



STATE OF WASHINGTON
STATE BUILDING CODE COUNCIL

May 2018
Log No. _____

1. State Building Code to be Amended:

- | | |
|---|---|
| <input checked="" type="checkbox"/> International Building Code | <input checked="" type="checkbox"/> International Mechanical Code |
| <input type="checkbox"/> ICC ANSI A117.1 Accessibility Code | <input type="checkbox"/> International Fuel Gas Code |
| <input type="checkbox"/> International Existing Building Code | <input type="checkbox"/> NFPA 54 National Fuel Gas Code |
| <input type="checkbox"/> International Residential Code | <input type="checkbox"/> NFPA 58 Liquefied Petroleum Gas Code |
| <input type="checkbox"/> International Fire Code | <input type="checkbox"/> Wildland Urban Interface Code |
| <input type="checkbox"/> Uniform Plumbing Code | |
- For the Washington State Energy Code, please see specialized [energy code forms](#)

Section(s): 2024 IBC Sections 717.2.3/717.6.2.1
 2024 IMC Sections 607.2.3/607.6.2.1
 2024 IFC Sections 903.3.1.1.2/903.3.1.2.4

Title: [Static Dampers](#)

2. Proponent Name (Specific local government, organization or individual):

Proponent: [Eric Vander Mey, PE](#)
Title: [Principal](#)
Date: [9/19/2024 \(updated on 5/6/2025\)](#)

3. Designated Contact Person:

Name: [Eric Vander Mey](#)
Title: [Delta E Consulting](#)

Cell: [\(206\) 321-1677](#)
E-Mail: ericv@deltaeconsulting.com

4. **Proposed Code Amendment.** Reproduce the section to be amended by underlining all added language, striking through all deleted language. Insert new sections in the appropriate place in the code in order to continue the established numbering system of the code. If more than one section is proposed for amendment or more than one page is needed for reproducing the affected section of the code, additional pages may be attached.

Clearly state if the proposal modifies an existing amendment or if a new amendment is needed. If the proposal modifies an **existing amendment**, show the modifications to the existing amendment by underlining all added language and striking through all deleted language. If a new amendment is needed, show the modifications to the **model code** by underlining all added language and striking through all deleted language.

Code(s) **2024 International Building Code (IBC)**
Section(s) **717.2.3 and 717.6.2.1**

Enforceable code language must be used.
Amend section to read as follows:

Base language in black text is from 2024 IBC
Revisions in red are revisions proposed prior to the 4/11/2025 SBCC BFRW Committee Meeting:
Revisions in blue are revisions proposed made after the 4/11/2025 SBCC BFRW Committee Meeting:

[BF] **CEILING RADIATION DAMPER.** A *listed* device installed in a ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly to limit automatically the radiative heat transfer through an air inlet/outlet opening. *Ceiling radiation dampers* include air terminal units, ceiling dampers and ceiling air diffusers. *Ceiling radiation dampers* are classified for use in either static systems that will automatically shut down in the event of a fire, or in dynamic systems that continue to operate during a fire. A dynamic *ceiling radiation damper* is tested and rated for closure under elevated temperature airflow.

[BF] 717.2.3: Static dampers.
Fire dampers and *ceiling radiation dampers* that are listed for use in static systems shall be installed only in heating, ventilation and air-conditioning systems that are automatically shut down in the event of a fire. See Section 717.6.2.1.2 for shut down requirements of systems with static ceiling radiation dampers.

717.6.2.1 Ceiling radiation dampers testing and installation. *Ceiling radiation dampers* shall be tested in accordance with Section 717.3.1. *Ceiling radiation dampers* shall be installed in accordance with the details specified in the fire-resistance-rated assembly and the manufacturer’s instructions and the listing.

717.6.2.1.1 Dynamic systems. Only *ceiling radiation dampers* labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems that do not automatically shut down designed to operate with fans on during a fire.

Exception: Ceiling radiation dampers tested and listed in combination with specific fan models shall not be required to be labeled for dynamic systems.

717.6.2.1.2 Static systems. Static *ceiling radiation dampers* shall only be provided with installed in systems that are automatically shut down in the event of ~~not designed to operate during a fire.~~ by one of the following control operations:

- 1. Duct smoke detection: Upon activation, the duct smoke detectors shall shut down all operational capabilities of the air distribution system in accordance with the listing and labeling of appliances used in the system. Duct smoke detectors shall be provided in the return, exhaust or relief airstream, duct smoke detectors shall comply with UL 268A, and shall be installed in accordance with International Mechanical Code Section 606.3.

Commented [EV1]: Relocated the acceptable options for shutting down systems with static ceiling radiation dampers. Based on offline review group we thought it would be best to only apply these provisions to static ceiling radiation dampers and not static fire dampers.

Commented [EV2]: Modify to align with ICC committee language for 2027 IBC in FS76-24.

Commented [EV3]: Modify to align with ICC committee language for 2027 IMC in FS76-24. See page FS76-24 for explanation that this allows static ceiling radiation dampers that are listed with a specific exhaust fan.

Commented [EV4]: Modify to align with ICC committee language for 2027 IBC in FS76-24..

Commented [EV5]: Recommending adding the acceptable means for shutdown for consistent enforcement. Per notes above only apply these provisions to static ceiling radiation dampers.

2. Area smoke detection: Upon activation, the area smoke detectors shall shut down all operational capabilities of the air distribution system in accordance with the listing and labeling of *appliances* used in the system. Area smoke detectors shall be provided in all portions of the building serviced by the air distribution system. Area smoke detectors shall be connected to a fire alarm system in accordance with the *International Fire Code* and comply with *International Mechanical Code* Section 606.4.1.
3. Dwelling unit area smoke detection: For air distribution systems that serve only one dwelling unit the area smoke detection system within the dwelling unit will be used for shut down in the event of a fire. Upon activation, the dwelling unit area smoke detector shall shut down all operational capabilities of the air distribution system in accordance with the listing and labeling of *appliances* and smoke detector used in the system. Area smoke detectors shall be connected to a fire alarm system in accordance with the *International Fire Code* and comply with *International Mechanical Code* Section 606.4.1
4. Fire Sprinkler waterflow: Upon activation, the fire sprinkler waterflow alarm device shall shut down all operational capabilities of the air distribution system in accordance with the listing and labeling of the *appliances* used in the system. The fire sprinkler waterflow switch shall be connected to a fire alarm system in accordance with the *International Fire Code*.
5. Duct heat sensor: Duct heat sensor is an acceptable means of shut down for systems with return or exhaust design capacity of 500 CFM (0.24 m³/s) or less. Upon activation, the duct heat sensors shall shut down all operational capabilities of the air distribution system in accordance with the listing and labeling of *appliances* used in the system. Duct heat sensors shall be provided in the return, exhaust or relief airstream and shall have an activation temperature that is approximately 50°F (28°C) above the normal temperature within the duct system, but not less than 125°F (52°C) and not greater than 200°F (93°C).

Exception: Fire sprinkler coverage: Where automatic fire sprinklers are provided in each space where a static ceiling radiation damper is installed, the associated heating, ventilation and air-conditioning system is not required to be automatically shut down in the event of a fire. The system shall have a return or exhaust capacity of less than 2,000 CFM (0.90 m³/s). Each space shall have fire sprinklers installed and shall not utilize the allowable sprinkler omission locations for Group R dwelling unit and sleeping unit bathrooms permitted by *International Fire Code* Section 903.3.1.1.2. Fire sprinklers in each space where a static ceiling radiation damper is installed shall be quick-response type with a temperature rating of 135°F (57°C) or 155°F (68°C).

1. Where a static ceiling radiation damper is installed at the opening of a duct, a smoke detector shall be installed inside the duct or outside the duct with sampling tubes protruding into the duct. The detector or tubes in the duct shall be within 5 feet (1524 mm) of the damper. Air outlets and inlets shall not be located between the detector or tubes and the damper. The detector shall be listed for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.

2. Where a static ceiling radiation damper is installed in a ceiling, the ceiling radiation damper shall be permitted to be controlled by a smoke detection system installed in the same room or area as the ceiling radiation damper.

3. A static ceiling radiation damper shall be permitted to be installed in a room where an occupant sensor is provided within the room that will shut down the system.

Commented [EV6]: Add exception that does not required HVAC system shut down for small systems with static ceiling radiation dampers that have low temperature fire sprinkler heads in all rooms including bathrooms.

Commented [EV7]: Recommend removing these exceptions to align with FS76-24 proposal for the 2027 IBC.

Amend 2024 International Fire Code as follows for correlation:

Base language in black text is from 2024 IFC

NFPA 13 sprinkler systems amend section 903.3.1.1.2

903.3.1.1.2. In Group R occupancies where sprinklers are not required for spaces with static ceiling radiation dampers without system shut down in accordance with the exception to Section 717.7.6.2.1.2 of the International Building Code, sprinklers shall not be required in bathrooms that do not exceed 55 square feet (5 m2) in area and are located within individual dwelling units or sleeping units, provided that walls and ceilings, including the walls and ceilings behind a shower enclosure or tub, are of noncombustible or limited-combustible material with a 15-minute thermal barrier rating.

NFPA 13R sprinkler systems add new section 903.3.1.2.4

903.3.1.2.4. Bathrooms. Sprinklers shall not be omitted from Group R occupancy dwelling unit bathrooms that do not exceed 55 square feet (5 m2) in area where sprinklers for spaces with static ceiling radiation dampers without system shut down are required in accordance with the exception to Section 717.7.6.2.1.2 of the International Building Code.

Commented [EV8]: Add pointer to IBC for NFPA 13 sprinkler systems to make sure sprinklers aren't omitted when required by IBC

Commented [EV9]: Add point to IBC for NFPA 13R sprinkler systems to make sure sprinklers aren't omitted when required by IBC

[Backup information:](#)

FS76-24

IBC: 717.6.2.1.1, 717.6.2.1.2; IMC@: [BF] 607.6.2.1.1, [BF] 607.6.2.1.2

Proposed Change as Submitted

Proponents: Amanda Hickman, The Hickman Group, Air Movement and Control Association International, Inc. (AMCA)
(amanda@thehickmangroup.com)

2024 International Building Code

Revise as follows:

717.6.2.1.1 Dynamic systems. Only *ceiling radiation dampers* labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems that do not automatically shut down during a fire.

Exception: *Ceiling radiation dampers* tested and listed in combination with specific fan models shall not be required to be labeled for dynamic systems.

[BF] 607.6.2.1.2 Static systems. Static *ceiling radiation dampers* shall only be installed ~~only~~ in systems that automatically shut down in the event of ~~are not designed to operate during~~ a fire.

Exceptions:

1. ~~Where a static ceiling radiation damper is installed at the opening of a duct, a smoke detector shall be installed inside the duct or outside the duct with sampling tubes protruding into the duct. The detector or tubes within the duct shall be within 5 feet (1524 mm) of the damper. Air outlets and inlets shall not be located between the detector or tubes and the damper. The detector shall be listed for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.~~
2. ~~Where a static ceiling radiation damper is installed in a ceiling, the ceiling radiation damper shall be permitted to be controlled by a smoke detection system installed within the same room or area as the ceiling radiation damper.~~
3. ~~A static ceiling radiation damper shall be permitted to be installed within a room where an occupant sensor is provided within the room that will shut down the system.~~

NPFA 13-2022 Definition

3.3.238 Waterflow Alarm Device. An attachment to the sprinkler system that detects a predetermined water flow and is connected to a fire alarm system to initiate an alarm condition or is used to mechanically or electrically initiate a fire pump or local audible or visual alarm. (AUT-SSI)

2024 IBC

[F] FIRE ALARM SIGNAL. A signal initiated by a *fire alarm-initiating device* such as a *manual fire alarm box*, *automatic fire detector*, *waterflow switch* or other device whose activation is indicative of the presence of a fire or fire signature.

[F] 903.4.1: Electronic supervision. INSIGHTS

Valves controlling the water supply for *automatic sprinkler systems*, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all *automatic sprinkler systems* shall be electrically supervised by a *listed fire alarm control unit*.

Exceptions:

1. *Automatic sprinkler systems* protecting one- and two-family dwellings.
2. Limited area sprinkler systems in accordance with Section 903.3.8, *provided that backflow prevention device test valves located in limited area sprinkler system supply piping shall be locked in the open position unless supplying an occupancy required to be equipped with a fire alarm system, in which case the backflow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated.*
3. *Automatic sprinkler systems* installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the *automatic sprinkler system*, and a separate shutoff valve for the *automatic sprinkler system* is not provided.
4. Jockey pump control valves that are sealed or locked in the open position.
5. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.
6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.
8. Underground key or hub gate valves in roadway boxes.

[F] 903.4.2: Monitoring.

Alarm, supervisory and *trouble signals* shall be distinctly different and shall be automatically transmitted to an *approved supervising station* or, where *approved* by the fire code official, shall sound an audible signal at a *constantly attended location*.

[F] 903.4.3: Alarms. INSIGHTS

An *approved audible and visual sprinkler waterflow alarm* device, located on the exterior of the *building* in an *approved* location, shall be connected to each *automatic sprinkler system*. Such sprinkler waterflow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. *Where a waterflow switch is required by Section 903.4.1 to be electrically supervised, such sprinkler waterflow alarm devices shall be powered by a fire alarm control unit or, where provided, a fire alarm system.* Where a *fire alarm system* is *provided*, actuation of the *automatic sprinkler system* shall actuate the *building fire alarm system*.

Exception: Automatic sprinkler systems protecting one- and two-family dwellings.

903.3.1.1.2: Bathrooms. CDP



In Group R occupancies, sprinklers shall not be required in bathrooms that do not exceed 55 square feet (5 m²) in area and are located within individual *dwelling units* or *sleeping units*, provided that walls and ceilings, including the walls and ceilings behind a shower enclosure or tub, are of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating.

NFPA 13-2022

9.2 Allowable Sprinkler Omission Locations.

9.2.4 Dwelling Units.

9.2.4.1 Bathrooms.

9.2.4.1.1* Unless sprinklers are required by 9.2.4.1.2 or 9.2.4.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 ft² (5.1 m²) in area, and that have walls and ceilings of noncombustible or

limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

9.2.4.1.1.1 Bathrooms in accordance with 9.2.4.1.1 that are located under stairs that are part of the path of egress shall not be required to be protected provided that the bathroom is separated from the stairs by fire-resistive construction in accordance with the local building code.

9.2.4.1.2 Sprinklers shall be required in bathrooms of limited care facilities and nursing homes, as defined in NFPA 101.

9.2.4.1.3 Sprinklers shall be required in bathrooms opening directly onto public corridors or exitways.

9.2.5 Closets and Pantries.

9.2.5.1 Sprinklers shall not be required in clothes closets, linen closets, and pantries within dwelling units in hotels and motels where the area of the space does not exceed 24 ft² (2.2 m²) and the walls and ceilings are surfaced with noncombustible or limited-combustible materials.

5. Briefly explain your proposed amendment, including the purpose, benefits and problems addressed.

Specifically note any impacts or benefits to business, and specify construction types, industries and services that would be affected. Finally, please note any potential impact on enforcement such as special reporting requirements or additional inspections required.

The building and mechanical code are silent on acceptable means of shut down for HVAC systems with static dampers. These provisions for static dampers were introduced in the 2015 IBC and have been modified for several code cycles.

This provides several options for shutdown consistent with IMC requirements for shutdown of other systems.

Amendments to the IBC should be matched in the IMC.

6. Specify what criteria this proposal meets. You may select more than one.

- ☐ The amendment is needed to address a critical life/safety need.
- ☒ The amendment clarifies the intent or application of the code.
- ☐ The amendment is needed to address a specific state policy or statute.
- ☐ The amendment is needed for consistency with state or federal regulations.
- ☐ The amendment is needed to address a unique character of the state.
- ☒ The amendment corrects errors and omissions.

7. Is there an economic impact: ☐ Yes ☒ No

If no, state reason: This only clarifies multiple options that are acceptable for shutdown as the code does not provide specific direction on acceptable means of shutdown. Designer can select appropriate means of shutdown depending on the size of the HVAC system.

If yes, provide economic impact, costs and benefits as noted below in items a – f.

a. **Life Cycle Cost.** Use the OFM Life Cycle Cost [Analysis tool](#) to estimate the life cycle cost of the proposal using one or more typical examples. Reference these [Instructions](#); use these [Inputs](#). Webinars on the tool can be found [Here](#) and [Here](#). If the tool is used, submit a copy of the excel file with your proposal submission. If preferred, you may submit an alternate life cycle cost analysis.

b. **Construction Cost.** Provide your best estimate of the construction cost (or cost savings) of your code change proposal.

\$[Click here to enter text](#)./square foot

(For residential projects, also provide \$[Click here to enter text](#)./ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

c. **Code Enforcement.** List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

d. **Small Business Impact.** Describe economic impacts to small businesses:

e. **Housing Affordability.** Describe economic impacts on housing affordability:

- f. ***Other.*** Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

Please send your completed proposal to: sbcc@des.wa.gov

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.