

# Construction Types - Definitions

## Type I: Fire-Resistive

- Walls, partitions, columns, floors and roofs are noncombustible.
- Designed to withstand the effects of fire for a limited time and prevent fire spread.
- Made of poured concrete and steel.
- Steel members must have a fire protective coating.

Type 1 structures are high-rises; defined as buildings more than 75 feet tall, with some agencies making amendments for buildings that are 35–55 feet tall. Type 1 structures are constructed of concrete and protected steel (steel coated with a fire-resistant material, most often a concrete mixture), and are designed to hold fire for an extended amount of time in order to keep the fire at bay in the room and/or floor of origin.

### **TYPE I-A--Fire Resistive Non-combustible**

(Commonly found in high-rise buildings and Group I occupancies).

- 3 Hr. Exterior Walls\*
- 3 Hr. Structural Frame
- 2 Hr. Floor/Ceiling Assembly
- 1 ½ Hr. Roof Protection

### **TYPE I-B--Fire Resistive Non-Combustible**

(Commonly found in mid-rise office & Group R buildings). 2 Hr. Exterior Walls\*

- 2 Hr. Structural Frame
- 2 Hr. Ceiling/Floor Separation
- 1 Hr. Ceiling/Roof Assembly

## Type II: Non-Combustible

- Walls, partitions, columns, floors and roofs are noncombustible but provide less fire resistance.
- Does not withstand the effects of fire or fire spread.
- "Noncombustible" refers to the fuel the building contributes, not its resistance to spread of fire.
- Typically exposed metal floor and roof system and metal or masonry walls.
- Least stable in terms of collapse, when exposed to fire.

Type II construction is typically found in new buildings and remodels of commercial structures. The walls and roofs are constructed of non-combustible materials.

### **TYPE II-A--Protected Non-Combustible**

(Commonly found in newer school buildings).

- 1 Hr. Exterior Walls
- 1 Hr. Structural Frame
- 1 Hr. Floor/Ceiling/Roof Protection

### **TYPE II-B--Unprotected Non-Combustible**

(Most common type of non-combustible construction used in commercial buildings).

Building constructed of non-combustible materials but these materials have no fire resistance.

## **Type III: Ordinary**

- Walls of masonry or other noncombustible walls with a 2 hour fire rating.
- Floors, roofs and interior partitions are of wood.

Type II buildings can have non-combustible walls and a wood roof support structure.

### **TYPE III-A--Protected Combustible**

(Also known as "ordinary" construction with brick or block walls and a wooden roof or floor assembly which is 1 hour fire protected).

- 2 Hr. Exterior Walls\*
- 1 Hr. Structural Frame
- 1 Hr. Floor/Ceiling/Roof Protection

### **TYPE III-B--Unprotected Combustible**

(Also known as "ordinary" construction; has brick or block walls with a wooden roof or floor assembly which is not protected against fire.

- 2 Hr. Exterior Walls\*
- No fire resistance for structural frame, floors, ceilings, or roofs.

## **Type IV: Heavy Timber**

(also known as "mill" construction; to qualify all wooden members must have a minimum nominal dimension of 8 inches.)

Type IV construction utilizes large dimensional lumber for structural members and interior elements.

- Walls of masonry or other noncombustible walls with a 2 hour fire rating.
- Interior columns, beams and girders are heavy timber (minimum 8x8).
- Floors and roofs are heavy planks (3x6 minimum).
- Extremely heavy fire load yet resistant to ignition and collapse due to mass of structural members.
- Usually lacks hidden voids.
- Once ignited, it requires large volumes of water to extinguish.

### **TYPE IV--Heavy Timber**

- 2 Hr. Exterior Walls\*
- 1 Hr. Structural Frame or Heavy Timber Heavy Timber Floor/Ceiling/Roof Assemblies

## **Type V: Wood-Framed**

- Walls, floors, and roofs that are made wholly or in part of wood.
- Type 5 construction is found in many modern homes. The walls and roofs are made of combustible materials—most commonly wood.

### **TYPE V-A--Protected Wood Frame**

(Commonly used in the construction of newer apartment buildings; there is no exposed wood visible.)

- 1 Hr. Exterior Walls
- 1 Hr. Structural Frame
- 1 Hr. Floor/Ceiling/Roof

### **TYPE V-B--Unprotected Wood Frame**

(Examples of Type V-N construction are single family homes and garages. They often have exposed wood so there is no fire resistance.)

- Note exceptions in the building code for fire resistance ratings of exterior walls and opening protection.

Table 4.1.1 Fire Resistance Ratings for Type I through Type V Construction (hr)

	Type I		Type II			Type III		Type IV	Type V	
	442	332	222	111	000	211	200	2HH	111	000
<b>Exterior Bearing Walls</b> <sup>a</sup>										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0 <sup>b</sup>	2	2	2	1	0 <sup>b</sup>
Supporting one floor only	4	3	2	1	0 <sup>b</sup>	2	2	2	1	0 <sup>b</sup>
Supporting a roof only	4	3	1	1	0 <sup>b</sup>	2	2	2	1	0 <sup>b</sup>
<b>Interior Bearing Walls</b>										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0	1	0	2	1	0
Supporting one floor only	3	2	2	1	0	1	0	1	1	0
Supporting roofs only	3	2	1	1	0	1	0	1	1	0
<b>Columns</b>										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0	1	0	H	1	0
Supporting one floor only	3	2	2	1	0	1	0	H	1	0
Supporting roofs only	3	2	1	1	0	1	0	H	1	0
<b>Beams, Girders, Trusses, and Arches</b>										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0	1	0	H	1	0
Supporting one floor only	2	2	2	1	0	1	0	H	1	0
Supporting roofs only	2	2	1	1	0	1	0	H	1	0
<b>Floor-Ceiling Assemblies</b>	2	2	2	1	0	1	0	H	1	0
<b>Roof-Ceiling Assemblies</b>	2	1½	1	1	0	1	0	H	1	0
<b>Interior Nonbearing Walls</b>	0	0	0	0	0	0	0	0	0	0
<b>Exterior Nonbearing Walls</b> <sup>c</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>

H: heavy timber members (see text for requirements).

<sup>a</sup>See NFPA 5000, 7.3.2.1.

<sup>b</sup>See NFPA 5000, Section 7.3.

<sup>c</sup>See 4.3.2.12, 4.4.2.3, and 4.5.6.8.

[5000: Table 7.2.1.1]