CHAPTER 7
FIRE-RESISTANCE-RATED CONSTRUCTION

TABLE 715.5
FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

TYPE OF ASSEMBLY	REQUIRED ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)
Interior walls:		
Fire walls	All	NP[a]
Fire barriers	>1	NP[a]
	1	3/4
Smoke barriers and fire partitions	1	3/4

(Add blank rows between fire walls, fire barrier and smoke barrier to align requirements, Remainder of table unchanged, posted 12-17-07)

TABLE 720.1(2)
RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS

Item 14 – 14-1.5 Construction column
2" x 4" wood studs ~~1~~" 16" on center with two layers 5/8" Type X gypsum wallboard[e] each side. Base layers applied vertically and nailed with 6d cooler[n] or wallboard[n] nails at 9" on center. Face layer applied vertically or horizontally and nailed with 8d cooler[n] or wallboard[n] nails at 7" on center. For nail-adhesive application, base layers are nailed 6" on center. Face layers applied with coating of approved wallboard adhesive and nailed 12" on center. *(Remainder of table unchanged, posted 12-17-07)*

TABLE 720.1(3)
MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS

Item 21-1.1 Floor or Roof Construction column
21. Wood joists, floor trusses and flat or pitched roof trusses spaced a maximum 24" o.c. with ½" wood structural panels with exterior glue applied at right angles to top of joist or top chord of trusses with 8d nails. The wood structural panel thickness shall not be less than nominal ½" nor less than required by Chapter 23. *(posted 12-17-07)*

Item 22-1.1 Floor or Roof Construction column
22.Wood joists, wood I-joists, floor trusses and flat or pitched roof trusses spaced a maximum 24" o.c. with ½" wood structural panels with exterior glue applied at right angles to top of joist or top chord of trusses with 8d nails. The wood structural panel thickness shall not be less than nominal ½" nor less than required by Chapter 23. *(posted 12-17-07)*

SECOND PRINTING (Updated January 31, 2007)

CHAPTER 7
FIRE-RESISTANCE-RATED CONSTRUCTION

716.5 Where required. Fire dampers, smoke dampers, combination fire/smoke dampers and ceiling radiation dampers shall be provided at the locations prescribed in Sections 716.5.1 through 716.5.5 and Section 716.6. Where an assembly is required to have both fire dampers and smoke dampers, combination fire/smoke dampers or a fire damper and a smoke damper shall be required. *(posted 1-31-07)*

721.2.3.3.1 Calculating concrete cover. The concrete cover for an individual tendon is the minimum thickness of concrete between the surface of the tendon and the fire-exposed surface of the beam, except that for ~~ungrouped~~ ungrouted ducts, the assumed cover thickness is the minimum thickness of concrete between the surface of the duct and the fire-exposed surface of the beam. For beams in which two or more tendons are used, the cover is assumed to be the average of the minimum cover of the individual tendons. For corner tendons (tendons equal distance from the bottom and side), the minimum cover used in the calculation shall be one-half the actual value. For stemmed members with two or more prestressing tendons located along the vertical centerline of the stem, the average cover shall be the distance from the bottom of the member to the centroid of the tendons. The actual cover for any individual tendon shall not be less than one-half the smaller value shown in Tables 721.2.3(4) and 721.2.3(5), or 1 inch (25 mm), whichever is greater. *(posted 1-31-07)*

CHAPTER 7
FIRE-RESISTANCE-RATED CONSTRUCTION

702.1 Definitions. …

FIRE SEPARATION DISTANCE. The distance measured from the building face to one of the following:
1. The closest interior lot line;
2. To the centerline of a street, an alley or public way; or
3. To an imaginary line between two buildings on the property.

The distance shall be measured at right angles from the face of the wall. *(posted 7-1-06)*

TABLE 704.8
MAXIMUM AREA OF EXTERIOR WALL OPENINGS
(Delete four references to note b in the table, remainder of table unchanged, posted 7-1-06)
a. *(No change)*
b. ~~See Section 704.7 for unexposed surface temperature.~~ Not used. *(posted 7-1-06)*
c. through j. *(No change)*

706.3.7 Control areas. Fire barriers separating control areas shall have a fire-resistance rating of not less than that required in Section ~~414.2.3~~ 414.2.4. *(posted 7-1-06)*

706.3.8 Separation of mixed occupancies. Where the provisions of Section ~~508.3.2~~ 508.3.3 are applicable, the fire barrier separating mixed occupancies shall have a fire-resistance rating of not less than that indicated in Section ~~508.3.2~~ 508.3.3 based on the occupancies being separated. *(posted 7-1-06)*

706.4 Exterior walls. Where exterior walls serve as a part of a required fire-resistance-rated shaft or exit enclosure~~,~~ or separation such walls shall comply with the requirements of Section 704 for exterior walls and the fire-resistance-rated enclosure or separation requirements shall not apply.

Exception: ~~Exterior walls required to be fire-resistance rated in accordance with Section 1023.6.~~ Exterior walls required to be fire-resistance rated in accordance with Section 1014.5.1 for exterior egress balconies, Section 1020.1.4 for exit enclosures and Section 1023.6 for exterior exit ramps and stairways. *(posted 7-1-06)*

~~**706.6 Exterior walls.** Where exterior walls serve as a part of a required fire-resistance-rated enclosure or separation, such walls shall comply with the requirements of Section 704 for exterior walls, and the fire-resistance-rated enclosure or separation requirements shall not apply.~~

~~**Exception:** Exterior walls required to be fire-resistance rated in accordance with Section 1014.5.1 for exterior egress balconies, Section 1020.1.4 for exit enclosures and Section 1023.6 for exterior exit ramps and stairways.~~ *(Duplicate of Section 706.4, posted 7-1-06)*

Renumber Sections 706.7 through 706.10 due to deletion of 706.6. (posted 7-1-06)

707.7 Openings. Openings in a shaft enclosure shall be protected in accordance with Section 715 as required for fire barriers. Doors shall be self- or automatic closing by smoke detection in accordance with Section 715.4.7.3 ~~715.3.7.3.~~ *(posted 7-1-06)*

711.3 Fire-resistance rating. … Where the floor assembly separates mixed occupancies, the assembly shall have a fire-resistance rating of not less than that required by Section ~~508.3.2~~ 508.3.3 based on the occupancies being separated. …..*(posted 7-1-06)*

712.4.1 Fire-resistance rated assemblies. Penetrations of the fire-resistance rated floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall comply with Sections 712.4.1.1 through ~~714.4.1.5~~ 712.4.1.4. *(posted 7-1-06)*

712.4.1.2 Membrane penetrations. *(No change)*

Exceptions:

1. Membrane penetrations ~~of maximum 2-hour fire-resistance-rated walls and partitions~~ by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or masonry items where the annular space is protected either in accordance with Section 712.4.1.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm2) in any 100 square feet ($9.3m^2$) of ceiling area in assemblies tested without penetrations. *(posted 7-1-06)*

2. through 4. *(No change)*

~~**712.4.1.5 Floor fire doors.** Floor fire doors used to protect openings in fire-resistance-rated floors shall be tested in accordance with NFPA 288, and shall achieve a fire resistance rating not less than the assembly being penetrated. Floor fire doors shall be labeled by an approved agency.~~ *(Duplicate of Section 711.8, posted 7-1-06)*

~~**712.4.3 Ducts and air transfer openings.** Penetrations of horizontal assemblies by ducts that are not protected with dampers shall comply with Section 712.2 and Sections 712.4 through 712.4.2.2. Ducts and air transfer openings that are protected with dampers shall comply with Section 716.~~ *(Duplicate of Section 712.4.1.3, posted 7-1-06)*

~~**712.4.4 Dissimilar materials.** Noncombustible penetrating items shall not connect to combustible materials beyond the point of firestopping unless it can be demonstrated that the fire-resistance integrity of the horizontal assembly is maintained.~~ *(Duplicate of Section 712.4.1.4, posted 7-1-06)*

TABLE 715.4
FIRE DOOR AND FIRE SHUTTER FIRE PROTECTION RATINGS

(No change to table)

a. (No change)

b. For testing requirements, see Section ~~715.3.3~~ 715.4.3. *(posted 7-1-06)*

TABLE 715.5
FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

TYPE OF ASSEMBLY	REQUIRED ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)
Interior walls:		
Fire walls	All	NP[a]
Fire barriers	>1	NP[a]
	1	3/4
Smoke barriers and fire partitions	1	3/4

(Add space in first column between fire barrier and smoke barrier to align requirements, Remainder of table unchanged, posted 7-1-06)

TABLE 720.1(2)
RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS

Item 15 – 15-1.16, Construction column

~~2″ × 4″ wood studs at 16″ with double top plates, single bottom plate; interior sides covered with 5/8″ Type X gypsum wallboard, 4′ wide, applied horizontally unblocked, and fastened with 21/4″ Type S drywall screws, spaced 12″ on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound. Exterior covered with 3/8″ wood structural panels applied vertically, horizontal joints blocked and fastened with 6d common nails (bright)—12″ on center in the field, 6″ on center panel edges. Cavity to be filled with 31/2″ mineral wool insulation. Rating established~~

2” x 6” wood studs at 24” centers with double top plates, single bottom plate; interior and exterior side covered with two layers of 5/8” Type X gypsum wallboard, 4’ wide, applied horizontally with vertical joints over studs. Base layer fastened with 2-1/4” Type S drywall screws, spaced 8” on center, wallboard joints covered with paper tape and joint compound, fastened heads covered with joint compound. Cavity to be filled with 5-1/2” mineral wool insulation. *(posted 7-1-06)*

Item 16 – 16-1.3, Construction column
2″ x 6″wood studs at 16″centers with double top plates, single bottom plates; interior side covered with 5/8″Type X gypsum wallboard, 4″ 4' wide, applied vertically with all joints over framing or blocking and fastened with 21/4″Type S drywall screws spaced 7″ on center. Joints to be covered with tape and joint compound. Exterior covered with 3/8″wood structural panels (oriented strand board), applied vertically with edges over framing or blocking and fastened with 6d common nails (bright) at 12″on center in the field and 6″on center on panel edges. R-19 fiberglass insulation installed in stud cavity. *(change 4 inches to 4 feet, posted 7-1-06)*

TABLE 720.1(3)
MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS
(First Column)
21. Wood joists, wood I-joist, floor trusses and flat or pitched roof trusses spaced a maximum 24"o.c. with 1/2"wood structural panels with exterior glue applied at right angles to top of joist or top chord of trusses with 8d nails. The wood structural panel thickness shall not be less than nominal 1/2"less than required by Chapter 23. *(posted 7-1-06)*

22. Steel ~~Wood~~ joists, ~~wood I-joists,~~ floor trusses and flat or pitched roof trusses spaced a maximum 24"o.c. with 1/2"wood structural panels with exterior glue applied at right angles to top of joist or top chord of trusses with ~~8d nails~~ No. 8 screws. The wood structural panel thickness shall not be less than nominal ½" less than required by Chapter 23. *(posted 7-1-06)*

23. Wood I-joist (minimum joist depth 9-1/4" with a minimum flange depth of 1-5/16" and a minimum flange cross-sectional area of 2.3 square inches) at 24"o.c. spacing with 1x4 (nominal) wood furring strip spacer applied parallel to and covering the bottom of the bottom flange of each member, tacked in place. 2"mineral wool ~~fiber~~ insulation, 3.5 pcf (nominal) installed adjacent to the bottom flange of the I-joist and supported by the 1x4 furring strip spacer. *(posted 7-1-06)*

TABLE 720.1(3)
MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS
Delete Item 24 (posted 7-1-06)

TABLE 720.1(3)
MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS
(Correction for heading over items 28, 29 and 30)

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF CONSTRUCTION (inches)				MINIUM THICKNESS OF CEILING (inches)			
			~~1~~ 4 hour	~~1~~ 3 hour	~~1~~ 2 hour	1 hour	~~1~~ 4 hour	~~1~~ 3 hour	~~1~~ 2 hour	1 hour

(posted 7-1-06)