CHAPTER 6
CONSTRUCTION TYPES

SECTION 601
GENERAL

601.1 Scope. Provisions of this chapter shall govern the classification of construction type by materials and fire resistance of its elements and the use of more than one construction type in a building.

601.2 Classification by type of construction

601.2.1 Every building shall be classified by the building official into one of the types of construction as set forth in this section.

<table>
<thead>
<tr>
<th>Type I</th>
<th>Type II</th>
<th>Type III</th>
<th>Type IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type V</td>
<td>1-Hour Protected</td>
<td>Unprotected</td>
<td>Type VI</td>
</tr>
<tr>
<td>1-Hour Protected</td>
<td>Unprotected</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

601.2.2 Materials for any one of the six types of construction may be used as specified in Table 600, or as permitted in this chapter.

601.3 Fire resistance requirements

601.3.1 All fire resistance requirements are expressed in terms of the number of hours of satisfactory performance in accordance with ASTM E 119.

601.3.2 Construction required to have a fire resistance rating shall be supported by construction of equal or greater fire resistance.

Exception: In Types IV Unprotected, V Unprotected and VI Unprotected construction, structural elements supporting exit access corridor walls and tenant separation walls of not more than one (1) hour fire resistance need not be rated provided a fire resistance rating is not required by other provisions of this code.

601.4 Materials and construction approved for fire resistance

601.4.1 The degree of fire resistance and the materials, assemblies and constructions providing such resistance shall be defined in Chapter 7 of this code, except that other materials, assemblies and constructions shall be approved, provided test data of a recognized engineering or testing laboratory are submitted, establishing that they develop the required fire resistance rating under tests made in accordance with ASTM E 119 or based on calculations and accepted engineering practice as set forth in 709.

601.4.2 Where structural requirements necessitate assemblies providing greater fire resistance than specified in this chapter, such structural requirements shall govern.

SECTION 602
DEFINITIONS

For definitions, see Chapter 2.

SECTION 603
TYPE I CONSTRUCTION

Type I is construction in which the structural members including exterior walls, interior bearing walls, columns, beams, girders, trusses, arches, floors, and roofs are of non-combustible materials and are protected so as to have fire resistance not less than that specified for the structural elements as specified in Table 600. For interior nonbearing partition requirements, see 704.2. For provisions governing combustibles in concealed spaces, see 707.

SECTION 604
TYPE II CONSTRUCTION

Type II is construction in which the structural members including exterior walls, interior bearing walls, columns, beams, girders, trusses, arches, floors and roofs are of non-combustible materials and are protected so as to have fire resistance not less than that specified for the structural elements as specified in Table 600. For interior nonbearing partition requirements, see 704.2. For provisions governing combustibles in concealed spaces, see 707.

SECTION 605
TYPE III CONSTRUCTION

605.1 General. Type III is construction in which fire resistance is attained by the sizes of heavy timber members (sawn or glued laminated) being not less than indicated in this section, or by providing fire resistance not less than one (1) hour where materials other than wood of heavy timber sizes are used; by the avoidance of concealed spaces under floors and roofs; by the use of approved fastenings, construction details and adhesives for structural members; and by providing the required degree of fire resistance in exterior and interior walls.

605.2 Columns

605.2.1 Wood columns may be sawn or glued laminated and shall be not less than eight (8) inches nominal in any dimension when supporting floor loads, and not less than six (6) inches nominal wide and eight (8) inches nominal deep when supporting roof and ceiling loads only.
605.2.2 Columns shall be continuous or superimposed throughout all stories by means of reinforced concrete or metal caps with brackets, or shall be connected by properly designed steel or iron caps, with pintles and base plates, or by timber splice plates affixed to the columns by means of metal connectors housed within the contact faces, or by other approved methods.

605.3 Floor framing
605.3.1 Beams and girders of wood may be sawn or glued laminated and shall be not less than 6 inches nominal wide and not less than 10 inches nominal deep.

605.3.2 Framed or glued laminated arches which spring from the floor line and support floor loads shall be not less than 8 inches nominal in any dimension.

605.3.3 Framed timber trusses supporting floor loads shall have members of not less than 8 inches nominal in any dimension.

605.4 Roof framing
605.4.1 Framed or glued laminated arches for roof construction which spring from the floor line and do not support floor loads shall have members not less than 6 inches nominal wide and 8 inches nominal deep for the lower half of the height and not less than 6 inches nominal in any dimension for the upper half of the height.

605.4.2 Framed or glued laminated arches for roof construction which spring from the top of walls or wall abutments, framed timber trusses and other roof framing which do not support floor loads shall have members not less than 4 inches nominal wide and not less than 6 inches nominal deep. Spaced members may be composed of two or more pieces not less than 3 inches nominal thick when blocked solidly throughout their intervening spaces or when such spaces are tightly closed by a continuous wood cover plate of not less than 2 inches nominal thick, secured to the underside of the members. Splice plates shall be no less than 3 inches nominal thick. When protected by approved automatic sprinklers under the roof deck, such framing members shall be not less than 3 inches nominal wide.

605.5 Construction details
605.5.1 Wall plate boxes of self-releasing type, or approved hangers, shall be provided where beams and girders enter masonry. An air space of \( \frac{1}{2} \) inch (12.7 mm) shall be provided at the top, ends and sides of the member unless approved naturally durable or preservative-treated wood is used.

605.5.2 Girders and beams shall be closely fitted around columns and adjoining ends shall be cross-tied to each other, or inter-tied by caps or ties, to transfer horizontal loads across the joint. Wood bolsters may be placed on tops of columns which support roof loads only.

605.5.3 Where intermediate beams are used to support floors, they shall rest on top of the girders, or shall be supported by ledgers or blocks securely fastened to the sides of the girders, or they may be supported by approved metal hangers into which the ends of the beams shall be fitted closely.

605.5.4 Columns, beams, girders, arches and trusses of material other than wood shall have a fire resistance rating of not less than 1 hour.

605.5.5 Wood beams and girders supported by walls required to have a fire resistance rating of 2 hours or more shall have not less than 4 inches (102 mm) of solid masonry between their ends and the outside face of the wall, and between adjacent beams.

605.5.6 Adequate roof anchorage shall be provided.

605.6 Floor decks. Floors shall be without concealed spaces. They shall be of sawn or glued laminated plank, splined, or tongue-and-grooved, not less than 3 inches nominal thick, or of planks not less than 4 inches nominal wide set on edge and well-spiked together. The planks shall be laid so that no continuous line of joints will occur except at points of support and they shall not be spiked to supporting girders. Planks shall be covered with 1 inch nominal tongue-and-groove flooring laid crosswise or diagonally or with \( \frac{15}{32} \) inch (11.9 mm) wood structural panels. Planks and flooring shall not extend closer than \( \frac{1}{2} \) inch (12.7 mm) to walls to provide an expansion joint, and the joint shall be covered at top or bottom.

605.7 Roof decks. Roofs shall be without concealed spaces and roof decks shall be sawn or glued laminated, splined or tongue and grooved plank, not less than 2 inches nominal thick, or of planks not less than 3 inches nominal wide, set on edge and spiked together as required for floors, or of \( \frac{11}{32} \) inch (29 mm) tongue and grooved wood structural panels bonded with exterior glue. Other types of decking may be used when approved by the building official.

605.8 Walls
605.8.1 Bearing portions of exterior and interior walls shall be of approved noncombustible materials and shall provide fire resistance ratings in accordance with Table 600.

605.8.2 Nonbearing portions of exterior walls shall be of approved noncombustible materials and shall provide fire resistance ratings in accordance with Table 600.

Exception: Where a horizontal separation of at least 20 ft (6096 mm) is provided, wood columns, arches, beams and roof decks conforming to heavy timber sizes may be used externally.
SECTION 606
TYPE IV CONSTRUCTION

Type IV is construction in which the structural members including exterior walls, interior bearing walls, columns, beams, girders, trusses, arches, floors and roofs are of non-combustible materials. Type IV construction may be protected or unprotected. Fire resistance requirements for structural elements of Type IV construction shall be as specified in Table 600. For provisions governing combustibles in concealed spaces, see 707.

SECTION 607
TYPE V CONSTRUCTION

Type V is construction in which the exterior bearing and non-bearing walls are of noncombustible material and have fire resistance not less than that specified in Table 600; bearing portions of interior walls are of material permitted in Table 600, and have fire resistance not less than that specified in Table 600; and beams, girders, trusses, arches, floors, roofs, and interior framing are wholly or partly of wood or other approved materials and have fire resistance not less than that specified in Table 600. Type V construction may be either protected or unprotected. Fire resistance requirements for structural elements of Type V construction shall be as specified in Table 600.

SECTION 608
TYPE VI CONSTRUCTION

Type VI is construction in which the exterior bearing and nonbearing walls and partitions, beams, girders, trusses, arches, floors, and roofs and their supports are wholly or partly of wood or other approved materials. Type VI construction may be either protected or unprotected. Fire resistance requirements for structural elements of Type VI construction shall be as specified in Table 600.

SECTION 609
PARTITIONS

609.1 Bearing walls shall comply with the provisions of Chapter 6, but shall provide not less than the degree of fire resistance specified in Table 600.

609.2 Nonbearing partitions shall conform to 609.2.1 through 609.2.4 and have the fire resistance specified in Table 705.1.2 except as specified elsewhere in this code.

609.2.1 Type I and Type II construction. Partitions shall be constructed of noncombustible materials.

Exceptions:
1. Framing members may be of fire retardant treated wood.
2. Pocket doors and their frames may be of wood.

609.2.2 Type III construction. Partitions may be of any material permitted by this code.

SECTION 610
MIXED TYPES OF CONSTRUCTION

609.2.3 Type IV construction. Partitions shall be constructed of noncombustible materials except that framing members of fire retardant treated wood may be used and pocket doors and their frames may be of wood. Partitions in one-story buildings only may be of any material permitted by this code. Partitions in fully sprinklered buildings, regardless of height, may be of any material permitted by this code.

609.2.4 Type V and Type VI construction. Partitions may be of any material permitted by this code.
TABLE 600
FIRE RESISTANCE RATINGS
REQUIRED FIRE RESISTANCE IN HOURS

<table>
<thead>
<tr>
<th>STRUCTURAL ELEMENT</th>
<th>TYPE I</th>
<th>TYPE II</th>
<th>TYPE III</th>
<th>TYPE IV</th>
<th>TYPE V</th>
<th>TYPE VI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-Hour</td>
<td>1-Hour</td>
<td>1-Hour</td>
<td>Protected</td>
<td>Unprotected</td>
<td>1-Hour</td>
</tr>
<tr>
<td>PARTY AND FIRE WALLS (a)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTERIOR BEARING WALLS Supporting columns, other bearing walls or more than one floor</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>NC</td>
<td>1 (h)</td>
</tr>
<tr>
<td>Supporting one floor only</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>NC</td>
<td>1</td>
</tr>
<tr>
<td>Supporting roofs only</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>NC</td>
<td>1</td>
</tr>
<tr>
<td>INTERIOR NONBEARING PARTITIONS</td>
<td>See 609.2, 704.1, 704.2 and 705.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLUMNS (g) Supporting columns or more than one floor</td>
<td>4</td>
<td>3</td>
<td>H(d)</td>
<td>1</td>
<td>NC</td>
<td>1</td>
</tr>
<tr>
<td>Supporting one floor only</td>
<td>3</td>
<td>2</td>
<td>H(d)</td>
<td>1</td>
<td>NC</td>
<td>1</td>
</tr>
<tr>
<td>Supporting roofs only</td>
<td>3</td>
<td>2</td>
<td>H(d)</td>
<td>1</td>
<td>NC</td>
<td>1</td>
</tr>
<tr>
<td>BEAMS, GIRDERS, TRUSSES &amp; ARCHES Supporting columns or more than one floor</td>
<td>4</td>
<td>3</td>
<td>H(d)</td>
<td>1</td>
<td>NC</td>
<td>1</td>
</tr>
<tr>
<td>Supporting one floor only</td>
<td>3</td>
<td>2</td>
<td>H(d)</td>
<td>1</td>
<td>NC</td>
<td>1</td>
</tr>
<tr>
<td>Supporting roofs only</td>
<td>3</td>
<td>2</td>
<td>H(d)</td>
<td>1</td>
<td>NC</td>
<td>1</td>
</tr>
<tr>
<td>FLOORS &amp; FLOOR/CEILING ASSEMBLIES (1)</td>
<td>See 605</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLOORS &amp; FLOOR/CEILING ASSEMBLIES (g)</td>
<td>See 605</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROOFS &amp; ROOF/CEILING ASSEMBLIES (g)</td>
<td>See 605</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXTERIOR BEARING WALLS and gable ends of roof (g, i, j)</td>
<td>(l)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horizontal separation (distance from common property line or assumed property line).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 ft to 3 ft (c)</td>
<td>4(0%)</td>
<td>3(0%)</td>
<td>3(0%)</td>
<td>1(0%)</td>
<td>1(0%)</td>
<td>3(0%)</td>
</tr>
<tr>
<td>over 3 ft to 10 ft (c)</td>
<td>4(10%)</td>
<td>3(10%)</td>
<td>2(10%)</td>
<td>1(10%)</td>
<td>1(10%)</td>
<td>2(10%)</td>
</tr>
<tr>
<td>over 10 ft to 20 ft (c)</td>
<td>4(20%)</td>
<td>3(20%)</td>
<td>2(20%)</td>
<td>1(20%)</td>
<td>1(20%)</td>
<td>2(20%)</td>
</tr>
<tr>
<td>over 20 ft to 30 ft</td>
<td>4(40%)</td>
<td>3(40%)</td>
<td>3(20%)</td>
<td>1(40%)</td>
<td>1(40%)</td>
<td>2(20%)</td>
</tr>
<tr>
<td>over 30 ft</td>
<td>4(NL)</td>
<td>3(NL)</td>
<td>1(NL)</td>
<td>1(NL)</td>
<td>NC(NL)</td>
<td>1(NL)</td>
</tr>
<tr>
<td>EXTERIOR NONBEARING WALLS and gable ends of roof (g, i, j)</td>
<td>(l)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>0 ft to 3 ft (c)</td>
<td>3(0%)</td>
<td>3(0%)</td>
<td>3(0%)</td>
<td>2(0%)</td>
<td>1(0%)</td>
<td>3(0%)</td>
</tr>
<tr>
<td>over 3 ft to 10 ft (c)</td>
<td>2(10%)</td>
<td>2(10%)</td>
<td>2(10%)</td>
<td>2(10%)</td>
<td>1(0%)</td>
<td>2(10%)</td>
</tr>
<tr>
<td>over 10 ft to 20 ft (c)</td>
<td>2(20%)</td>
<td>2(20%)</td>
<td>2(20%)</td>
<td>2(20%)</td>
<td>2(20%)</td>
<td>2(20%)</td>
</tr>
<tr>
<td>over 20 ft to 30 ft</td>
<td>1(40%)</td>
<td>1(40%)</td>
<td>1(40%)</td>
<td>NC(40%)</td>
<td>NC(40%)</td>
<td>1(40%)</td>
</tr>
<tr>
<td>over 30 ft (k)</td>
<td>NC(NL)</td>
<td>NC(NL)</td>
<td>NC(NL)</td>
<td>NC(NL)</td>
<td>NC(NL)</td>
<td>NC(NL)</td>
</tr>
</tbody>
</table>

For SI: 1 ft = 0.305 m.
NC = Noncombustible
NL = No Limits
H = Heavy Timber Sizes
Notes:

a. See 704.5 for extension of party walls and fire walls.

b. See 704.5 for parapets.

c. See 705 for protection of wall openings.

d. Where horizontal separation of 20 ft or more is provided, wood columns, arches, beams, and roof deck conforming to heavy timber sizes may be used externally.

e. In buildings not over two stories approved fire retardant treated wood may be used.

f. In one-story buildings, structural members of heavy timber sizes may be used as an alternate to unprotected structural roof members. Stadiums, field houses and arenas with heavy timber wood dome roofs are permitted. An approved automatic sprinkler system shall be installed in those areas where 20 ft clearance to the floor or balcony below is not provided.

g. See 1511 for penthouses and roof structures.

h. The use of combustible construction for interior bearing partitions shall be limited to the support of not more than two floors and a roof.

i. Exterior walls shall be fire tested in accordance with 601.3. The fire resistance requirements for exterior walls with 5 ft or less horizontal separation shall be based upon both interior and exterior fire exposure. The fire resistance requirements for exterior walls with more than 5 ft horizontal separation shall be based upon interior fire exposure only.

j. Where Appendix F is specifically included in the adopting ordinance, see F102.2.6 for fire resistance requirements for exterior walls of Type IV buildings in Fire District.

k. Walls or panels shall be of noncombustible material or fire retardant treated wood, except for Type VI construction.

l. For Group A - Large Assembly, Group A - Small Assembly, Group B, Group E, Group F, Group R occupancies and Automobile Parking Structures, occupancies of Type I construction, partitions, columns, trusses, girders, beams, and floors may be reduced by 1 hour if the building is equipped with an automatic sprinkler system throughout, but no component or assembly may be less than 1 hour.

m. Group A - Large Assembly (no stage requiring proscenium opening protection) and Group A - Small Assembly occupancies of Type V Unprotected construction shall have 1-hour fire resistant floors over any crawl space or basement.

n. For Group B and Group M occupancies of Type IV or Type V construction, when five or more stories in height a 2-hour fire resistant floor shall be required over the basement.

o. For unsprinklered Group E occupancies of Type IV, Type V Unprotected, Type V Unprotected or Type VI Unprotected, floors located immediately above useable space in basements shall have a fire resistant rating of not less than 1 hour.

p. In buildings of Group A, B, E and R occupancies, the required fire resistance of the roof or roof/ceiling assembly including the beams, girders, trusses, or arches that support the roof only may be omitted where every part of the roof structural members have a clear height of 20 ft (6096 mm) or more above any floor, mezzanine or balcony.

q. See 701.4.