

Smoke Control Special Inspections Supplemental Submittal Checklist

The **Smoke Control** record is required by **Office of the Fire Marshal** when building design includes smoke control systems and is used as a mechanism to submit the required documents for approval. To create a Smoke Control record please follow the instructions provided at: [smoke control plus guidelines](#). Upon approval of the smoke control application, required documentation could be uploaded into [Planning and Land Use System \(PLUS\) | Fire and Rescue](#) for the Smoke Control record.

Smoke control record review process consists of three separate submission steps:

- 1- Rational analysis report including special inspection plan, and periodic test plan
- 2- Third-party inspection team qualification
- 3- Final test report

Required documents need to be approved for the prerequisite step before advancing to the next submission step. Note the prescribed timeline for each document as follows:

The **Rational Analysis Report** should be submitted before the fire marshal review for construction plans can be approved. A set of fabrication and erection documents including the rational analysis, special inspection procedure, and periodic test plan shall be submitted along with the construction documents during the application for building permit. Refer to [Guidelines for Smoke Control Manual](#) for additional details of what should be included in this report.

Pre-testing

- ☐ **Third-party Inspection Qualifications** - Special Inspections and tests for smoke control systems shall be conducted by qualified individuals, agencies, or firms with expertise in fire protection engineering, mechanical engineering, and certification as air balancers. The special inspections engineer of record for smoke control systems shall be approved by the Office of Fire Marshal, Engineering Plans Review Branch, on behalf of the Building Official.
 - Provide resumes of individuals conducting the test. Include examples of projects where third-party, specific to the persons named in the resume, conducted special inspection for smoke control in project of similar size, story, space, etc.
 - Provide copies of certificates that reflect air balancer certification from a recognized agency such as Associated Air Balance Council (AABC).

Third Party Inspector's Qualification approval should be obtained at the earliest, **at least 30 days prior to performing special inspections**. Failure to obtain approval will delay conducting inspections and obtaining Certificate of Occupancy. Submit required documentation to the Fire Marshal's office as outlined by the smoke control record review process.

- ☐ The AHJ may choose to observe/audit the installed components of the smoke control system(s) and witness the smoke control system performance tests. The A/E and Contractor shall certify that the smoke control system is complete prior to acceptance test by the AHJ.

Once the smoke control system installation is completed and pretested by the contractor, **notification shall be provided to the special inspector and Office of the Fire Marshal, 5 days in advance for final testing.** Notification to Office of the Fire Marshal shall be emailed to fire.engplansreview@fairfaxcounty.gov.

Note: All inspections and testing shall be conducted with County approved smoke control system plans.

Post testing

- The **final report** of testing (VCC 909.18.8.3) compiled by the third-party special inspector must be dated, signed, and sealed by the Registered Design Professional. The final test report should outline the following details:
 - Data that shows the air pressure differentials at doors for each stair, at every level, and at all atrium doors serving means of egress while the system was in operation.
 - Data that shows pressure differentials across smoke barriers for each smoke control condition.
 - Briefly describe how the assumptions in the rational analysis fit the testing scheme. Example, what were the environmental conditions (temperature, etc.)?
 - Provide indication that all sequence of operations was verified (manual and automatic), all panel functions (i.e., verification of input/output signals both fire alarm and firefighter smoke control panel, firefighter panel priority over others), control verification, and monitoring of equipment.
 - Indicate how long it took for power transfer to occur and whether the system performed during the entire operation as required per rational analysis including all equipment.
 - Indicate that all rated walls, barriers, partitions, and ceilings were visually verified, and all penetrations sealed as required by code to maintain continuity. Verify exact location of fire/smoke barriers matches what is shown on approved plans. Any changes not reflected on the approved permit set require as-built submittal with final report submission.
 - Indicate which detectors were operated for smoke control activation and verification of their annunciation at the panel. Testing shall include verification of airflow in both minimum and maximum conditions.
 - Provide verification that dampers operated at all the required locations per the approved plans and were installed in the smoke zone boundary.
 - Indicate the air flow rates at the exhaust and make up air location(s) and how they compare with the approved rational analysis.
 - Provide drawings with the location and time where the pressure measurements were read and whether those pressures were maintained during testing.
 - Provide copy of fan curve from manufacture. How does it compare to fan operation during testing? Include voltage, amperage, rpm, and belt tension.
 - Provide documentation that shows the gauges and other measurement devices used for air flow measurements or opening force were calibrated within 12 months of test.
 - In the report, provide identification of all devices by manufacturer, nameplate data, design value, measured values.
 - Indicate any deviations from the rational analysis and special inspection procedure including any limitations experienced during testing.

- Integrated testing shall comply with NFPA 4 as required by VCC Section 901.6.2 and its results should be included in the final report. Fire alarm component testing is a separate function and requires separate approvals.
- Submit required documentation to the Fire Marshal's office as outlined by the smoke control record review process.

For any questions, call 703-246-4806 or email fire.engplansreview@fairfaxcounty.gov

Referenced Documents

- SPECIAL INSPECTIONS PROGRAM - 2021 Edition (2021-SIP)- Chapter 16 [SPECIAL INSPECTIONS PROGRAM - 2021 Edition \(2021-SIP\)](#)
- Guidelines for Smoke Control Manual can be found at [Engineering Plans Review | Fire and Rescue \(fairfaxcounty.gov\)](#)
- Virginia Construction Code, 2021 edition.