



STATE OF WASHINGTON
STATE BUILDING CODE COUNCIL

Log No. 21-GP2-075
Proponent Revision
Received 5/23/22

1. State Building Code to be Amended:

- International Building Code
- ICC ANSI A117.1 Accessibility Code
- International Existing Building Code
- International Residential Code
- International Fire Code
- Uniform Plumbing Code

- International Mechanical Code
- International Fuel Gas Code
- NFPA 54 National Fuel Gas Code
- NFPA 58 Liquefied Petroleum Gas Code
- Wildland Urban Interface Code

For the Washington State Energy Code, please see specialized [energy code forms](#)

Section(s):

607.5.2 and 607.5.3

Title:

Fire Barriers and Fire Partitions

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

Proponent: **Eric Vander Mey, Rushing**

Title: **Principal**

Date: **5/23/2022**

3. Designated Contact Person:

Name: **Eric Vander Mey, Rushing**

Title: **Principal**

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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) WSMC **Section(s)** 607.5.2 & 607.5.3

Enforceable code language must be used.

Amend section to read as follows:

See proposed changes below in red, underline with track changes.

Note: these changes will need to be correlated with Chapter 7 of the WSBC.

FYI current online versions of IBC and IMC are different for the recent changes in Exception 3. IMC language was used for this code proposal.

2021 IBC:

3. Such walls are penetrated by fully ducted HVAC systems, have a required *fire-resistance rating* of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. Nonmetal flexible air connectors shall be permitted in the following locations:

3.1. At the duct connection to the air handling unit or equipment located within the mechanical room in accordance with Section 603.9 of the *International Mechanical Code*.

3.2. From an overhead metal duct to a ceiling diffuser within the same room in accordance with Section 603.6.2 of the *International Mechanical Code*.

2021 IMC:

3. Such walls are penetrated by fully ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code*. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than 26 gage [0.0217 inch (0.55 mm)] thickness and shall be continuous from the air-handling *appliance* or *equipment* to the air outlet and inlet terminals. Flexible air connectors shall be permitted in a fully ducted system, limited to the following installations:

3.1. Nonmetallic flexible connections that connect a duct to an air handling unit or *equipment* located within a mechanical room in accordance with Section 603.9.

3.2. Nonmetallic flexible air connectors in accordance with Section 603.6.2 that connect an overhead metal duct to a ceiling diffuser where the metal duct and ceiling diffuser are located within the same room.

[BF] 607.5.2 Fire barriers. Ducts and air transfer openings that penetrate fire barriers shall be protected with listed fire dampers installed in accordance with their listing. Ducts and air transfer openings shall not penetrate enclosures for interior exit stairways and ramps and exit passageways except as permitted by Sections 1023.5 and 1024.6, respectively, of the International Building Code.

Exception: Fire dampers are not required at penetrations of fire barriers where any of the following apply:

1. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance-rated assembly.
2. Ducts are used as part of an approved smoke control system in accordance with Section 513 and where the fire damper would interfere with the operation of the smoke control system.
3. Such walls are penetrated by fully ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the International Building Code. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than 26 gage [0.0217 inch (0.55 mm)] thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. Flexible air connections shall be permitted in a fully ducted system, limited to the following installations:

3.1 Nonmetallic flexible connections that connect a duct to an air-handling unit or equipment located within a mechanical room or located outdoors in accordance with 603.9.

3.2 Nonmetallic flexible air connectors in accordance with Section 603.2.6 that connect an overhead metal duct to a ceiling-diffuser, grille or register where the metal duct and diffuser, grille, or register are located in the same room.

[BF] 607.5.2.1 Horizontal exits. A listed smoke damper designed to resist the passage of smoke shall be provided at each point that a duct or air transfer opening penetrates a fire barrier that serves as a horizontal exit.

[BF] 607.5.3 Fire partitions. Ducts and air transfer openings that penetrate fire partitions shall be protected with listed fire dampers installed in accordance with their listing.

Exception: In occupancies other than Group H, fire dampers are not required where any of the following apply:

1. Corridor walls in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the International Building Code and the duct is protected as a through penetration in accordance with Section 714 of the International Building Code.
2. The partitions are tenant partitions in covered and open mall buildings where the walls are not required by provisions elsewhere in the International Building Code to extend to the underside of the floor or roof sheathing, slab or deck above.
3. The duct system is constructed of approved materials in accordance with Section 603 and the duct penetrating the wall complies with all of the following requirements:
 - 3.1. The duct shall not exceed 100 square inches (0.06 m²).
 - 3.2. The duct shall be constructed of steel not less than 0.0217 inch (0.55 mm) in thickness.
 - 3.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.
 - 3.4. The duct shall be installed above a ceiling.
 - 3.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.
 - 3.6. A minimum 12-inch-long (305 mm) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 1-1/2-inch by 1-1/2-inch by 0.060-inch (38 mm by 38 mm by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The annular space between the steel sleeve and the wall opening shall be filled with rock (mineral) wool batting on all sides.

4. Such walls are penetrated by fully ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, and are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the International Building Code. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for conveying supply, return or

exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than 26 gage [0.0217 inch (0.55 mm)] in thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.

4.1 Nonmetallic flexible connections that connect a duct to an air-handling unit or equipment located within a mechanical room or located outdoors in accordance with 603.9.

4.2 Nonmetallic flexible air connectors in accordance with Section 603.2.6 that connect an overhead metal duct to a diffuser, grille or register where the metal duct and diffuser, grille, or register are located in the same room. Where the fully ducted HVAC system metal ductwork penetrates a corridor fire partition the ductwork shall be continuous without openings to the corridor to a mechanical room or shaft enclosure.

- 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.

Clarifies continuous duct requirement for the 26 gage ductwork where vibration isolation connectors are required for acoustical vibration isolation or per equipment support/seismic tiedown requirements per ASCE 7.

- 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: Clarify intent of the code. Allows the similar provisions for fire partitions as that are allowed for fire barriers in 2021 IMC/IBC.

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.

Code Change No: FS67-18

Original Proposal

Section(s): 717.5.2 (IMC 607.5.2)

Proponent: John Williams, Chair, representing Healthcare Committee (AHC@iccsafe.org)

2018 International Building Code

Revise as follows:

717.5.2 Fire barriers. Ducts and air transfer openings of fire barriers shall be protected with listed fire dampers installed in accordance with their listing. Ducts and air transfer openings shall not penetrate enclosures for interior exit stairways and ramps and exit passageways, except as permitted by Sections 1023.5 and 1024.6, respectively.

Exception: Fire dampers are not required at penetrations of fire barriers where any of the following apply:

1. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance-rated assembly.
2. Ducts are used as part of an approved smoke control system in accordance with Section 909 and where the use of a fire damper would interfere with the operation of a smoke control system.
3. Such walls are penetrated by fully ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. Flexible air connectors shall be permitted in the following locations:
 - 3.1. Non-metal flex connections shall be permitted at the duct connection to the air handling unit or equipment located within the mechanical room in accordance with Section 603.9 of the International Mechanical Code.
 - 3.1. Non-metal flex connections shall be permitted from an overhead metal duct to a ceiling diffuser within the same room in accordance with Section 603.6.2 of the International Mechanical Code.

Reason: The intention of this code change is to more accurately reflect typical installations found in most buildings. As currently written, the code implies that any flex duct (or equipment flexible connections) negates the use of the exception for fire dampers in 1 hour walls in fully ducted, fully sprinklered buildings.

The code permits the omission of the fire damper for a metal duct system that terminates either at a wall (such as a sidewall grille) or continues on to a duct opening past the fire barrier and has openings in the duct ("continuous from the air-handling appliance or equipment to the air outlet and inlet terminals"). This section does not prohibit openings to be on both sides of the duct as long as the openings are in metal duct. However, as currently written, if flex duct is used to connect a metal duct to a ceiling diffuser (standard practice) this triggers the requirement for a fire damper.

The flex connection within the concealed space does not constitute a greater hazard than other conditions that would permit the omission of the fire dampers (see attached sketches below).

Likewise, a flex connection at the AHU within the mechanical space does not constitute a hazard that should trigger the fire damper within the system.

As proposed, this section will coordinate with the requirements already established in the International Mechanical Code. IMC Section 606.6.3 limits the design air temperature for flexible air connectors to 250 degrees F (121 C). Under the vast majority of conditions where flexible air connectors will be used (installed above a ceiling, light or ordinary hazard occupancy, ordinary or

intermediate temperature sprinklers, quick or standard response), the sprinkler response can be demonstrated by calculation to occur before the ceiling jet temperature from a fire reaches the limit of 606.6.3.

The intention is to maintain the allowance of flexible connectors at the terminal end of hard ductwork within the room of the air register. This public comment maintains the requirements of the IMC, including:

Limiting the length of the flexible connector to 14 feet actual length.

- Requiring the flexible connector to be tested in accordance with UL 181.
- Requiring use only at the end of hard ductwork.
- Maintains the requirement for hard ductwork to pass through the barrier.

This allows constructability of a fully ducted system, and maintains the integrity of the system throughout the building.

It is not the intention of the code change to allow flexible ducts through any vertical barriers (as already prohibited by Section 717.7). The flexible ductwork is only to be allowed within a room, and above the ceiling. See the sketch below to better clarify the intention.

This proposal is submitted by the ICC Committee on Healthcare (CHC). The CHC was established by the ICC Board to evaluate and assess contemporary code issues relating to healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. In 2017 the CHC held 2 open meetings and numerous conference calls, which included members of the committees as well as any interested parties, to discuss and debate the proposed changes. Information on the CHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CHC effort can be downloaded from the CHC website at: <https://www.iccsafe.org/codes-tech-support/cs/icc-committee-on-healthcare/>.

Cost Impact: The code change proposal will decrease the cost of construction

This proposed code change would result in a decrease in construction cost since this will eliminate fire dampers where the building/installation complies with the requirements of the proposed exception. Where a building does not meet the requirements of the proposed exception, there would be no change in construction cost (dampers would still be required as they are now).

Cost Impact: None

Report of Committee Action Hearings

Committee Action:

Approved as Submitted

Committee Reason: The proposal reflects common practice for many of these installations. It is consistent with the IMC. Flex duct is limited to 14 feet. (Vote 13-1)

Assembly Action:

None

Final Action

FS67-18

AS
