LOFT INSULATION

Toolbox Talk

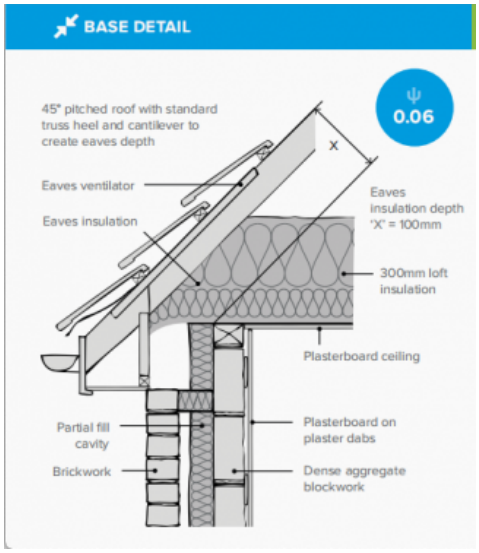
Key point 1 - Focus on the junctions

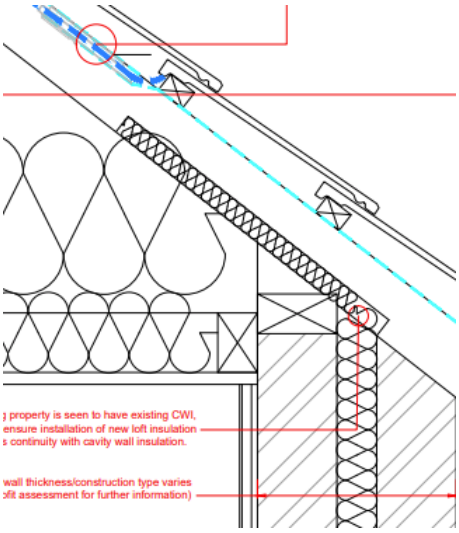
The junction between the ceiling and the wall is a classic problem area where thermal bridging may occur, there must be a continuous thermal layer maintained in this area otherwise the condensation risk will be high, and mould could occur.

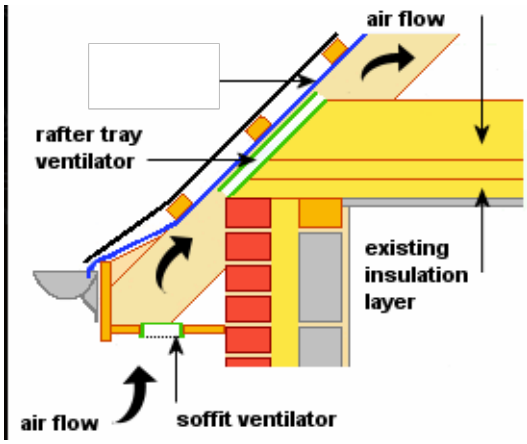
For each individual property, a design and product specification will be created for this junction. The contractor must make sure that their surveyors and installers have access to the design and understand the requirements.

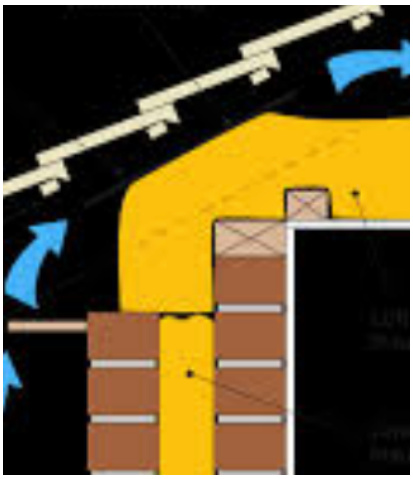
A PIBI should be completed by a competent person who is familiar with the design for the junction, the PIBI should confirm that the design is achievable however should issues be found on site then the installer must raise this with the Designer and Coordinator at the earliest possible time and an alternative design must be agreed upon.

The below are generic examples of how this junction may look, in each example note that the thermal layer is continuous:

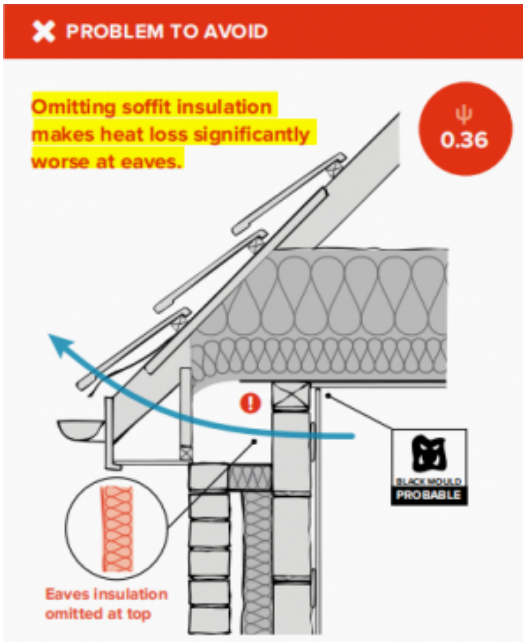




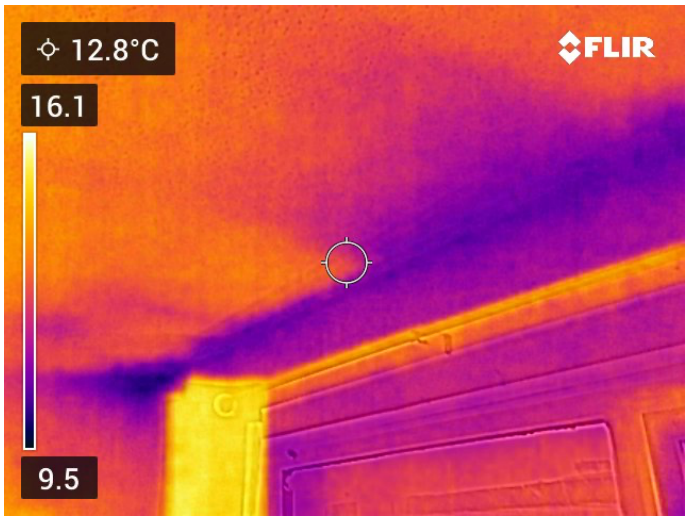


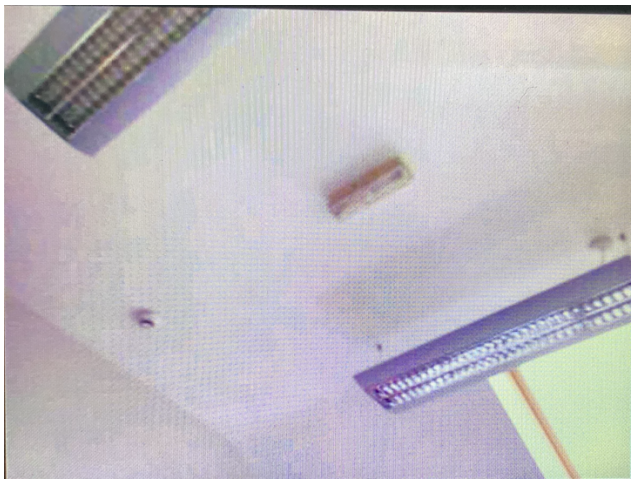


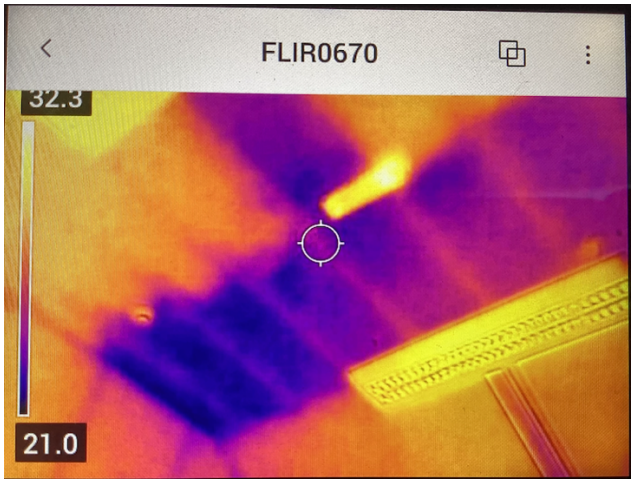
The problem to avoid may look similar to the design below with the thermal bridge indicated by the blue arrow.



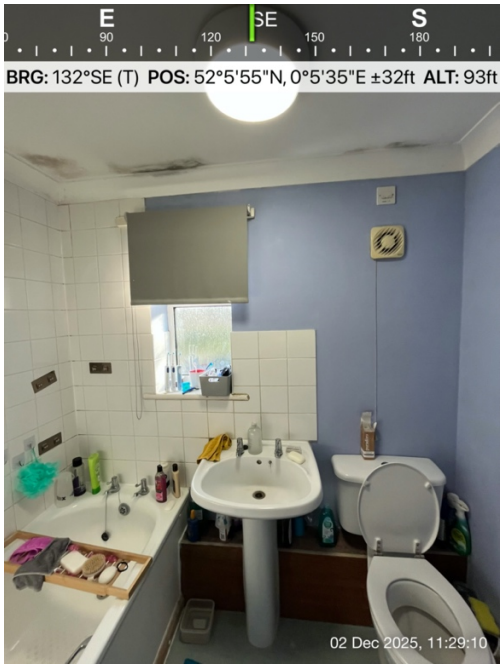
The below are thermal images which reveal where loft insulation has not effectively been installed. The first picture reveals inconsistencies while the second picture reveals that loft insulation does not reach the wall anywhere across the junction.

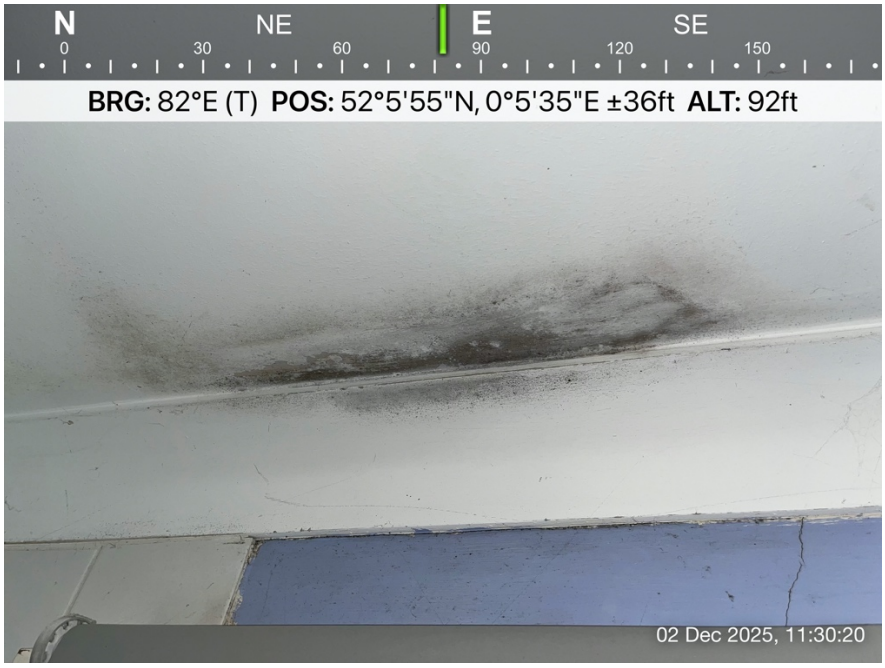






The following pictures show the real world implications of insulation being missing from the junction. Because the surface temperature is lower in these areas, they attract condensation which increases the mould risk significantly, this is particularly risky in environments that have higher humidity and / or are under ventilated.





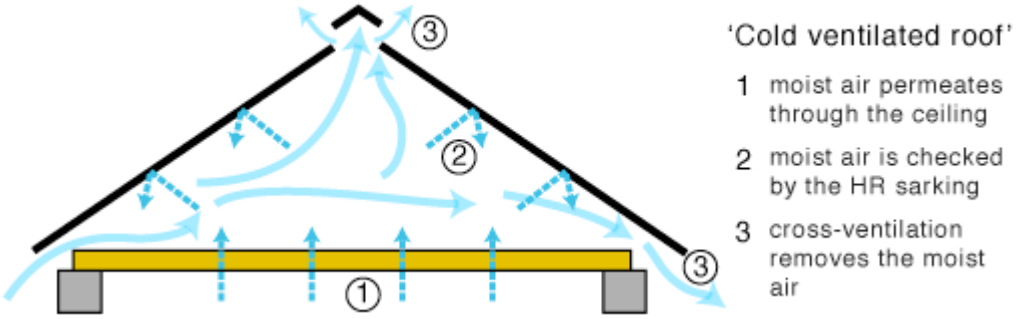
Key Point 2 – Ventilation

Cross ventilation of the roof space is essential to ensure that any moisture which occurs is removed by the consistent flow of fresh air.

There are a number of different ways to ventilate a loft space with eaves ventilation and felt lap vents being the most common.

For each individual property, a design and product specification will be created to supply ventilation in line with BS5250. The contractor must make sure that their surveyors and installers have access to the design and understand the requirements.

The below diagram simply demonstrates the general principle:

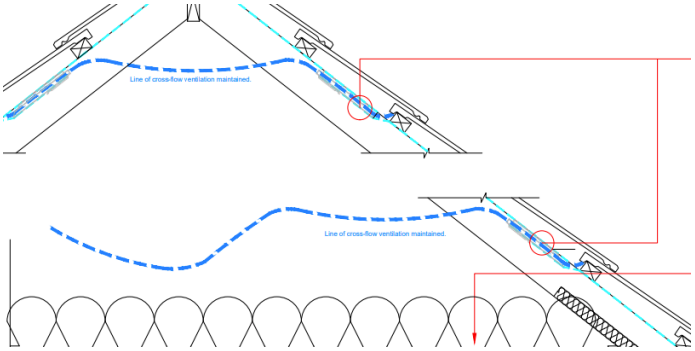


There are a number of products on the market to maintain eaves ventilation but they all work on the principle of fitting snuggly into the eaves to allow the insulation to be installed correctly while maintaining the ventilation channel above. This is a simple principle but in practice can be difficult to retrofit, where this method is used the contractor / installer must make sure that there is suitable ventilation from the soffits. Images below show a product from Klober and a view of the product installed.

Below are pictures of a ventilated soffit and a non-ventilated soffit.

Felt lap vents are very simple products to install, they are simply slipped over the joints in the felt at the top and bottom of the roof space at equal distances, as below. They are suitable for the majority of roofs, described by BS5250 as ‘sufficiently open’, in practice this is the majority of roofs with tiles.

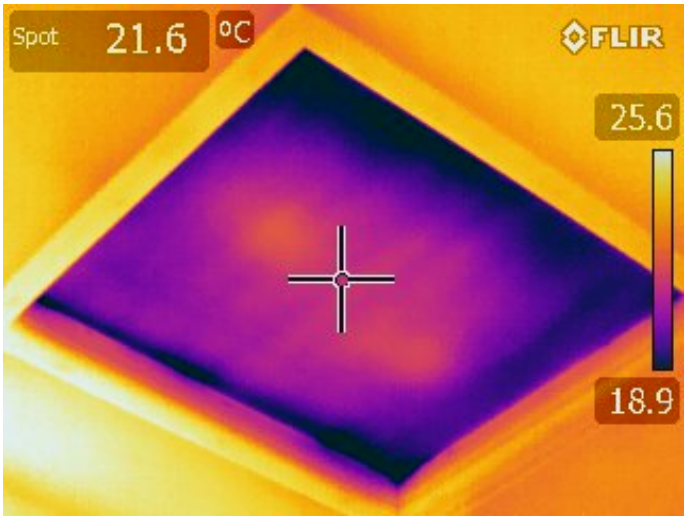
The design should specify the number of lap vents required or how to calculate this number.



Over ventilation of the loft space is unlikely to cause an issue however where we are making changes to the underlay we are technically changing the wind loading of the roof. Where existing ventilation is already in place we do not need to add more.

Key Point 3 – Loft Hatches

Loft hatches are an in-built thermal bridge which it is practically impossible to remove, therefore keen attention should be given to mitigating the effects. The below picture shows the substantial difference in heat loss through an uninsulated and un-draught proofed loft hatch, notice the colder areas around the sides of the hatch where the draughts can affect the surface temperature and proximity to the loft insulation can strength the thermal bridge.



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

Loft hatches may be insulated in a few different ways but the principles will remain the same, the insulation should be of a sufficient and consistent depth. It should be well installed and draught proofing should ensure that the hatch fits snugly and securely into the frame.

While the design and specification should always be followed, pre-constructed loft hatches tend to be the preferred option when looking to improve the thermal qualities of the loft hatch as they offer the most consistent level of quality in terms of both insulation and airtightness. It is common to see loft hatches insulated with both encapsulated mineral wool and a form of insulating board, while these can both be effective, they are more likely to be installed poorly or degrade over time. Examples of each are below:

There are some examples below of situations to be avoided / improved.

Poor workmanship

Uninsulated hatch

Poor quality and degraded EPS

Layer of wool not consistent with loft insulation

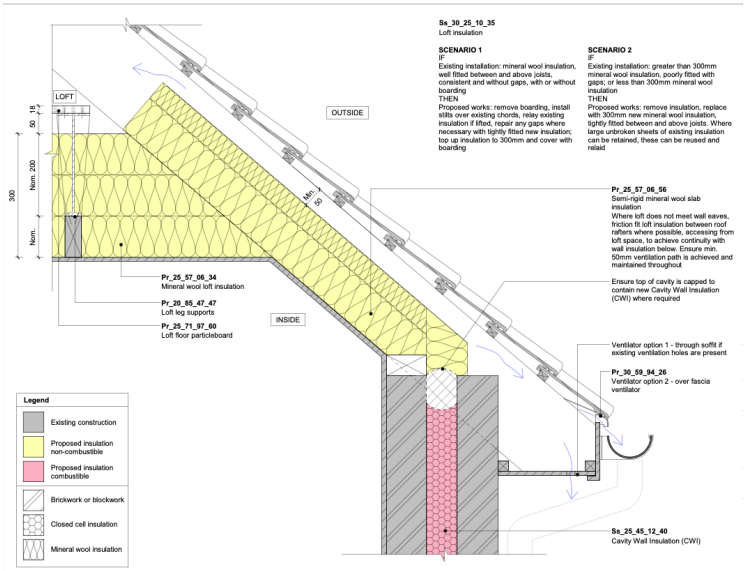
Key Point 4 – Skeilings

Skeilings (sloping ceilings at a wall to roof junction) are a relatively rare construction detail however where they do occur, they are often uninsulated and are therefore a thermal bridge which needs keen attention to detail; it is very common for them to attract damp and mould due to their lower surface temperature in comparison to the constructions abutting them.

In some cases they can be insulated from inside the loft space by friction fitting semi rigid or rigid insulation between the rafters as in the property below:

Where this is the case, caution should be used to ensure the ventilation pathways are maintained and the insulation is continuous with the loft insulation. In the picture above, the insulation board has been installed to the skeiling with the loft insulation pushed down to meet it, this detail appears to have been successful however could be improved by extending the board higher up the rafters to about the same height as the top of the eaves tray and abutting the loft insulation up to the underside of it.

When completing the PIBI, the loft installer **must** inspect these areas and determine whether the design and method statement are appropriate. Sometimes it is not possible to install insulation from within the loft space so the first few rows of roof tiles will need to be removed and insulated from the outside, this adds cost, disruption and complication to a project so will need identifying and reporting to the main contractor at the earliest possible stage. The below design detail nicely highlights the junction, where installed with a cavity wall:



Where the skeiling detail is seen in conjunction with EWI, it may be that PSI Value calculations are required from the Retrofit Designer to determine whether additional insulation, such as internally fitted insulated plasterboard, are also required. If this is the case then this should be clearly marked on the Retrofit Design.

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