

Cavity Barriers

Building Standards Guidance Note 7

Guidance

Approved Document B opens the possibility to have no cavity barriers in a ceiling serving an undivided area of any size, this approach is viable, but care must be taken by the designer to ensure that the intent of functional requirement B3(4) is met. The functional requirement looks to ensure that the spread of fire and smoke is inhibited in concealed spaces.

Having a concealed space of any size without cavity barriers has removed the primary method of inhibiting spread of fire and smoke in cavities so why does the guidance suggest it may be acceptable?

Our view is that the guidance:

- a) Controls the risk of ignition within the ceiling void.
- b) The guidance applies to single undivided spaces and one of the conditions is to provide Automatic Fire Detection (AFD), rather than the minimum requirement of a manual system, to ensure that occupants are aware of any fire quickly.
- c) Based on a) and b) above the guidance also assumes a fire will:
 - i. Only spread to the cavity from the room space it's over, and therefore
 - ii. Not spread unseen having originated in the void.

Guidance

Below are the conditions given in paragraph 9.12 of guidance, given in Approved Document B volume 2, that looks to minimise the risk of ignition and propagation within the cavity:

- a) Together, the room and cavity form a compartment separated from the rest of the building.
- b) Both of the following apply:
 - i. The building is fitted with an automatic fire detection and alarm system that conforms to BS 5839-1.
 - ii. Detectors are only required in the cavity to satisfy BS 5839-1.
- c) If the cavity is used as a plenum then the recommendations for recirculating air distribution systems in Section 32 of BS 9999 are followed.

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- d) Both of the following apply.
 - i. The exposed surface of the material/product used in the construction of the cavity is class B-s3, d2 or better.
 - ii. The supports and fixings in the cavity are class A1.
- e) Any pipe insulation system should achieve class C-s3, d2 rating or better.
- f) Any electrical wiring in the cavity is laid in metal trays or metal conduit.
- g) Other than those in (d)–(f), any materials are class A2-s3, d2 rated or better.

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Sweco's view is that following the guidance is acceptable for a Cat A fit out, but the absence of void protection (see paragraph b above) may lead to additional works if a Cat B fit out subsequently proposes to divide the floor space; it is appropriate to advise the client this when considering a Cat A. It should be noted that provision of void smoke detection can be costly with ribbed/honey combed structural floor soffits, guidance on this element of design can be found in BS5839 –1.

It can be seen from the table for Cat B fit outs there are two circumstances where cavity barriers would not be called for in the ceiling void:

- Void protection is provided; or
- slab-to-slab partitions are used, and the void meets conditions a to g of 9.12.

Guidance

Floor Type/Use	Cavity Barrier spacing requirements to ceiling and Floor Voids
Cat B Office	20m
Cat A Office	40m where ceiling is at least C s3 d2
Cat A Office meeting 9.12 a – g	No Cavity Barriers.
Cat B Office with void detection	No Cavity Barriers.
Cat B Office with slab-to-slab partitions and when meeting a – g conditions of 9.12	No cavity barriers or fire dampers to rooms unless special fire risk room

Special fire risk rooms should be enclosed in fire rated construction regardless of concealed void requirements.

Guidance

Designers/Contractors are commonly reluctant to provide cavity barriers in ceiling voids over undivided spaces to avoid the cost of damper provision where ventilation ductwork pass through the cavity barrier. It is Sweco's view that if the ductwork is metal then a damper is not required where it passes through a cavity barrier that is dividing a single undivided space below. This view is held as smoke entering the ductwork from the space below then re-emerging into the space of fire origin does not need to be inhibited as smoke from the same fire is likely to spread along the underside of the ceiling more rapidly than within the duct.

Guidance

More generally the correct positioning and installation of cavity barriers in a building is critical to fire safety, with competent installers this should not be a problem on site but as a surveyor you should actively look to assure yourself that this will be the case during your inspections. Also, we should seek to understand the contractor's "closures" procedure; as a minimum it would be expected that all barriers should be photographed and signed off by the Principal Contractor before being concealed.

Finally, appropriate information on the location, specification and maintenance of cavity barriers must be part of the Regulation 38 pack provided to the "responsible" person (as defined in the Regulatory Reform Fire Safety Order). For instance, if the design solution is an undivided single space, the information should include what measures will need to be made if the space is subsequently divided in terms of cavity barriers, penetrations to new cavity barriers etc.

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