



# WEATHERTIGHTNESS BASICS

It's often said that the devil is in the detail. Here, we give a refresher on some small construction details that need to be correct to increase the weathertightness of your building projects.

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The junctions between the cladding and windows, doors, pipe and duct penetrations can be a weakness in the weathertightness of a building envelope. Getting the construction details and sequence correct is basic, but unfortunately it isn't always happening on building sites.

## Drained cavity window/door head flashing

The window or door head flashing in an E2/AS1 drained cavity construction (see Figure 1) protects the critical junction between the window flange and the exterior cladding and allows water to drain from the cavity and air to get in. Remember that:

- E2/AS1 calls for a 15° slope across the head flashing to ensure water will drain effectively off the flashing
- the head flashing must overflash the window head by 10 mm and span across the width of the cavity
- the flashing upstand of 35 mm minimum needs to be taped with flexible flashing tape to the face of the wall underlay or install an additional layer of wall underlay to maintain drainage from the cavity
- the flexible flashing tape must be compatible with the wall underlay to ensure long-term adhesion
- the flashing must incorporate folded stop-ends that block off the opening to the cavity at the flashing ends – cavity battens must *not* be used as stop-ends
- a cavity closure device is needed to protect the cavity above the window head
- cladding is installed with a 5 mm gap from the bottom edge of the cladding to the top surface of the sloped head flashing – this allows water to drain from the cavity over the flashing and air to enter to dry any moisture.

Windows and doors are usually installed before the cladding, making the head flashing installation easier and preventing the 15° slope being reduced (which can happen when flashings are forced upwards during later window installation).

## WANZ WIS cavity drain

The WANZ window installation system offers an alternative method of dealing with window and door head flashing installation (see Figure 2). This incorporates a uPVC or metal cavity closer drain the same depth as the cavity, installed with an upward curve in the middle across the window head. Water draining down the back of the cladding is collected and taken to either end and drained to an exit point further down the building.

The cavity closer drain must pass through any vertical battens at each end so that drainage is not blocked (see Figure 3 for how *not* to build it) and

the water should exit well clear of the batten. It is also important that any vertical battens above the window head are left well short of the drain so that ventilation can occur within the cavity.

Avoid over curving the cavity closer drain. This can distort its shape and lead to water being collected and drained onto the face of the wall underlay as opposed to the back of the cladding.

The system is completed with the installation of a typical direct fix cladding head flashing, protecting the junction between the cladding and the window.

## Flexible flashing tape

Where flexible flashing tape is being used in a construction detail with a rigid or non-rigid air barrier or wall underlay, the tape specified must be compatible with the component it is being adhered to. →

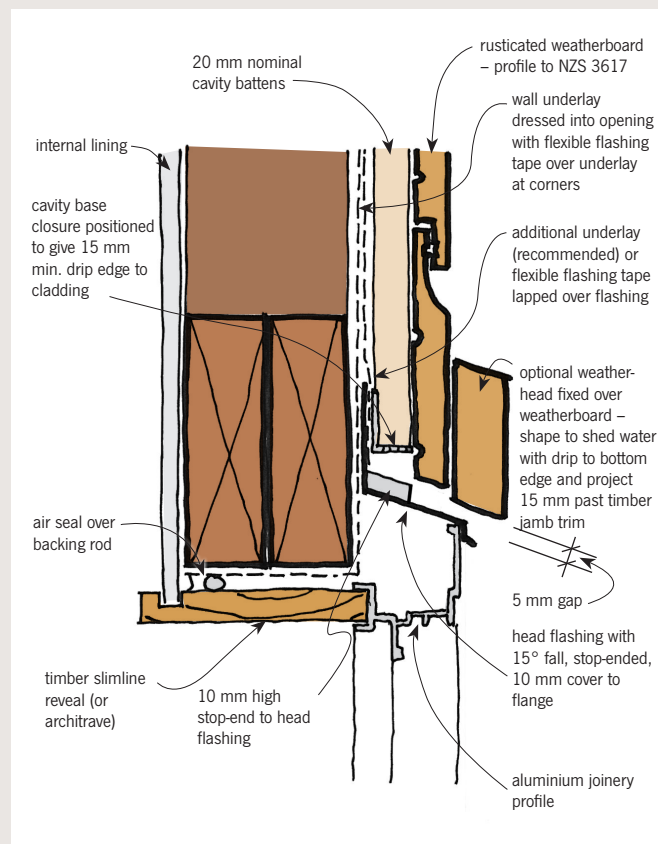


Figure 1: E2/AS1 drained cavity construction.

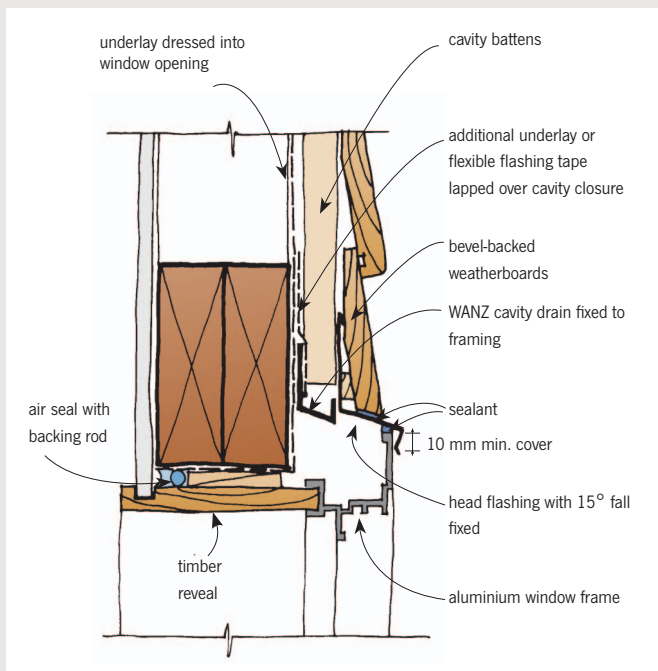


Figure 2: Wanz window installation system.

When being adhered onto a wall underlay, solid blocking within the wall framing where the tape is required will provide a solid backing and allow better installation and adhesion of the tape. Solid blocking will also help hold in place any pipe or duct penetration that is required to be taped.

The durability of the tape is also important. It must meet the same Building Code durability requirements as the cladding system, for example, flexible flashing tapes used behind moderately difficult to replace cladding systems such as brick veneer must comply with the system's 50-year durability requirements.

**ISSUE**

Poorly installed or incompatible flexible flashing tape can lose adhesion over time, and this may result in water penetration.

**Rigid air barriers**

Using a rigid air barrier on the outside of wall framing has some benefits over a flexible wall underlay or air barrier. A rigid air barrier:

- ensures the insulation within the wall framing is held in place
- allows easier installation of pipe and duct penetrations – it holds these more easily in place and provides a solid substrate for the flexible flashing tape to adhere to
- can sometimes provide structural bracing.

Rigid air barriers must be installed according to manufacturers' instructions, particularly when they are providing bracing. Also ensure that the exterior face is watertight and provides an effective gravity drainage plane for any water that may leak through the exterior wall cladding.

**FLEXIBLE WALL UNDERLAYS ISSUE**

Problems often arise where the installation of insulation forces a non-rigid underlay across the cavity. This can reduce drainage and drying and also potentially wick water from the back of the cladding onto the underlay.

Remember, when stud spacings are over 450 mm, flexible wall underlays need intermediary restraint such as polypropylene tape, galvanised wire or additional vertical battens.



Figure 3: How not to install a Wanz-WIS cavity drain over a window.

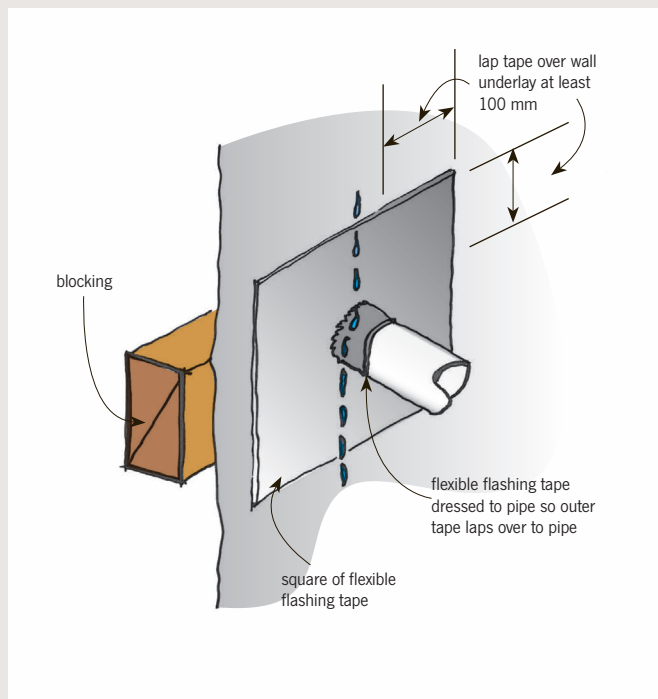


Figure 4: Penetration through the exterior cladding.

**Minor cladding penetrations**

Pipes and ducts that run from the interior of a building through the cladding to the exterior need to be installed and sealed *before* the exterior cladding is installed.

The penetration must be well sealed to the non-rigid wall underlay or rigid air barrier. A compatible flexible flashing tape must be installed to provide an effective air seal and lapped to facilitate gravity drainage of water down and around the penetration (see Figure 4).

Solid blocking within the wall framing will provide a solid substrate behind non-rigid underlays, allowing good tape adhesion and providing support for the pipe or duct.

The pipe or duct should be sloped slightly to the exterior to ensure that any water draining onto it will drain to the exterior.

**LEAKAGE PATH ISSUE**

Poorly installed air seals can create an air leakage path into the frame cavity, and these will become water leakage paths when water is present on the back of the cladding. ❖