# 2018 Residential Code

# Fire Resistance Exterior Wall Construction

**R302.1 Exterior walls.** Construction, projections, openings and penetrations of exterior walls shall comply with Table R302.1(1).

**Exceptions:**

1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance.
2. Walls of dwellings and accessory structures located on the same lot.
3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits.
4. Detached garages located within 2 feet of a lot line can have eave projections not exceeding 4 inches.
5. Foundation vents are permitted.

**TABLE R302.1(1)**
**EXTERIOR WALLS**

| **EXTERIOR WALL ELEMENT** | | **MIN. FIRE RATING** | **MIN. FIRE SEPARATION DISTANCE** |
|---|---|---|---|
| Walls | Fire rated | 1-hour (both sides) | 0 feet |
| | Not Fire rated | 0 hours | ≥ 5 feet |
| Projections | | N/A | < 2 feet |
| | Fire rated | 1-hour (underside)[a, b] | ≥ 2 feet to < 5 feet |
| | Not Fire rated | 0 hours | ≥ 5 feet |
| Wall Openings | | N/A | < 3 feet |
| | Max 25% wall area per story | 0 hours | 3 feet |
| | Unlimited | 0 hours | 5 feet |
| Penetrations | All | See Section R302.4 | < 3 feet |
| | | None required | 3 feet |

a. The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave overhang if fireblocking is provided from the wall top plate to the underside of the roof sheathing.
b. The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the rake overhang where ventilation openings are not installed in the rake overhang or in walls that are common to attic areas.

R302.4.1 Through penetrations. Through penetrations of fire-resistance-rated wall or floor assemblies shall comply with Section R302.4. l. l or R302.4. l .2.

Exception: Where the penetrating items are steel, ferrous or copper pipes, tubes or conduits, the annular space shall be protected as follows:

I. In concrete or masonry wall or floor assemblies, concrete, grout or mortar shall be permitted where installed to the full thickness of the wall or floor assembly or the thickness required to maintain the fire-resistance rating, provided:

1.1 The nominal diameter of the penetrating item is a maximum of 6 inches; and
1.2 The_ area of the opening through the wall does not exceed 144 square inches.

2. The material used to fill the annular space shall prevent the passage of flame and hot gases s sufficient to ignite cotton waste where subjected to ASTM El 19 or UL 263 time temperature fire conditions under a minimum positive pressure differential of0.01 inch of water at the location of the penetration for the time period equivalent to the fire resistance rating of the construction penetrated.

R302.4.1.1 Fire-resistance-rated assembly. Penetrations shall be installed as tested if) the approved fire-resistance-rated assembly.
R302.4.1.2 Penetration firestop system. Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E8 l 4 or UL 14 79, with a minimum positive pressure differential of 0.0 I inch of water and shall have an F rating of not less than the required fire-resistance rating of the wall or floor/ceiling assembly penetrated.

R302.4.2 Membrane penetrations. Membrane penetrations shall comply with Section R302.4. l. Where walls are required to have a fire-resistance rating, recessed fixtures shall be installed so that the required fire-resistance rating will not be reduced.

Exceptions:

1. Membrane penetrations of maximum 2-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches in area provided the aggregate area of the openings through the membrane does not exceed 100 square inches in any 100 square feet of wall area. The annular space between the wall membrane and the box shall not exceed l /8 inch. Such boxes on opposite sides of the wall shall be separated by one of the following:

    1.1. By a horizontal distance of not less than 24 inches where the wall or partition is constructed with individual noncommunicating stud cavities;
    1.2. By a horizontal distance of not less than the depth of the wall cavity when the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation;
    1.3. By solid fire blocking in accordance with Section R3 02.11;
    1.4. By protecting both boxes with listed putty pads; or
    1.5. By other listed materials and methods.

2. Membrane penetrations by listed electrical boxes of any materials provided the boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the wall membrane and the box shall not exceed J/8 inch unless listed otherwise. Such boxes on opposite sides of the wall shall be separated by one of the following:

2.1 By the horizontal distance specified in the listing of the electrical boxes;
2.2. By solid fire blocking in accordance with Section R3 02.11;
2.3. By protecting both boxes with listed putty pads; or
2.4. By other listed materials and methods.

Solid fire blocking materials allowed by Section R302.ll:

1. Two-inch nominal lumber.
2. Two thicknesses of I -inch nominal lumber with broken lap joints.
3. One thickness of23/32-inch wood structural panels with joints backed by 23/32-inch wood structural panels.
4. One thickness of3/4-inch particleboard with joints backed by ¾-inch particleboard.
5. One-half-inch gypsum board.
6. One-quarter-inch cement-based

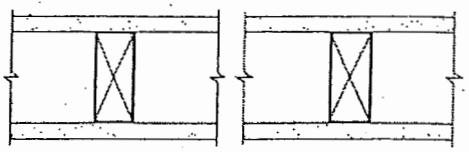
## WALLS AND INTERIOR PARTITIONS, WOOD FRAMED

| GA FILE NO. WP 3514 | GENERIC | 1 HOUR FIRE | 35 to 39 STC SOUND |
|---|---|---|---|

**GYPSUM WALLBOARD, WOOD STUDS**

One layer 5/8" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side of 2 x 4 wood studs 16" o.c. with 1 1/4" Type W drywall screws 12" o.c.

Joints staggered 16" on opposite sides. **(LOAD-BEARING)**



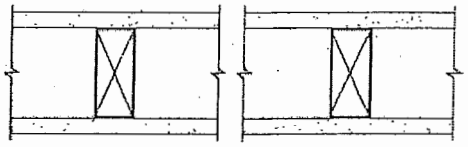
Thickness: 4 3/4"
Approx. Weight: 7 psf
Fire Test: SWRI 01-4511-619[1], 3-94
Sound Test: See WP 3520 (G&H NG-246FT, 7-2-65)

| GA FILE NO. WP 3520 | GENERIC | 1 HOUR FIRE | 35 to 39 STC SOUND |
|---|---|---|---|

**GYPSUM WALLBOARD, WOOD STUDS**

One layer 5/8" type X plain or predecorated gypsum wallboard applied parallel to each side of 2 x 4 wood studs 24" o.c. with 6d coated nails, 1 7/8" long, 0.0915" shank, 1/4" heads, 7" o.c. at joints and top and bottom plates and 3/8" beads of adhesive at intermediate studs.

Joints staggered 24" on opposite sides. **(LOAD-BEARING)**



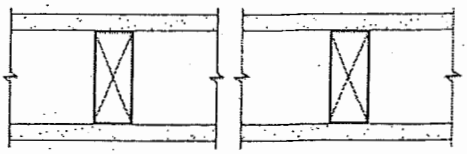
Thickness: 4 7/8"
Approx. Weight: 7 psf
Fire Test: FM WP 90, 8-21-67
Sound Test: G&H NG-246FT, 7-2-65

| GA FILE NO. WP 3605 | GENERIC | 1 HOUR FIRE | 30 to 34 STC SOUND |
|---|---|---|---|

**GYPSUM WALLBOARD, WOOD STUDS**

One layer 5/8" type X plain or predecorated gypsum wallboard, water-resistant gypsum backing board, or gypsum veneer base applied parallel or at right angles to each side of 2 x 4 wood studs 16" o.c. with 6d coated nails, 1 7/8" long, 0.0915" shank, 1/4" heads, 7" o.c. Joints of square edge, bevel edge or predecorated wallboard may be left exposed.

Joints staggered 16" on opposite sides. **(LOAD-BEARING)**



Thickness: 4 7/8"
Approx. Weight: 7 psf
Fire Test: UL R1319-4, -6, 6-17-52; UL R2717-39, 1-20-66; UL R3501-52, 3-15-66, UL Design U305; ULC Design W301
Sound Test: OR 64-8, 2-4-64

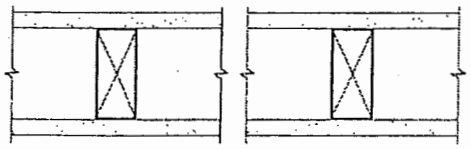
## WALLS AND INTERIOR PARTITIONS, WOOD FRAMED

| GA FILE NO. WP 3510 | GENERIC | 1 HOUR FIRE | 35 to 39 STC SOUND |
|---|---|---|---|

**GYPSUM WALLBOARD, WOOD STUDS**

One layer 5/8" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side of 2 x 4 wood studs 24" o.c. with 6d coated nails, 1 7/8" long, 0.0915" shank, 1/4" heads, 7" o.c.

Joints staggered 24" on opposite sides. **(LOAD-BEARING)**



Thickness: 4 7/8"
Approx. Weight: 7 psf
Fire Test: UL R3501-47, -48, 9-17-65, UL Design U309; UL R1319-129, 7-22-70, UL Design U314
Sound Test: NGC 2404, 10-14-70

**Contact the manufacturer for more detailed information on proprietary products.*