

Date: 14/09/98

Ref: 45/1/156

*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 16(10)(a)**

#### **Determination of compliance with Requirement B1 (Means of Escape) & B3 (Internal Fire Spread (Structure)) of the Building Regulations 1991 (as amended) in respect of the installation of suspended ceilings in a new three storey store**

3. In making the following determination, the Secretary of State has not considered whether the plans conform to any other relevant requirements.

#### **The proposed work**

4. The building to which the proposed building work relates is a new three storey retail store situated in a shopping centre. The ground and first floor plan area is approximately 100m by 60m. The ground and first floors comprise retail areas as well as storage facilities. In addition, the first floor also contains a restaurant, with associated food preparation areas, and toilet facilities. The third floor is approximately 15 per cent of the area of the ground floor and is located at one end of the building. It contains extensive staff accommodation including changing rooms, toilets, offices, a training room, a staff shop and a stock handling room. Below the ground floor is an undercroft extending for approximately half of the length of the building.

5. The building is separated from the shopping centre by two hour fire resisting construction comprising blockwork walls, fire shutters, or fire resisting glazing. The building is divided into five compartments, namely: The Undercroft; the Lower Mall and Upper Mall trading floors; the Lower Mall stock handling area; and the Upper Mall stock handling area, staff quarters and kitchens; and the Third Level staff accommodation. The compartments are of one hour fire resistance which is achieved by the floor and wall constructions.

6. The proposed building work includes the installation of suspended ceilings to all of the floors. The depth of the proposed voids will be approximately 1.6m. You have proposed that only non combustible materials will be contained within the ceiling voids and on this basis you do not propose to install sprinkler protection within the voids.

7. These proposals were the subject of discussion with the district council who took the view that your proposals would not be in compliance with Requirement B3 (Internal fire spread (structure)). They were not prepared to accept that because only non combustible materials would be allowed within the ceiling voids it would provide sufficient compensation for the omission of sprinklers within the voids. However, you believe that your proposals would be in compliance and it is in respect of this question that you have applied for this determination. However, in doing so you did not specify the specific requirements which you were seeking a determination upon. In response to the department the district council have referred to Requirement B1 (Means of escape) as well to Requirement B3. In accordance with normal procedures their letter was copied to you and in the absence of a further response from you, the department has therefore taken the subject of the determination to be in respect of both requirements.

### **The applicant's case**

8. You contend that it is not necessary to provide sprinklers to the ceiling voids within the store and refer to a similar determination that was upheld by the Secretary of State. In addition you have made the following points in support of your case:

(i) there will be no combustible materials contained within the ceiling voids

(ii) all duct work contained within the ceiling voids will be constructed from a metal gauge which is 0.7 mm thick or greater, which you believe will provide thirty minutes fire resistance around the duct.

(iii) you have provided a copy of the fire strategy for the building in which you confirm that the store will be separated from the main shopping mall by two hour fire resisting construction. The store itself will be divided into five compartments, namely: the undercroft; the lower mall and upper mall trading floors; the lower mall stock handling area; the upper mall stock handling area (including staff quarters and kitchens); and the third level staff accommodation. All of these compartments will be separated from one another by one hour fire resisting construction. You also confirm within the fire strategy that a full sprinkler protection system is to be provided at ceiling level throughout the store and is to be of the classification Ordinary Hazard - Group III Life Safety (in accordance with BS 5306: Part 2 (*Specification of sprinkler systems*)). A smoke extraction facility is to be provided above the points of entrance into the main shopping mall, which will activate on operation of an in-duct smoke detector. Finally, a fire alarm system in accordance with BS 5839 (*Fire detection and alarm systems for buildings*) is also to be provided.

## **The borough council's case**

9. The borough council state that as the compartment size within the store exceeds 2,000 square metres, sprinkler protection of the store in accordance with *BS 5306: Part 2:1990 (Specification of Sprinkler Systems)* should be provided. The borough council specifically cite *paragraph 26.6.2 of BS 5306: Part 2* which requires that ceiling voids with a depth of more than 0.8 metres should also be sprinkler protected. The borough council confirm that the ceiling voids within the store are approximately 1.6 metres deep.

10. The borough council are of the opinion that the remainder of the store meets the minimum requirements given within *Approved Document B (Fire Safety)* but no other compensatory features have been included to offset the omission of sprinklers from the ceiling voids.

11. The borough council have consulted the Fire Authority who have confirmed that they share the council's view that void sprinkler protection is required.

## **The Department's view**

12. The department's analysis of this case is as follows. In respect of Requirement B1 (Means of escape), it is noted that the store is provided with a sufficient number of escape routes to ensure that in the event of a fire occurring which prejudices one route of escape, the occupants would be able to turn and make their escape in an opposing direction. Once the occupants have passed through a final exit or into an escape stair they will then be in relative safety as they will be separated from the ceiling cavities by fire resisting construction. The department notes that it is the borough council's opinion that apart from the provision of sprinklers within the ceiling cavities the rest of the scheme satisfies the guidance given in *Approved Document B*.

13. The department is aware that both the upper and lower sales floors of the store open into the main shopping mall, however, you confirm that two hour fire resisting roller shutters, which operate via a fusible link or by manual override, are provided above each point of access into the mall. In addition to the roller shutters you propose to provide a means for controlling possible smoke spread from the store into the main shopping mall, by utilising down-stand beams positioned between the ceiling and the entrances into the mall. In addition, the department notes from the fire strategy that these provisions will be complemented by a smoke extract system positioned directly above each entrance into the mall. This extract system will operate via a smoke detector positioned within the duct work itself. The department does not therefore consider that the unsprinklered ceiling void within the store would prejudice escape from either the main shopping mall or the store itself.

14. With regard to Requirement B3 (Internal fire spread (structure)) of the Regulations, the department accepts that *BS 5306: Part 2 (Specification for sprinkler systems)* recommends that ceiling cavities in excess of 0.8m should be provided with sprinkler protection. However, the department notes from the drawings submitted that cavity barriers have been provided within the ceiling voids above both the upper and lower sales floors. The provision of cavity barriers would initially restrict the spread of fire and smoke. In addition, a series of structural down-stand beams which will exist within the ceiling cavities on all of the floors, would also help restrict the spread of smoke in the early stages of a fire with the down-stand beams in this instance acting as smoke catchment reservoirs.

15. The department notes that you confirm that no combustible materials will be contained within any of the ceiling voids and the fact that the store is separated into five individual compartments. The department therefore considers the absence of sprinklers in the ceiling void to be not a threat to life safety but to be more an issue of property protection.

16. The Department therefore considers in this case that your proposals to omit sprinklers from the ceiling voids shows compliance with Requirements B1 and B3 of the Building Regulations 1991.

### **The determination**

17. The Secretary of State has given careful consideration to the particular circumstances of this case and the arguments of both parties. He has concluded, and hereby determines, that your proposal not to provide sprinkler protection within the ceiling voids of your clients new building complies with Requirement B1 (Means of escape) and B3 (Internal fire spread (structure)) of Schedule 1 to the Building Regulations 1991 (as amended).