

Smoke Shaft Termination at Roof Level

Purpose.

BCA technical guidance notes are for the benefit of its members and the construction industry, to provide information, promote good practice and encourage consistency of interpretation for the benefit of our clients. They are advisory in nature, and in all cases the responsibility for determining compliance with the Building Regulations remains with the building control body concerned.

This guidance note is based upon information available at the time of issue and may be subject to change. The Approved Documents should be consulted for full details in any particular case.

Introduction.

The Approved Document to Part B Vol. 2 provides guidance on the termination of natural smoke vents that rely on the buoyancy of the smoke and the chimney effect of the shaft. However, the guidance on the termination is contained within a small paragraph and not diagrams. This guidance represents the guidance in diagrammatic form with some written explanation.

Guidance.

Smoke shafts must have a minimum cross-sectional area of 1.5m^2 , a minimum dimension of 0.85m, terminate at least 0.5m above the surrounding structure and extend 2.5m above the highest ceiling served by the shaft.

Where the smoke shaft penetrates the roof it must be located such that any nearby projections/obstructions through the roof will not have an adverse effect on the smoke escaping and, at worse, will not prevent the smoke from escaping.

Therefore the shaft needs to be terminated a minimum of 2.5m above the highest ceiling of floors served by the shaft and at least 0.5m above any obstructions within 2m of the shaft. Diagram 1 shows a cross section through a building illustrating the guidance.

Where the guidance looks for the smoke shaft termination to be 2.5m above the highest ceiling it means that all smoke shafts that serve all floors within a building will have a "chimney" that extends somewhere in the region of 2m above the roof level. Therefore, even where there are no obstructions within 2m of the shaft that shaft termination will protrude above the roof line (something that most architects/planners would not prefer). See Diagram 2.

It should be remembered that the openings into the smoke shaft and the free area of the shaft and opening at the head should be a minimum of 1.0m^2 .

Where the designer wishes to keep the protrusion of the shaft to a minimum the smoke ventilation of the top floor could be through a separate ventilation opening (minimum 1.5m^2) and the shaft serve all floors except the top floor. This means that the shaft would need to terminate no less than 2.5m above the ceiling of the highest floor served by the shaft. See Diagram 3.

NB. The shaft termination and vent to the top floor will need to be a minimum of 2m apart.

Alternatively, and in order to minimise the number of penetrations through the roof, the opening into the shaft from the top storey could be increased beyond the minimum 1.0m^2 to 1.5m^2 and the clear opening of the shaft a minimum of 1.5m^2 . This effectively creates a direct opening to the outside air from the top storey and does not rely on the smoke shaft as a "chimney".



