CHAPTER 6
TYPES OF CONSTRUCTION

SECTION 601
GENERAL

601.1 Scope. The provisions of this chapter shall control the
classification of buildings as to type of construction.

SECTION 602
CONSTRUCTION CLASSIFICATION

602.1 General. Buildings and structures erected or to be
erected, altered or extended in height or area shall be classified
in one of the five construction types defined in Sections 602.2
through 602.5. The building elements shall have a fire-resis-
tance rating not less than that specified in Table 601 and exte-
rior walls shall have a fire-resistance rating not less than that
specified in Table 602.

602.1.1 Minimum requirements. A building or portion
thereof shall not be required to conform to the details of a
type of construction higher than that type, which meets the
minimum requirements based on occupancy even though
certain features of such a building actually conform to a
higher type of construction.

602.2 Types I and II. Type I and II construction are those types
of construction in which the building elements listed in Table
601 are of noncombustible materials.

602.3 Type III. Type III construction is that type of construc-
tion in which the exterior walls are of noncombustible mater-
ials and the interior building elements are of any material
permitted by this code. Fire-retardant-treated wood framing
complying with Section 2303.2 shall be permitted within exter-
rior wall assemblies of a 2-hour rating or less.

602.4 Type IV. Type IV construction (Heavy Timber, HT) is
that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid or laminated wood without concealed spaces. The
details of Type IV construction shall comply with the provi-
sions of this section. Fire-retardant-treated wood framing com-
plying with Section 2303.2 shall be permitted within exterior
wall assemblies with a 2-hour rating or less.

602.4.1 Columns. Wood columns shall be sawn or glued
laminated and shall not be less than 8 inches (203 mm),
nominal, in any dimension where supporting floor loads and
not less than 6 inches (152 mm) nominal in width and not
less than 8 inches (203 mm) nominal in depth where sup-
porting roof and ceiling loads only. Columns shall be con-
tinuous or superimposed and connected in an approved
manner.

602.4.2 Floor framing. Wood beams and girders shall be of
sawn or glued-laminated timber and shall be not less than 6
inches (152 mm) nominal in width and not less than 10
inches (254 mm) nominal in depth. Framed sawn or glued-
laminated timber arches, which spring from the floor
line and support floor loads, shall be not less than 8 inches

602.4.3 Roof framing. Wood-frame or glued-laminated
arches for roof construction, which spring from the floor
line or from grade and do not support floor loads, shall have
members not less than 6 inches (152 mm) nominal in width
and have less than 8 inches (203 mm) nominal in depth for
the lower half of the height and not less than 6 inches (152
mm) nominal in depth for the upper half. Framed or glued-
laminated arches for roof construction that 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 (102 mm) nominal in
width and not less than 6 inches (152 mm) nominal in depth.
Spaced members shall be permitted to be composed of two
or more pieces not less than 3 inches (76 mm) nominal in
thickness where blocked solidly throughout their interven-
ing spaces or where spaces are tightly closed by a continu-
ous wood cover plate of not less than 2 inches (51 mm)
nominal in thickness secured to the underside of the mem-
bers. Splice plates shall be not less than 3 inches (76 mm)
nominal in thickness. Where protected by approved auto-
matic sprinklers under the roof deck, framing members
shall be not less than 3 inches (76 mm) nominal in width.

602.4.4 Floors. Floors shall be without concealed spaces.
Wood floors shall be of sawn or glued-laminated planks,
splined or tongue-and-groove, of not less than 3 inches (76
mm) nominal in thickness covered with 1-inch (25 mm)
nominal dimension tongue-and-groove flooring, laid cross-
wise or diagonally, or 0.5-inch (12.7 mm) particleboard or
planks not less than 4 inches (102 mm) nominal in width set
on edge close together and well spiked and covered with
1-inch (25 mm) nominal dimension flooring or 0.5-inch (12
mm) wood structural panel or 0.5-inch (12.7 mm)
particleboard. The lumber shall be laid so that no continuous
line of joints will occur except at points of support. Floors
shall not extend closer than 0.5 inch (12.7 mm) to walls.
Such 0.5-inch (12.7 mm) space shall be covered by a mold-
ing fastened to the wall and so arranged that it will not ob-
struct the swelling or shrinkage movements of the floor.
Corbeling of masonry walls under the floor shall be permit-
ted to be used in place of molding.

602.4.5 Roofs. Roofs shall be without concealed spaces and
wood roof decks shall be sawn or glued laminated, splined
or tongue-and-groove plank, not less than 2 inches (51 mm)
thickness, 11/16-inch-thick (32 mm) wood structural panel (exte-
rior glue), or of planks not less than 3 inches (76 mm) nomi-
nal in width, set on edge close together and laid as required
for floors. Other types of decking shall be permitted to be
used if providing equivalent fire resistance and structural
properties.
602.4.6 Partitions. Partitions shall be of solid wood construction formed by not less than two layers of 1-inch (25 mm) matched boards or laminated construction 4 inches (102 mm) thick, or of 1-hour fire-resistance-rated construction.

602.4.7 Exterior structural members. Where a horizontal separation of 20 feet (6096 mm) or more is provided, wood columns and arches conforming to heavy timber sizes shall be permitted to be used externally.

602.5 Type V. Type V construction is that type of construction in which the structural elements, exterior walls and interior walls are of any materials permitted by this code.

SECTION 603
COMBUSTIBLE MATERIAL IN TYPE I AND II CONSTRUCTION

603.1 Allowable materials. Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3:

1. Fire-retardant-treated wood shall be permitted in:
   1.1. Nonbearing partitions where the required fire-resistance rating is 2 hours or less.
   1.2. Nonbearing exterior walls where no fire rating is required.
   1.3. Roof construction as permitted in Table 601, Note c, Item 3.
2. Thermal and acoustical insulation, other than foam plastics, having a flame spread index of not more than 25.

Exceptions:

1. Insulation placed between two layers of noncombustible materials without an intervening airspace shall be allowed to have a flame spread index of not more than 100.
2. Insulation installed between a finished floor and solid decking without intervening airspace shall be allowed to have a flame spread index of not more than 200.
3. Foam plastics in accordance with Chapter 26.
4. Roof coverings that have an A, B or C classification.
5. Interior floor finish and interior finish, trim and millwork such as doors, door frames, window sashes and frames.
6. Where not installed over 15 feet (4572 mm) above grade, show windows, nailing or furring strips, wooden bulkheads below show windows, their frames, aprons and show cases.
7. Finished flooring applied directly to the floor slab or to wood sleepers that are firestopped in accordance with Section 717.2.7.
8. Partitions dividing portions of stores, offices or similar places occupied by one tenant only and which do not establish a corridor serving an occupant load of 30 or more shall be permitted to be constructed of fire-retardant-treated wood, 1-hour fire-resistance-rated construction or of wood panels or similar light construction up to 6 feet (1829 mm) in height.
10. Combustible exterior wall coverings, balconies, bay or oriel windows, or similar appendages in accordance with Chapter 14.
11. Blocking such as for handrails, millwork, cabinets, and window and door frames.
13. Mastics and caulking materials applied to provide flexible seals between components of exterior wall construction.
14. Exterior plastic veneer installed in accordance with Section 2605.2.
15. Nailing or furring strips as permitted by Section 803.4.
16. Heavy timber as permitted by Note c, Item 2, to Table 601 and Sections 602.4.7 and 1406.3.
17. Aggregates, component materials and admixtures as permitted by Section 703.2.2.
18. Sprayed cementitious and mineral fiber fire-resistance-rated materials installed to comply with Section 1704.11.
19. Materials used to protect penetrations in fire-resistance-rated assemblies in accordance with Section 712.
20. Materials used to protect joints in fire-resistance-rated assemblies in accordance with Section 713.
21. Materials allowed in the concealed spaces of buildings of Type I and II construction in accordance with Section 717.5.
22. Materials exposed within plenums complying with Section 602 of the Oregon Mechanical Specialty Code.

603.1.1 Ducts. The use of nonmetallic ducts shall be permitted when installed in accordance with the limitations of the Oregon Mechanical Specialty Code.

603.1.2 Piping. The use of combustible piping materials shall be permitted when installed in accordance with the limitations of the Oregon Mechanical Specialty Code and the Oregon Plumbing Specialty Code.

603.1.3 Electrical. The use of electrical wiring methods with combustible insulation, tubing, raceways and related components shall be permitted when installed in accordance with the limitations of the Electrical Specialty Code.
TABLE 601
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (hours)

<table>
<thead>
<tr>
<th>BUILDING ELEMENT</th>
<th>TYPE I</th>
<th>TYPE II</th>
<th>TYPE III</th>
<th>TYPE IV</th>
<th>TYPE V</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>HT</td>
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<tr>
<td>Structural frame</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Including columns, girders, trusses</td>
<td>3b</td>
<td>2b</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Bearing walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exterior</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Interior</td>
<td>3b</td>
<td>2b</td>
<td>1</td>
<td>0</td>
<td>1/HT</td>
</tr>
<tr>
<td>Nonbearing walls and partitions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exterior</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nonbearing walls and partitions</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Floor construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Including supporting beams and joists</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>HT</td>
</tr>
<tr>
<td>Roof construction</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
<td>0½</td>
<td>0</td>
</tr>
<tr>
<td>Including supporting beams and joists</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For SI: 1 foot = 304.8 mm.

a. The structural frame shall be considered to be the columns and the girders, beams, trusses and spandrels having direct connections to the columns and bracing members designed to carry gravity loads. The members of floor or roof panels which have no connection to the columns shall be considered secondary members and not a part of the structural frame.

b. Roof supports: Fire-resistance ratings of structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.

c. 1. Except in Factory-Industrial (F-1), Hazardous (H), Mercantile (M) and Moderate-Hazard Storage (S-1) occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.

2. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.

3. In Type I and II construction, fire-retardant-treated wood shall be allowed in buildings including girders and trusses as part of the roof construction when the building is:
   i. Two stories or less in height;
   ii. Type II construction over two stories; or
   iii. Type I construction over two stories and the vertical distance from the upper floor to the roof is 20 feet or more.

d. An approved automatic sprinkler system in accordance with Section 903.3.1.1 shall be allowed to be substituted for 1-hour fire-resistance-rated construction, provided the system is not otherwise required by other provisions of the code or used for an allowable area increase in accordance with Section 506.3 or an allowable height increase in accordance with Section 504.2. The 1-hour substitution for the fire resistance of exterior walls shall not be permitted.

e. Not less than the fire-resistance rating required by other sections of this code.

f. Not less than the fire-resistance rating based on fire separation distance (see Table 602).

TABLE 602
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCEa

<table>
<thead>
<tr>
<th>FIRE SEPARATION DISTANCE (feet)</th>
<th>TYPE OF CONSTRUCTION</th>
<th>GROUP H</th>
<th>GROUP F-1, M, S-1</th>
<th>GROUP A, B, E, F-2, I, R², S-2, U</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5</td>
<td>All</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>≥ 5</td>
<td>IA</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>&lt; 10</td>
<td>Others</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>≥ 10</td>
<td>IA, IB</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&lt; 30</td>
<td>IIB, VB</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>≥ 30</td>
<td>Others</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

For SI: 1 foot = 304.8 mm.

a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.

b. Group R-3 and Group U when used as accessory to Group R-3, as applicable in Section 101.2 shall not be required to have a fire-resistance rating where the fire separation distance is 3 feet or more.

c. See Section 503.2 for party walls.