

## Background

Windows and doors represent a natural break in the continuity of the wall insulation, by their very nature they have a significantly higher u-value than the construction around them and therefore should be seen as high-risk areas which are given the attention to detail they deserve. Not only can they be a key area of heat loss; they also represent a natural penetration to the airtightness layer and therefore are often the culprit for increased levels of unwanted infiltration.

The points included in this document are for guidance and information purposes; they aim to highlight common areas of non-compliance and poor workmanship.

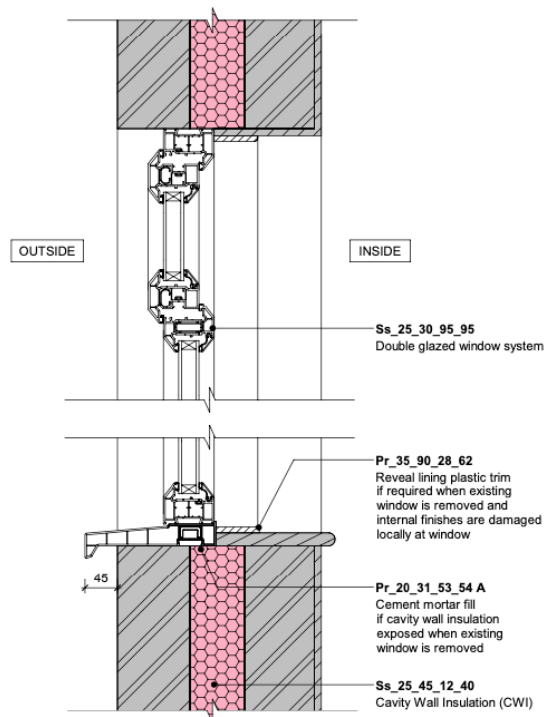
**For each individual property, a design and product specification will be created for these details. The contractor must make sure that their PIBI surveyors and installers have access to the design and understand the requirements.**

## Key point 1 – Continuity of the insulated plane (thermal bridge risk)

Window frames and reveals are a very common place to find damp and mould issues. The affect of thermal bridging at the junction between the window and the wall can create cold areas. Older glazing can often result in condensation forming internally which can run down the window and onto the sill. The mixture of moisture, humidity and cold surfaces gives mould the ideal breeding ground to prosper. Improving the u-value of the window and ensuring it is installed at a location within the reveal which mitigates the thermal bridge risk is vital. Insulated cavity closers should be used where possible to further ensure this risk is mitigated. Windows and doors should also maintain continuity of the air barrier, this can be achieved by using air tightness tape to seal them to the surrounding structural openings. Compressible seals or airtightness sealant may also be used to supplement this.



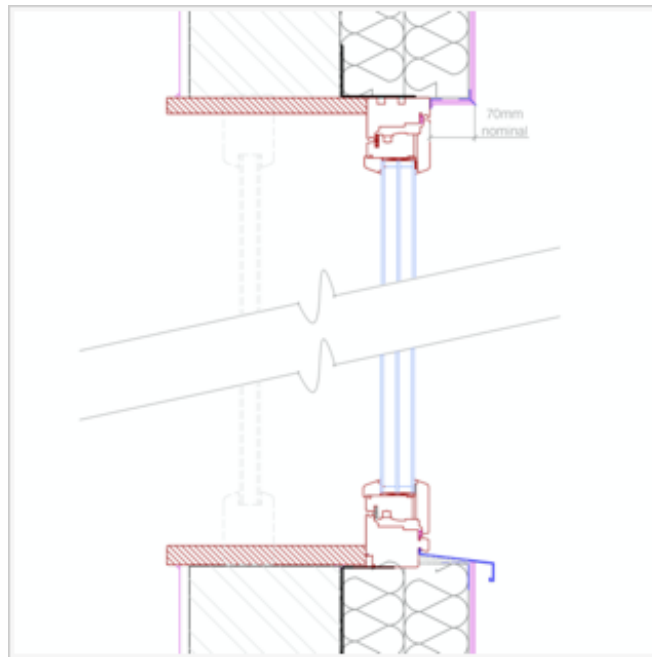
The appropriate placement within the reveal is specified in section 4.15d of Part L of the building regulations: 'window or door units should be located with an overlap between the inner face of the unit and the inner face of the external leaf – for windows an overlap between 30mm and 50mm, and for doors 50mm – so that the window or door unit is contiguous with the insulation layer of the external wall.' The below design gives a good illustration of how this detail should look when installing a window to a cavity wall.



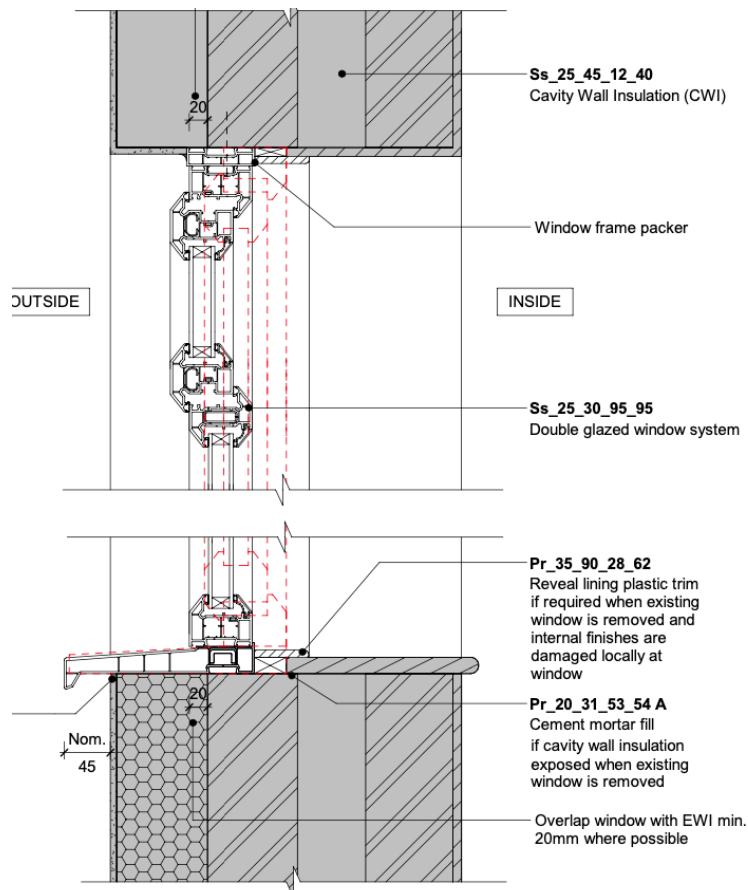
Where windows are not installed in the correct position, as below, this will need to be rectified. If there is a reason why the correct placement cannot be achieved then we will need to look at other options such as insulating the window reveals with a product like aerogel.



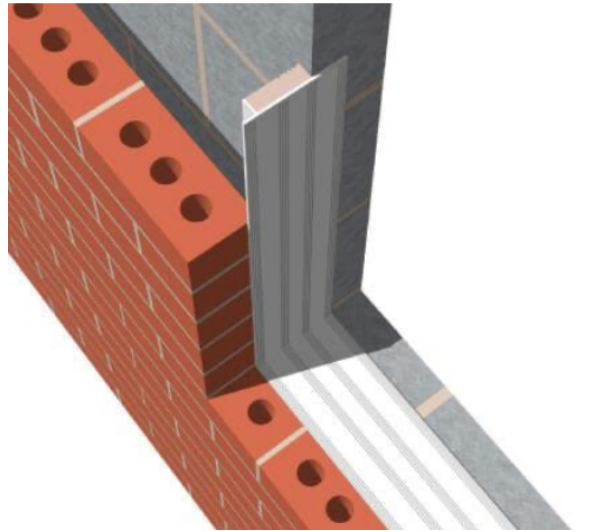
Where windows and doors are installed in conjunction with EWI, the same principles apply; they should be installed in a way that ensures continuity with the insulated layer. The below detail from the Retrofit Pattern Book illustrates the requirement nicely.



Different properties and designs will require different alignments so always consult with the Retrofit Design and Retrofit Designer if required. The detail could look more like the below with a minimum of 20mm overlap specified:



Use of insulated cavity closers on retrofit projects will not always be possible due to the risk of damaging the walls around the window opening however, where possible, this should be considered in order to provide a continuous insulated layer right up to the window frame. Please consult the design for specific project requirements.



**Evidence (date and time stamped with geo-tags) that the window has been appropriately placed should be included in the mid / post install evidence provided to the Retrofit Coordinator.**

**Key point 2 – Sealant**

Sealing a window or door around the frame, and to the sill, ensures that moisture cannot make its way back into the cavity or into the building. It also significantly helps to improve the airtightness of the dwelling. The FENSA Compliance Guide stipulates the following:

‘A full perimeter seal should be applied using an appropriate sealant all the way around the frames. Particular care should be taken under sills. Bedding of sills on foam is acceptable but a perimeter point seal should be applied afterwards. Bedding sills on silicone is acceptable where access is limited as long as the seal is continuous with no gaps and set towards the front of the aperture’

The guide is absolutely right to highlight the need for care beneath the sills and is a very common place for post install compliance surveys to discover issues such as the seal being either incomplete, or missing entirely.





**Evidence (date and time stamped with geo-tags) that the window has been appropriately sealed should be included in the post install evidence provided to the Retrofit Coordinator.**

### **Key point 3 – Sills**

Sills are an extremely important part of the installation to get right, they ensure that rain water does not pool on the sill, run back into the property or saturate the wall below. Sills should be installed so that the angle runs away from the window, they must include a drip detail beneath the sill and they must protrude away from the external face of the wall by a specified distance. The FENSA compliance guide requires this distance to be a minimum of 25mm however most retrofit designs will require a sill to be in the region of 40mm, please consult the design to ensure the sill is compliant.

The below picture is an extreme example of what can happen when the sill is not installed correctly, the water has pooled on the stone work below causing the sill to rot along the bottom edge. This has left a large gap where rainwater can freely enter the beneath the sill and will make its way to the internal face of the wall, resulting in damp issues.



The window below has been installed with a sill which is non-compliant. It protrudes just 15mm from the external wall and the drip detail location will send rainwater running down the external face.



**Evidence (date and time stamped with geo-tags) that the window sill has been appropriately installed should be included in the post install evidence provided to the Retrofit Coordinator.**

