



buildings
2023-005
bulletin
TECHNICAL

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PURPOSE: This Bulletin clarifies BC Section 917.3.1 with regards to the stair ventilation method in that all enclosed exit stairs in Group R-2 Occupancy must be provided with a reversible fan system that is capable of pressurizing or exhausting the area of the largest floor.

SUBJECT(S): Stair Ventilation for Post-Fire Smoke Purge

RELATED CODE SECTIONS & RESOURCES: 2014 BC 916.3, 2022 BC 917.3

I. Background

Post-fire smoke purge systems are designed to extract smoke from indoor areas after a fire has been extinguished. The post-fire smoke purge systems help the building and the building occupants to resume normal activities as quickly as possible once the fire has been extinguished. The exhaust air/smoke removed by the post-fire smoke purge system must not be recirculated into the building, and such air/smoke must be discharged to a safe location outside of the building in accordance with the NYC Construction Code.

The 2022 BC 917.3 (2014 BC 916.3) requires post-fire smoke purge systems in R-2 occupancies to be provided by either Stair Ventilation (BC 917.3.1) or Corridor Ventilation (BC 917.3.2).

II. Clarification

BC 917.3.1 for stair ventilation states, in part,

The top of all enclosed exit stairs shall be provided with a reversible fan system capable of introducing fresh air or exhausting air at a rate of 6 air changes per hour or 1 cubic foot per minute per square foot (cfm/ft²) (0.00508 m³/s•m²), whichever is greater, based on the area of the largest floor. ...

If the stair ventilation method is to be used per BC 917.3.1, a reversible fan system capable of introducing fresh air and exhausting air must be installed at the top of every enclosed exit stairway. The reversible fans must be capable of introducing or exhausting air at a rate of 6 Air Changes Per Hour or 1 CFM per square foot, whichever is larger, based on the largest floor. The fan's capacity must be calculated based on the largest floor area to ensure it will be able to serve any other floor if affected.

Where multiple stairs are present in a building, the top of each exit stairway must be provided with a reversible fan. In group R-2 occupancies, stairs sharing any common wall, floor, ceiling, scissor stair assembly, or other enclosure are counted as two exit stairways in accordance with 2014 BC 1015.2.1, Exception 3 and 2022 BC 1007.1.1, Exception 3, and therefore, two dedicated fans are required for post fire smoke purge, one at the top of each stairway. A single reversible fan serving two or more exit stairways in R-2 buildings is prohibited.