
BBS MEMO

Ohio Board of Building Standards

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6606 Tussing Road, P.O. Box 4009, Reynoldsburg, Ohio 43068-9009

ACCEPTANCE TESTING OF SMOKE CONTROL SYSTEMS

As a result of the requirements of H.B. 215 passed into law last year, many building officials may have recently experienced the process of plan review, inspection, and acceptance testing of the newly retrofitted smoke control systems for consumer fireworks sales and storage facilities. As a result of this process, it has been brought to our attention that the requirements of OBBC Section 922.6 regarding acceptance of smoke control systems may not be completely understood and/or enforced uniformly across the state. The following items outline the building officials' responsibilities as they relate to approval of smoke control systems for new and existing facilities:

- In addition to plans and specifications for the smoke control system, the designer must submit to the building department "***A System Operation Report.***" It must include all information as outlined in OBBC Section 922.6.1 which requires the identification of all mechanical and electrical components of the system such as fans, dampers, intake louvers, smoke detectors, manual controls, standby power equipment, et cetera. The report must also identify all smoke zones and building components of the system such as smoke barriers, self-closing doors, et cetera. To enable the building official to fully understand the system, the report should include a narrative sequence of operation and an alarm event chart that explains the initiation and response of the system and the interaction of all system components under various fire conditions. Attached is a suggested checklist that may be used by your department and/or given to designers.
- After plan approval and prior to acceptance testing, the designer and contractor must submit to the building department a proposed testing method. There are numerous testing methods available such as smoke bombs, trace gases, pressure and velocity measurements, or test fires. The appropriate method shall be determined on a case by case basis and must be approved by the building official in accordance with OBBC Section 922.6.2.
- After the system has been installed, the system must be subject to an acceptance test as required in sections 901.7 and 922.6.2. Every device and all controls that make up the smoke control system must be tested to ensure their proper operation as specified in the System Operation Report. All smoke barriers/partitions and doors must be checked for tightness. The acceptance test results must be documented and available for inspection. The code official has the option of witnessing the test or reviewing the acceptance test documentation. The contractor should coordinate scheduling of the acceptance test with all interested parties such as the building official, fire official, insurance inspector, owner, and engineer to enable all interested parties to attend the test.

We understand that smoke control systems can be confusing. Because each building is unique in its architectural features, it follows that each smoke control system will be unique in its design. However, if the design team and the code officials follow the required steps outlined above, the approval process can be consistent and uniform despite the diversity of the system designs.

DOCUMENT SUBMISSION INFORMATION CHECKLIST

SMOKE CONTROL SYSTEMS

This document is a *recommended* checklist for the submission of smoke control system plans to certified building departments. Completing this form and submitting it with your plans and specifications should expedite the plan review process.

A.) DESIGN OBJECTIVES:

1. Maintain design smoke layer interface level at six feet above _____ for _____ minutes.

AND

2. Provide a minimum of two air changes/ hour via _____ natural **or** _____ mechanical ventilation. (Check one)

B.) DESIGN ASSUMPTIONS:

1. Design Fire Steady State Heat Release Rate (Q)= _____ (Btu/sec)
2. Design Critical Height(smoke interface level) (Z)= _____ (ft)
3. Area of space required to have smoke control (A)= _____ (ft²)
4. Height of space required to have smoke control (H) = _____ (ft)
5. Volume of space required to have smoke control = _____ (ft³)
6. _____ Regular Space **or** _____ Irregular Space. (Check one)

C.) SYSTEM DESCRIPTION:

A narrative description of the smoke control system should be provided on the plans or in the specifications. The following items should be described in the narrative and clearly identified on the plans prior to plan approval:

1. _____ Passive **or** _____ Active Mechanical System. (Check one)
2. _____ Alternative to code Engineered Smoke Control System (Describe design)
3. _____ Dedicated System **or** _____ Integrated with HVAC system (Check one)
4. Identify all *mechanical* and *electrical* components of the system, such as fans, dampers, intake louvers, smoke detectors, manual controls*, standby power equipment, alarm relays, electrical controls, et cetera.
5. Identify all smoke zones and *building* components of the system, such as smoke barriers and self closing doors.
6. Provide a complete sequence of operation and alarm event charts which explains the initiation and response of the system and the interaction of all system components (two previous items) under a fire condition.

- * Provide evidence that the local fire department has approved the location of the manual control for the smoke control system and that the manual fire alarm system does not activate the smoke control system.

D.) TEST METHOD APPROVAL:

Prior to acceptance testing, the designer must submit to the building department a proposed testing method for the smoke control system. One of the following methods must be approved by the building official:

1. _____ Smoke bombs
2. _____ Smoke candles
3. _____ Pressure and Velocity measurements
4. _____ Trace gases
5. _____ Test fires
6. _____ Other testing method (Describe fully to building official)