

SMOKE CONTROL SYSTEMS FOR THE FIRST RESPONDER

July 2010

FIREFIGHTER TRAINING

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Smoke Control Systems vs. Smoke Ventilation Systems.

References:

North Carolina Fire Prevention Code, 2009 Edition, Section 909
North Carolina Building Code, 2009 Edition

1. Smoke control systems can be found in buildings such as Hospitals, Prisons, Covered Malls or other buildings containing atriums, High-rise buildings and buildings with smoke protected seating.
2. There are two types of smoke control systems.
 - a. Active - Utilizes fans, duct, HVAC units and other mechanical equipment to ventilate smoke from a building to a predetermined habitable level
 - b. Passive – Uses compartmentalization, reservoirs or other methods to control smoke to a predetermined habitable level.
3. Smoke control systems are engineered to provide occupants with a habitable environment for a period of not less than 20 minutes or 1.5 times the calculated egress time, whichever is less.
4. While some smoke control systems, such as those found in Atriums, may be used to evacuate smoke from a building, smoke control systems are not designed to completely remove smoke from a building.
5. Fire fighter control panels for smoke control systems may vary in location throughout your jurisdiction.
 - a. High-rise buildings and buildings with smoke protected seating are required to have a Fire Command Center. The fire fighters smoke control panel will also be located here.
 - b. In all other buildings the fire fighter's smoke control panel is required to be installed in an approved location adjacent to the fire alarm panel.
6. Fire fighter control panels for smoke control shall include manual override of automatic systems.

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7. Smoke ventilation systems can be found in buildings containing high piled combustible storage, factories or storage occupancies in excess of 50,000 ft², or extended exit access travel distances.
8. Smoke ventilation systems through the use of smoke and heat vents, draft curtains, and fans are designed to keep the smoke contained to a defined area and evacuate the smoke from the building.
9. Mechanical smoke ventilation systems require that a control panel be located in a room immediately accessible to fire service personnel from the exterior of the building
 - a. The room is required to have a minimum of 1 hour fire resistance rated barriers
 - b. Each individual fan shall have manual controls.
10. It is important not to confuse these two systems. Ventilation issues could become present if the tactics being used to ventilate the building are competing with the engineered smoke control system.
 - a. Familiarize your department with buildings in your jurisdiction that have smoke control systems or smoke ventilation systems.
 - b. Familiarize your department with the location of the fire fighter control panels.
 - c. Coordinate with the building owner(s) times at which the system(s) is(are) being tested. Use the test(s) to further familiarize your department with the complete operation of the smoke control or smoke ventilation systems.