ROOF INSULATION

IDEAL HOMES LTD.

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BEST PRACTICE PROGRAMME

Good Practice Guide

ROOF INSULATION

P RICHMOND

IDEAL HOMES LTD.

The roof is one element of an integrated design to achieve a thermally efficient structure, and its construction is common to both forms of structural shell. One of the major problems areas with highly insulated roofs is the risk of condensation, causing deterioration of the roof structure. This aspect is addressed in the Building Regulations which require the provision of roofspace ventilation via correctly sized openings, and is an important consideration of any roof design. The requirement for low energy housing to be more airtight could result in higher internal moisture levels, increasing the risk of condensation in the roof if not correctly dealt with.

The method of roof insulation and design detail adopted by Ideal Homes are described in the following paragraphs.

Pitched Roofs

With conventional pitched constructions roof insulation is installed at ceiling level as one of the last operations, after second fix electrical work.

150mm insulation

Eaves ventilator

fixed between rafters

Soffit ventilator

Roof and eaves detail masonry construction

Further information: Enquiries Bureau, Building Research Energy Conservation Support Unit (BRECSU) Building Research Establishment, Garston, Watford, WD2 7JR. Tel No. 0923 664258 Fax No. 0923 664097

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There is a risk that electrical wiring which is run behind thermal insulation material will overheat and short circuit or catch fire. To avoid this happening, the wiring in the roofspace is up-rated and larger capacity cables are used in the wiring to nowhere. The wiring cannot be run clear of the insulation.

Flat Roofs

Flat roof constructions are generally avoided, the main exception being for garages. These roofs are uninsulated and should not need special precautions against condensation. However, flat roofs over living accommodation have been used by us, in conjunction with parapet walls, to match existing facades. Providing sufficient permanent ventilation is extremely difficult with parapet walls and therefore the ventilated "warm deck" construction is preferred. The insulation is installed above the membrane, rather than below it, to form an inverted roof.

There is no need for vapour barriers or underlay membranes since the roof construction is on the warm side of the insulation. Further guidance is given in the BRE report reference BIR 643 "Thermal Insulation: Avoiding Risks.

Figure 2: Warm deck flat roof

Figure 3: Room-in-the-roof construction.

Conclusion

Our experience has been that if the correct and adequate amount of ventilation is provided and maintained throughout the roof structure, condensation in the roofspace is successfully avoided. It is worthwhile using purpose made products such as eaves ventilators, insulation restraint trays and ventilating soffits, since the work can be more easily carried out and can be readily checked.

Continuity of insulation is essential and must be checked when all work is complete.

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