SIMPLIFIED WIND BRACING

The information herein provides guidelines for complying with the simplified wall bracing provisions of the 2009 Virginia Residential Code so your new home or addition can adequately resist wind load.

QUALIFYING STRUCTURES

Only those structures which meet all of the conditions listed below can be designed using simplified wall bracing.

1. Structures are no more than two-stories above the foundation or basement.
2. Floors do not overhang more than 24 inches beyond the foundation or bearing wall below.
3. Wall heights do exceed 10 feet.
4. Eave-to-ridge heights of the roof do not exceed 15 feet.
5. Exterior walls are finished on the inside with ½ inch gypsum board.
6. There are no wood-framed cripple walls or walk-out basement walls in a two-story structure.

Publications, forms and other useful information can be found online at
www.fairfaxcounty.gov/buildingpermits

SHEATHING MATERIAL

The following sheathing materials are available with simplified wall bracing. However, you must use only one in your design.

1. Wood structural panels (OSB or plywood) with a minimum thickness of $^{3}/_{8}$ inch.
2. Structural fiberboard with a minimum thickness of ½ inch.

CIRCUMSCRIBED RECTANGLE

To determine the amount of bracing you need, you must first draw a rectangle around your structure. The length of each side of the rectangle will be used to determine bracing amounts. Use the following rules to help guide you. See FIGURE 1 and FIGURE 2 for examples.

1. The rectangle must enclose offsets and projections such as sunrooms and garages.
2. The rectangle must exclude chimneys and open structures such as decks, carports and porches.
3. Draw a rectangle for each floor.
4. No side of the rectangle can be more than 60 feet long.
5. The long side can be no more than three times the length of the short side.
6. The length of the long rectangle side will determine the amount of bracing for the short side and vice versa.

If your structure does not comply with criteria listed herein, you must use the wall bracing technique in our companion publication entitled "Wind Bracing."

Contact and locate us…

Building Development Agencies
The Herrity Building
12055 Government Center Pkwy
Fairfax, VA 22035

- Permit Application Center
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- Site & Addressing Center
  2nd floor, **703-222-0801**
- Building Plan Review
  3rd floor, **703-222-0114**
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  2nd floor, **703-222-1082**
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  6th floor, **703-631-5101**

Hours of Operation
Monday—Thursday: 8 a.m.—4 p.m.
Friday: 9:15 a.m.—4 p.m.

Health Department
10777 Main Street
Fairfax, VA 22030
703-246-2201

*All telephone numbers are accessible in TTY by calling **711**.*

To request this information in an alternate format, call Customer and Technical Support Center at 703-222-0801, TTY 711.

A Fairfax County, Virginia Publication

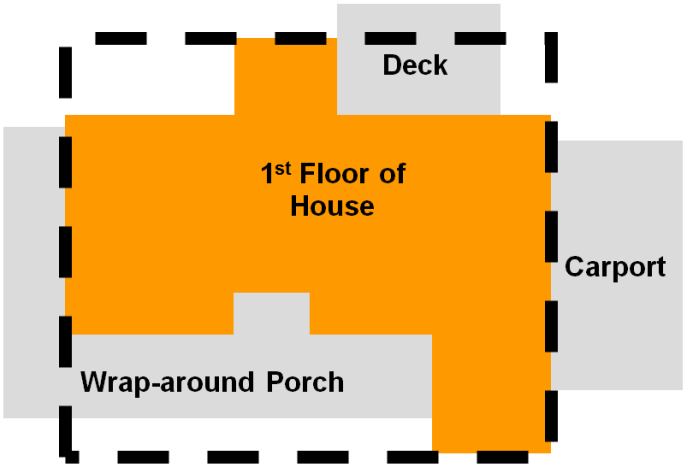


FIGURE 1: NEW HOUSE

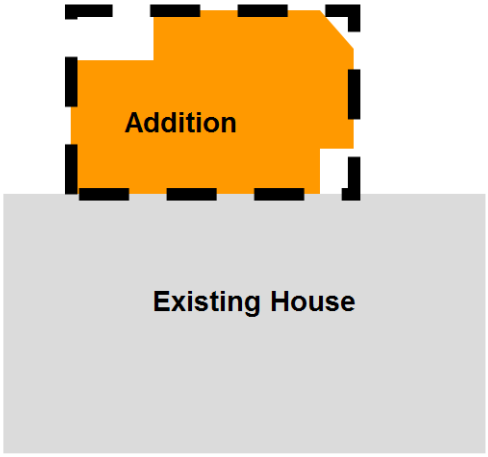


FIGURE 2: ADDITION

BRACING UNITS

Much like a braced wall panel, a bracing unit is a full-height sheathed segment of the exterior wall with no openings or offsets, both vertically and horizontally, with a minimum length of 3 feet (when sheathing is applied over the entire structure).

Sheathed segments of wall longer than 3 feet can be considered multiple bracing units. Simply divide the length of the wall by 3. Please note that sections of wall less than 3 feet cannot be recognized as fractional bracing units.

For example: as shown in FIGURE 3, the number of bracing units in the 13 foot section of wall of the second floor is…

# of bracing units = 13 ÷ 3 = 4.33

FIGURE 3: MULTIPLE BRACING UNITS

MINIMUM NUMBER OF BRACING UNITS

All the walls facing each side of the circumscribed rectangle, as shown in FIGURE 4, must have a minimum number of bracing units per TABLE 1. With an addition, the side of the rectangle which corresponds to the common wall with the existing house can be ignored in most cases.

When using TABLE 1, you must know the story level of the house, eave-to-ridge height of the roof and the length of the long and short sides of the circumscribed rectangle (rounded up to the next unit of 10).

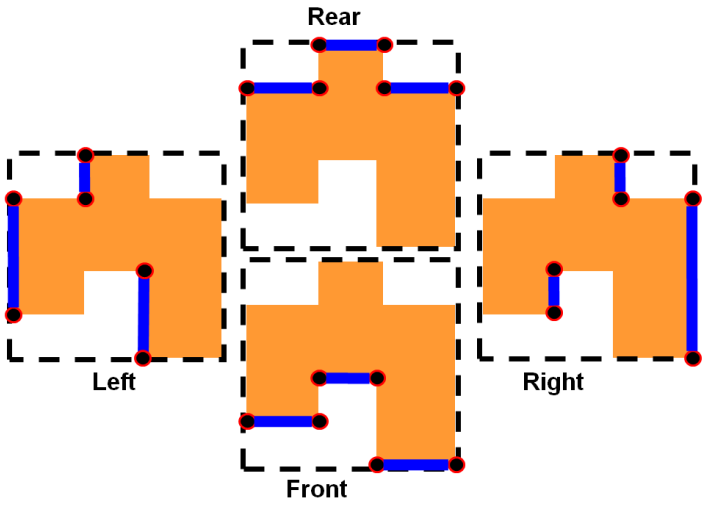
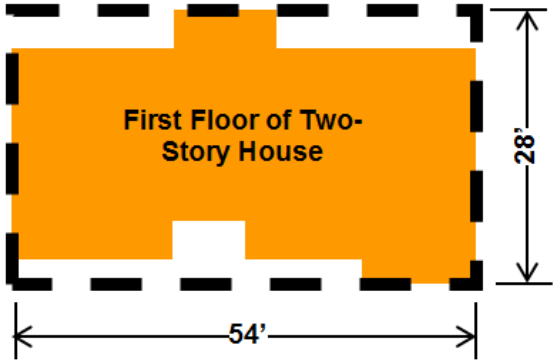


FIGURE 4: WALLS FACING RECTANGLE

TABLE 1: MINIMUM NUMBER OF BRACING UNITS

STORY LEVEL	EAVE-TO-RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE					
		Length of short side (ft)						Length of long side (ft)					
		10	20	30	40	50	60	10	20	30	40	50	60
1-story and top level of a 2-story	10	1	2	2	2	3	3	1	2	2	2	3	3
Bottom level of a 2-story		2	3	3	4	5	6	2	3	3	4	5	6
1-story and top level of a 2-story	15	1	2	3	3	4	4	1	2	3	3	4	4
Bottom level of a 2-story		2	3	4	5	6	7	2	3	4	5	6	7



For Example: If the long side of the rectangle had a 54-foot length and the short side had a 28-foot length, determine the number of bracing units in each. Assume this is the first floor of a two-story house with an eave-to-ridge height of 10 feet.

1. You must round the length of both sides of the rectangle up to the next unit of 10. Therefore, the rectangle would be 60'x30'.
2. For each long rectangle side, in TABLE 1 use the column for 30 feet (the length of the short side), the row for a 10 foot eave-to-ridge height and the row for the first of a two story house. The minimum number of bracing units is 3.
3. For each short rectangle side, in TABLE 1 use the column for 60 feet (the length of the long side), the row for a 10 foot eave-to-ridge height and the row for the first of a two story house. The minimum number of bracing units is 6.
4. Therefore, the front and rear walls of the house must each have a cumulative number of bracing units equal to 3 or more, and the left and right walls must each have 6 or more.

BRACING UNIT DISTRUBUTION

In addition to the minimum number of bracing units for each side of the circumscribed rectangle, each exterior wall must have bracing units located using the rules listed below.

1. A bracing unit must begin within 12 feet of any corner of the structure.
2. The distance between bracing units cannot exceed 20 feet.
3. Walls greater than 8 feet in length must have at least one bracing unit, and walls less than 8 feet are permitted to have no bracing units.

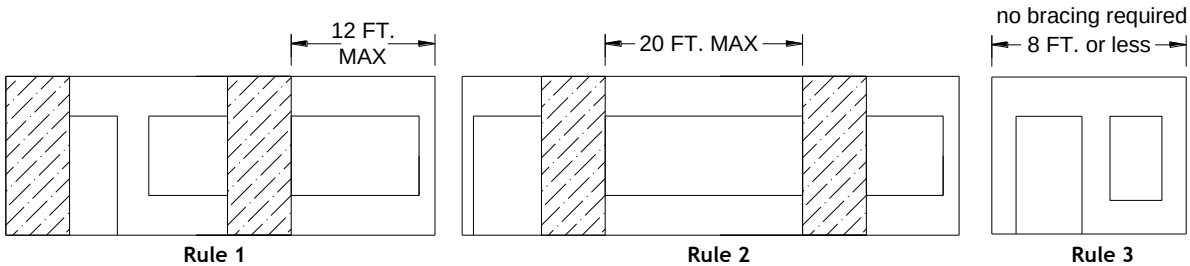


FIGURE 5: BRACING UNIT DISTRIBUTION RULES

NARROW PANELS

Narrow braced wall panel methods from the classic wall bracing provisions are permitted to be used in simplified wall bracing. Those methods, and their applicability are outlined in TABLE 2. References are made to a companion publication entitled Wind Bracing and to the 2009 Virginia Residential Code for a more thorough description of these bracing methods.

TABLE 2: PERMITTED NARROW PANELS

Method	Equivalent Bracing Units	Wind Bracing Publication	2009 Virginia Residential Code
PFH portal frame with hold-downs	1.0	Figure 16	Figure R602.10.6.2
PFG portal frame adjacent garage opening	0.75	Figure 17	Figure R602.10.6.3
CS-G continuous sheathing garage panel	0.5	Table 3	Table R602.10.4
CS-PF continuous sheathing portal frame	0.5	Figure 18	Figure R602.10.6.4

BRACING UNIT CONNECTIONS

When a bracing unit is located along the roof eave, blocking between the rafter or truss framing may be required in accordance with FIGURE 6 and TABLE 3 below. Reference is made to the companion publication entitled Wind Bracing and to the 2009 Virginia Residential Code for a more thorough description of the blocking requirements.

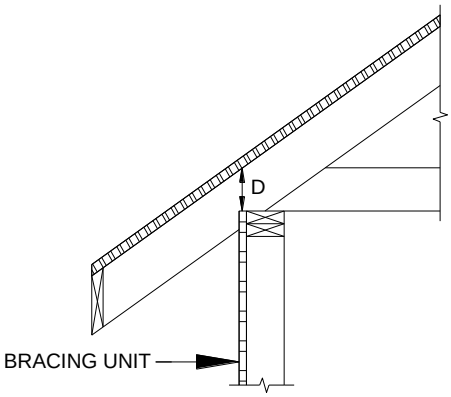


FIGURE 6: ROOF FRAMING BLOCKING

TABLE 3: ROOF FRAMING BLOCKING

Distance, D	Requirement	Wind Bracing Publication	2009 Virginia Residential Code
0 - 9.25"	No blocking required	—	Section R602.10.8.1
9.25" - 15.25"	Solid blocking between rafters or trusses	Figure 25	Figure R602.10.8.1(1)
15.25" - 48"	Soffit blocking or Vertical blocking panel	Figure 26 or Figure 28	Figure R602.10.8.1(2) or Figure R602.10.8.1(3)
over 48"	Engineered design required	—	Section R602.10.8.1

MASONRY STEMWALL SUPPORT

Masonry stem walls with a height and length of 48 inches or less and supporting a bracing unit or one of the narrow panels listed above must be reinforced in accordance with FIGURE 21 of the companion publication entitled Wind Bracing and to FIGURE R602.10.9 of the 2009 Virginia Residential Code.