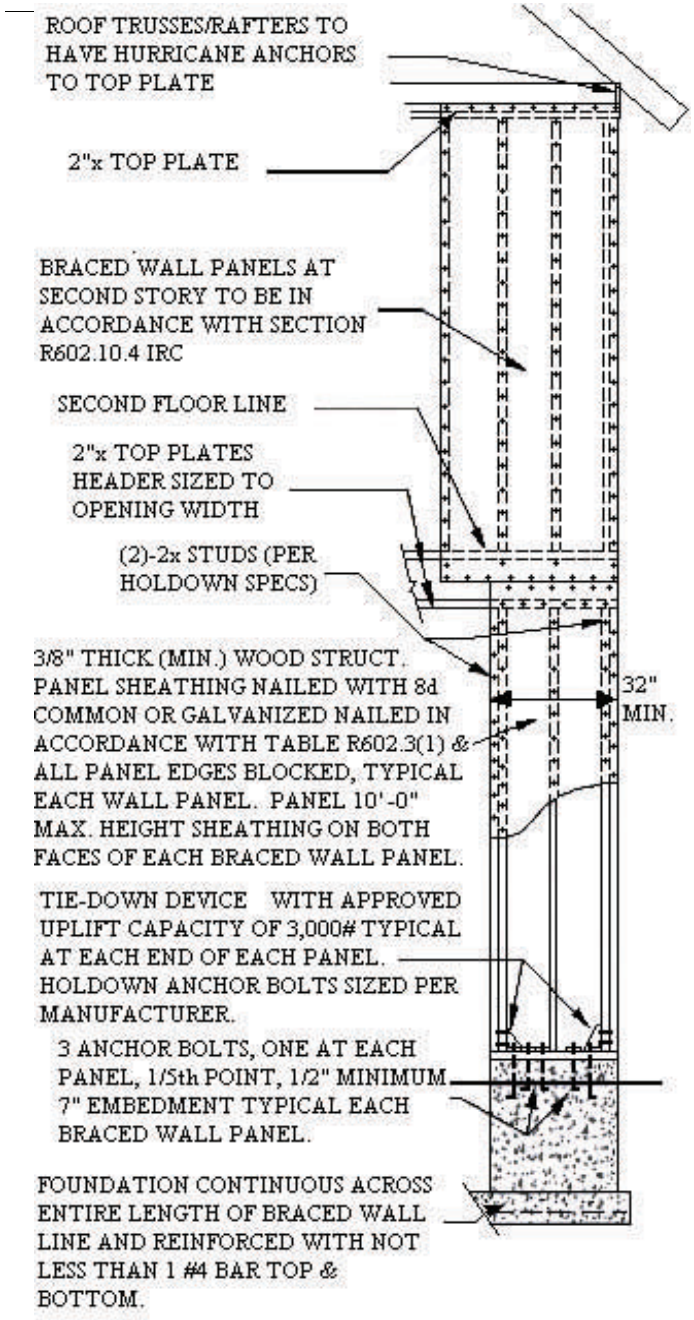
Two-Story Building 32 inch Alternate Braced Wall Panel



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Alternate Braced Wall Panels

IRC R602.10.6

A few design tips for Braced Wall and Alternate Braced Wall Panels

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Braced Wall Panel Requirements

An important area in the design of buildings is the design of braced wall and alternate braced wall panels to control uplift and overturning in wind and seismic events. The basic requirements contained in the International Residential Code offer some assistance in this design.

General Braced Wall Construction Requirements:

1. One story buildings or second of two story exterior walls are to be sheathed with a minimum of 48-inch wide structural wood panels or approved alternate braced wall panels and foundation straps, located at each end and at least every 25 feet on center but not less than 20% of the braced wall line.
2. The first story of a two story structure is to be sheathed with a minimum of 48-inch wide structural wood panels (96 inches for gypsum wallboard), or approved alternate braced wall panels and foundation straps, located at each end and at least 25 feet on center but not less than 45% of the braced wall line.
3. Exterior braced wall panels at corners are permitted to begin no more than 8 feet from each end if the braced wall panel closest to the corner has a properly installed tie-down device with an allowable uplift capacity of at least 1800 pounds or a 24-inch wide panel is applied to each side of the building corner.
4. Braced wall panels that are counted as part of a braced wall line shall be in line, except that offsets out-of-plane of up to 4 feet shall be permitted provided that the total out-of-plane offset dimension is not more than 8 feet.
5. Spacing of interior braced wall lines in each story shall be placed not to exceed 25 feet on center in the longitudinal and transverse directions (exception for one 900 square foot room spaced to 35 feet on center). Interior braced walls are installed per No. 1 & 2 above (these braced wall panels could be properly installed gypsum wallboard panels).
6. Spacing for crawl space braced wall lines shall be placed not to exceed 25 feet on center and in accordance with No. 1 & 2 above with the percent of bracing increased by 15% and panels in the braced wall line not more 18 feet apart.

Optional Continuous Structural Panel Sheathing Requirements, IRC 602.10.5:

1. The provisions in No. 4, 5 & 6 above also apply to structures utilizing this method of construction.
2. When continuously sheathing the exterior of the building, the code requires that interior braced wall lines be established in the longitudinal and transverse directions every 25 feet on center per 602.10.11. This applies to our seismic design category (D1) location. In the past we have allowed one braced wall panel at the end of each interior braced wall line to be sheathed with gypsum wallboard. Now the entire braced wall line is to be sheathed on both interior and exterior braced wall lines with wood structural panels. These braced wall lines, inside and out, are to be shown on the approved plans. A note is to be made on the plans that IRC section 602.10.5, Continuous Structural Panel Sheathing is being utilized for the design.

   The design concepts of this code section are based on sheathing the braced wall lines completely, including areas above and below openings. Table 602.10.5 (No. 3 below) and the last sentence of section 602.10.5 sets the criteria for the percentage of openings allowed within the braced wall lines. If larger openings with less wall area are preferred, a Montana registered structural engineer is required to design that portion of the structure, per 301.1.3 and 602.10.10.

3. Table 602.10.5, length requirements for braced wall panels in a continuously sheathed wall.

Length of Braced Wall Panel			Maximum Opening Height Next to Braced Wall Panels
8′ Wall	9′ Wall	10′ Wall	
48″	54″	60″	100%
32″	36″	40″	85%
24″	27″	30″	65%

Garage 4:1 Aspect Ratio: Full-height sheathed wall segments to either side of garage openings that support light frame roofs shall be permitted to have a 4:1 aspect ratio (2′ wide & 8′ tall, 2′ 6″ wide and 9′ tall).

Since this is a complicated issue we would be willing to sit down with you and your plans to go over these concepts prior to submittal of your project for review.

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