

Date: 21/09/98

Ref: 45/3/124

Note: The following letter which has had personal details edited out was issued by our former department, the Department for Environment, Transport and the Regions (DETR). DETR is now Communities and Local Government - all references in the text to DETR now refer to Communities and Local Government.

Building Act 1984 - Section 39

Appeal against refusal by the City Council to relax Requirement F2 (Condensation in Roofs of the Building Regulations 1991 (as amended) in respect of the insulation of a pitched roof space which has been converted into bedroom accommodation

The appeal

2.The appeal relates to alterations to part of the roof in one corner of a large nursing home in order to create three bedrooms. This has entailed the construction of a new flat roof and improvement in the thermal insulation of the existing pitched roof.

3.The drawings indicate that the construction of the pitched roof comprises existing tiles; existing felt under the tiles; new 80mm thick polyurethane insulation between the rafters; and new plaster board and skim to the underside of the rafters.

4.The building work was progressed on the basis of a Building Notice which was given. However, the City Council was not content that the roof constructions were in compliance with Requirement F2 given that no provision had been made for ventilation. However, you believe that although your construction does not follow the guidance given in *Approved Document F (Ventilation)* it does comply with Requirement F2 of the Building Regulations 1991(as amended). Nevertheless, you then proceeded to apply to the City Council for a relaxation of Requirement F2 on which was refused by the Council. It is against that refusal that you then appealed to the Secretary of State.

The appellant's case

5. Your case for a relaxation was set out in your attachments which comprised your application to the City Council for a relaxation. These included a short report, copies of articles referred to therein, and details of a swimming pool roof construction which you had completed. In your opinion far from helping to avoid condensation, ventilation of roof spaces can in fact cause condensation particularly under cold, calm conditions. To avoid this occurrence you have used unvented warm roofs in a variety of projects (including your own home) in this country as well as above the Arctic Circle without known failures.

The City Council's case

6. The City Council acknowledged that you have been able to detail a number of different projects where you personally have applied similar constructions and for which you have yet to experience any form of condensation problem. They acknowledge that it could therefore be said that you have shown by example that this design solution was satisfactory. On the other hand, the City Council argue that in the right set of circumstances - albeit not perhaps within the roof space but at the junction of the roof and wall - condensation will still occur given the right set of circumstances. Moreover, the City Council argue that their officers have witnessed situations with flat roof constructions whereby condensation has destroyed the roof joists through wet rot because ventilation was either absent or incorrectly installed.

7. The City Council point out that the main thrust of *Approved Document F*, the supporting document *Thermal Insulation Avoiding the Risks* by the BRE, and the current alternative specified within the British Standards all pursue the directly opposite approach to yours - namely that of providing a high level of ventilation above the insulation. The City Council therefore argue that your specification is a type of halfway house which they consider satisfies neither this approach nor the principles of warm roof construction.

8. In their submission to the Department in respect of your appeal the City Council state that they considered the detailed argument put forward by you and have some sympathy for your case, particularly given that you have undertaken similar constructions throughout the country without reported failures. Nevertheless the City Council feel they cannot be certain that this method of insulation which excludes ventilation will not cause problems with condensation in the future; and given that the method is the complete opposite of the guidance in the *Approved Document F* and the *BRE report BR 262 1994* they consider that a rejection of your application for a relaxation was unavoidable.

The Department's view

9. Requirement F2 states that:

*Adequate provision shall be made to prevent excessive condensation -
(a) in a roof; or
(b) in a roof void above an insulated ceiling.*

The purpose of the requirement is to ensure that condensation does not substantially and permanently reduce the effectiveness of the thermal insulation, or the strength of the roof structure. In your particular case it is (a) above which applies.

10. You have based your case for a relaxation of Requirement F2 on the performance of your own projects and your experience with profiled metal industrial roofing which have been the subject of articles by you in the Architects Journal. However, condensation damage can be a long term problem and may not yet be manifest and therefore known about. In any event, the Department would be reluctant to accept evidence of performance other than if it were provided by an expert third party. Moreover, your experience with profiled metal industrial roofing is one of dealing with a proprietary systems, not individually designed and executed ones, and the Department therefore considers that the conclusions cannot be assumed to be transferrable to the project that you have designed and built.

11. The Department sought further independent advice from the BRE Scottish Laboratory. The Laboratory took the view that roofs with insulation between the rafters and no ventilation may work satisfactory, but only if they employ a low vapour permeability insulant and an effective vapour control layer below it. Because of the risk that this will not be achieved in practice, they recommend that there should be a ventilated cavity between the insulant and the underside of the tile underlay.

12. In your particular case, the Department takes the view that the polyurethane insulation probably meets the low vapour permeability requirement, but that there may be gaps between the slabs which allow vapour to pass through and, under some conditions, condense on the cold side of the underlay. A vapour control layer would reduce the risk but from the drawings and documentation available this does not seem to be part of your system.

13. As set out above, Requirement F2 requires that: Adequate provisions be made to prevent excessive condensation - In the Department's view, your system does go some way to controlling condensation, but relies upon good workmanship and does not deal adequately with any condensation which may form. It is therefore the Department's view that your system would run the risk of not controlling excessive condensation in particular circumstances with the potential to substantially and permanently reduce the effectiveness of the thermal insulation and, more importantly, cannot be proven not to have the potential to result in wet or dry rot resulting in loss of strength of the roof

structure. The essence of most current guidance is that adequate ventilation should be provided. In the Departments opinion it is not good practice to do otherwise given the present state of knowledge, unless other precautions are taken. As a result it would be inappropriate to consider relaxing the requirement.

The Secretary of State's decision

14.The Secretary of State has given careful consideration to the facts of this case and the arguments put forward by both parties. In particular, he has taken note of the personal experience you state that you have had with the application of your particular design solutions; and has also taken note of the converse experiences and opinions cited by the City Council.

15.The Secretary of State has concluded that the balance of judgement in respect of Requirement F2 must err on the side of caution, particularly given that by the very nature of many roof constructions deterioration of the insulation and the structure of the roof itself may not be manifest for many years. He therefore considers that it would not be appropriate to relax Requirement F2 and that the City Council came to the correct decision in refusing to do so. Accordingly, the Secretary of State dismisses your appeal.