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American Wood Council

Engineered and Traditional Wood Products



The header of the document features the American Forest & Paper Association (AF&PA) logo on the left, which includes a tree icon and the text "AF&PA American Forest & Paper Association". To the right of the logo is the "American Wood Council" logo, with the tagline "Engineered and Traditional Wood Products" and the text "Developers of internationally recognized standards for wood design and construction". Further right are logos for "NDS" (National Design Specification) and "WFCM" (Wood Framing Construction Manual).

MAT110: Fireblocking & Draftstopping

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Although it's not structurally related, fireblocking and draftstopping are fire-safety items that are specifically tied to the use of wood framing. In fact, it's only required in wood framed buildings.

Fireblocking & Draftstopping



- **Fireblocking**
 - No longer called “firestopping”
 - Prevents movement of flame, smoke, gases through concealed spaces
 - Primarily addresses vertical movement (although code addresses horizontal direction in walls)
- **Draftstopping**
 - Prevent movement of smoke and gases through concealed spaces
 - Primarily addresses horizontal movement

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For a long time what the code now calls “fireblocking” was called “firestopping.” However, the materials which provide annular protection around pipes and ducts are generically referred to as “firestopping,” so the application that we will talk about here became “fireblocking.”

Fireblocking and draftstopping have similar, but slightly different, purposes. As you see here, fireblocking is intended to resist the movement of flames, where draftstopping is intended to resist the passage of smoke and gases.

Fireblocking & Draftstopping



FIREBLOCKING

- Locations
 - Walls at floors & ceilings & at 10' intervals (both vertical & horizontal)
 - Interconnections between concealed vertical and horizontal spaces (example: between walls and furredowns)
 - Concealed spaces between stair stringers at top & bottom of run
 - Openings for vents, piping, chimneys, etc
 - Cornices of 2- or more family dwellings at unit separation line

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Fireblocking is intended to resist upward movement of flames, smoke, and gases. Here you see the general locations cited in the code. We'll show some simple examples in a moment, although it must be admitted that real-world applications of the code's requirements may be more complex than our examples.

While studs typically provide built-in protection horizontally and top and bottom plates do the same vertically, in high walls fireblocking must be added to limit the vertical distance to 10 ft or less.

Fireblocking & Draftstopping

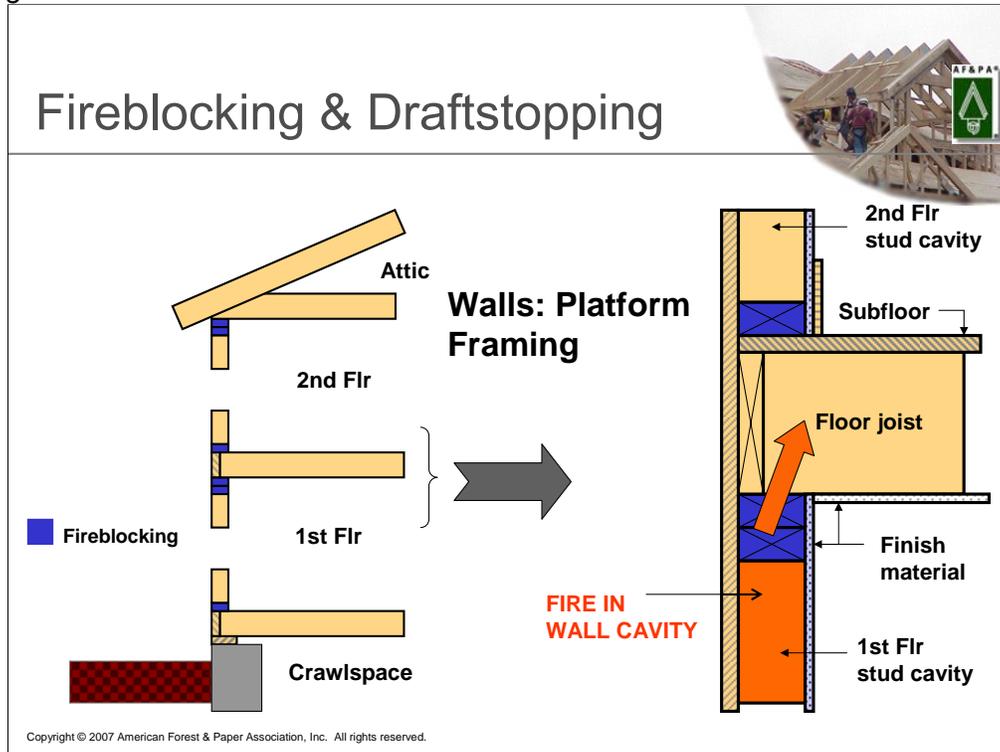


FIREBLOCKING

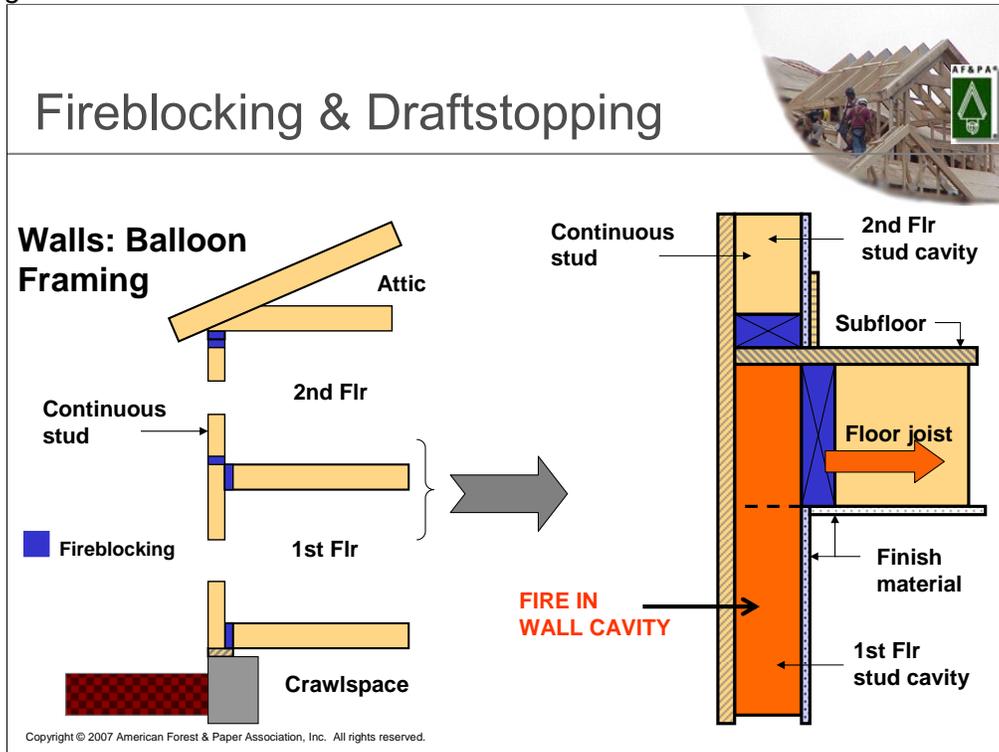
- Accepted materials
 - 2x lumbers
 - 2 layers of 1x lumber
 - 23/32" WSP or 3/4" particleboard
 - 1/2" gypsum board or 1/4" cement asbestos board
 - Batts or blanket mineral wool or fiberglass insulation
 - Other approved materials

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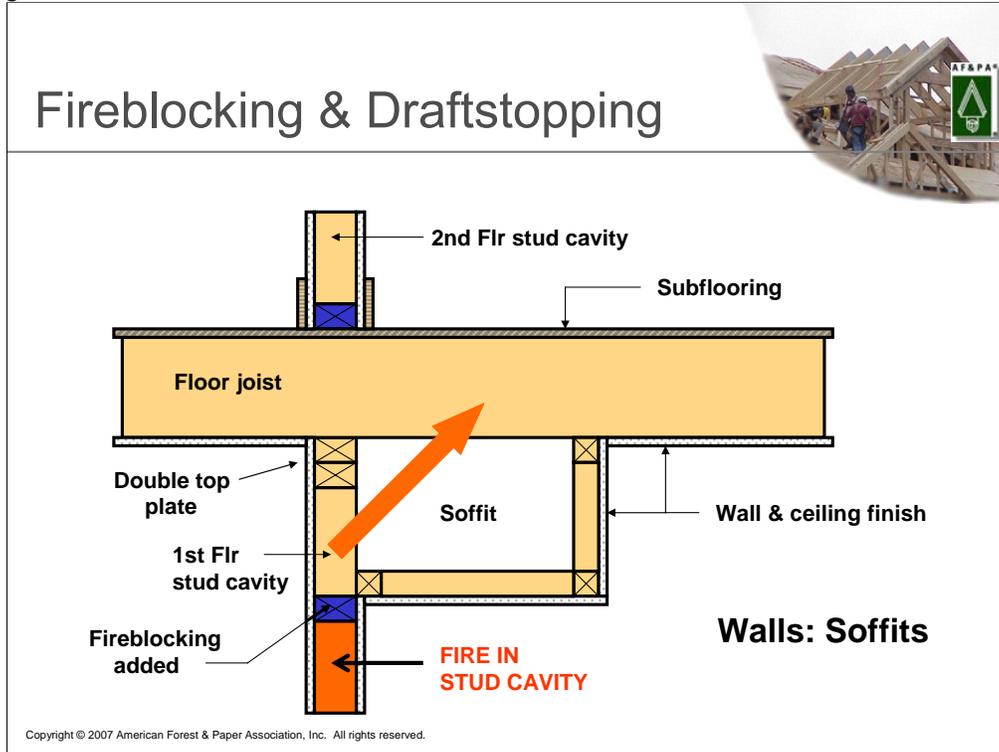
You'll notice that acceptable fireblocking materials tend to be rather substantial since they're intended to inhibit the passage of fire. As we'll see in a moment, draftstopping materials are lighter materials because they're intended to reduce the passage of smoke and gases.



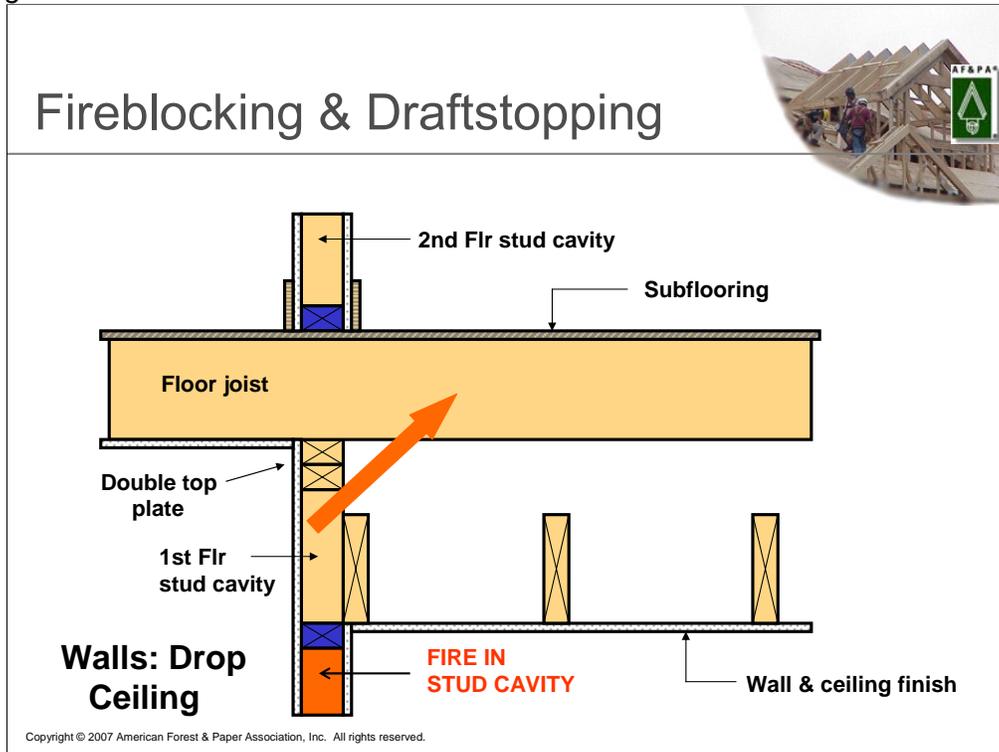
Here's the first of several admittedly simplified examples of what is intended by the code's requirements. Without the presence of the fireblocking fire in a concealed space could spread through interconnected concealed spaces as indicated by the orange arrow. Note that, as mentioned on an earlier slide, plates provide built-in fireblocking.



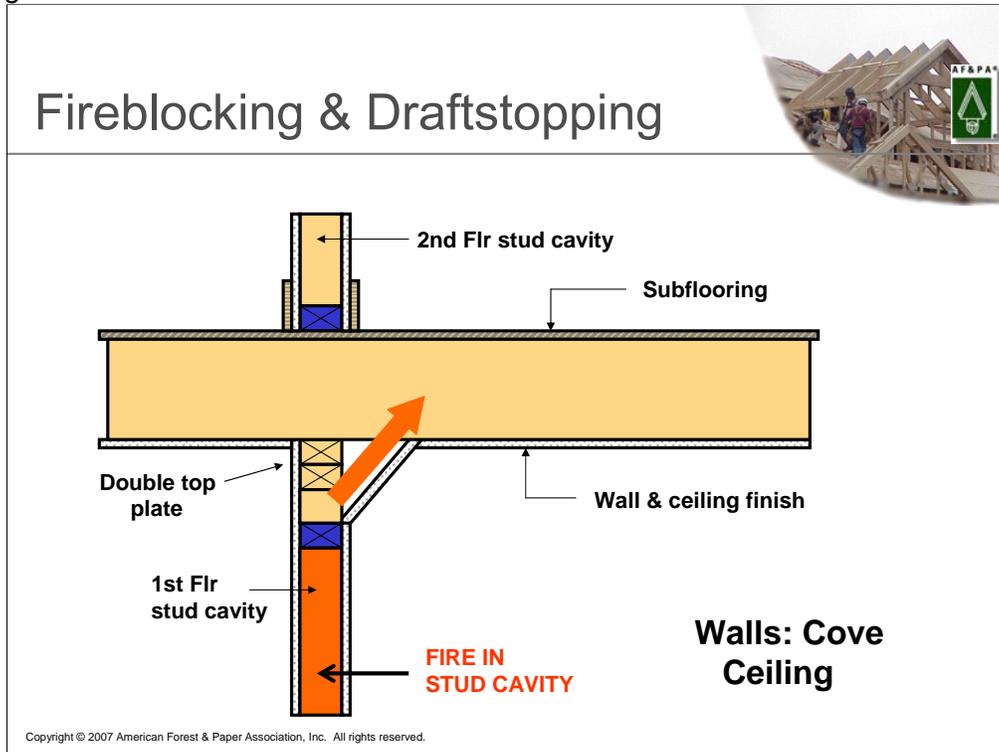
In balloon framing, or methods of framing with long studs in which the inherent protection offered by plates is missing, specific material must be added to act as fireblocking.



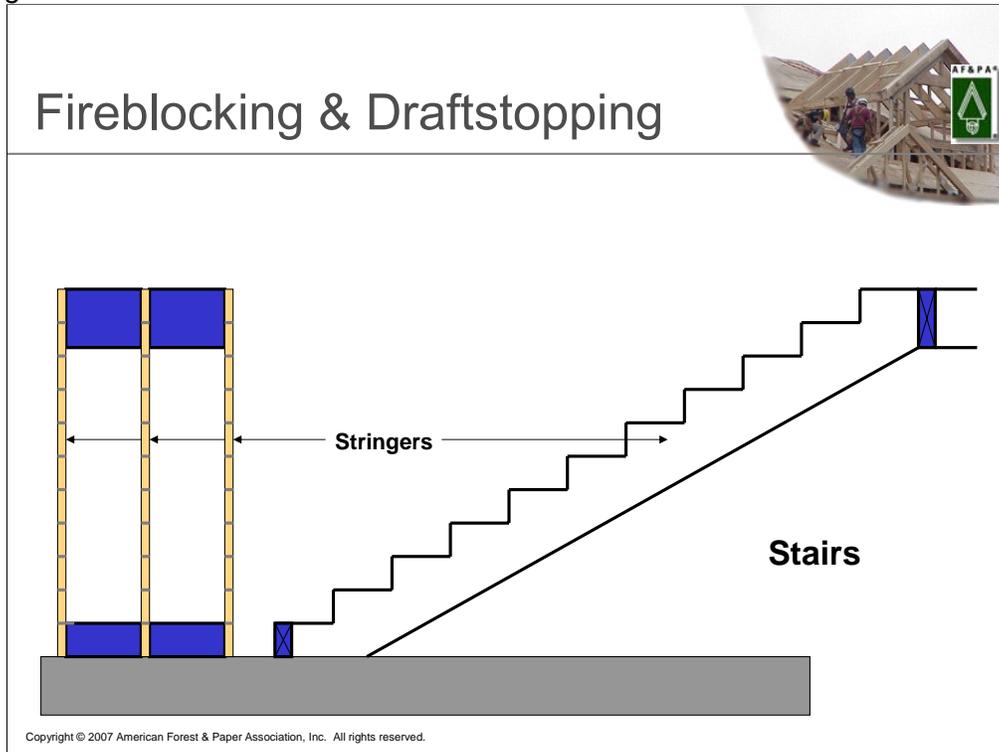
There are instances in which the plates may not provide the protection that they do otherwise. Here we see a soffit, similar to what you see above cabinets, in which the opening to the floor-ceiling assembly occurs below the top plate. In this instance, fireblocking is required as shown.



A similar situation may exist with a dropped ceiling.



And cove ceilings may provide the same problem.



Stair stringers must be fireblocked, keeping fire in the floor assemblies from getting into the space below the stairs and burning the stringers away. It also prevents fire in the stringers from getting into the floor assemblies. Some of the older codes had more extensive requirements for fireblocking stairs than does the IRC.

Fireblocking & Draftstopping

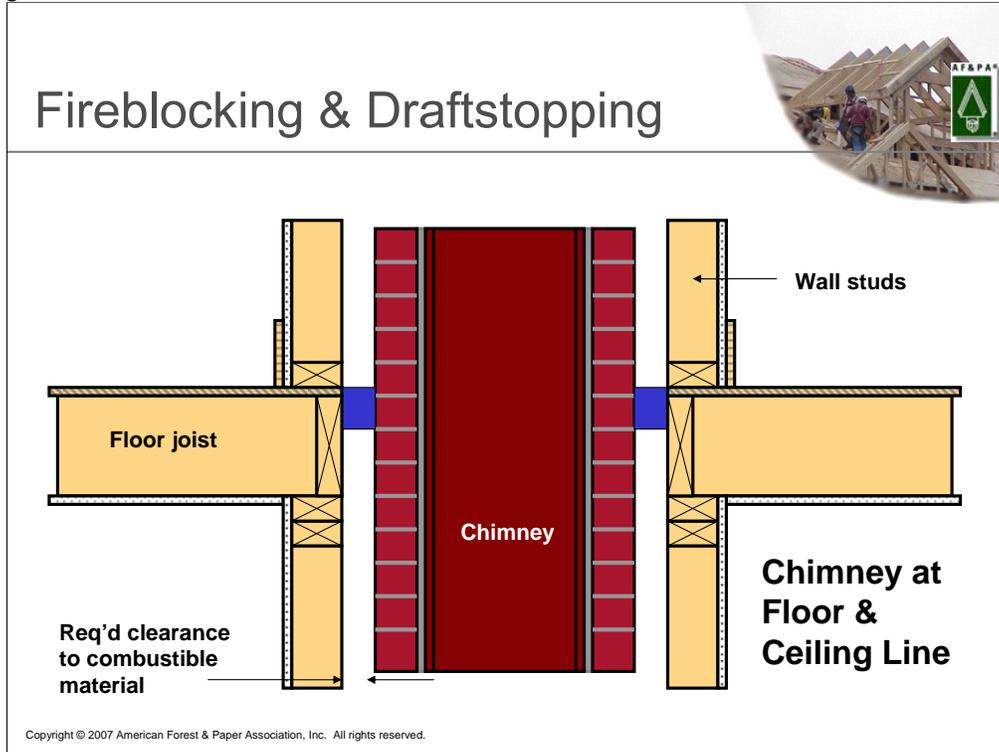


Holes in Plates



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Holes in plates must be fireblocked with approved material to “... resist the free passage of flame ...” This means that latex caulk or foam insulation, which would likely melt out rather quickly, wouldn’t be accepted.



Fireblocking of spaces where chimneys pass through floors and ceilings, must be done with noncombustible material securely fastened in place. Some details are provided in Section R1001.16.

Fireblocking & Draftstopping



DRAFTSTOPPING

- Where useable space is both above & below concealed space of floor/ceiling assemblies
- Concealed space not to exceed 1,000 sf on each side of draftstop & approximately of equal sizes

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There are some points to be made about the draftstopping requirements:

1. If there is no useable space above the assembly (an attic) or below it (a crawlspace), draftstopping isn't required.
2. If the assembly isn't concealed (an open floor/ceiling assembly above a basement), draftstopping isn't required.
3. If draftstopping is required the 1,000 sf limit applies but the divided spaces must be approximately equal. For example, in a 1,500 sf floor/ceiling assembly you can have 1,000 sf on one side of the protection and 500 sf on the other.

Fireblocking & Draftstopping

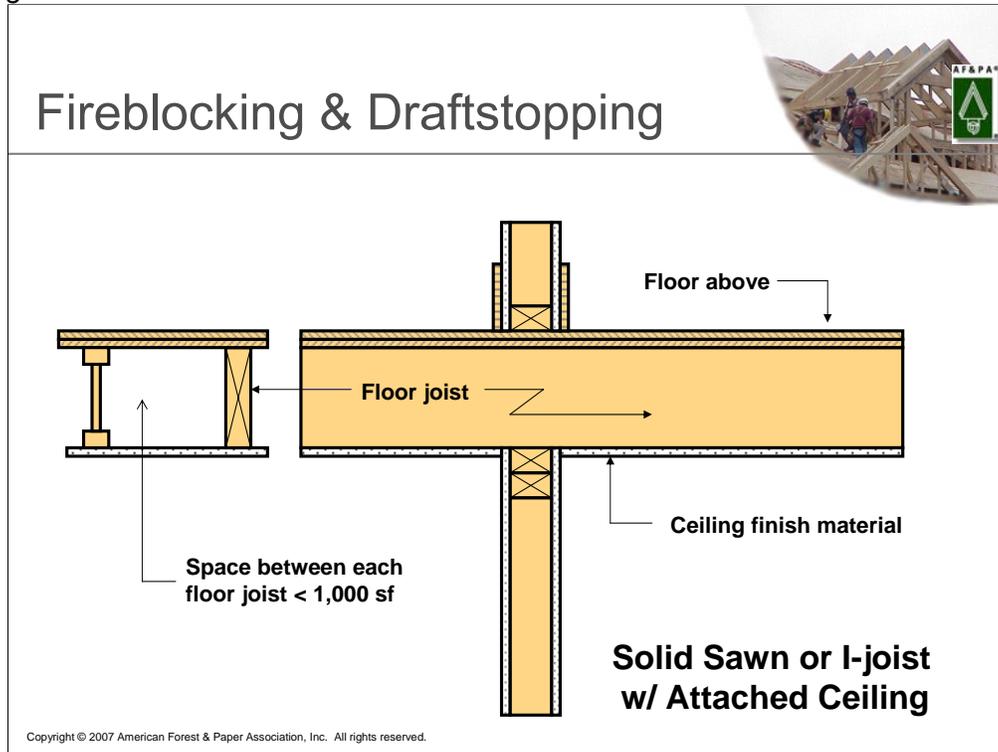


DRAFTSTOPPING

- Accepted materials
 - 1/2" gypsum board
 - 3/8" WSP
 - 3/8" Type 2-M-W particleboard
 - Other approved materials

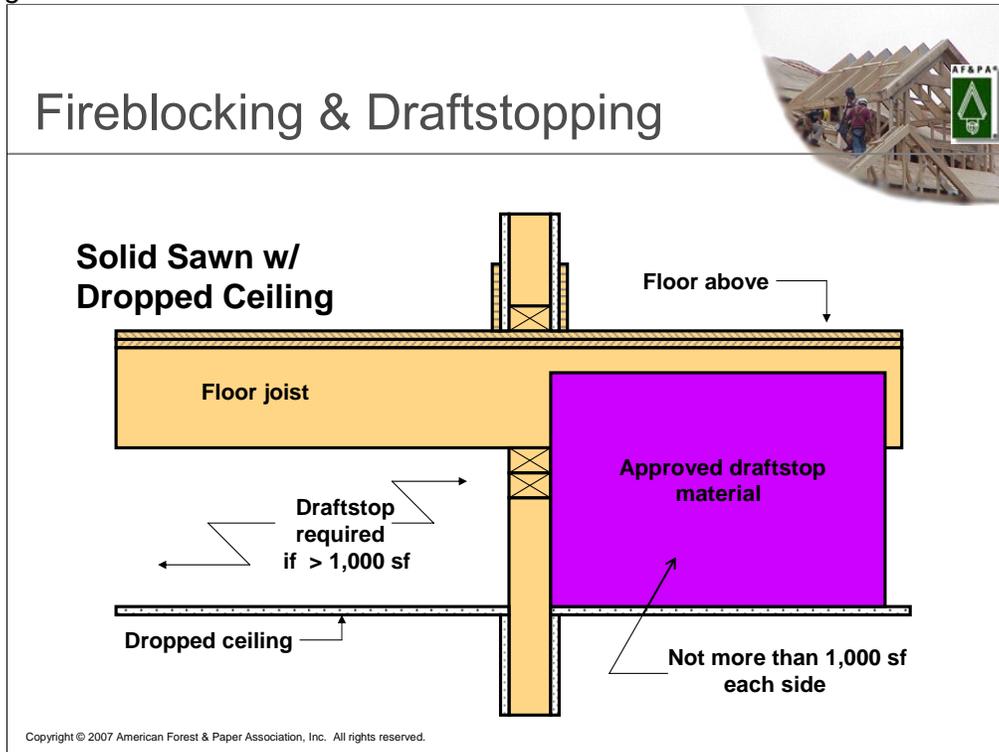
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Here you'll note that acceptable draftstopping materials are lighter materials than those required for fireblocking. However, it would seem logical that fireblocking materials could be used for draftstopping since they will resist the passage of fire.

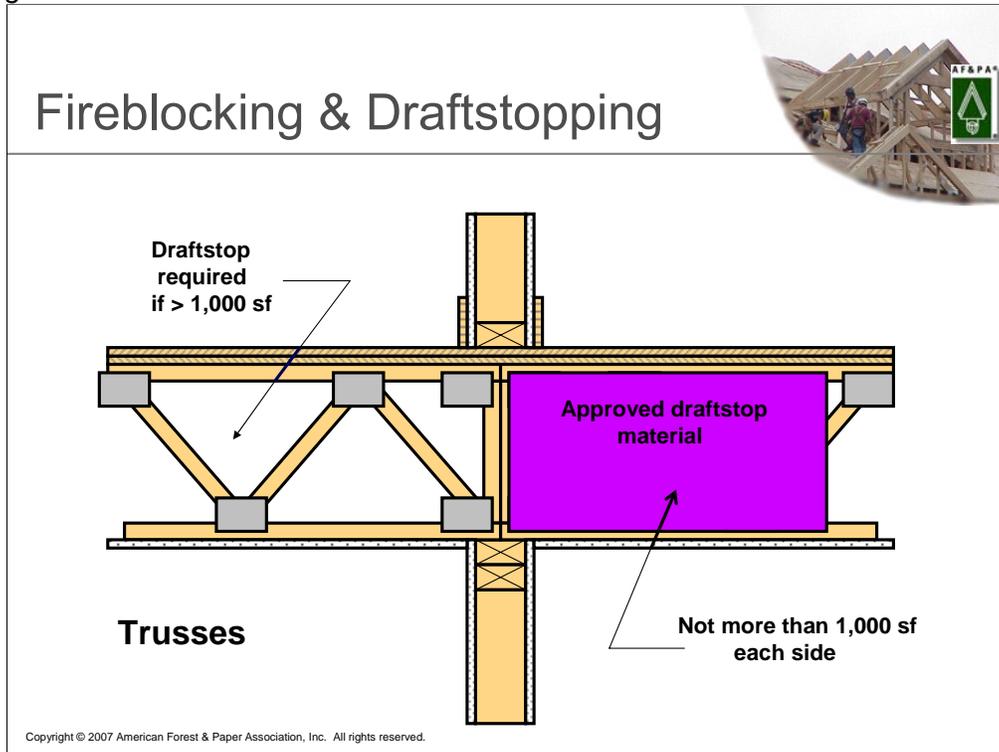


Solid sawn joists or other solid joists such as I-joists provide more than adequate draftstopping when the ceiling finish is added to the bottom of the joists. And it's very unlikely that the 1,000 sf limit would come into play here since the spans of the joists are going to be limited.

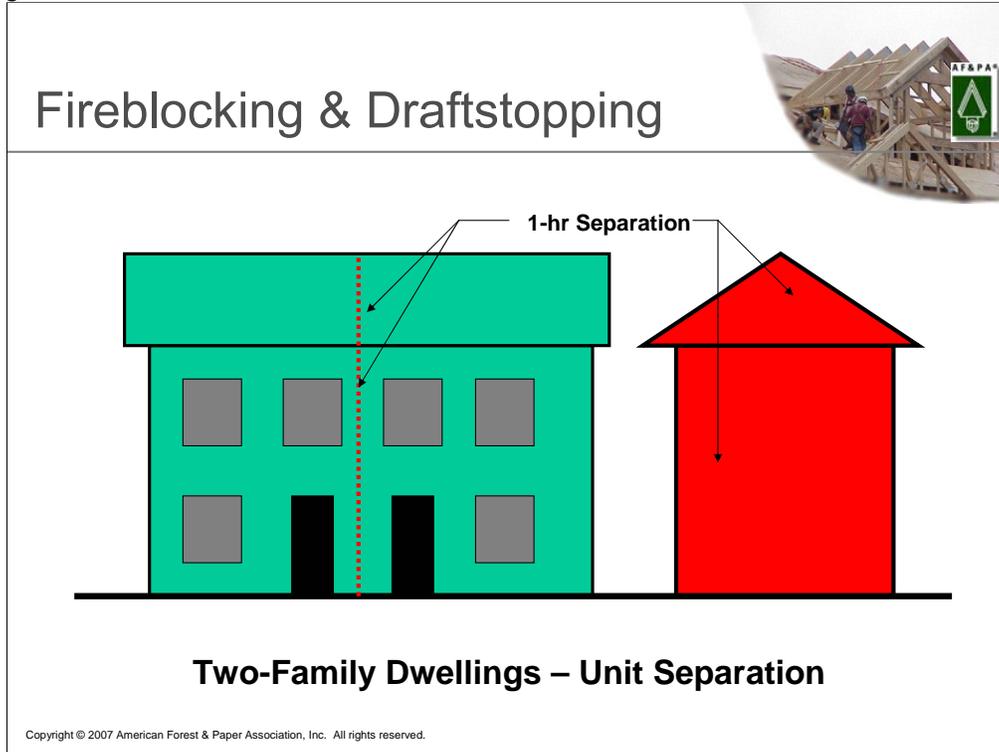
However, if the ceiling finish is added to a resilient channel for sound deadening purposes, the resulting space between the bottom of the joists and the finish material would have to be draftstopped.



Where a dropped ceiling is used, draftstop material must be suspended in some fashion to block the space between the joist and the ceiling material.

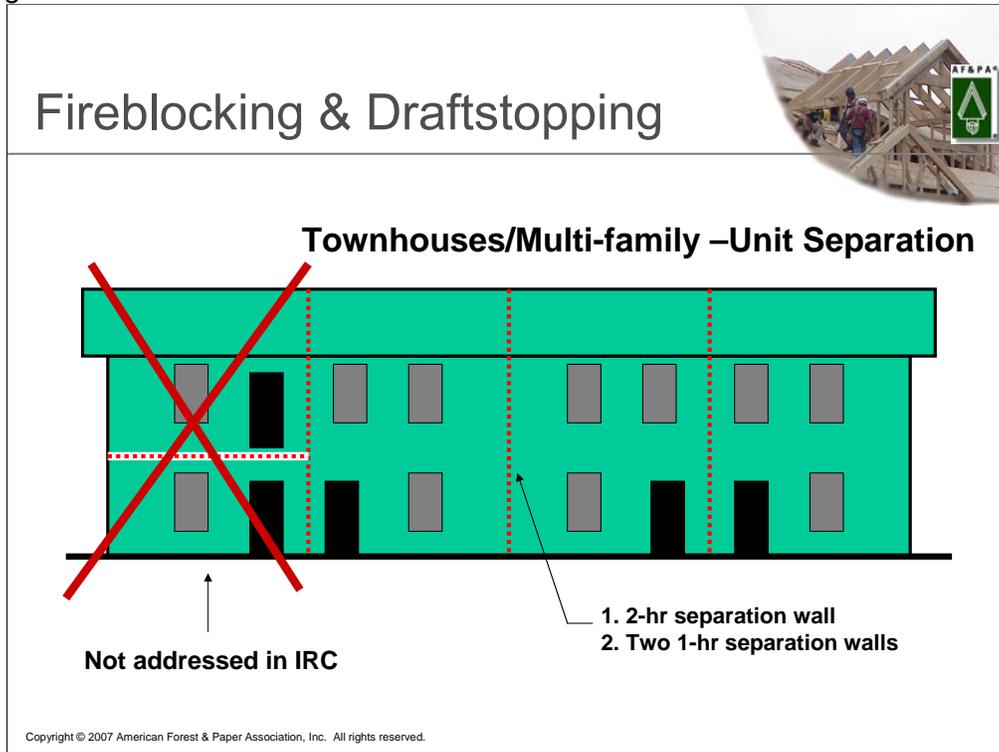


Even though the ceiling finish is added to the bottom of a truss, the inside of the truss is open to the passage of smoke and gases. For that reason the draftstop material must be added as you see here.



Finally let's talk about fire separation between units of duplexes and multi-family dwellings.

The IRC requires that a 1-hour rated assembly must extend from the foundation to the roof.



In multi-family dwellings that separation must be either a single 2-hr rated assembly or two 1-hr assemblies. The IRC is applicable to multi-family dwellings only when each unit extends from the foundation to the roof. So, the fire separation of stacked units as you see on the left isn't addressed.

Fireblocking & Draftstopping



QUESTIONS?

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