

# Windows Installed into Walls with FPIS and Wood Framing

*Window Buck Method*

Revised 11/14/2016



# Background

- There are many acceptable ways to mount and detail windows for support and weather resistance.
- This installation best practice provides only a representative solution for integrating windows with Foam Plastic Insulating Sheathing (FPIS).
- It is the responsibility of the user to verify the appropriateness of any specific detail for their specific conditions.

# Scope

- The installation approach featured in this presentation:
  - Is a “window buck” installation concept with window flanges mounted directly over a limited thickness of FPIS.
  - Represents a common method for installing windows in walls with generally more than 1-1/2 to 2-inches-thick FPIS.



# Scope

- The installation approach featured in this presentation:
  - Uses FPIS as the water-resistive barrier (WRB).
    - Refer to [DrJ DRR 1410-05](#) and the FPIS manufacturer's installation instructions.
    - Use of a separate WRB material layer is also common and acceptable with appropriate installation and detailing.



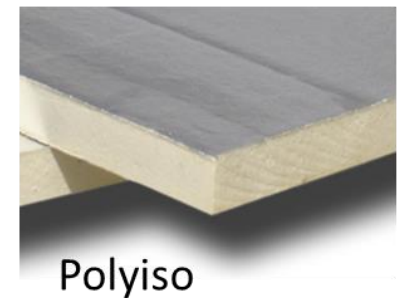
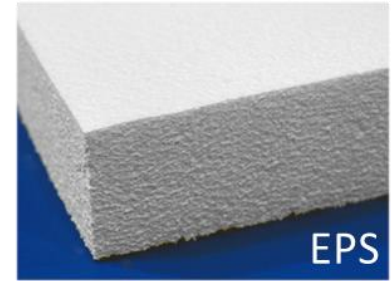
# Scope

- The installation approach shown includes windows with integral mounting flanges.
- Integral mounting flange windows:
  - Are sometimes referred to as “integral nailing flange,” “integral fin,” or “integral mounting fin.”
  - An integral flange is extruded with the frame and forms one continuous piece around the perimeter.
  - A mounting flange is typically about 1½” wide and is set back about 1” from exterior window face. Fasteners are installed through the pre-punched holes in the flange.



# About FPIS

- Three types of FPIS:
  - Expanded Polystyrene (EPS) - ASTM C578
  - Extruded Polystyrene (XPS) - ASTM C578
  - Polyisocyanurate (Polyiso) - ASTM C1289
- R-values ranging from R-4 to more than R-6 per inch.
- Come in many thicknesses, compressive strengths, and densities.



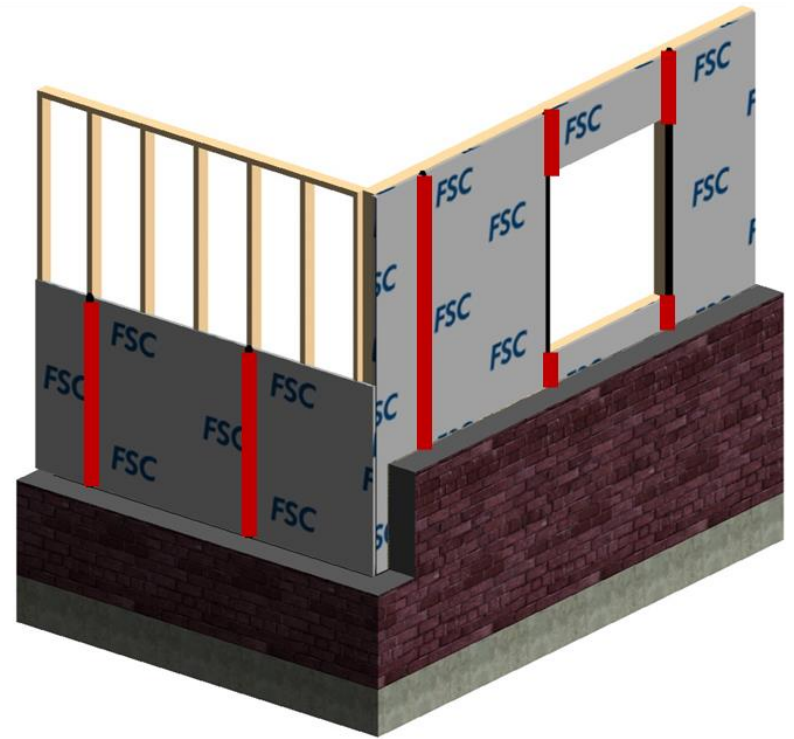
# Typical FPIS Applications

- Often used as exterior **continuous insulation (ci)** on buildings to comply with energy codes or for improved performance.
  - Can be used as an **air-barrier (AB)** and **water-resistive barrier (WRB)** per manufacturer's code approvals and instructions.
  - Proprietary FPIS products are also available as a structural insulating sheathing composite for **wall bracing**.



# Installation Guidance

- [DrJ Best Practices](#)
- Window, FPIS, WRB, or Flashing manufacturer's installation instructions
- An approved design
- The following general installation guidelines



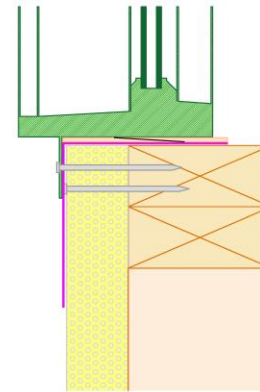


# Key Principles

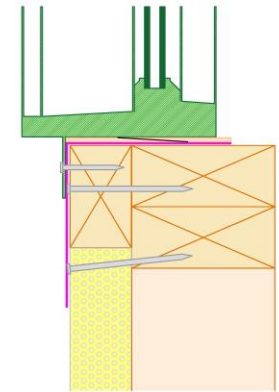
- The intent of any acceptable detail for integrating windows with FPIS is:
  - To provide adequate structural support to the window unit.
  - To prevent water penetration at the window-wall interface by flashing to direct water onto the exterior surface of the WRB layer and/or cladding and away from the window opening.
  - To provide adequate drainage at the window sill for any incidental leakage of water that may still penetrate into the rough opening.

# Framing Methods

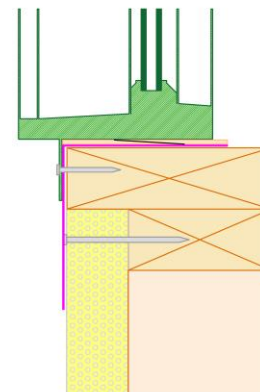
- There are four typical methods for window framing.
- This program covers the “Lumber Window Buck” method.



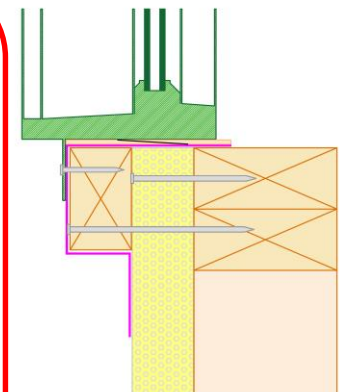
Standard



Picture Frame

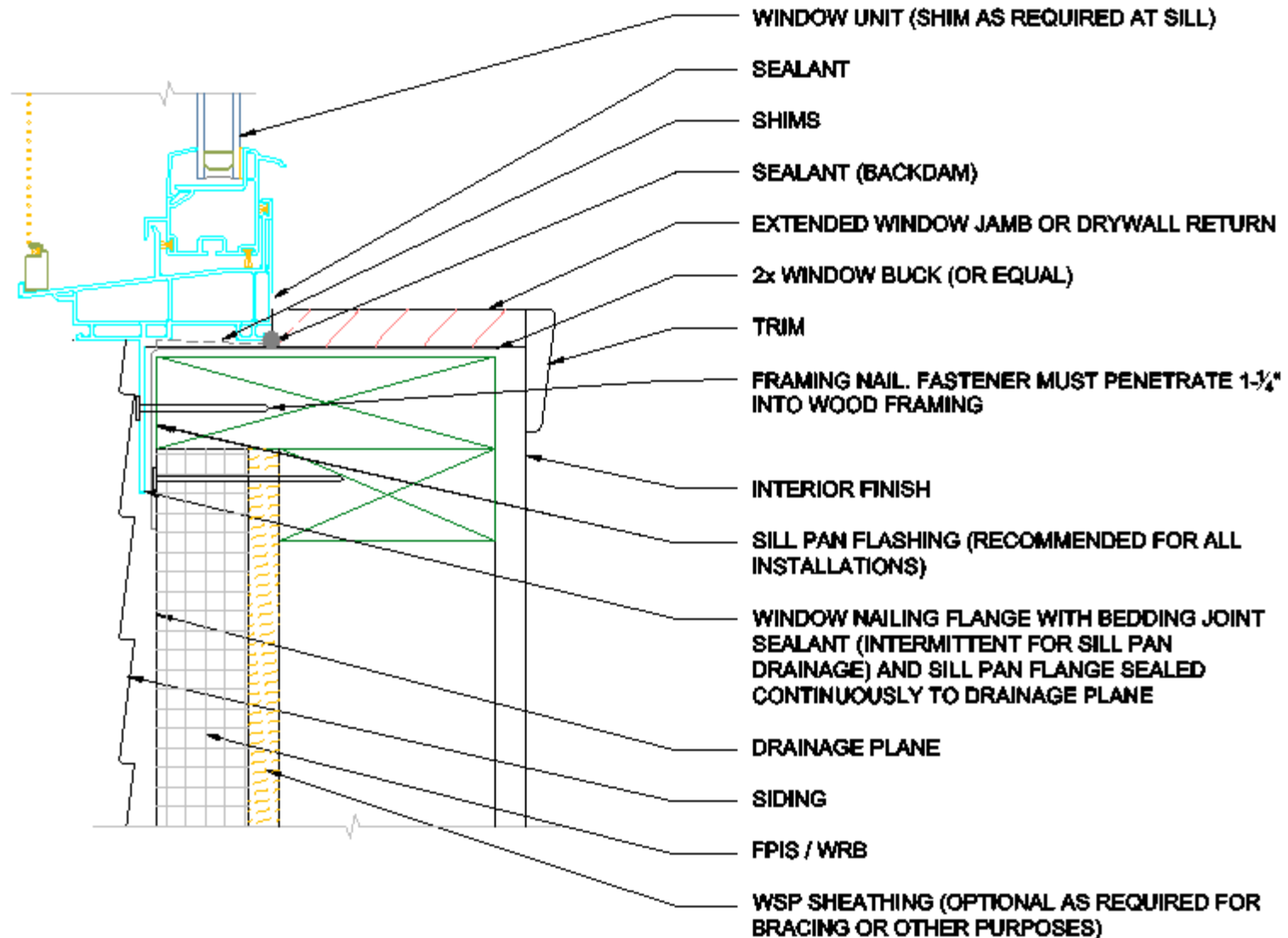


Lumber Window Buck

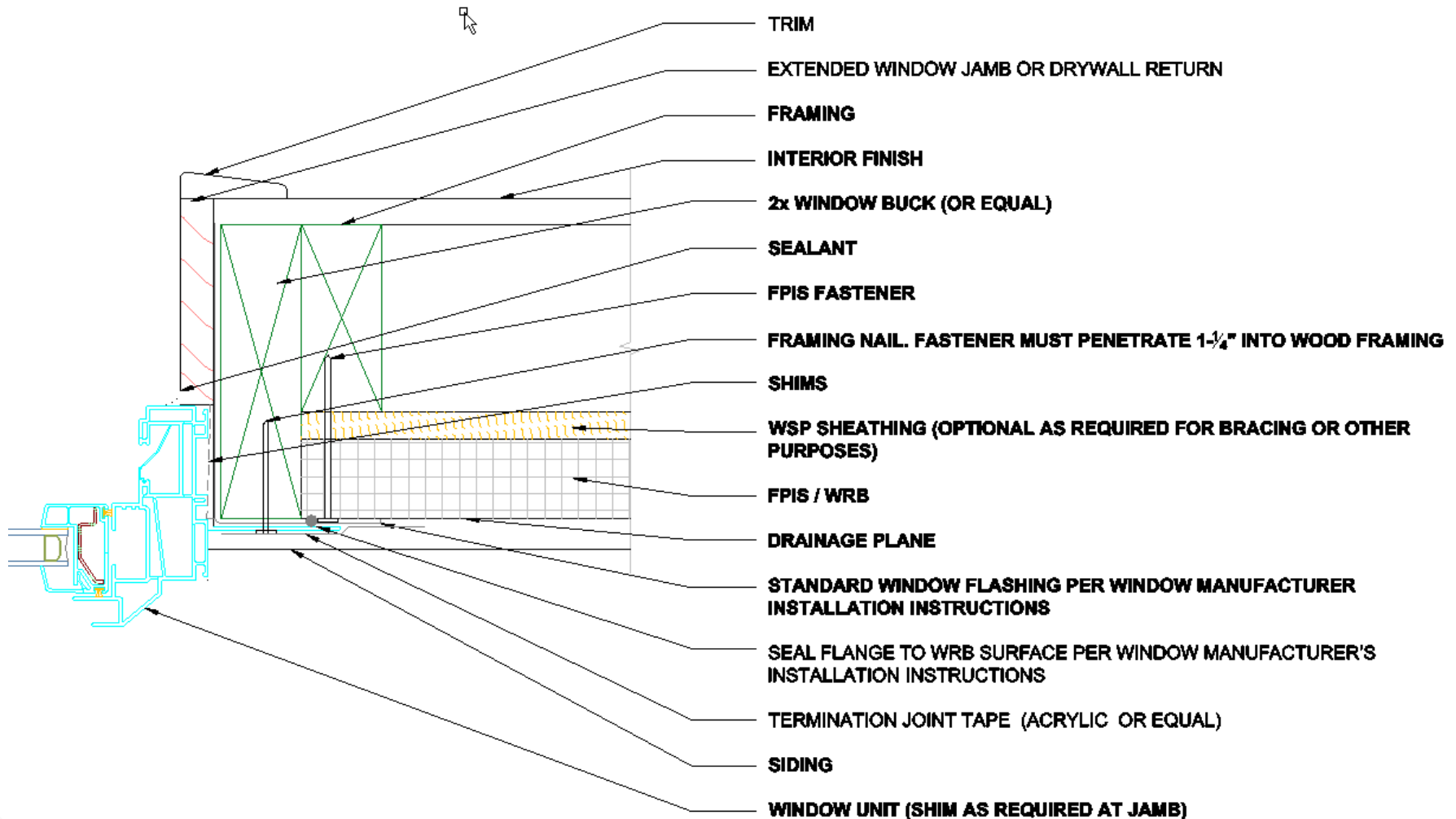


Rainscreen

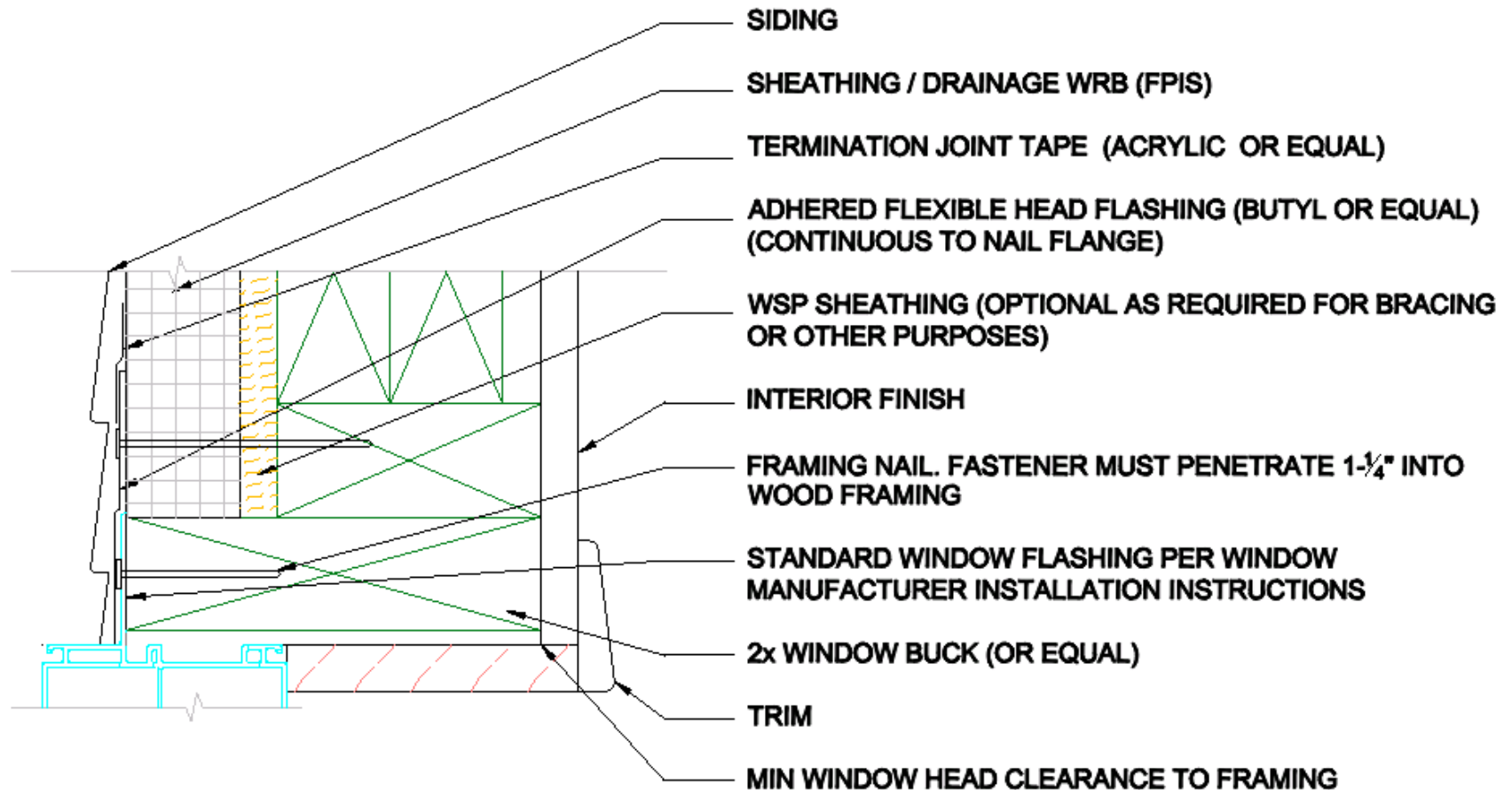
# Window Buck Installation - Sill



# Window Buck Installation - Jambs

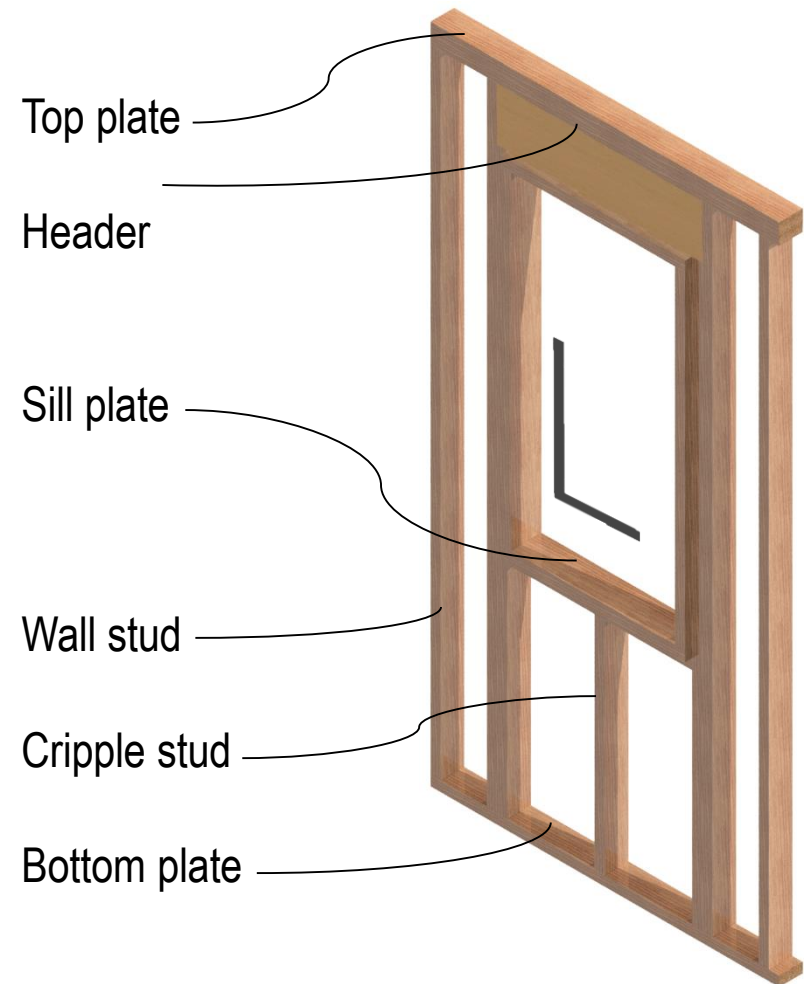


# Window Buck Installation - Header



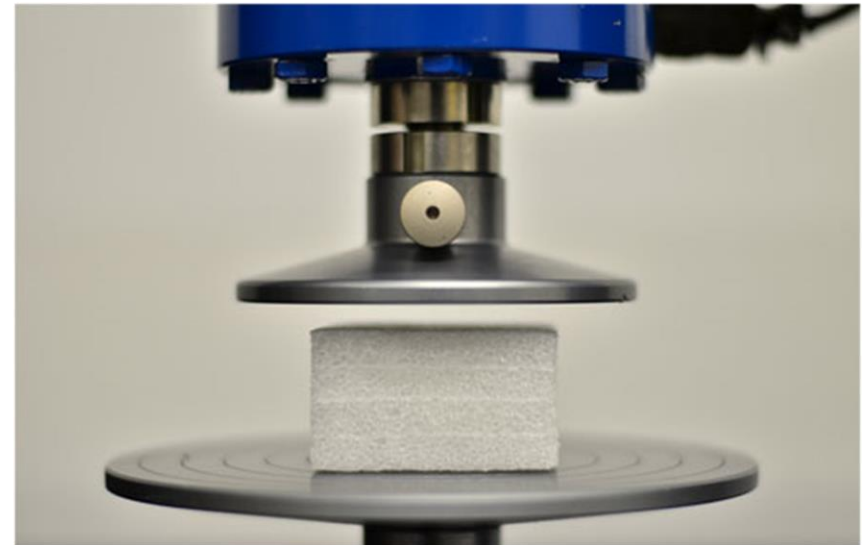
# Step 1: Frame Window Opening

- Frame walls as required by the applicable code.
- Ensure window rough opening is square and true.
- Ensure appropriate framing in accordance with window installation method selected and support for FPIS edges is provided.



# Step 2: Verify and install FPIS

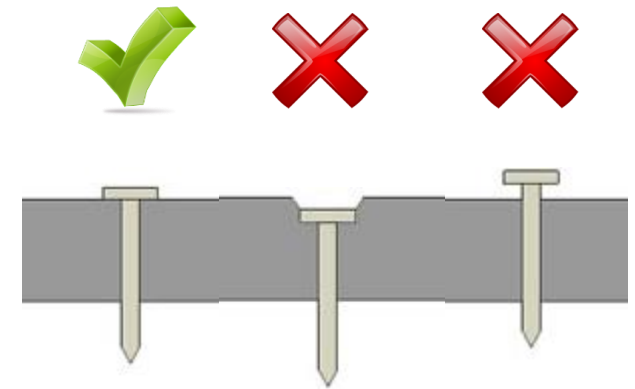
- FPIS material must comply with:
  - ASTM C578 (EPS, XPS)
  - ASTM C1289 (Polyiso)
- Wind pressure resistance
  - See [ANSI/SBCA FS-100](#) for guidance
  - Only required when FPIS not used as oversheathing



ASTM D 1621

# Step 2: Verify and Install FPIS

- Drive nails flush and snug with the surface of the insulation board.
- Do not overdrive nails.
- Do not underdrive nails.
- Many FPIS manufacturers recommend use of cap nails.





# Step 2: Verify and Install FPIS

- Follow manufacturer's installation guidelines
- While not prohibited, avoid placing vertical joints in the sheathing over a window head where practical.
- See "[FPIS Installation Instructions](#)" program.



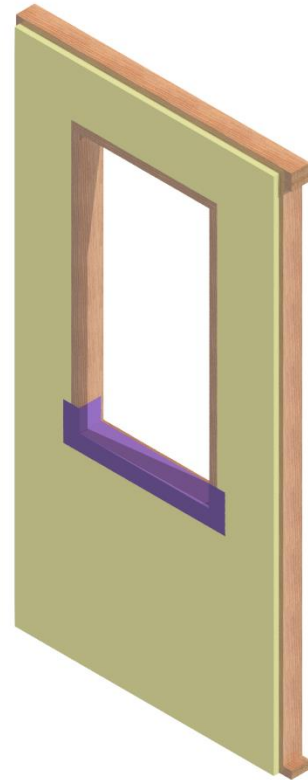
# Step 3: Verify Flashing and Sealant Materials

- Ensure chemical compatibility of all sealants and flashings with intended substrates; refer to sealant and flashing manufacturer's data.
- Use flashing tape and sealants recommended by the window and FPIS/WRB manufacturers.



# Step 4: Apply Sill Flashing

- Apply all flashings in shingle fashion (e.g., jamb flashing overlaps sill flashing and head flashing overlaps jamb flashing).
- Overlap and seal sill flashing at center of sill if a multi-piece sill or pan flashing is used.



# Step 4: Apply Sill Flashing

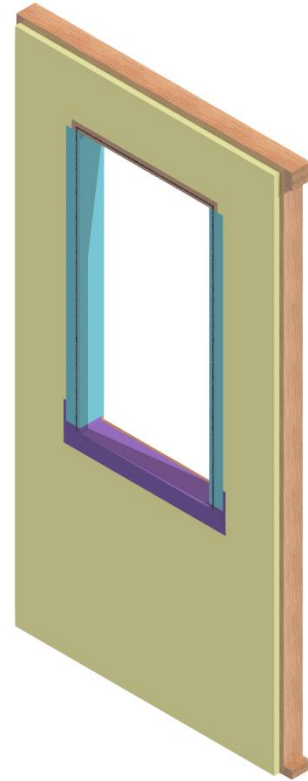
- Alternatively, use a manufactured sill pan to simplify sill drainage installation.



Manufactured Sill Pan

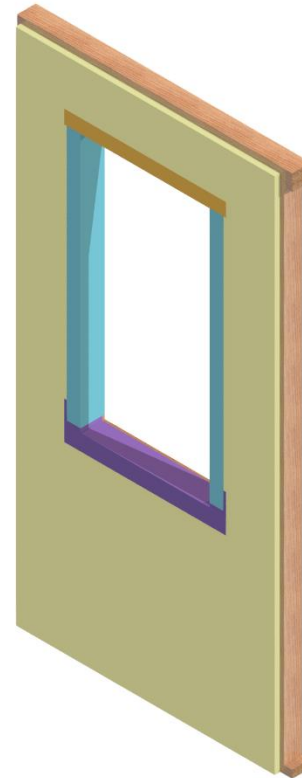
# Step 5: Apply Jamb Flashing

- Apply flashing at jambs



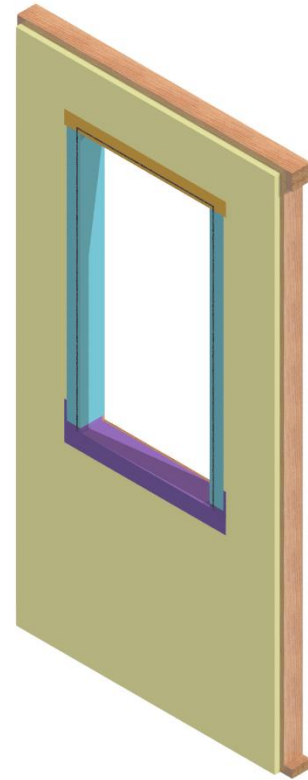
# Step 6: Apply Head Flashing

- Apply flashing at head



# Step 7: Apply Sealant

- Apply sealant at jambs and head (or as required by manufacturer's install instructions).
- Sill is left open to allow the cavity below the window to drain to the exterior.



# Step 8: Install Window Shims at Sill

- Apply setting blocks and/or shims between the rough opening and window frame.
- The window frame must be anchored to the wood rough opening as required by the window manufacturer or in accordance with an approved design for sill support.





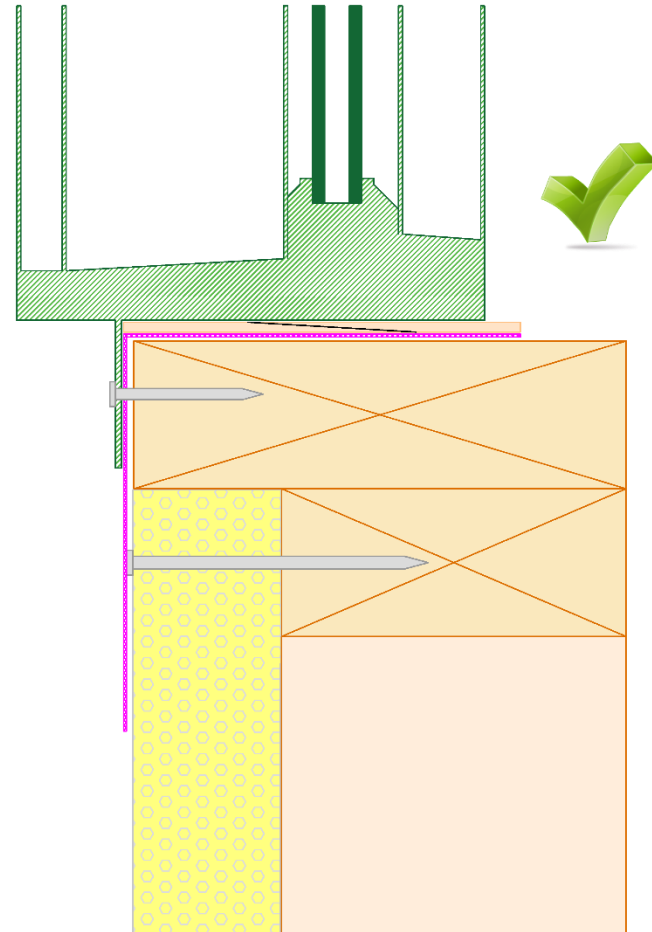
# Step 9: Install Window

- Install window plumb, level, and square per manufacturer's instructions.



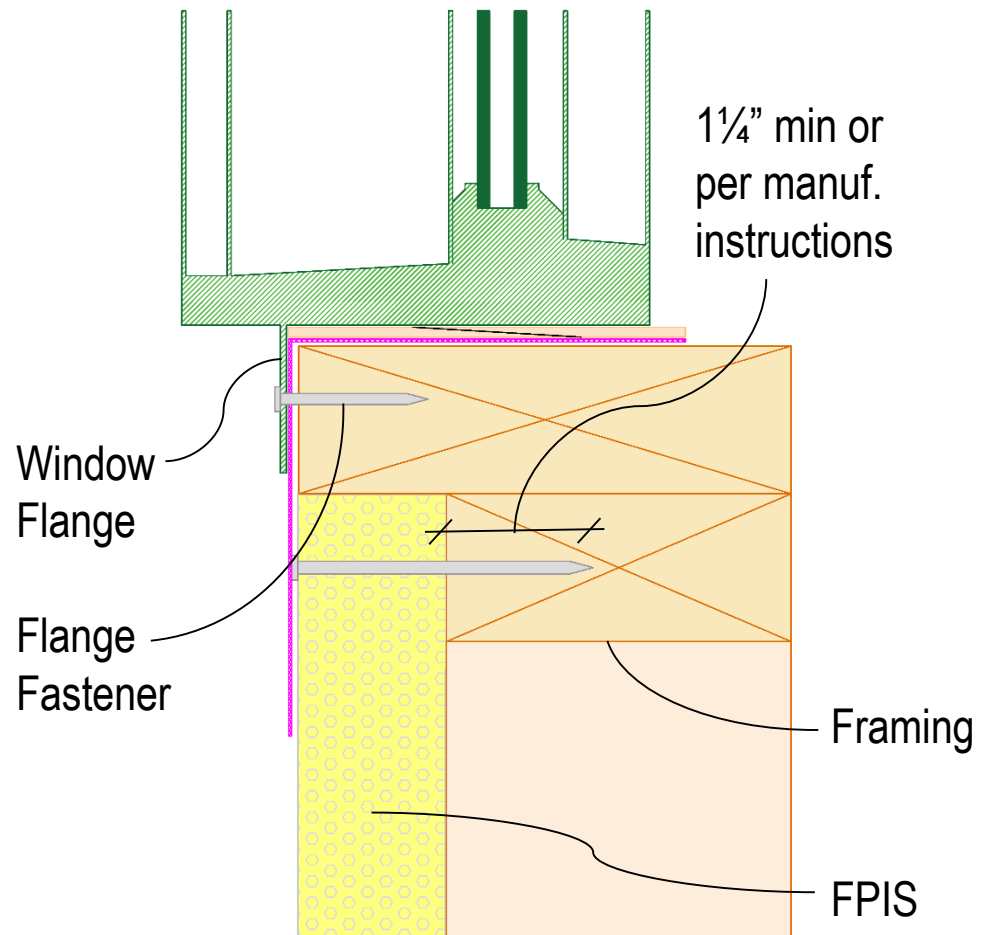
# Step 7: Install Window

- The window frame must adequately bear on the wood sill particularly if using a non-structural flange window.
- Providing adequate sill support is good practice and often required by window manufacturer installation instructions.



# Step 8: Verify Window Fasteners

- Window flange fasteners must penetrate a minimum of 1¼" into framing members per IRC 2015.
- Follow manufacturer installation requirements for size and spacing.



# Step 9: Install Window Shims

- Apply shims between the rough opening and window frame.
- Anchor the window per the manufacturer's installation instructions.



# Step 10: Apply Jamb Flashing

- Install flashing over the nailing flanges of the jambs to provide a final layer of protection against water intrusion.
- The sill is not sealed, allowing for drainage of the rough opening, back to the exterior.
- Where applicable, install drip cap per manufacturer



# Step 11: Apply Head Flashing

- Apply head flashing.
  - Typically, butyl flashing tapes are used for this purpose.
- Overlap window head flange and jamb flashing.



# Step 12: Tape Head Flashing

- For extra durability and protection, terminate the top edge of the head flashing tape with the FPIS manufacturer's approved joint tape.
- Typically, acrylic tapes are used for this purpose.



# Step 13: Apply Sealant

- Air seal window around entire perimeter on the interior with sealant or expanding foam made for this purpose.





# Step 14: Install Cladding

- [See Installation Instructions](#)  
“Attachment of Exterior Wall Coverings Through Foam Plastic Insulating Sheathing (FPIS) to Wood or Steel Wall Framing.”



# Additional Reading

- *Fastening Systems for Continuous Insulation*, New York State Energy Research and Development Authority (NYSERDA), April 2010.
- *ASHRAE Journal*, "[Stuck on you](#)," Feb 2013.
- *ASHRAE Journal*, "[Windows can be a pain](#)," Lstiburek, April 2015.