BUILDING CONTROL

GUIDANCE NOTE 4

GUIDANCE NOTES FOR CONSTRUCTION PROFESSIONALS ON THE USE OF DOWNLIGHTERS IN DWELLINGS

Introduction

The use of downlighters is becoming increasingly common in dwellings and domestic extensions. This fact combined with recent amendments to the Building Regulations has prompted debate on their compliance between Building Control Surveyors and other construction professionals.

The purpose of these guidance notes is to consider the areas of concern and demonstrate how they can be specified in order to accord with the requirements. Subjects covered include fire safety, sound insulation and the conservation of fuel and power.

Fire Safety

Approved Document B of the Building Regulations includes requirements that floors in dwellings achieve a fire rating. This is normally 30 minutes for low rise buildings where the floor is not a compartment floor. When installing downlighters in such a floor, the question arises as to whether or not they will adversely affect its fire resistant properties to the extent that it will not comply.

Whilst there is not a great deal of research information available on this subject, tests sponsored by the DETR (now ODPM) and carried out by The Timber Research and Development Association* provide useful guidance. The view of many Building Control professionals is that additional protection in the form of intumescent covers, boxing or fire resisting fittings is a necessary provision in all cases. It may be that these opinions that have been influenced by commercially driven advice from companies dealing in such products. It is important that our decisions are based on sound and independent scientific research, it being all too easy to ask for a higher standard knowing that we are unlikely to be challenged.

The above tests were carried out on typical timber joisted floors (measuring 3.2m x 4.2m) fitted with up to 24 plastic and metal clipped fittings of various diameters. All indicated that the unprotected downlighters did not cause premature failures in terms of load bearing capacity, insulation or integrity. It could be argued that such ‘laboratory’ standards do not represent a floor after the retrospective removal of areas of floor decking. Such concerns are weakened by the fact that patched areas are inevitably supported on noggins or joists and the tests included decking that was not tongued and grooved.

Similar tests on 60 minute fire resisting floors also did not show premature failure. This small scale evidence is sufficient to negate the need for downlighter protection in 60

minute floors. Full scale evidence may be more onerous so in the absence of such information, covers should be provided.

It is also important that these tests are not seen as being representative of other floor types such as those incorporating engineered 'I beam' joists. Such members have little 'sacrificial' timber so rely almost entirely on the integrity of the ceiling lining to prevent failure in fire. Protective measures are also essential in this type of floor.

Sound Insulation

Internal floors within dwellings

When amended Part E hit our desks in July 2003, it bought into effect new controls on floor construction within dwellings in addition to the existing requirements concerning separating floors. This has caused surveyors to consider the impact of downlighter installation in such floors and whether the 40 R w dB sound insulation value would still be achievable. Acoustically rated fittings are available but are they necessary?

The advice from experienced acoustic consultants is that their effect on sound insulation properties is relatively negligible. Previous tests would suggest a reduction of only 1 – 2 dB. In view of the popularity of such fittings it would seem a reasonable approach to allow them in internal floors without any additional measures.

Separating floors between dwellings

The use of downlighters in various separating floor constructions is covered in the Robust Details Guide. This states that there should be a minimum ceiling void of 75mm and that; -

a) They should be fitted in accordance with manufacturers recommendations,
b) At centres not less than 75mm, and
c) Openings in the lining should not exceed 100mm diameter or 100 x 100mm square.

Developers who opt to register accordance with a robust detail should not deviate from this associated guidance. For separating floors not covered by robust details it would seem sensible to advise against their use. There is little relevant commentary in the Approved Document and such penetrations may well be the cause of failure in the necessary pre completion testing.

Thermal Insulation

Cold bridging

A common sight for surveyors carrying out final inspections of extensions and new dwellings is a roof space insulated with 250mm thick mineral wool quilt and with

countless uninsulated patches around the downlighter fittings in the ceilings. The cumulative effect of this in terms of heat loss can be substantial
It is true to say that most turn a blind eye to such cold bridges despite their contravention of Regulation L.1. This is because of the need to vent heat away from the units as per manufacturer's advice. A more favourable arrangement can be achieved using downlighter bulbs that mainly direct heat downwards with far less heat production above the unit. This allows a small pocket in insulation to safely accommodate the fitting i.e. the omission of a small area of lower layer quilt in 2 layer systems. Consequently heat loss can be greatly reduced and Surveyors can confidently ensure compliance with the Regulations.

Efficient Lighting

Approved Document L 2006 edition amends the requirements for the provision of energy efficient lights. New dwellings for example now require 25% of all light fittings to be energy efficient ones. Compact fluorescent downlighters are now available which meet this standard.

Conclusion

From the above it is clear that designers and builders can incorporate downlighters as part of a lighting system to a dwelling without having to contravene the Building Regulations. Building Control Surveyors must be vigilant against being influenced by potentially biased information from the commercial sector. We have some excellent sources of independent advice that we can use to make balanced judgements when checking designs or work on site.

* **Trada Technology Report 1/2001**
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