

Exterior Walls

Johns Manville AP™ Foil-Faced insulation sheathing board is an excellent choice for insulating exterior walls. Polyiso provides one of the highest R-values per inch of any rigid insulation (R-6 at 1 inch). When applied to the exterior face of wood, steel, or concrete to cover all structure, sills and headers, Johns Manville AP™ Foil-Faced insulation provides a layer of continuous insulation to prevent heat flow through details not normally covered by insulation products. AP™ Foil-Faced insulation is lightweight and easy to install. It may be installed with seams taped and penetrations sealed to function as an air barrier and water-resistive barrier (WRB), or it may be installed in conjunction with a separate WRB system.

Before You Begin:

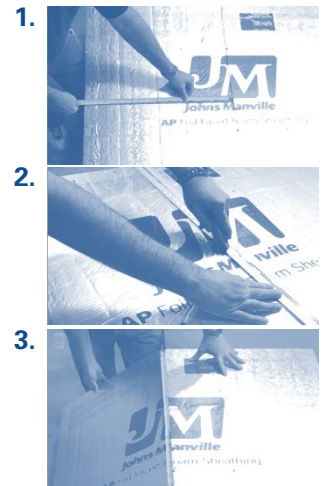
Always follow local building codes. AP™ Foil-Faced sheathing must be separated from the interior of a building by a minimum of ½-inch gypsum board or equivalent 15-minute thermal barrier as required by code. Repair any water leaks or structural cracks in the wall. Gather all materials.

Materials Checklist

- Safety glasses and gloves
- Measuring tape and pencil
- Utility knife or handsaw
- Straight edge
- Flashing tape such as 3M 8067, Grace Vycor Pro, or Lamatek
- Mechanical fasteners such as masonry nails with 1-inch metal washers, or JM Ultrafast CI Plates and JM Ultrafast CI Phillips screws
- Single component, moisture-cure silicone sealant
- Concrete WRB, if desired

Measuring and Cutting

1. Measure the board by dragging a measuring tape hook across the surface of the board; create a crease while holding the tape at the desired length.
2. Using a straight edge as a guide, deeply score the crease. There is no need to cut through.
3. Snap the board along the score line over the edge of a table or workbench.



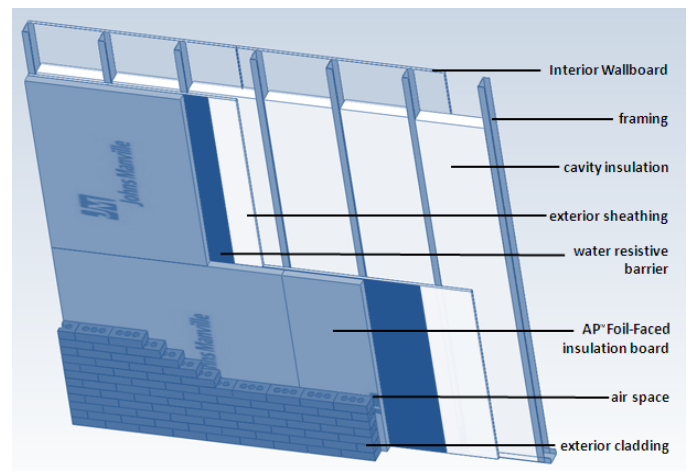
Installation

OPTION 1: Framed Wall – Separate WRB

1. If a WRB is already installed over the exterior sheathing, care should be taken to maintain its integrity while installing AP™ Foil-Faced boards. Self-sealing flashing tape should be applied to the WRB where fasteners are expected for insulation or cladding attachment, to prevent fasteners from creating air or water leaks. For liquid/spray/trowel-applied WRB materials, verify manufacturer's recommended cure time before installing foam boards.
2. Install AP™ Foil-Faced boards horizontally or vertically over exterior sheathing. Use maximum board lengths to minimize the number of joints. The insulation board joints should be staggered relative to structural sheathing (OSB or non-insulated sheathing) joints. Butt board edges together tightly, and carefully fit around openings and penetrations. The reflective side of the board should be oriented to the exterior and the nonreflective white side should be oriented to the interior.

EXCEPTION: If vinyl siding is to be installed over AP™ Foil-Faced sheathing, install foam boards with the white nonreflective side toward the vinyl siding.

Figure 1. Framed Wall – Separate WRB



3. Fasten insulation using 1-inch head plastic cap nails long enough to penetrate framing at least ¾ inch, or ⅝ inch head galvanized roofing nails long enough to penetrate at least ¾ inch, or 1-inch crown 16-gauge wire staples long enough to penetrate at least ½ inch. Drive fasteners flush with board, but do not countersink. Suggested fastener spacing is 16 inches on center or less along each stud.

Installation (continued)

OPTION 1: Framed Wall – Separate WRB - Continued

4. Use a utility knife and straight edge to trim the insulation board to conform to irregular wall angles, projections or wall surfaces. Repair any boards damaged during installation. Patch holes less than 1 inch across with flashing tape. Patch holes greater than 1 inch across with matching board material and then seal with flashing tape.
5. If a WRB was not installed under the AP™ Foil-Faced sheathing, install WRB over insulation per WRB manufacturer's instructions. Adjust fastener lengths to account for the thickness of the foam sheathing.
6. Brick, wood, hardboard, aluminum or vinyl sidings may be fastened to the wood frame construction through the insulation in accordance with the siding manufacturer's instructions.
7. Cement board, shakes or shingles may also be applied by installing furring strips or a plywood nailer base over the insulation and attaching the siding in accordance with the manufacturer's instructions.
8. Install cladding systems as soon as possible, preferably within 60 days.

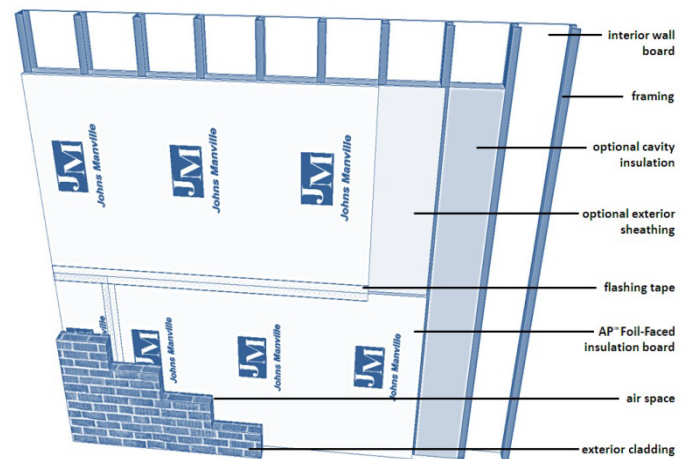
OPTION 2: Framed Wall – AP™ Foil-Faced as WRB

1. Install AP™ Foil-Faced boards either directly to framing or over exterior sheathing. If over exterior sheathing, insulation board joints should be staggered relative to exterior sheathing. Install boards horizontally or vertically using maximum board lengths to minimize the number of joints. Butt board edges together tightly, and carefully fit around openings and penetrations. The reflective side of the board should be oriented to the exterior and the non-reflective white side should be oriented to the interior.

EXCEPTION: If vinyl siding is to be installed over AP™ Foil-Faced sheathing, install foam boards with the white nonreflective side toward the vinyl siding.

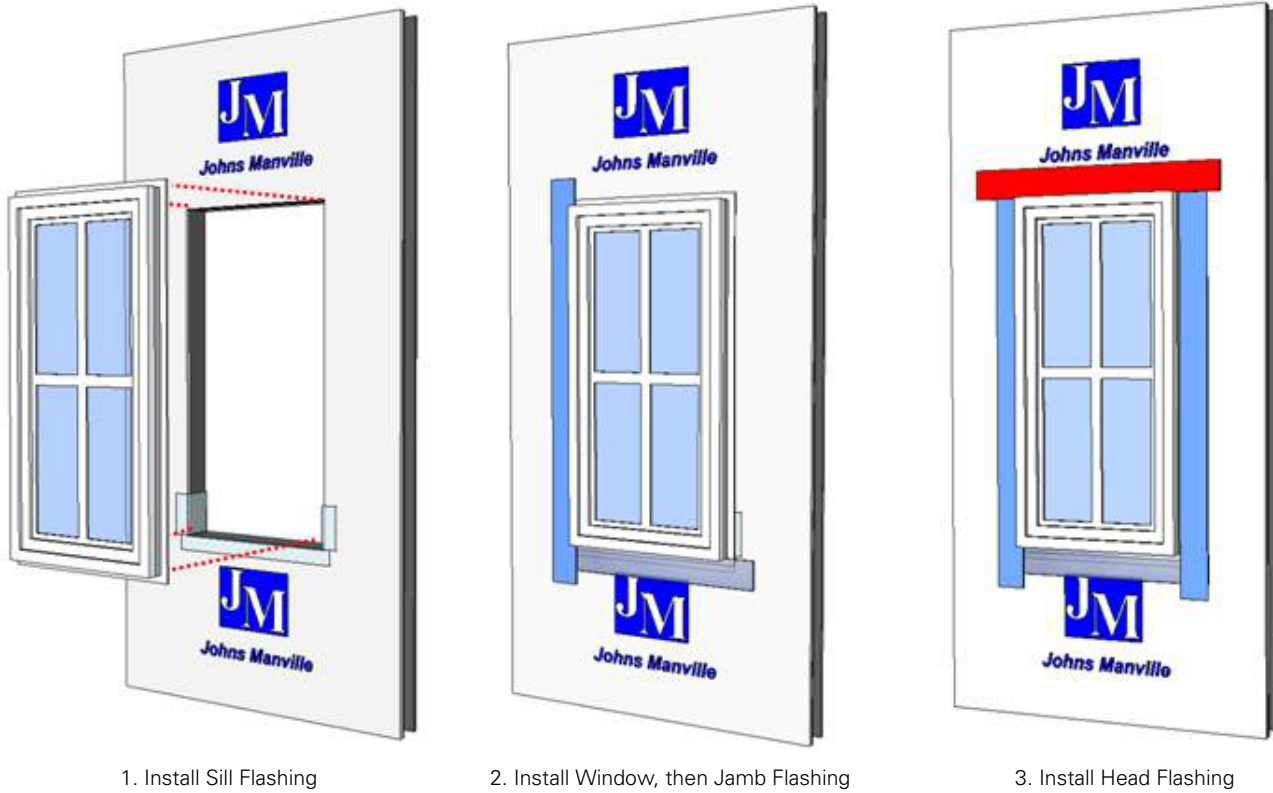
2. Secure AP™ Foil-Faced boards using recommended 2-inch capped fasteners with no. 10 self tapping screws long enough to penetrate framing a minimum of three threads. Drive fasteners flush with board, but do not countersink. Suggested fastener spacing is 16 inches on center or less around the board perimeter and in the field.
3. To create an air/water-resistive barrier, tape all seams, edge and end joints, and thru-wall penetrations with recommended flashing tape as shown in Figures 3 - 5. Install flashing shingle-style with a minimum 4 inch overlap, and follow the tape manufacturer's application instructions. Seal fastener penetrations by applying a minimum 4-inch by 4-inch piece of tape over each plate, smoothing tape edges to create an air-tight seal between the tape and the insulation board. Create continuous air/water barrier at roof and foundation wall interface using peel-and-stick membrane, or other approved barrier, following manufacturer's application instructions.
4. Seal penetrations and panel defects with recommended sealant.
5. Use a utility knife and straight edge to trim the insulation board to conform to irregular angles, projections or wall surfaces. Repair boards damaged during installation. Patch holes less than 1 inch across with flashing tape and/or sealant. Patch holes greater than 1 inch across with matching board material and seal with flashing tape.

Figure 2. Framed Wall – AP™ Foil-Faced as WRB



6. Brick, wood, hardboard, aluminum, or vinyl sidings may be fastened to the wood frame construction through the insulation in accordance with the siding manufacturer's instructions. Seal penetrations with recommended sealant. This step will help reduce air or water leaks around cladding attachments.
7. Cement board, shakes or shingles may also be applied by installing furring strips or a plywood nailer base over the insulation and attaching the siding in accordance with the manufacturer's instructions. Self-sealing flashing tape should be applied to the AP™ Foil-Faced board under where nailers or furring strips will be installed. This step will help reduce air or water leaks around fasteners used to secure these elements.
8. Install cladding systems as soon as possible, preferably within 60 days.

FIGURE 3. TYPICAL WINDOW FLASHING DETAIL

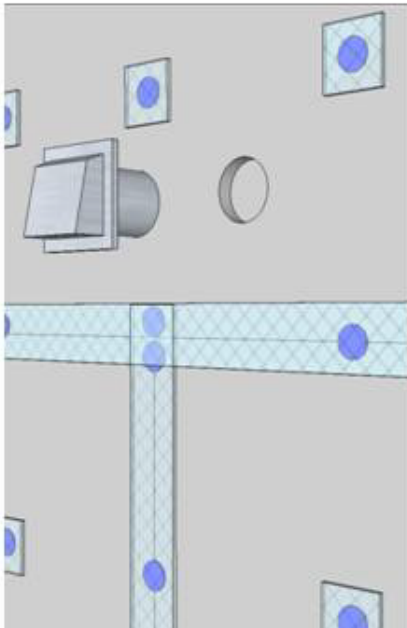


1. Install Sill Flashing

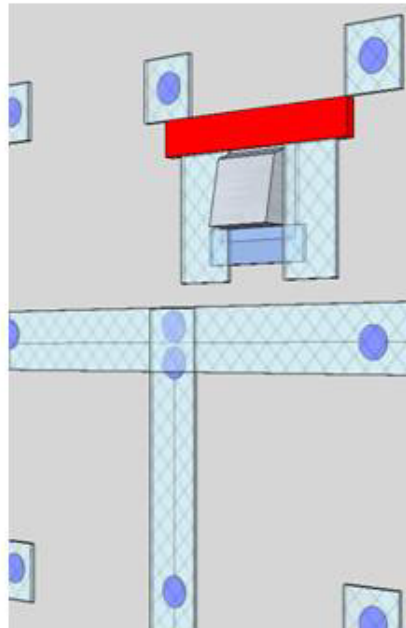
2. Install Window, then Jamb Flashing

3. Install Head Flashing

FIGURE 4. TYPICAL PENETRATION FLASHING DETAIL - FLANGED

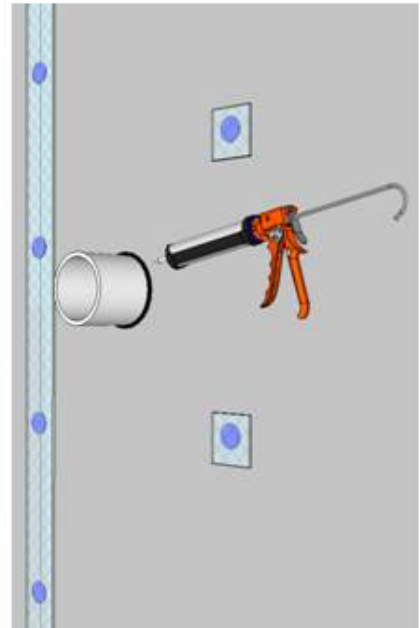


1. Install flanged penetration cover.



2. Apply tape in shingle fashion order; lower edge, then sides, then top.

FIGURE 5. TYPICAL PENETRATION FLASHING DETAIL - UNFLANGED



1. Install unflanged item. Apply caulk to seal penetration.

Installation (continued)

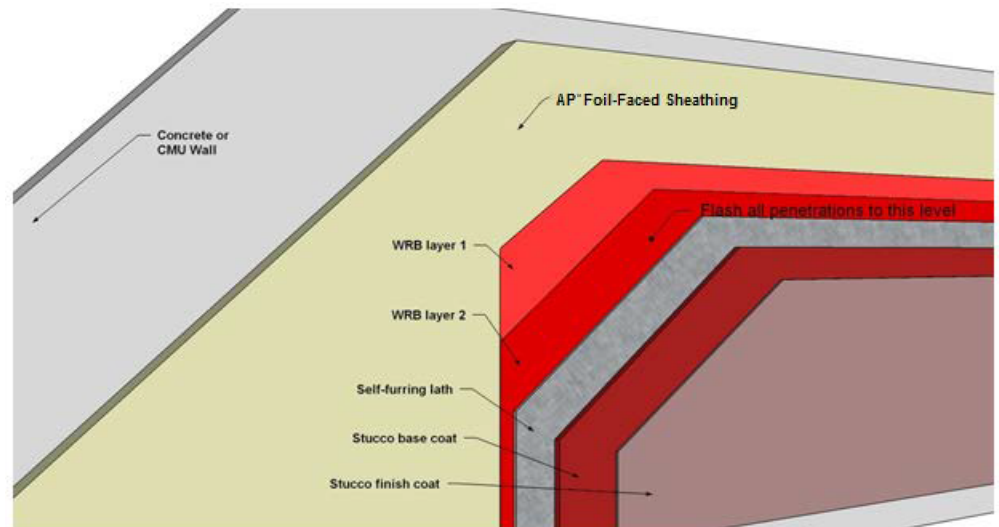
OPTION 3: Concrete / Block Wall – Separate WRB – Stucco – Maximum 1-1/2” Insulation

1. Install AP™ Foil-Faced boards horizontally or vertically over concrete or block wall. Use maximum board lengths to minimize the number of joints. Butt board edges together tightly, and carefully fit around openings and penetrations. The reflective side of the board should be oriented to the exterior and the nonreflective white side should be oriented to the interior.
2. Insulation may be held in place temporarily with 1- to 2-inch size spots of high-quality construction adhesive, spaced approximately 16 inches each direction.
3. Foam insulation boards must be fastened to the concrete or block wall. This can be done either separately or in conjunction with the lath fasteners. If separately, fasten using power-driven masonry nails with 1-inch minimum metal washers or caps, or other suitable masonry fastener. Fasteners should penetrate 1-inch minimum into the concrete. Space fasteners approximately 24 inches on center.
4. Drive fasteners flush with board (or lath), but do not countersink fasteners or lath into foil facing.
5. Install 2 layers of WRB over AP™ Foil-Faced sheathing per WRB manufacturer’s instructions. Adjust fastener lengths to account for the thickness of the foam sheathing.
6. Install self-furring lath through insulation to concrete / block wall in accordance with the lath manufacturer's instructions.
7. Install stucco system over lath in accordance with the stucco manufacturer’s instructions.
8. Install stucco system as soon as possible, preferably within 60 days.

Alternate WRB options:

- A. One separate WRB behind AP™ Foil-Faced Sheathing
- B. AP™ Foil-Faced Sheathing taped joints + 1 layer WRB (building paper)

Figure 6. Concrete / Block Wall – Stucco



OPTION 4: Concrete / Block Wall – AP™ Foil as WRB – Stucco – 1-1/2” or greater Insulation

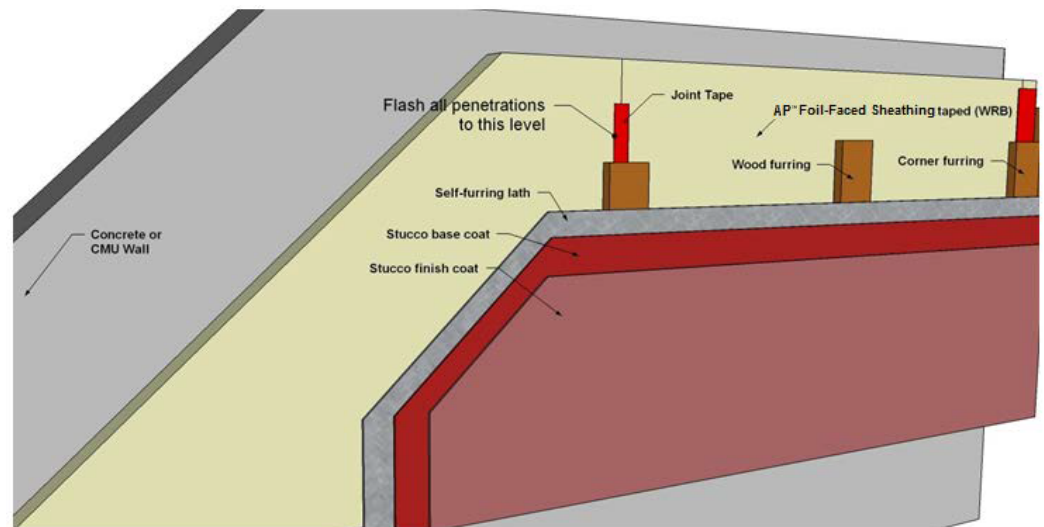
1. Install AP™ Foil-Faced boards horizontally or vertically over concrete or block wall. Use maximum board lengths to minimize the number of joints. Butt board edges together tightly, and carefully fit around openings and penetrations. The reflective side of the board should be oriented to the exterior and the nonreflective white side should be oriented to the interior.
2. Insulation may be held in place temporarily with 1- to 2-inch size spots of high-quality construction adhesive, spaced approximately 16 inches each direction.
3. Foam insulation boards must be fastened to the concrete or block wall. This can be done either separately or in conjunction with the wood furring fasteners. Fasteners should penetrate 1-inch minimum into the concrete (unless otherwise specified by the stucco/lath manufacturer).
4. Fasteners shall not be spaced more than 24 inches on center.

Installation (continued)

OPTION 4: Concrete / Block Wall – AP™ Foil as WRB – Stucco – 1-1/2” or greater Insulation - Continued

5. To create an air/water-resistive barrier, tape all seams, edge and end joints, and thru-wall penetrations with recommended flashing tape as shown in Figures 3 - 5. Install flashing shingle-style with a minimum 4 inch overlap, and follow the tape manufacturer's application instructions. Seal fastener penetrations by applying a minimum 4-inch by 4-inch piece of tape over each plate, smoothing tape edges to create an air-tight seal between the tape and the insulation board. Create continuous air/water barrier at roof and foundation wall interface using peel-and-stick membrane, or other approved barrier, following manufacturer's application instructions.
6. Seal penetrations and panel defects with recommended sealant.
7. Install wood furring and attach fasteners through insulation to concrete / block wall in accordance with manufacturer's instructions. Drive fasteners flush with furring strips, do not countersink or drive wood furring into foil facers.
8. Install self-furring lath to furring strips in accordance with manufacturer's instructions.
9. Install stucco system over lath in accordance with the stucco manufacturer's instructions.
10. Install stucco system as soon as possible, preferably within 60 days.

Figure 7. Concrete / Block Wall – Stucco



OPTION 5: Existing Wall – AP™ Foil-Faced Insulation Over Siding

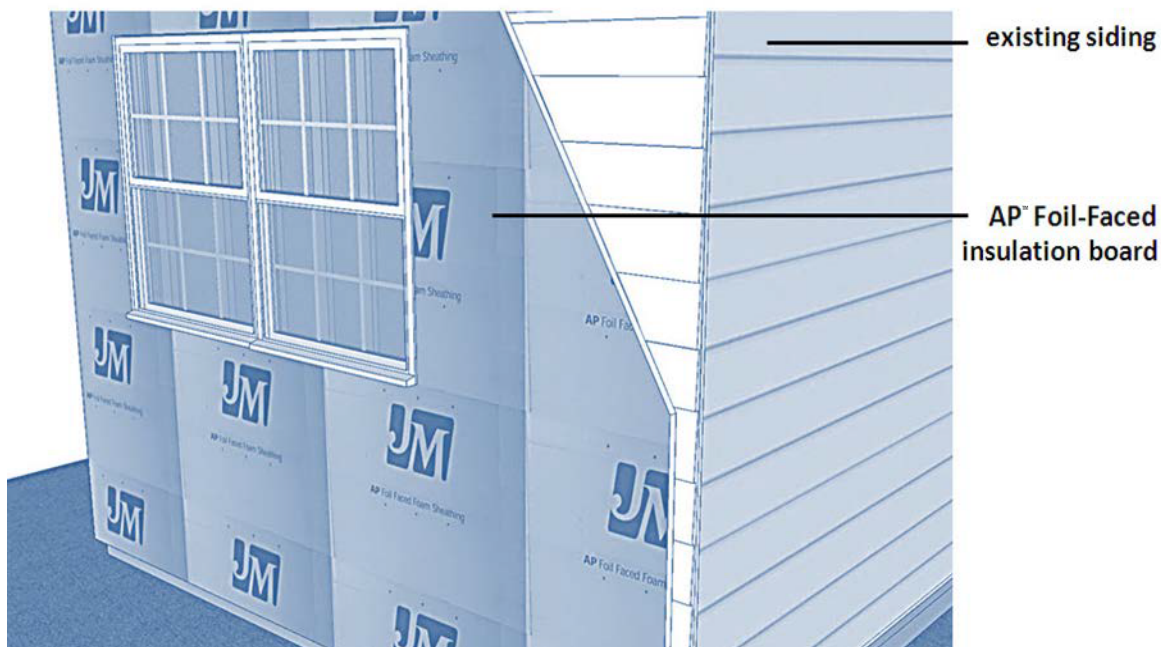
1. Correct all moisture-related wall problems before proceeding with new siding application. Because each type of siding may require specific application details, consult siding manufacturer's instructions before beginning. Existing siding should be structurally sound; secure loose siding and repair or replace rotted siding, trim, sills and corner posts, etc. before residing. Remove all gutters, downspouts, shutters, molding and old caulking around windows and doors.
2. Fasten AP™ Foil-Faced insulation over existing siding. Secure AP™ Foil-Faced boards using recommended 2-inch capped fasteners with no. 10 self tapping screws long enough to penetrate framing a minimum of three threads. Drive fasteners flush with board, but do not countersink. Suggested fastener spacing is 16 inches on center or less around the board perimeter and in the field. Jamb, frame or sill extenders may be required depending on thickness of insulated sheathing used as well as siding manufacturer's application instructions. It is recommended that AP™ Foil-Faced insulation boards be installed vertically.
3. If the AP™ Foil-Faced insulation will also be used as a WRB, tape all seams, edge and end joints, and thru-wall penetrations with recommended flashing tape as shown in Figures 3 - 5. Install flashing shingle-style with a minimum 4 inch overlap, and follow the tape manufacturer's application instructions. Seal fastener penetrations by applying a minimum 4-inch by 4-inch piece of tape over each plate, smoothing tape edges to create an air-tight seal between the tape and the insulation board. Create continuous air/water barrier at roof and foundation wall interface using peel-and-stick membrane, or other approved barrier, following manufacturer's application instructions.

Installation (continued)

OPTION 5: Existing Wall – AP™ Foil-Faced Insulation Over Siding - Continued

4. Seal penetrations and panel defects with recommended sealant.
5. Use a utility knife and straight edge to trim the insulation board to conform to irregular wall angles, projections or wall surfaces. Repair any boards damaged during installation. Patch holes less than 1 inch across with flashing tape and/or sealant. Patch holes greater than 1 inch across with matching board material and then seal with flashing tape.
6. New siding is applied in accordance with the manufacturer's instructions. Ensure that fasteners are long enough to penetrate both the AP™ Foil-Faced insulating sheathing and the normal securing substrate to a depth recommended by the siding manufacturer.

Figure 8. Existing Wall – AP™ Foil-Faced Insulation Over Siding



Personal Protective Equipment

Personal Protective Equipment: Eyes/Face

Safety glasses with side shields are recommended to keep dust out of the eyes.

Personal Protective Equipment: Skin

Leather or cotton gloves should be worn to prevent skin contact and irritation.

Personal Protective Equipment: Respiratory

A NIOSH-certified respirator should be used if ventilation is unavailable, or is inadequate for keeping dust levels below the applicable exposure limits.

Ventilation

In fixed manufacturing settings, local exhaust ventilation should be provided at areas of cutting to remove airborne dust. General dilution ventilation should be provided as necessary to keep airborne dust below the applicable exposure limits and guidelines. The need for ventilation systems should be evaluated by a professional industrial hygienist, while the design of specific ventilation systems should be conducted by a professional engineer.

Personal Protective Equipment: General

Loose-fitting, long-sleeved clothing should be worn to protect skin from irritation. Work clothing should be washed separately from other clothes, and the washer should be rinsed thoroughly (run empty for a complete wash cycle). This will reduce the chances of dust being transferred to other clothing.