



CITY OF CHICAGO

DEPARTMENT OF BUILDINGS

Building Code Clarifications - 7. Fire Resistance

7.1 (15- 12-030) Use of combustibles in Type III construction roof assemblies

Code Section (15-12-030) “Use of Combustibles” was revised on May 17, 2000, in conjunction with other code sections to allow the use of Exterior Insulation finishing Systems (EIFS) on buildings. The intention of this revision was to allow this combustible insulation on the exterior walls of buildings of construction Types I, II & III. Previously, per Chapter 13-60, exterior walls of those construction types were required to be constructed entirely of noncombustible materials with the applicable fire ratings.

The revision of Code Section (15-12-030) was intended to require only the structural components to be noncombustible and fire rated. EIFS is not a structural component so it was not required to be noncombustible. It was not intended to change the requirements of Chapter 13-60 to now require a noncombustible roof assembly in Type III construction. Type III construction has always been allowed to have a combustible roof assembly with an applicable fire rating when required. Therefore, buildings of Type III construction are NOT required to have noncombustible roof assemblies.

7.2 (15-8-322) Wood frame balconies

An unprotected wood frame balcony shall be permitted on buildings of construction Types III and IV. They must conform to the requirements of the Section (15-8-322). The Code Section (15-8-310) shall not be applicable to building construction Types III and IV.

7.3 (15-8-210) & (15-8-220) Combustible material used to enclose heating equipment rooms in Types III & IV construction

In buildings of types III and IV construction, the use of wood is permitted for the interior framing of the walls, floors and ceilings in accordance with the Sections (13-60-060), (13-60-070) and (15-8-260)(c). Therefore, wood framing or wood studs shall be permitted for the enclosure of space heating equipment rooms located in the buildings of types III and IV construction. The hourly fire rating shall be in accordance with the Sections (15-8-210) and (15-8-220).

7.4 (15-8-520) Skylights and sloped glazing

The use of laminated glass roof panel in atria and skylights has been approved in many installations. Tempered glass has not been approved since it fragments and falls when a concentrated (impact) load is applied.

Therefore, only wire glass or laminated safety glass shall be specified for all skylights and sloped glazing applications. Tempered glass may be used in double glazed installations only with wire glass or laminated safety glass as the lower layer.

7.5 (15-8-110) Protection of openings

Building inspections have recently shown that many existing buildings do not comply with Section (15-8-110). Any building plan which is reviewed must show compliance with the Section (15-8-110).

Section (15-8-110) requires fire rated windows for buildings on interior lot lines, near fire escapes and other locations. All design professionals must be aware of situations when fire rated windows are required per Section (15-8-110).

7.6 (15-12-160) Size of fire rated windows

Sections (15-12-160) through (15-12-250) address all of the requirements needed for fire rated windows. Depending on the type of window being used, Sections (15-12-210) and (15-12-220) give the maximum size restrictions for that specific type of window.

However, Section (15-12-240)(b) also allows windows of other sizes to be used, provided that these windows meet all of the required test standards that the code requires.

Therefore, fire rated windows of any size can be used provided that the actual window being used meets all of the required test standards. These test standards are stated in Sections (15-12-170) through (15-12-200).

Without special testing, the use of fixed wire glass vision panels is permitted in one hour fire rated interior walls, provided each pane does not exceed 1,296 square inches in area having a maximum dimension of four feet, six inches and is installed in a 16 gauge steel frame. Wire glass when used for the exterior wall opening protection shall not exceed 720 square inches per piece and shall be in a 16 gauge steel frame.

7.7 (15-8-110) Fire rated windows and the Energy Code

Fire rated windows are required by code to protect openings in buildings per code section (15-8-110). These windows provide a 45 minute fire rating which includes a hose stream test. These windows can be required along interior lot lines or near fire escapes, exterior stairs and other locations. Fire rated windows protect the building's exposure from fire, and also protect the building's occupants and firefighters when using a fire escape during a fire incident.

It is agreed that, whenever the Municipal Code requires fire rated windows to be installed, this life safety requirement must be met. The new Energy Code **will not** supersede this requirement. The requirements of the energy code will need to be met in other ways.

7.8 (15-8-160) Enclosure of pipe shafts and ducts

Per Section (15-8-160), when pipes and ducts pass through floor openings less than nine square feet in area, no fire rated enclosure is required regardless of the construction type of the building. All that is required is that the openings between the floor and the pipes or ducts be filled with noncombustible materials.

On building plan reviews, only a general note stating compliance with this code section will be required. A detailed drawing is not needed, nor is it required by code. This shall be for any pipe, flue or duct passing through a floor opening which is less than nine square feet in area.

7.9 (15-8-200) Enclosure of heating plants & boilers

Section (15-8-200) clarifies when a fire rated enclosure is not required for heating plants and boilers. Steam boilers have a pressure rating exceeding 15 psi. They are not included in this section, but instead are covered under section (13-8-210). Heating plants with pressure rating less than 15 psi can be viewed as forced air furnaces.

The enclosure of furnaces or boilers shall not be required for one story business, mercantile, industrial or storage **units** having a floor area not exceeding 3000 sq. ft. This section refers to the size of the **unit or tenant space** and not to the building size. Therefore, a storage occupancy that only occupies any one story of a building (this could be a multi-story building) and with a tenant area not exceeding a 3000 sq. ft. is not required to have a fire rated enclosure around its furnace. This shall be the same for a business, mercantile, or industrial occupancy that meets this unit size requirement.

7.10 (15-8-180) Stairwell enclosure - Nonessential openings

Code Section (15-8-180) does not prohibit the penetration of electrical conduit into the stair enclosure. These conduits can be used to power the lighting within the stairwell or the building fire alarm system. The conduits that penetrate the stair enclosure shall be fire stopped properly with a non-combustible material.

However, the HVAC air ducts are not permitted to cut through a stairwell enclosure, with or without duct openings within the stairwell.

7.11 (15-8-140) Convenient stairway enclosures

The following stairway enclosure requirements apply to the convenient stairways that serve the floor levels that are occupied by one tenant or the floor levels served are under control of one management or ownership:

One-hour enclosure is required for the stairways that serve any two or three floors of a building and two hour enclosure is required when four or more levels are served. The one hour stairway enclosure walls can have fixed wired glass vision panels, provided each light does not exceed 1,296 square inches in area having a maximum dimension of four feet, six inches and is installed in a 16 gauge steel frame. One and two hours fixed ceramic glass is also permitted in one and two hours stairway enclosures. The dimensions allowed are strictly by manufactures specifications.

When serving only two floors, a complete stairway enclosure is required only on one level, upper or lower, with one-hour walls and 1½ hour self-closing 'B' label door. A note is required on the plans that the stair door is not permitted to be held open. Enclosure on both levels is required when stair doors are held open by magnetic door hold open devices and smoke detectors are installed in accordance with the Section (15-8-180)(c).

Except in Residential and Institutional occupancies, the enclosure of a stairway serving only the second floor from the ground floor is not required in buildings of Fire Resistive Construction (Type 1 construction).

Compliance with the High Rise Chapter 13-76 and installation of atrium smoke control system is required if stairway enclosure is not provided for non-required stairways.

7.12 (15-8-140)(b) Convenient stairways - No enclosure required

Stairway enclosure shall not be required for the stairway serving any two floors in buildings of Type I-A, I-B, and I-C construction with the following conditions:

1. The entire building is protected by an automatic sprinkler system.
2. The open stairway is not used as a required exit, except where permitted by the Section (15-8-140)(b)&(c).
3. The occupancy of the floors served by the open stairway is not Hazardous Use, Multiple Dwellings, or Institutional Use.
4. All shafts within 100 feet horizontal distance from the unenclosed stairway opening, on both levels, have minimum one (1) hour enclosure, except the shafts for pipes and ducts passing from one floor to the other as per section (15-8-160).

This ruling is based on the fact that Section (15-8-140)(b) allows stairway between two floors, between the ground floor and the second floor, without any enclosure, and with the life safety features and restrictions in place, it can be any two floors of the building.

7.13 (15-8-323) Weather protected entries

As of this date, small entry porches (weather protected entries) on single family homes are not required to comply with the porch standards and/or are not required to apply for a building permit for repair or replacement. The entry porches governed by this memorandum must be less than 50 square feet in area, excluding the steps, and a

maximum of six feet above ground level for the floor of the porch. The entry porch may be covered (weather protected entry - code section (15-8-323)) or uncovered (stoop).

7.14 (15-8-320) Clarifications concerning combustible porch materials

Code section 15-8-320 requires that new construction porches of combustible construction be located six feet (6'-0") from an interior lot line. In addition, exception 2 of this section allows combustible residential front porches not exceeding 200 square feet in area and one story in height to be located within three feet of the interior lot line. The department has received many inquiries asking if the use of new synthetic wood products, fire-retardant treated wood or the use of a hybrid porch construction using non-combustible metal columns and beams with an infill of wood joists and / or wood decking qualify the porch as non-combustible construction.

Section 15-12-040(a) defines a combustible material as a material which will ignite when heated to a temperature of 1200 degrees Fahrenheit or less. At this time, The Department is not aware of a synthetic or recycled wood or plastic material used as decking or structure which meets this temperature criterion for non-combustible construction. Therefore porches with synthetic plastic or wood decking or other members would be classified as combustible construction.

Based on the same criterion, the Department of Buildings and the Chicago Fire Department do not recognize fire-retardant treated wood as non-combustible. While fire-retardant treating may temporarily delay the onset of combustion, it does not render a wood product as permanently non-combustible. Furthermore, both departments note that fire-retardant treated wood used in exterior applications will more quickly lose its chemical properties of fire-retardant treatment owing to exposure to weather and U.V. degradation. Therefore, porches using exterior fire-retarded treated wood are classified as combustible porches.

Finally, porches using a combination of non-combustible and combustible elements such as steel perimeter beams and columns with an infill of wood joists and / or wood decking do not meet the requirements of code section 13-60-030 (Type II Non-Combustible Construction) which states that "Non-combustible construction shall be that construction in which all structural elements are of non-combustible materials." Therefore, only if a porch is constructed with all non-combustible structural elements (foundations, columns, beams, joists, decking, stringers, treads, risers, guardrails, handrails, rafters and roof decking) is it considered to be non-combustible..

7.15 (15-8-322) Clarification of the definition of 'balcony'

A balcony is defined as 'an open unheated floor cantilevered from or supported by a building, and open to the atmosphere on at least one side'. To clarify when the requirements for a balcony are applicable versus the requirements for a 'deck' or a 'porch', a balcony is further defined as being attached directly to the side of a building

and supported either by the building or by the ground. A balcony located above the roof of a building can not be supported by the roof of a building. Such an open unheated floor shall be defined as a deck.

Additionally, a balcony can not contain a means of exiting from the balcony other than through the building to which it is attached. If one is able to exit directly to the outside and away from the building, then this space is no longer a balcony and must meet the requirements of either a 'deck' or a 'porch' as applicable.

7.16 (15-8-150) Clarification of elevator enclosures

This code section requires two-hour fire rated enclosures for elevator shafts and dumbwaiters. Within a single family residence no fire separations are required within the residence. Therefore, any elevator or dumbwaiter serving a single family residence or a single dwelling unit and contained exclusively within that unit is not required to have a fire rated enclosure. An elevator or dumbwaiter serving more than one dwelling unit or serving one dwelling unit and any other occupancy is required to meet the requirements of section 15-8-150.