

Residential Fire-Resistant Construction

The purpose of this bulletin is to help clarify when and where fire-resistant construction is required for non-sprinklered residential construction. The code language and table provide limited guidance. We have expanded the information based on current code language, historical code language, and intent of the code.

Concerning exterior wall protection, the code assumes that an owner has no control over adjoining property. Thus the location of buildings on the owner's property relative to the property line requires regulation.

The property line concept provides a convenient means of protecting one building from another as far as exposure is concerned.

Exposure is the potential for heat to be transmitted from one building to another during a fire.

Radiation is the primary means of heat transfer.

Fire separation distance (FSD) is the distance measured from the foundation wall or face of wall framing, whichever is closer, to one of the following:

1. To the closest interior *lot line*; or
2. To the centerline of a street, an alley, or public way; or
3. To an imaginary line between two buildings on the *lot*.

Walls less than 5 feet from the property/lot line must be of a listed 1-hour fire-resistant construction. The fire-resistant rating also requires the rating exposure to be for both sides.

Projections may not be closer than 2 feet to the property/lot line, must be protected when they are 2 to 5 feet from the property/lot line and no protection is required if more than 5 feet from the property/lot line. **See examples on pages 3 & 4.**

Openings in walls not allowed less than 3 feet, limited to 25% of maximum wall area per story from 3 feet up to 5 feet, and unlimited at 5 feet or more from the property/lot line.

Penetrations are to be protected in fire-resistant wall assemblies when less than 5 feet from the property/lot line.

IRC R302.1 Exterior Walls

Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1 (1); or dwellings equipped throughout with an automatic sprinkler system installed in accordance with Section P2904 shall comply with Table R302.1 (2).

Exceptions:

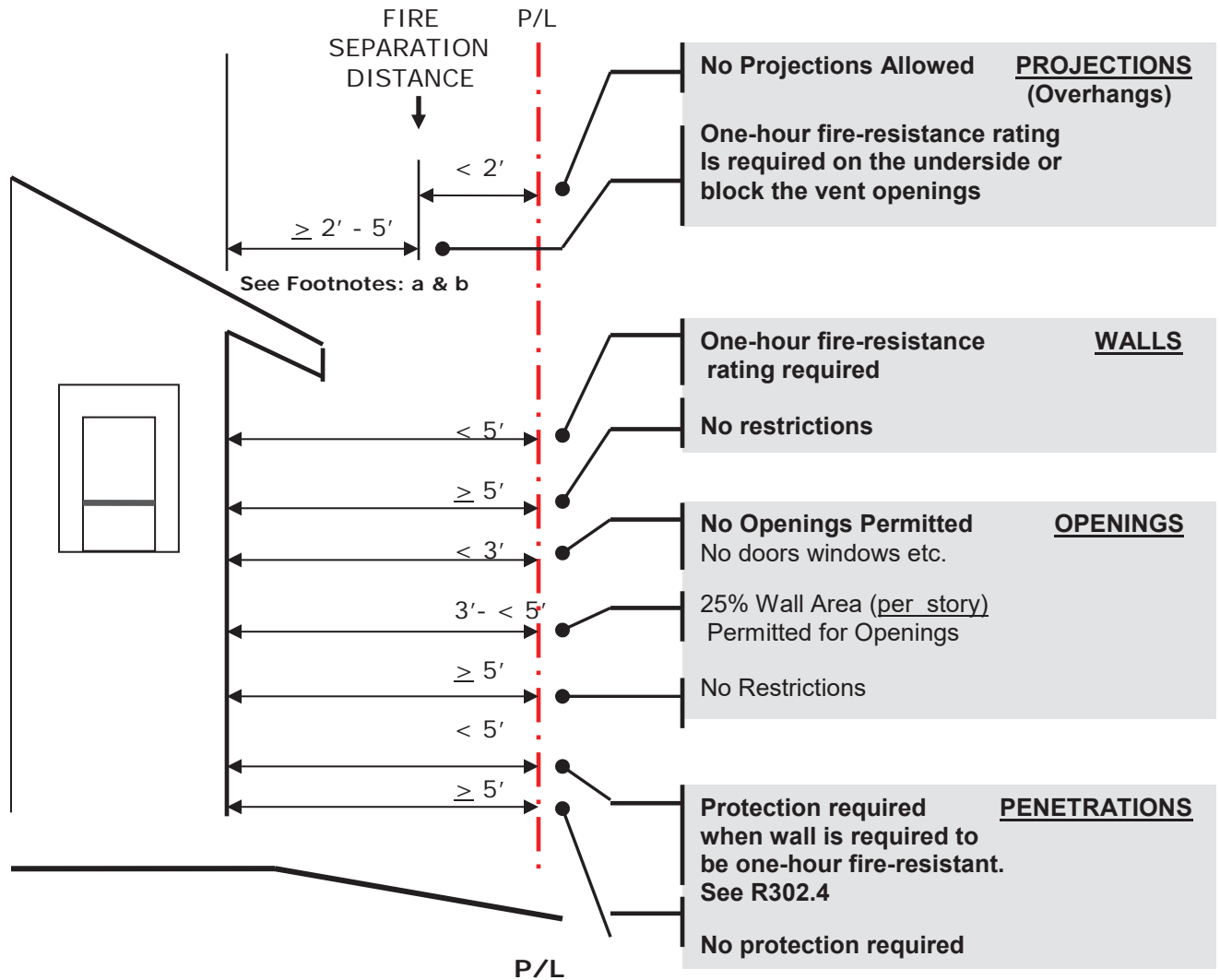
1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance.
2. Walls of dwellings and accessory structures located on the same lot.
3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
4. Detached garages accessory to a dwelling located within 2 feet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm).
5. Foundation vents installed in compliance with this code are permitted.

**WAC Table R302.1(1)
Exterior Walls**

Exterior Wall Element		Minimum Fire-Resistance Rating	Minimum Fire Separation Distance
Walls	(Fire-resistance rated)	1-hour tested in accordance with ASTM E 119 or UL 263 with exposure from both sides	< 5 feet
	(Not fire-resistance rated)	0 hours	≥ 5 feet
Projections	(Fire-resistance rated)	1 hour on the underside ^{a, b}	≥ 2 feet to 5 feet
	(Not fire-resistance rated)	0 hours	5 feet
Openings in Walls	Not allowed	N/A	< 3 feet
	25% maximum of wall area <u>per story</u>	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 5 feet
		None required	5 feet

For IS: 1 foot = 304.8 mm. N/A = Not Applicable

- a. Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fire blocking is provided from the wall top plate to the underside of the roof sheathing.
- b. Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave provided no gable vent openings are installed.



When any portion of an eave or projection extends into the fire separation distance, it shall have the required protection back to the exterior wall.

- Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fire blocking is provided from the wall top plate to the underside of the roof sheathing.
- Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave provided no gable vent openings are installed.

Note:

When you use option "a" or "b" above, you will need to provide additional roof venting. Refer to IRC Section R806 for roof venting requirements.

Table R302.1(1) Calculating Area of Openings in Walls

- Q.** Is the gable end area included in wall area to determine the 25% maximum wall area for openings when the exterior wall is 3' - <5' from the property line?
- A.** Yes, the cumulative Wall 1, Wall 2 and the Gable can be used to calculate the total allowable openings. The walls and gable are 1-hour fire-resistant construction to the underside of the roof.

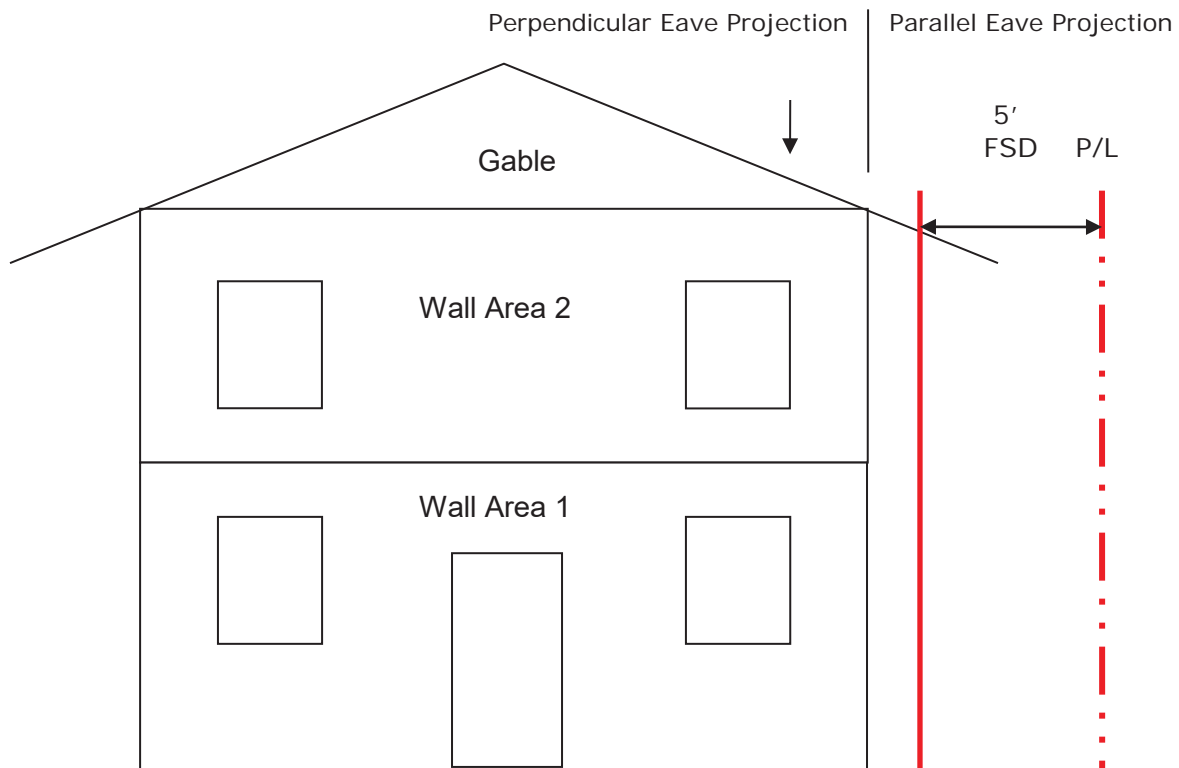


Table R302.1(1) Eave Protection

- Q.** When only a portion of the eave or projection extends into the FSD would the entire eave projection require protection outside the FSD back to the exterior wall?
- A.** When using 1-hour fire resistant construction on the underside it would not be practical to stop it part way back and leave vent openings unprotected. The intent of the code is to protect the underside and slow the spread of fire. The simple solution would be to block the vent openings as allowed by the foot notes "a" or "b" in Table R302.1(1)
- Q.** When a rake or eave perpendicular to the property line projects into the FSD is protection required?
- A.** The rake or eave that is parallel with the perpendicular wall would not require protection, only the portion parallel to the property line requiring protection for the