and vapour sealing skin has then been removed allowing a significantly higher rate of air, moisture, and vapour to drive into the perimeter cavity.

With the interior skin cut off, the most restrictive vapour permeable portion of the spray foam will be the skin on the outer side, basically placing the most restrictive vapour retarding material on the exterior cold side of the wall assembly. This will lead to increased vapour condensation within the outer spray foam's core and deterioration of materials within the perimeter cavity via freeze/thaw ice lensing cycles and moisture damage.

If the perimeter cavity is over filled, FIS requires cutting out the foam and re-applying the foam in smaller applications so the skin can remain. Or, cut out the foam to a ½" (12.7mm) depth, clean the side surfaces of foam, and install a sealant product over top of the foam to seal the interior side of the perimeter cavity gap.

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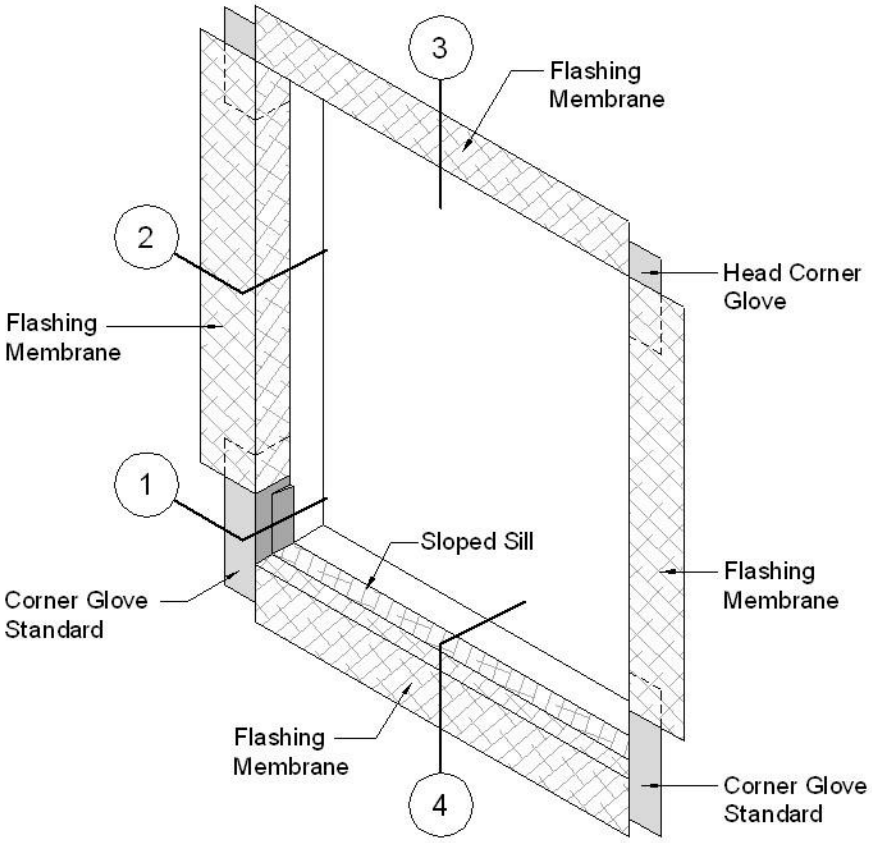
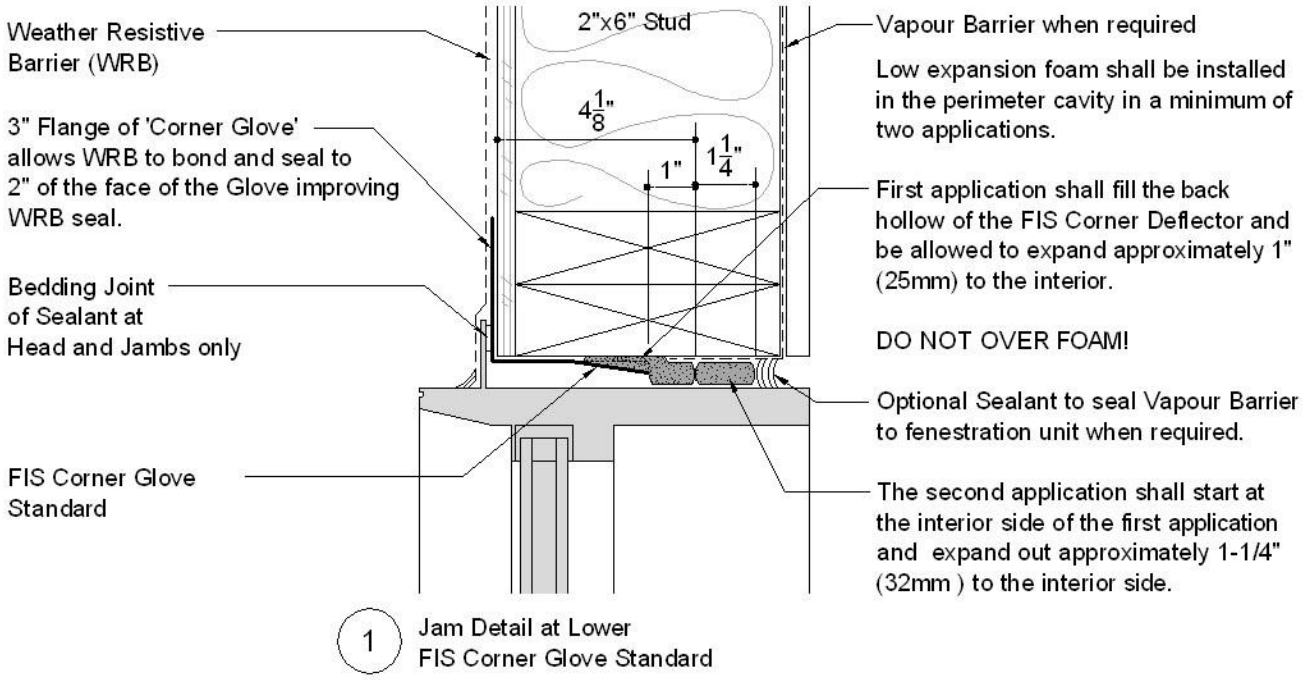
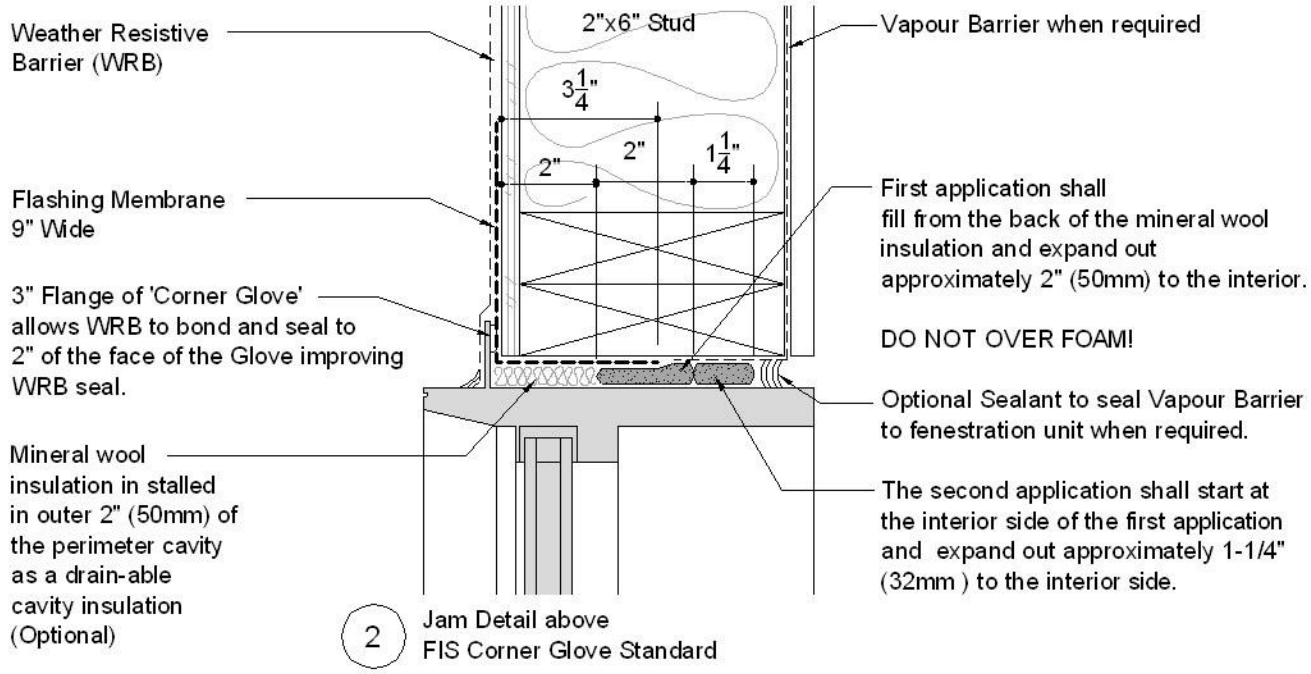
9.1 Low Pressure Foam Application for FIS Standard Corner Glove



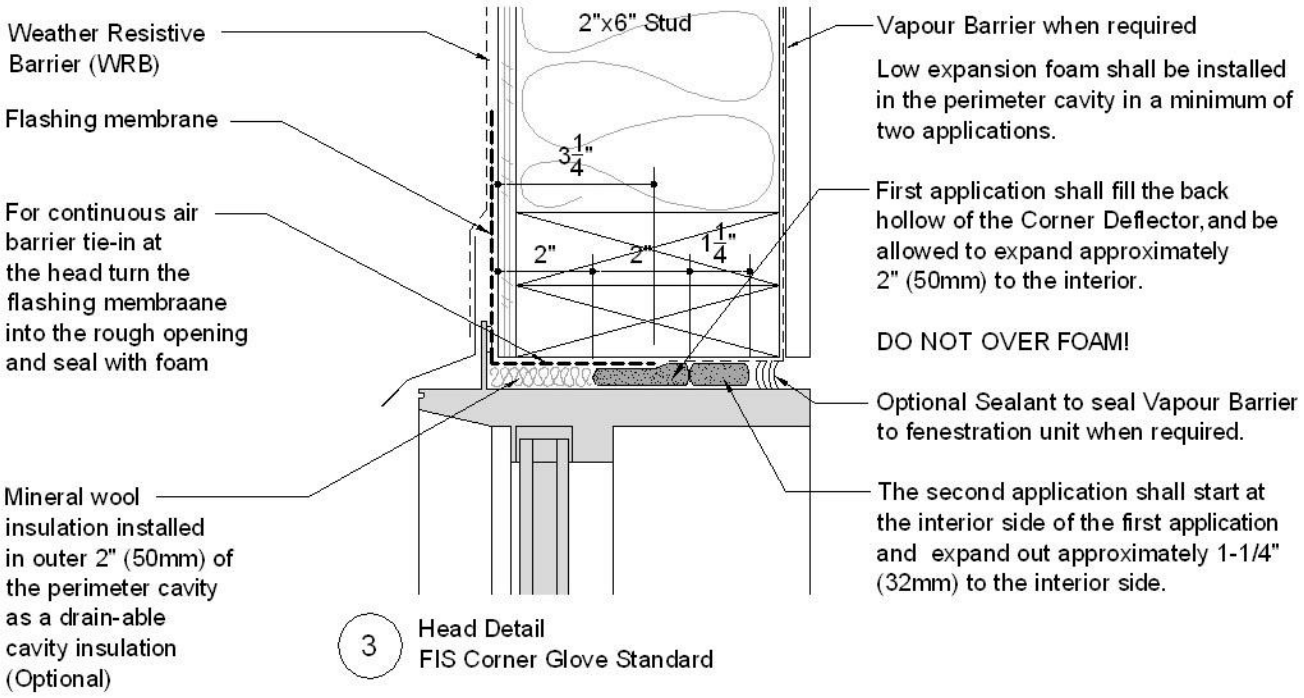
FIS Figure No. 9.1.1 – Low Pressure Expansion Foam Application Using Standard Corner Glove
Refer also to Figures 9.1.2, 9.1.3, 9.1.4 and 9.1.5 below.



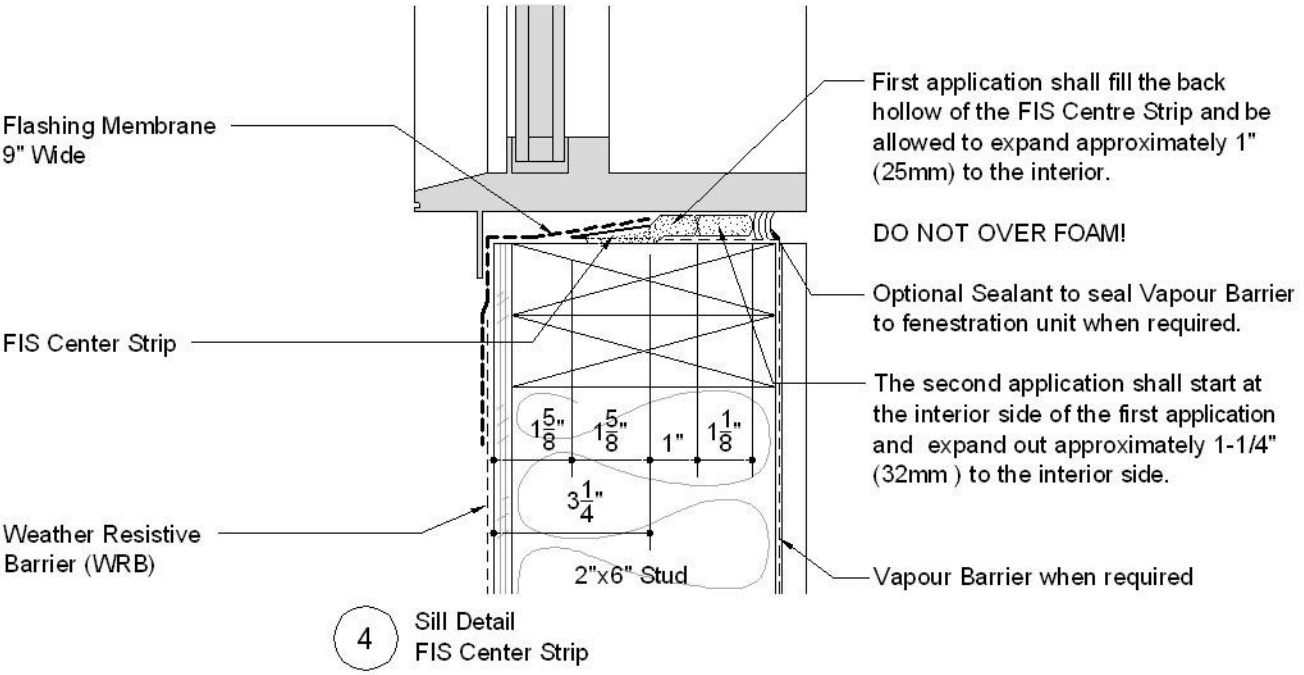
FIS Figure No. 9.1.2 - Foam Insulation Installation for Standard 'Corner Glove' at Lower Jamb



FIS Figure No. 9.1.3 – Foam Insulation Installation for Standard 'Corner Glove' at Upper Jamb



FIS Figure No. 9.1.4 – Foam Insulation Installation for Standard 'Corner Glove' at Head



FIS Figure No. 9.1.5 – Foam Insulation Installation for Standard 'Corner Glove' at Sill

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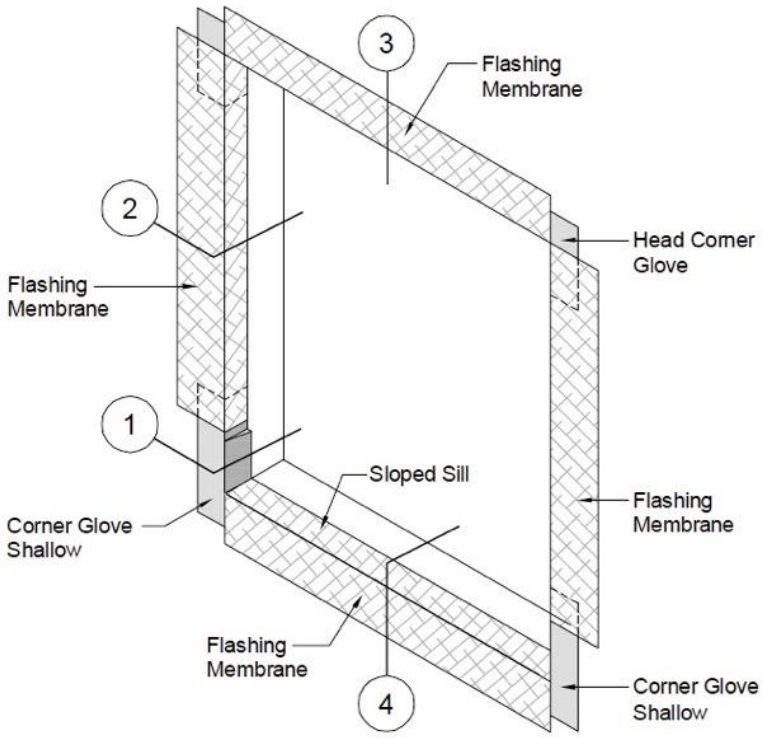
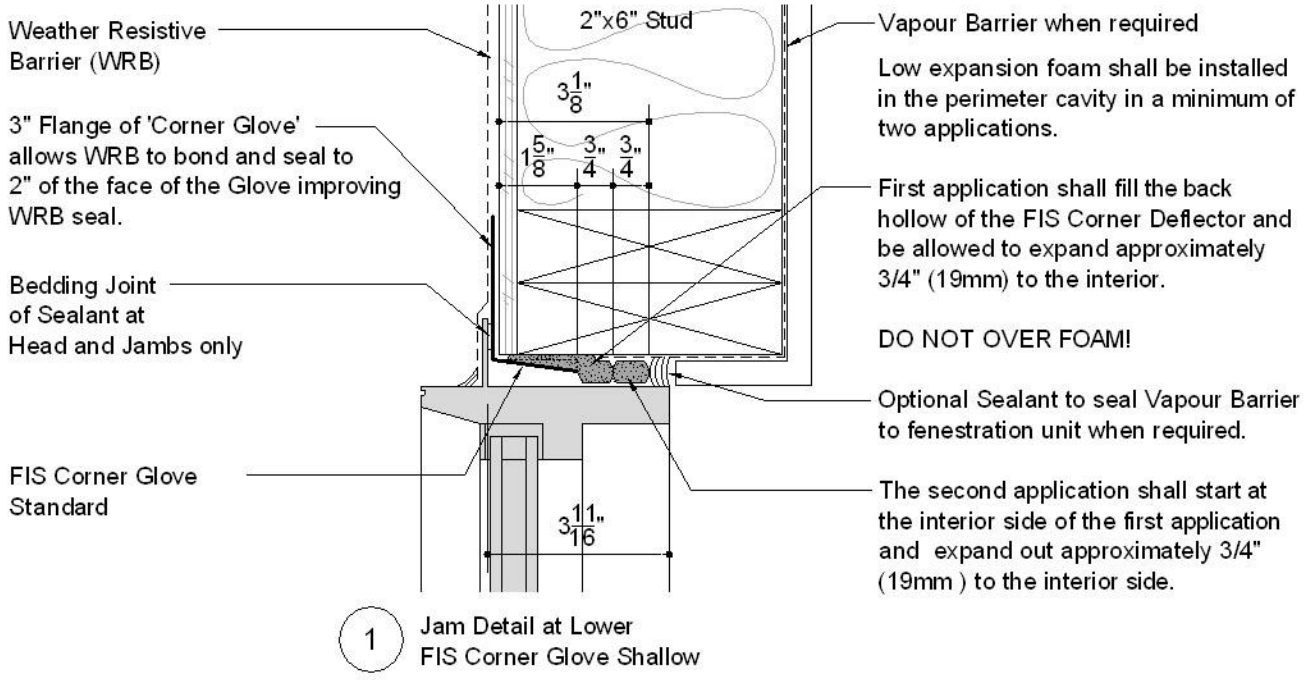
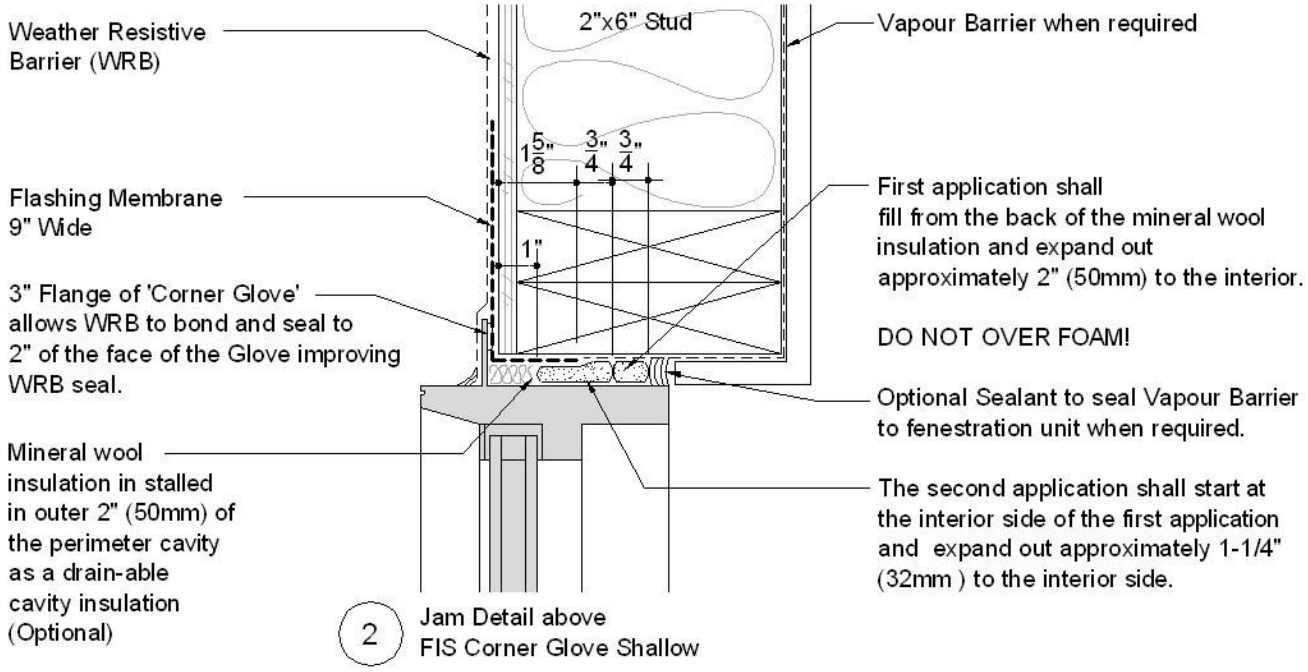
9.2 Low Pressure Foam Application for FIS Shallow Corner Glove



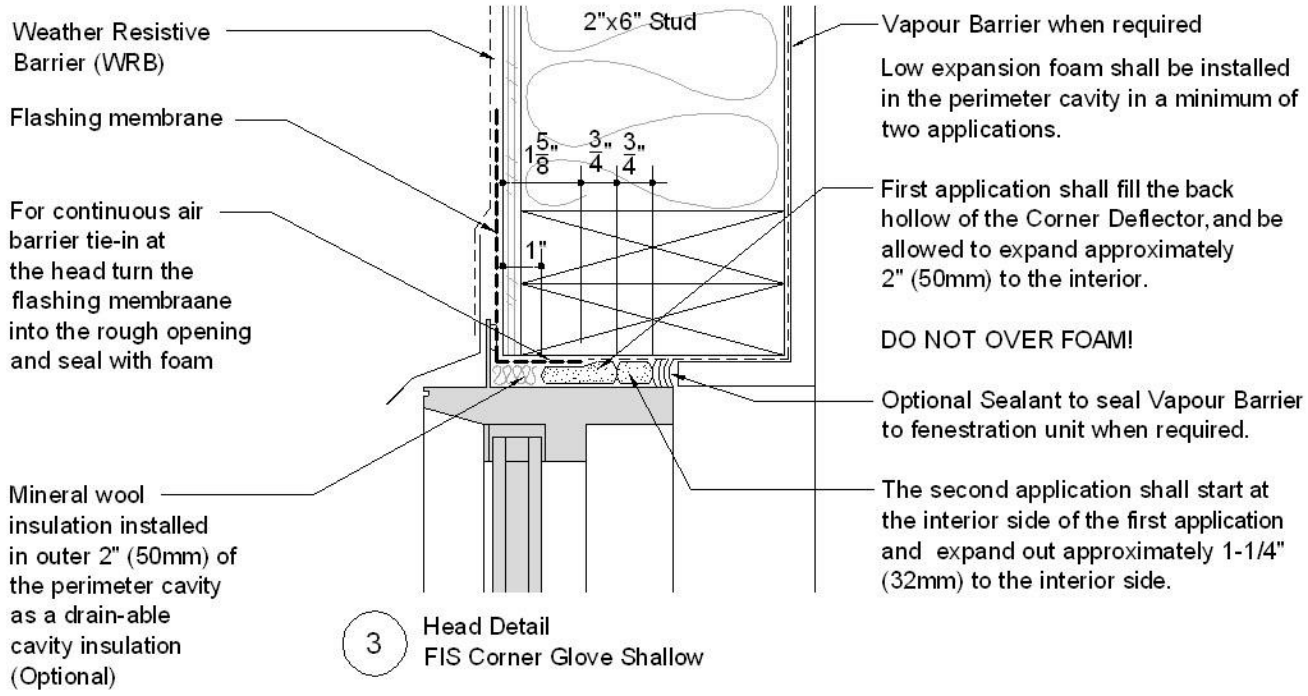
FIS Figure No. 9.2.1 – Low Pressure Expansion Foam Application Using Shallow Corner Glove
Refer also to Figures 9.2.2, 9.2.3, 9.2.4 and 9.2.5 below.



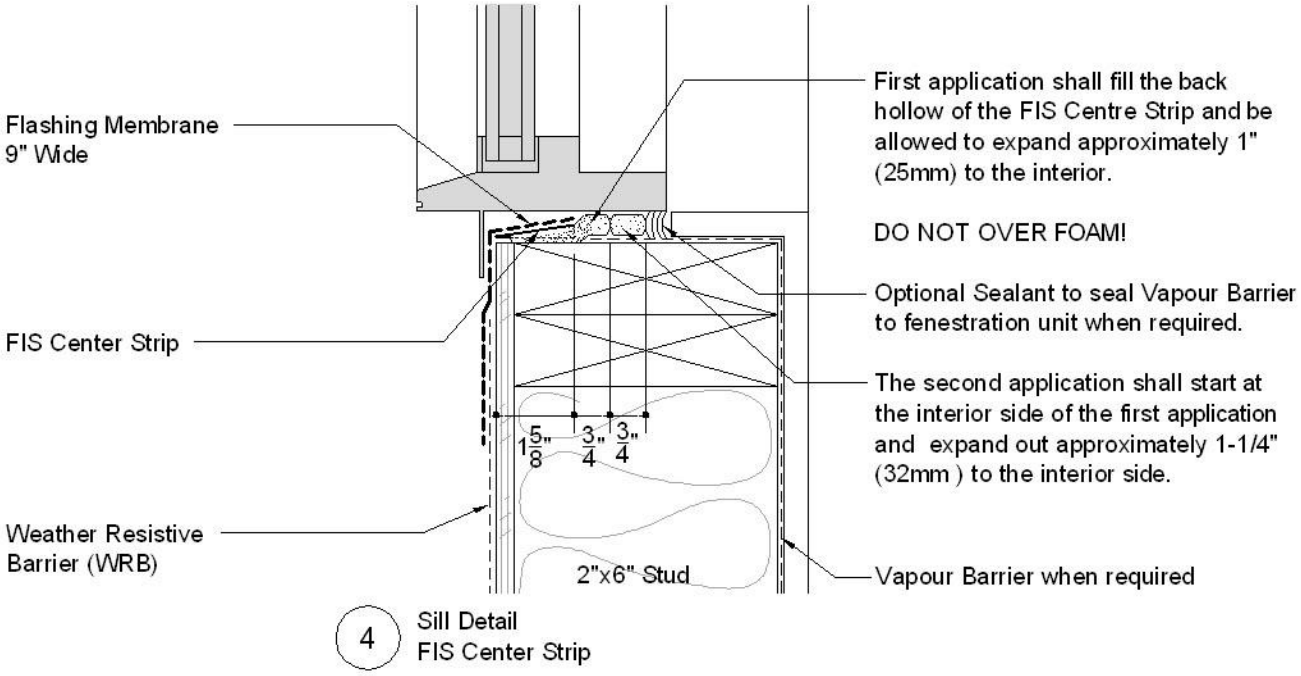
FIS Figure No. 9.2.2 – Foam Insulation Installation for Shallow 'Corner Glove' at Lower Jamb



FIS Figure No. 9.2.3 – Foam Insulation Installation for Shallow 'Corner Glove' at Upper Jamb



FIS Figure No. 9.2.4 – Foam Insulation Installation for Shallow 'Corner Glove' at Head



FIS Figure No. 9.2.5 – Foam Insulation Installation for Shallow 'Corner Glove' at Sill

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Warranty

FORTRESS INSTALLATION SYSTEMS

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Our system carries a limited lifetime warranty that is based on the life of the building or structure, it is fully transferable whether you are involved in the construction or are the 3rd-5th owner you are under warranty as long as the system is installed as per our instructions. You will carry no liability for leaks in the pan area that infiltrate your buildings wall assembly. Such leaks can be responsible for mold and rot causing structural damages forcing additional costs on the homeowner for future upkeep.

Ends of FIS Installation Manual