

# Just how do you install windows properly?

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The reality is that there is not just one good way to install windows, but there are certain principles that must be taken care of with any installation to prevent cold air or water leakage later.

Basically a window installation must shed most of the water with the siding, what does get through someday is keep away from the wood and directed downward with a drainage path that positively drains outdoors -- the wall portion between the sash and the frame is insulated and sealed air tight on the inside.

From the start:

- A window must be plumb, level and square.
- A window must be properly supported by shims in the right places so that the window is held firmly in place but not distorted.
- Header flashings are required where the overhang of the house does not protect the window top from rain.
- Something must be installed in the window-to-house space (between the rough opening of the structure and the window frame) that acts as a "drainage layer" -- the furthestmost point that moisture that gets past the flashings and caulking can go before it is redirected and drained outdoors. This drainage layer is a critical new element in cold climate window installations, an acknowledgement of the reality that water will probably get past the outer layers of protection, and that water must not be allowed into the walls. Nailing flanges on windows makes it very difficult to assure proper moisture protection -- they simplify hanging windows but complicate making them water tight. Window frames that counted on the exterior caulking are the greatest causes of water damage in walls below windows.
- This shimming cavity around the window must be insulated to keep the window frame warm.
- This same cavity must be sealed off air tight on the inside of the house to prevent household moisture from migrating into the wall by air currents moving around the window trim. Air sealing the window at the sheathing level has been found to not totally protect the window. Put the drainage layer first, then the air seal plane further inside the house.

We followed one good installation with Brian in Victoria B.C. where window leakage has often been a problem.

Here are the details of one way to accomplish these objectives as we follow Brian with my camera.

- 1- Milled and pre primed 2x6 for the rough sill provides positive drainage outwards.
- 2- Row of building paper under the window -- building paper is always put on in shingle fashion, overlapping to direct water away from the wall.
- 3- Primer on building paper, wall and sill to assure permanent adhesion with the peel & stick to come. Long term adhesion of peel & stick can be a hidden problem.
- 4- Peel & Stick applied to lower portion of window to receive and redirect outwards any behind-the-siding water flow. Note they bring the peel & stick into the house beyond the window frame to avoid the black sealant, which is under the blue surface, from bleeding into the white finish caulking. Notice careful and total sealing of corner joints -- three layers to really seal the corner and not leave a little gap at the horizontal-vertical-wall junction.
- 5- Building paper 'shingled' over the rest of the opening. Any water that penetrates the siding is directed down to the waterproof lower area and shed outwards. They don't use the peel & stick here in order to allow any moisture in the framing to move through the building paper and out.
- 6- Spaced shims provide complete horizontal support for the window over the tapered sill plate and a drainage pathway outward.
- 7- Sticky adhesive is placed over the window frame to catch and seal edge of building paper to the window frame just prior to the installation of siding.

8- After insulating between the window and the house framing, foam backing rod is stuffed around the frame, to be covered with caulking and the sill plate put into the wet caulking to seal it to the frame.

9- The 2007 code requirement in Canada now require end dams on all header flashings over windows and doors. For details on how to do that, follow the link to window header end dam jig.

"Window Wise" is a Canadian program dedicated to good window installations. Their site is worth a visit.

**Keywords:**

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