

Orange County Fire Authority

Community Risk Reduction

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Smoke Control Systems



Guideline G-03

Serving the Cities of Aliso Viejo • Buena Park • Cypress • Dana Point • Garden Grove • Irvine • Laguna Hills • Laguna Niguel • Laguna Woods
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Smoke Control Systems

1. PURPOSE

To provide an outline of the smoke control system plan review and inspection procedures required by the Orange County Fire Authority (OCFA) in accordance with requirements of Section 909 of the 2025 California Building Code (CBC) and 2025 California Fire Code (CFC).

2. SCOPE

This guideline pertains to all projects within the OCFA jurisdiction where smoke control systems are installed. It is the owner's/builder's responsibility to retain qualified firms or individuals to conduct smoke control system design and testing. The following information outlines the required steps to process smoke control system design, plan review, and final system acceptance testing. Refer to the OCFA fee schedule for costs associated with review and inspection of smoke control systems.

3. SUBMITTAL REQUIREMENTS

3.1 Rational Analysis Report and Related Plans - A report must be submitted to the OCFA that addresses the requirements of Section 909 of the CBC/CFC. The report shall be based on well-established principles of engineering practice and prepared by a qualified engineer who is licensed in California. The report shall be signed and stamped by the licensed engineer and shall, at a minimum, include and explain the following:

- 3.1.1 Design fire
- 3.1.2 Smoke control system method
- 3.1.3 Stack effect
- 3.1.4 Temperature effect of fire
- 3.1.5 Wind effect
- 3.1.6 HVAC systems
- 3.1.7 Climate
- 3.1.8 Duration of operation
- 3.1.9 Smoke control system interaction
- 3.1.10 Smoke control zones
 - 3.1.10.1 Clear identification of active and passive zones
 - 3.1.10.2 Clear identification of smoke barrier separations
- 3.1.11 Smoke and fire dampers (managed vs. non-managed)
- 3.1.12 Smoke control panel and its configuration (see next paragraph)
- 3.1.13 Sequence of operation

Note: The OCFA may require third party review of the rational analysis report and plans.

In addition to the rational analysis report, provide the latest architectural, mechanical, electrical, and fire/life safety system drawings that are related to the design and operation of the smoke control system. The drawings shall show, at a minimum, the location of smoke barrier separations, shafts, vents, inlets, outlets, fire-resistive separations, smoke and fire dampers, fire

control room, a draft detail of the smoke control panel (its location, graphics, description of operations, automatic control, and manual control), power systems, etc.

3.2 Fire Alarm Plan Review Special Requirements - The final details of the smoke control panel will be reviewed and approved during the fire alarm submittal and review. Provide the smoke control panel make, model, and listings. In addition to details required during the rational analysis report, provide a panel LED and symbol legend, power LED, common trouble LED, and a lamp test button. The panel design must be for fire department emergency response purposes only, providing only information relevant during an emergency response. Keep the panel design as simple as possible; see Attachment 1 for an example. Provide control actions only for active smoke control operations (i.e., stairwell, floor or other pressurizations, airflow designs, or exhaust designs) and do not provide controls for passive systems (i.e., dampers for passive floors, door closers in passive systems, etc.).

3.3 Special Inspection Requirements - The owner/builder shall retain a qualified Special Inspection Agency (SIA) as approved by the OCFA. It is the owner's/builder's responsibility to contact the OCFA and verify the qualification of the SIA. The SIA and the design agency that prepared the rational analysis report shall be two independent agencies unless it is specifically approved by the OCFA. The SIA will:

- 3.3.1 Coordinate the review of the contractor's documents to verify conformance with the approved rational analysis report and coordinate work between the construction team and the OCFA.
- 3.3.2 Prepare a guideline for acceptance testing of the smoke control system (CBC/CFC 909.18), coordinate the interface between the trades, and include the testing procedure. **The guideline shall be reviewed and approved by the OCFA.**
- 3.3.3 Prepare an inspection report to document inspection activities conducted. Such reports shall be placed in a binder. A duplicate copy of the binder containing the inspection report shall be kept at the job site (general contractor's office) during construction.

3.4 Final Inspection Report - A complete report on system testing shall be prepared by the SIA. The report shall be reviewed by the engineer of record and submitted to the OCFA. The report shall be in accordance with the requirements of Section 909.18.8.3 of the CBC/CFC. The SIA must address the specific process that will be followed for the final OCFA acceptance testing. When the entire system is tested and found fully functional with no or conditional outstanding issues, the **final inspection report shall be submitted to the OCFA at least 48 working hours prior to the testing of the system by the OCFA.** The report shall be signed by both the inspection agency and the engineer of record (signed, sealed, and dated) and shall contain the frequent testing reports, smoke control system device manufacturer data sheets, and the final testing results.

3.5 Final OCFA Acceptance Testing - Following receipt of the final inspection report, an inspection shall be scheduled with the OCFA to conduct final acceptance testing. Final approval and sign-off by the OCFA is based on the successful completion of this test. The following list helps aid with OCFA acceptance testing:

- 3.5.1 Copies of approved plans are available at the site.
- 3.5.2 SIA representative(s) is/are present.
- 3.5.3 Fire alarm staff are present (panel resets, set and reset fire alarms, etc.).
- 3.5.4 Staff are available to confirm airflow rates, pressure differentials and door opening forces.
- 3.5.5 Activity that may interfere with testing is restricted, especially in areas sensitive to testing (i.e. stairwells, atriums, etc.).
- 3.5.6 Normal power in addition to back-up power is fully available and can be operated.
- 3.5.7 A copy of the written maintenance program complying with the requirements of Section 909.22 of the CBC/CFC is available to provide to the building owner/operator.

Attachment 1 – Example of Smoke Control Panel Design for a System with Pressurized Stairwells and Passive Floors

