



# Fire Installation Permit Application

## Smoke Control System



[redmond.gov/Prevention](http://redmond.gov/Prevention)

Updated Feb. 1, 2021 to the 2018 International Fire Code

### PERMITTING REQUIREMENTS PHASE I

An IFC fire installation permit is required for all new Smoke Control System installations regulated by IFC Section 909. **Smoke control systems are reviewed in two phases by the Redmond Fire Department.**

**Phase I** is a review of the Conceptual Design Report. The Phase I permit application and Conceptual Design Report shall be submitted at the same time as the Building Permit Application so that it can be reviewed in conjunction with the building permit.

**Phase II** is the review of the Detailed Design Report. Smoke Control systems may require third party review by an independent engineer familiar with smoke control design and installation, upon the discretion of the Fire Marshal. Smoke Control systems shall be inspected by a special inspector that has been approved by the Fire Marshal.

#### PROJECT INFO

Site Address: \_\_\_\_\_  
 Project Name/Tenant: \_\_\_\_\_  
 Associated Permits: \_\_\_\_\_  
 Property Owner: \_\_\_\_\_

#### Office Use Only

PROJ: \_\_\_\_\_ DATE: \_\_\_\_\_  
 BLDG: \_\_\_\_\_ APP EXPIRES: \_\_\_\_\_  
 FIRE: \_\_\_\_\_ ACCEPTED BY: \_\_\_\_\_  
 PAYMENT METHOD: \_\_\_\_\_ TYPE: \_\_\_\_\_

#### APPLICANT INFORMATION

Contact Person: \_\_\_\_\_  
 Company Name: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-Mail: \_\_\_\_\_

Address: \_\_\_\_\_  
 City: \_\_\_\_\_  
 State: \_\_\_\_\_ Zip: \_\_\_\_\_

#### CONTRACTOR

Contractor Name: \_\_\_\_\_  
 Contact Person: \_\_\_\_\_  
 Business Address: \_\_\_\_\_  
 City: \_\_\_\_\_  
 State: \_\_\_\_\_ Zip: \_\_\_\_\_

State Contractors License #: \_\_\_\_\_  
 Expiration Date: \_\_\_\_\_  
 Redmond Business License #: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

#### TYPE OF PERMIT

**Smoke Control Systems** (check only one):

- Level 1: Modify Existing       Level 2: Prescriptive System       Level 3: Performance-Based Design

## DESCRIPTION OF WORK

### SMOKE CONTROL SUBMITTAL CHECKLIST

#### Electronic Plan Standards

File Naming Standards:

Electronic plans and documents shall be named as specified in **bold type** under “Permitting Requirements”. For example, the site plan must be named **“Site Plan”**.

Acceptable File Types:

Plans, calculations, specifications and supporting documents shall be uploaded as a PDF file.

Plan Sheet Standards:

All plans shall be drawn to scale, as identified in the checklist, and each sheet shall state the scale.

Document Orientation:

All **plans** must be uploaded in **“Landscape”** format in the horizontal position. All other documents can be in “Portrait” format.

The following information is required at time of application for the fire installation permit:

- Completed **Fire Installation Permit Application**
- Completed **Smoke Control Submittal Checklist**. Check all checkboxes that are applicable to your project.
- Copy of **Conceptual Design Report**

### PHASE I GENERAL REQUIREMENTS

The Conceptual Design Report should include a rational analysis which supports the types of smoke control systems to be employed. A description of the method of their operation, the systems supporting them and the methods of construction to be utilized shall be included. Items to be addressed shall include, but not be limited to: Stack effect; Temperature effect of fire; Wind effect; building heating and ventilation systems; Climate and Duration of operation. See IFC 909.4.

### PERMITTING REQUIREMENTS PHASE II

- Copy of original **Fire Installation Permit Application**
- Copy of original **Smoke Control Submittal Checklist**.
- Copy of **Detailed Design Report**
- Smoke Control System **Plans**

### PHASE II GENERAL REQUIREMENTS

After approval of the Conceptual Design Report by Redmond Fire Prevention, the Detailed Design Report and construction drawings shall be submitted for review and approval prior to installation. The approved Building Permit plan set shall be used for the submittal of the Detailed Design Report for the system.

Because of the complexity of smoke control systems, it is important that the Detailed Design documents clearly identify the expected performance of the system. These documents must also clearly identify the expected performance of each component in the smoke control system. Components include all passive and active elements that work together to provide smoke control in accordance with IFC Section 909.

## PHASE II GENERAL REQUIREMENTS (CONTINUED)

- The Detailed Design Report, based on the Conceptual Design Report, including the smoke control system rational analysis, must be prepared by a Professional Engineer competent in the design of smoke control systems. This rational analysis must be stamped by the Professional Engineer. The Detailed Design Report shall be a bound document, independent of design plans, and minimally address the following:
  - General narrative description of the building. This description will include identification of building uses and occupancies as well as passive and active fire protection features that will work together with the smoke control system
  - Narrative description of each passive and active smoke zone. Every space in a building requiring smoke control must be identified as an active or passive smoke zone, with measurable performance criteria identified
  - Description of which methods will be used for each active smoke-control zone, and supporting rational analysis in accordance with IBC Section 909.4. This description will include such items as minimum required fan size, expected fire loads ceiling heights, computer modeling, calculations, locations of operable windows and/or doors, etc
  - Specific discussion of how smoke control will be initiated in each zone and the associated system responses. A simple and clear event matrix shall be provided.
  - Calculations associated with the smoke control system design and fan capacities.
  - Identify anticipated system performance, especially with regard to pressurized stairwells/hoist ways, during stack effect conditions. Provide calculations demonstrating minimum and maximum pressure differentials to be observed during and in the absence of any stack effect.
  - Description of smoke dampers and fire/smoke dampers, including which dampers will be supervised for damper position, the position of unsupervised dampers when smoke control system is active, damper positions upon loss of power, actuation temperature of fire and fire/smoke dampers.
  - Identification of coordinated zones for sprinkler and fire alarm systems with regard to smoke control zones.
  - Identify where variable frequency drives are to be used for smoke control equipment and method of control.
  - Piston effect of elevators shall be addressed.
  - Description of fire modeling or other performance-based analysis utilized in the design of the smoke control system. Purpose of the analysis, as well as associated assumptions and conclusions must be clearly identified.
  - Any related material that supports the design of the smoke control system.
  - The signature and stamp of the professional engineer responsible for the rational analysis.
- Provide a detailed event matrix that includes every fire alarm and smoke control initiating device by address down one column, and every fire alarm notification device (by zone), every smoke control device (i.e. fans, dampers, etc.), and every other event that must occur in order for proper operation of the smoke control system (i.e. HVAC shutdown, etc.) across the top; with prior approval, some devices may be combined. This matrix may be divided into one matrix for smoke control devices and one matrix for non smoke control devices.
- The following drawings must be included with the smoke control submittal:
  - Smoke control zone drawings shall be prepared and provided.
  - Drawings depicting the fire rating of associated smoke barriers.
  - Drawings demonstrating pressurization control and power wiring routing and protection.
  - Drawings demonstrating fire alarm wiring routing and protection.
  - Smoke control mechanical equipment and ductwork drawings shall be prepared and provided.

## PHASE II GENERAL REQUIREMENTS (CONTINUED)

- The submittal for each associated permit, including architectural, mechanical, electrical, fire alarm and fire sprinkler plans are not required to be submitted with the smoke control plan. However, each of these associated permits shall include the following:
  - Clear identification where passive zones and active zones are provided.
  - Smoke zone boundaries shall be identified; these boundaries are required to be constructed as smoke barriers and shall be appropriately identified in the architectural plan set.
  - The concise narrative description of the smoke control system for the building and any special requirements of the design.
  - A letter prepared by each designer stating that their design satisfies the requirements of the smoke control system.

## PLANS

The following is a list of information required on all plan submittals for review of all Smoke Control Systems for compliance with the 2018 IFC. The plan shall be drawn to 1/8" scale minimum. The applicant is required to submit all of this information so an accurate and timely review may be done.

To more clearly identify the systems involved on design plans, the background systems and floor plans should be in light line weight, with the pertinent systems in heavy line weight. Smoke control system component drawings shall be submitted on current architectural backgrounds.

I understand that all applicable codes apply. Errors and/or omissions on the plans and corrections from field inspections are the responsibility of the owner/contractor. All work is subject to compliance with City of Redmond ordinances and laws of the State of Washington.

APPLICANT NAME: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_