

## Conceptual Smoke Control Submittal

7/15/08

The city may require additional information as needed. For preparation information, see description sheet # 1, *Standards for Plans and Drawings*. If you have any questions concerning your application, please visit or call Development Services (425-452-6800) between 8 a.m. and 4 p.m., Monday through Friday (Wednesday, 10 to 4). Assistance for the hearing impaired: dial 711 (Telecommunications Relay Service).

Because of the complexity of smoke control systems, it is important that design documents incorporate the conceptual smoke control approach as early as possible during the design process.

Locations that may require smoke control systems include (IBC 2006 reference):

- Pressurized Shafts/Smokeproof Enclosures(1020.1.7)
- Underground Buildings (405.5)
- Windowless Buildings (408.8)
- Covered Mall Buildings (402.9)
- High-rise Buildings (403.13)
- Building Atriums (404.4)
- Stages and Platforms (410.3.7.2)
- Assembly Seating (1025.6.2.1)

To apply for the building or TI permit where smoke control (including shaft pressurization only systems) is provided, documentation consisting of the following is required. **This submittal checklist must be completed and submitted with the application. Submit 2 sets of documents**

- The Conceptual Smoke Control Design must be prepared by a Professional Engineer competent in the design of smoke control systems and accompanied by current architectural background drawings and Smoke Zone Plans.
- The Conceptual Smoke Control Design is the first submittal of the Smoke Control Permit (type FH) and must be submitted as a separate permit prior to the Building permit.
- The Conceptual Smoke Control Design must be approved prior to release of the building permit, or submittal of the detailed design (number sheet 42b)

The submittal must include:

- A Summary Event Matrix** (sequence of operations) for the smoke control system.
- Smoke Zone Plans** at a legible scale (these may be part of the drawing set) identifying smoke zone boundaries and smoke barrier locations. Depict (cross hatching, coloring, etc.) the smoke control approach for each space, such as active (indicate mechanical supply and/or exhaust capability), passive (indicate if vents are provided), or sub-zones (spaces not constructed as a smoke compartment and not provided with smoke control).
- A Life Safety Report** must be submitted as part of the conceptual design. This report must include a project description of the building, life safety systems and the smoke control system. Calculations/computer modeling analysis need not be provided with the conceptual design.
  - Life Safety Systems.** This report must include a description of the building, occupancies and various life safety features of the project (sprinkler systems, fire pumps, reservoirs, standpipe systems, fire detection/alarm/communication system, Fire Command Center requirements, emergency power systems, in-building radio system, etc.) and how they will interface with each other.

- **The Smoke Control Narrative** must detail how the code requirements of IBC 909 will be addressed including the design constraints and limits. It must also clearly describe each space identified on the Smoke Zone Plans, in sufficient detail to describe the smoke control method for each space and how it would be initiated. In particular:
  - System performance goals and design objectives, including general testing criteria.
  - Specific performance criteria to be evaluated for each zone.
  - Location of fire-fighter's smoke control panel.
  - Description of the firefighter smoke control panel features.
  - Description of the 2-hour protection of pressurization fan wiring, equipment and ductwork.
  - Location of pressurization fans.
  - Identified design constraints.
  - Identification of spaces where computer modeling is planned.
  - Design basis fire(s) and locations.
  - Tenability criteria.

Conceptual design documents need not include calculations or detailed control diagrams, but must generally identify every smoke zone in the building and the smoke control approach for each zone. Approved smoke control approaches are described in City of Bellevue Fire Department Development Standards (BFDDS), Chapter 11-Smoke Control.

Approval of the Conceptual Design Submittal **does not** constitute approval of the smoke control system. Once the conceptual design submittal has been approved, the Detailed Design Submittal as described in City of Bellevue Submittal Requirements Guide 42b must be submitted.

Remodeling or tenant improvement (TI) projects that affect the performance of an **existing** smoke control system, or require the addition of a smoke control system, must satisfy the conditions described in this guide, 42a.

Where a **New** smoke control system is required, see Guide 42b. For **Revisions to an Existing** smoke control system, see Guide 42c. For **Shaft Pressurization Only** systems, see Guide 42d.

**To apply for future permits for associated systems (Building, Mechanical, Electrical, Sprinkler, and Fire Alarm), the following details must be included in those submittals. These details and permits are not part of the 42a submittal requirements:**

**1. Architectural Plan Submittal:**

- A Concise Narrative Description of the smoke control system and any special requirements of the design must be prepared by the author of the Detailed Design Report. This description will be required to be on every set of associated design plans and be shown on future tenant improvement drawings for the life of the building as described in Sheet 42c.
- Clear identification where passive zones and active zones are provided.

- Clear identification of the smoke zone boundaries. These boundaries are required to be constructed as smoke barriers and must be appropriately identified, including wall and/or horizontal listed assembly number and associated assembly details not deviating from the listed assembly.
- A letter prepared by the architect stating that their design satisfies the requirements of the smoke control system. Note: a single letter signed by all disciplines is acceptable.
- Plans must provide the location and design of the emergency generator and transfer switch rooms per IBC Section 909.11. In addition, they must detail 2-hour fire-rated separation of power/control wiring to equipment serving the pressurized elevator and stair shafts.
- Provide seismic anchorage of critical systems and include the design with the associated design submittal, as appropriate (IBC Section 403.14).

## 2. Mechanical Plan Submittal:

- A Concise Narrative Description of the smoke control system and any special requirements of the design must be prepared by the author of the Detailed Design Report. This description will be required to be on every set of associated design plans and be shown on future tenant improvement drawings for the life of the building as described in Sheet 42c.
- Clear identification where passive zones and active zones are provided.
- Clear identification of the smoke zone boundaries. These boundaries are required to be constructed as smoke barriers and must be appropriately identified.
- A letter prepared by the mechanical designer stating that their design satisfies the requirements of the smoke control system. Note: a single letter signed by all disciplines is acceptable.
- Plans must include identification of the location and address of all devices that will initiate shaft pressurization, components associated with the smoke control process (including actuators, control dampers, fire and smoke dampers, variable air volume controls, and fans), and associated system responses/configurations.
- Provide capacities of each shaft pressurization fan—including applicable calculations for the number of belts and the operating exhaust temperature.
- Identify equipment locations with inlet and outlets clearly identified and separated in accordance with Amended IBC Section 909.10.3.
- The location and design of the emergency generator and transfer switch rooms per IBC Section 909.11.

## 3. Fire Alarm Plan Submittal:

- A Concise Narrative Description of the smoke control system and any special requirements of the design must be prepared by the author of the Detailed Design Report. This description will be required to be on every set of associated design plans and be shown on future tenant improvement drawings for the life of the building as described in Sheet 42c.
- For final approval, Fire-fighter's Smoke Control Panel must be submitted in color at full-scale for Fire Department review with the fire alarm plans.
- A letter prepared by the fire alarm designer stating that their design satisfies the requirements of the smoke control system. Note: a single letter signed by all disciplines is acceptable.
- Plans must include identification of the location and address of all devices that will initiate smoke control, components associated with the smoke control process (including actuators, control dampers, fire and smoke dampers, variable air volume controls, and fans), and associated system responses/configurations.
- Submittals must also demonstrate the 2-hour fire-rated protection of wiring, when utilizing the fire alarm system for pressurization control functions.

**4. Electrical Plan Submittal:**

- A Concise Narrative Description of the smoke control system and any special requirements of the design must be prepared by the author of the Detailed Design Report. This description will be required to be on every set of associated design plans and be shown on future tenant improvement drawings for the life of the building as described in Sheet 42c.
- Clear identification where passive zones and active zones are provided.
- Clear identification of the smoke zone boundaries. These boundaries are required to be constructed as smoke barriers and must be appropriately identified.
- A letter prepared by the electrical designer stating that their design satisfies the requirements of the smoke control system. Note: a single letter signed by all disciplines is acceptable.
- The location and design of the emergency generator and transfer switch rooms per IBC Section 909.11.
- Generator sizing and minimum run time of the generator for evacuation purposes.
- Demonstrate 2-hour protection of wiring controlling/powering fans serving smoke proof enclosures.
- Panel schedule (industry standard type) for the emergency panel with connected and demand loads.
- Schedule of smoke control components showing equipment, the load in amps or volt-amps, conduit type and size, conductor type and size, and breaker type and size.
- All emergency system wiring methods pertaining to the smoke control.
- Schedule of individual smoke control components starting loads that will start at the same time and schedule of individual smoke control components running loads.
- The total combined loads of smoke control components for start up and run (start up and run shown separately).

**5. Sprinkler Plan Submittal:**

- A Concise Narrative Description of the smoke control system and any special requirements of the design must be prepared by the author of the Detailed Design Report. This description will be required to be on every set of associated design plans and be shown on future tenant improvement drawings for the life of the building as described in Sheet 42c.
- Clear identification where passive zones and active zones are provided.
- Clear identification of the smoke zone boundaries. These boundaries are required to be constructed as smoke barriers and must be appropriately identified.
- A letter prepared by the sprinkler designer stating that their design satisfies the requirements of the smoke control system. Note: a single letter signed by all disciplines is acceptable.
- Demonstrate that sprinkler zones are coordinated with smoke zones, as applicable.