fire-resistance rated unless required by other sections of this code.

❖ In general, fire barriers must be supported by construction having an equivalent fire-resistance rating. If the supporting structure is a primary structural frame (see definition) and supports a fire barrier wall more than two stories in height, the fire-resistance rating for the supporting structure must be protected by the individual encasement method in Section 704.3. If the supporting members are a secondary structural member, then the supporting structure can be protected by membrane protection as in Section 712 for horizontal assemblies. The intent of this requirement is to prevent the effectiveness of the assembly from being circumvented by a fire that threatens the supporting elements. The requirement for the supporting construction to be fire-resistance rated applies to buildings of all types of construction, even to buildings of Type IIB, IIIB and VB construction for all fire barrier walls except those separating incidental use areas.

Exception 1 is not an exception at all, but a requirement that supporting structures for fire barriers separating flammable or combustible tank storage be 2-hour fire-resistance rated.

Exception 2 is an exception to the continuity requirement for shaft enclosure walls.

Exception 3 allows only incidental use area separation walls in Type IIB, IIIB and VB construction to be supported on nonfire-resistance-rated construction if no other code section requires the supporting elements to be fire-resistance rated.

Fire barrier walls will usually be built on top of a floor and will terminate at the floor above. Should a fire barrier wall, as in the case of some shaft walls, be constructed through a floor, any hollow space within that wall could provide a passage for fire or smoke and, therefore, must be fireblocked as specified in the last sentence of Section 707.5.1. Any hollow vertical spaces within fire barrier walls must be fireblocked in accordance with Section 717.2.2.

707.6 Openings. Openings in a *fire barrier* shall be protected in accordance with Section 715. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 156 square feet (15 m^2). Openings in *exit* enclosures and *exit* passageways shall also comply with Sections 1022.3 and 1023.5, respectively.

Exceptions:

1. Openings shall not be limited to 156 square feet (15 m^2) where adjoining floor areas are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
2. Openings shall not be limited to 156 square feet (15 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective is a *fire door* serving an *exit* enclosure.
3. Openings shall not be limited to 156 square feet (15 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective has been tested in accordance with ASTM E 119 or UL 263 and has a minimum *fire-resistance rating* not less than the *fire-resistance rating* of the wall.
4. Fire window assemblies permitted in atrium separation walls shall not be limited to a maximum aggregate width of 25 percent of the length of the wall.
5. Openings shall not be limited to 156 square feet (15 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective is a *fire door* assembly in a *fire barrier* separating an *exit* enclosure from an *exit* passageway in accordance with Section 1022.2.1.

❖ Buildings, in order to provide utility, must provide access into different areas that include the need to provide openings. Section 707.7 defines what openings are permitted and how they have to be protected to maintain the integrity of the fire barrier. To maintain the viability of the fire barrier, the aggregate width of open-

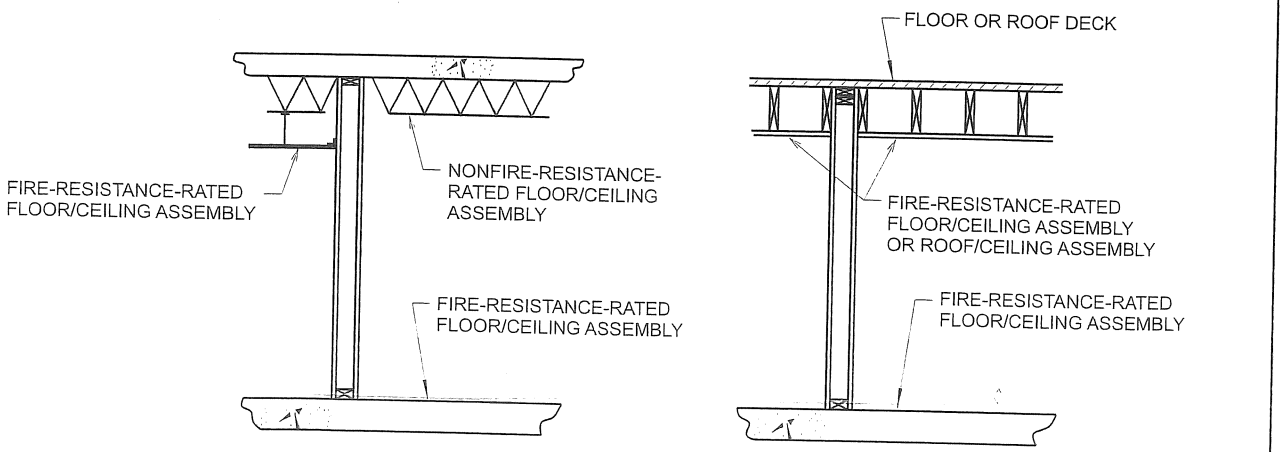


Figure 707.5
CONTINUITY OF FIRE BARRIERS

omission of sprinkler protection in combustible attics and concealed spaces, provided the space is not used for living purposes or storage. However, when using this exception, sprinkler protection is necessary and required, since the protection is considered available to control fires in the incipient stage and keep unoccupied concealed spaces and attic areas from becoming involved. For these buildings, the exception requires sprinkler protection and the fire partitions do not need to extend to the deck above.

Although this exception provides a blanket exclusion for fireblocking or draftstopping within floor/ceiling and roof/ceiling spaces, this may need to be reviewed on a case-by-case basis. The intent of this section is to address concealed spaces that are not used for any purpose. When an attic space is provided, it would be necessary to decide if the attic is simply a concealed space or if it is an occupied portion of the dwelling unit. For example, if each dwelling unit had access to the attic above its unit by means of a pull-down ladder and an area of the attic was provided with flooring so that storage could be placed there, it would be prudent to consider that attic as being a part of the dwelling unit and, therefore, requiring a fire partition, instead of draftstopping, to be provided between the adjacent attics.

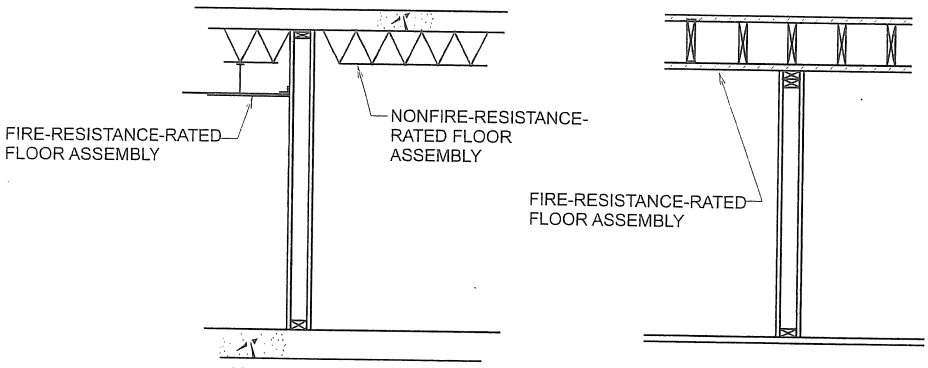


Figure 709.4(1)
CONTINUITY OF FIRE PARTITIONS

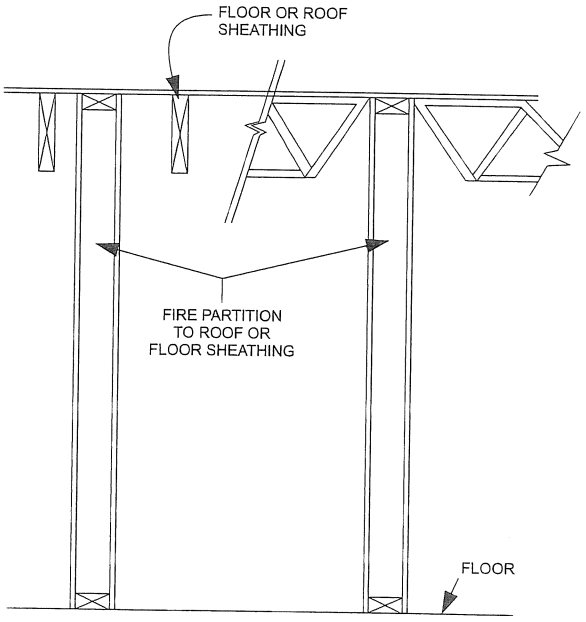


Figure 709.4(2)(A)
FIRE PARTITION CONTINUITY

709.4

712.4

712.4 Continuity. Assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and Sections 708.2, 713.4, 714 and 1022.1. Skylights and other penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof assembly is maintained. Unprotected skylights shall not be permitted in roof assemblies required to be fire-resistance rated in accordance with Section 704.10. The supporting construction shall be protected to afford the required *fire-resistance rating* of the *horizontal assembly* supported.

Exception: In buildings of Type IIB, IIIB or VB construction, the construction supporting the *horizontal assembly* is not required to be fire-resistance-rated at the following:

1. Horizontal assemblies at the separations of incidental uses as specified by Table 508.2.5, provided the required *fire-resistance rating* does not exceed 1 hour.
2. Horizontal assemblies at the separations of *dwelling units* and *sleeping units* as required by Section 420.3.
3. Horizontal assemblies at *smoke barriers* constructed in accordance with Section 710.

❖ All floors, roofs and ceilings of horizontal assemblies are to be continuous without openings or penetrations, except as permitted by this section. The continuity of the assembly is critical to its ability to limit fire and smoke spread. The continuity provision applies regardless of whether a fire-resistance rating is required, since floor/ceiling assemblies are also intended to restrict vertical smoke movement [see Figure 712.4(1)]. Penetrations or openings of the assembly are permitted in accordance with Section 708.2, 713.4 or 714, provided that the fire-resistance rating, if required, is maintained [see Figure 712.4(2)]. The fire-resistance rating required by Table 601 for roof construction is intended to minimize the threat of premature structural failure of the roof construction under fire conditions. These provisions, with the exception of the requirements of Section 705.10 and 706.6, [illegible] tain the penetra are, th tance-r integrit visions sure d The iss collaps would garding also pe [illegible] rior. Code users should also review the fireblocking and draftstopping requirements that are found in Section 717. Fireblocking and draftstopping requirements apply to combustible concealed locations and it is a separate issue from fire-resistance ratings and may impose additional requirements for the assembly.

The exception deals with three specific applications of horizontal assembly where it is unnecessary to provide fire-resistance rating of the supporting construction of horizontal assemblies in buildings of Type IIB, IIIB or VB construction, which are types of construction where Table 601 would never require the horizontal assembly or the supporting structural members to have a fire-resistance rating. This exception exempts the supporting construction of horizontal assemblies in the same manner as the code currently exempts the supporting construction of fire barriers, and fire partitions and smoke barriers, but only in those circumstances where the horizontal assembly is a component of the same fire containment assembly as the fire barrier or fire partition or smoke barrier. It is not reasonable to exempt construction supporting a fire containment assembly for some components of the assembly but not for other components. If the exemptions for buildings of Type IIB, IIIB and VB construction are valid, they should be applied to the entire fire containment assembly, not just a portion of it.

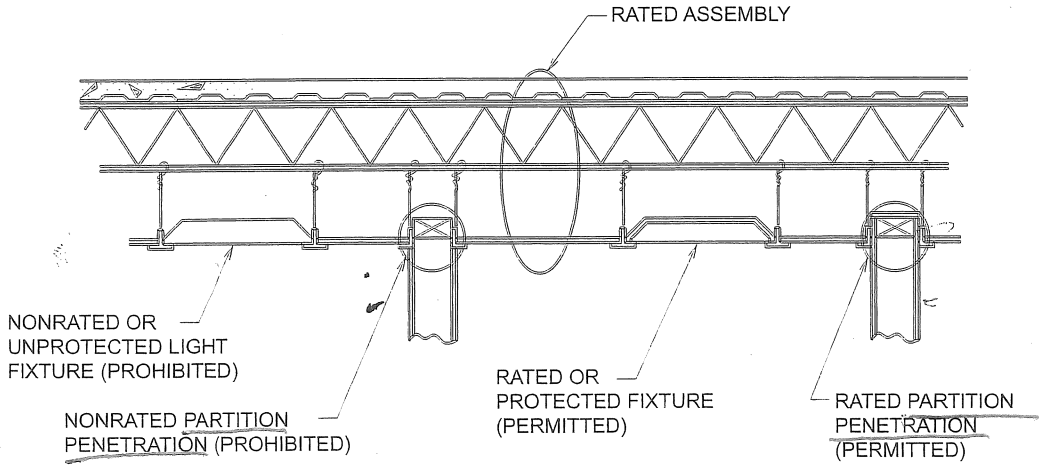


Figure 712.4(1)
CONTINUITY OF FIRE-RESISTANCE-RATED FLOOR/CEILING ASSEMBLY

here. Although the code does provide an extensive laundry list of accepted materials, it is important to note that the code does allow the use of any other approved material when it is adequately supported.

717.3.2 Groups R-1, R-2, R-3 and R-4. Draftstopping shall be provided in floor/ceiling spaces in Group R-1 buildings, in Group R-2 buildings with three or more *dwelling units*, in Group R-3 buildings with two *dwelling units* and in Group R-4 buildings. Draftstopping shall be located above and in line with the *dwelling unit* and *sleeping unit* separations.

Exceptions:

1. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
2. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, provided that automatic sprinklers are also installed in the combustible concealed spaces.

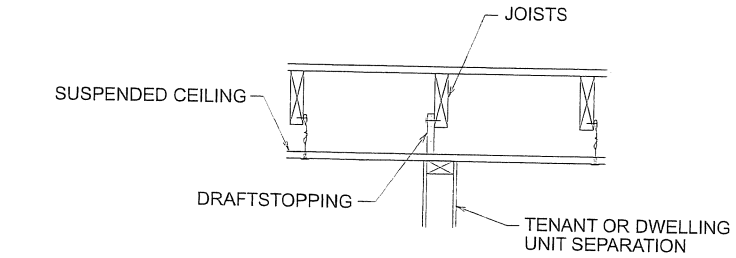
❖ To maintain the integrity of dwelling or sleeping unit separation walls in buildings of Groups R-1, R-2, R-3 and R-4, draftstopping is to be provided when the dwelling or sleeping unit separation wall is not continuous to the floor sheathing above. The draftstopping must be installed directly above the dwelling or sleeping unit separation wall (see Figure 717.3.2). The dwelling or sleeping unit separation wall (see Section 708), plus the draftstopping above are considered a barrier to the spread of fire and smoke. As such, the draftstop offers some level of protection to the occupants of one dwelling or sleeping unit from a fire occurring in another dwelling or sleeping unit.

The exception indicates that the draftstopping need not be provided if sprinklers are installed above and below the ceiling, since sprinkler activation will control the spread of fire. The sprinkler system must be installed in accordance with Section 903.3.1.1 or 903.3.1.2 and NFPA 13 or 13R. The NFPA 13 sprinkler system (see Section 903.3.1.1) will generally require the sprinklers to be installed within combustible floor spaces unless the space meets the exceptions found within the standard. The NFPA 13R sprinkler system (see Section 903.3.1.2) would generally not require the sprinkler system within the concealed floor space. However, when using the provisions of Exception 2, the NFPA 13R system must be extended into the floor space despite the normal exclusion within the standard. See Section 102.4, which supports that the code requirement will control in this situation.

717.3.3 Other groups. In other groups, draftstopping shall be installed so that horizontal floor areas do not exceed 1,000 square feet (93 m²).

Exception: Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

❖ Unless the spaces above and below the ceiling are sprinklered (NFPA 13 system), draftstopping is to be provided in all groups except Groups R-1, R-2, R-3 and R-4 such that the open space does not exceed 1,000 square feet (93 m²) (see Figure 717.3.3).



SECTION A-A

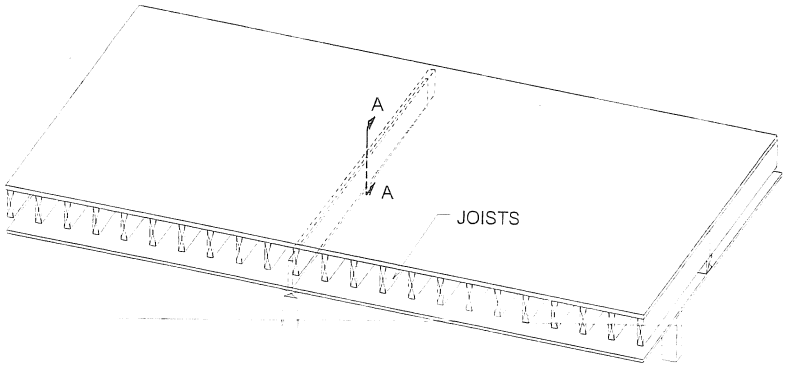
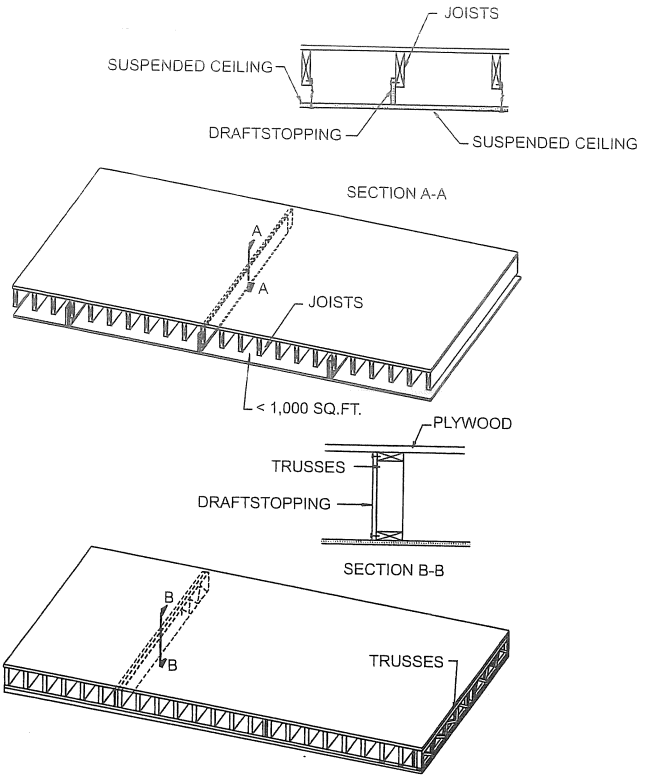


Figure 717.3.2
DRAFTSTOPPING—GROUPS R-1, R-2, R-3 AND R-4 AT TENANT AND DWELLING UNIT SEPARATIONS



For SI: 1 square foot = 0.0929 mm².

Figure 717.3.3
DRAFTSTOPPING—CONCEALED FLOOR SPACES, OTHER GROUPS

717.4 Draftstopping in attics. In combustible construction, draftstopping shall be installed to subdivide *attic* spaces and concealed roof spaces in the locations prescribed in Sections 717.4.2 and 717.4.3. Ventilation of concealed roof spaces shall be maintained in accordance with Section 1203.2.

❖ Fires that spread to attics that are not properly draftstopped often cause considerable damage. For this reason, draftstopping is required in attic and concealed roof spaces in accordance with Sections 717.4.2 and 717.4.3. The text also reminds the code user that, although the space must be compartmented, it still must be ventilated in accordance with the provisions of Chapter 12 in order to eliminate moisture or condensation or to cool the attic.

717.4.1 Draftstopping materials. Materials utilized for draftstopping of *attic* spaces shall comply with Section 717.3.1.

❖ See the commentary to Section 717.3.1.

717.4.1.1 Openings. Openings in the partitions shall be protected by self-closing doors with automatic latches constructed as required for the partitions.

❖ Section 1209.2 requires attic access. The placement of draftstopping in the attic may interfere with the ability of the fire department to gain access to all attic spaces. This section requires that if draftstopping is provided with access openings to adjacent draftstopped portions of the attic, the openings must be constructed of draftstopping materials and be equipped with self-closing mechanisms in order to ensure that the draftstop will perform its intended function.

717.4.2 Groups R-1 and R-2. Draftstopping shall be provided in *attics*, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more *dwelling units* and in all Group R-1 buildings. Draftstopping shall be installed above, and in line with, *sleeping unit* and *dwelling unit* separation walls that do not extend to the underside of the roof sheathing above.

Exceptions:

1. Where *corridor* walls provide a *sleeping unit* or *dwelling unit* separation, draftstopping shall only be required above one of the *corridor* walls.
2. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
3. In occupancies in Group R-2 that do not exceed four *stories above grade plane*, the *attic* space shall be subdivided by draftstops into areas not exceeding 3,000 square feet (279 m²) or above every two *dwelling units*, whichever is smaller.
4. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, pro-