



# CODE REVIEW COMMITTEE

SACRAMENTO VALLEY ASSOCIATION OF BUILDING OFFICIALS

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## Code Review Committee Question/Survey for March 2008 and Committee Supported Responses

### Subject: Alternate Braced Wall Panels

#### 1. Given: Given SDC D or E per Footnote "a" in Table 2308.12.4

1a. Would your jurisdiction allow alternate brace wall panels (as defined in Section 2308.9.3.1)?

YES		NO	
11	55%	9	45%

1b. Would your jurisdiction allow a braced portal (as defined in Section 2308.9.3.2)?

YES		NO	
12	60%	8	40%

#### Comments by Spokespersons

- Yes, provided that there is another BWP within 8' of the opposing corner of the BWL and the combined bracing percentages (lengths) meet Table 2308.12.4.
- Section 2308.2.2 refers to 2308.12 for additional requirements for Seismic Design Category D and E. I would consider 2308.12 to be minimum requirements for these SDCs.
- A & B above currently would only be allowed when part of a complete wall line designed by a state licensed architect or engineer.
- It would appear that alternate braced wall panels and braced portals are not permitted in Seismic Design Categories D and E.
- The 2:1 ratio requirement eliminates the use of alternate panels in 2308.9.3.1 & 3.2.
- All buildings must be engineered. We do not allow conventional, non-engineered buildings.
- Yes - The alternate panel and portal can be substituted for the equivalent length of braced wall. John Henry, ICC, wrote an article about that subject.

#### Code Review Committee Supported Response

The Committees position is yes, based on the ICC interpretation from John Henry's article (see attachment).

### Subject: Disabled Path of Access to Trash Enclosures

#### 2. Would your jurisdiction require an accessible path of travel to a trash enclosure...

2a. Serving commercial buildings?

YES		NO	
10	50%	10	50%

2b. Serving multifamily dwellings?

	YES		NO
17	85%	3	15%

### Comments by Spokespersons

- Access is required to buildings...trash enclosures aren't buildings.
- This is a good question. The paving surface from a commercial building to the trash enclosure is usually level, but not marked per standard disabled access requirements. What happens when the disabled individual reaches the enclosure? Are they going to be able to open the gate and/or the dumpster lid? At a facility with a large enclosure, and many employees, the garbage duties could be delegated. A cluster development with single employee occupancies would require that the enclosure(s) be fully accessible. The enclosures at multifamily dwellings are part of the common use area and therefore must be accessible.
- The path must be accessible and the enclosure itself must be accessible.
- Yes, if there may be "employee" usage. So, only if there may be a maintenance crew or staff. This is an employee, CBC 1123B requirement.
- Not familiar with this requirement. A code section would be helpful.
- Yes but the specific requirements for compliance of the trash enclosure are in the federal standards (ADA and Fair Housing).

### Code Review Committee Supported Response

Under Fair Housing it is clear that refuse areas of multifamily dwellings must be accessible. The trash enclosure has to be accessible and be on an accessible route. Requirements are the same for commercial buildings.

## Section 2308: Conventional LightFrame Construction

John R. Henry, P.E.

Section 2308 of the 2006 International Building Code (IBC) permits prescriptive conventional wood frame construction without engineering provided the scope, limitations, and restrictions prescribed in the section are strictly followed. The provisions include prescriptive framing requirements for both vertical gravity loads, as well as bracing methods intended to resist lateral load effects from wind pressure and seismic ground motion. This column addresses several questions regarding the 2006 IBC prescriptive conventional wood frame wall bracing in Seismic Design Category D and E.

### Answers to FAQ's:

**Q:** The wall bracing requirements in Seismic Design Category A, B, and C are relatively straightforward. For example, conventional wood frame buildings in Seismic Design Category C require braced wall panels spaced not more than 25 feet-on-center and must comprise at least 25 percent of the wall according to Table 2308.9.3(1). However, conventional wood frame buildings in Seismic Design Category D and E must use [Table 2308.12.4](#) to determine the amount of wall bracing required. [Table 2308.12.4](#) provides the minimum length of wall bracing per 25 feet of wall, but does not provide a minimum percentage. Since there is no percentage given, we are unsure of how to properly apply the requirements of the table. For example, for a building sited where  $SDS > 1.00g$ , the table requires 12 feet of wall bracing for every 25 feet of wall. It is clear that a 25-foot-long wall requires 12 feet of bracing and a 50-foot-long wall requires 24 feet of bracing, but what amount of bracing would be required for a 40-foot-long wall?

**A:** A rational way to apply the requirements of the table would be to convert the required bracing length to a minimum percentage of bracing. For example, for  $SDS > 1.00g$ , the table requires 12 feet of type S-W wall bracing (wood structural panel or diagonal wood sheathing) for every 25 feet of wall line, which is 48 percent of bracing ( $100 \times 12/25 = 48$  percent). Therefore, a 40-foot-long wall would require 19.2 feet of braced wall panels ( $0.48 \times 40 = 19.2$ ). Note that Section 2308.12.4 requires braced wall panels to be distributed along the length of the braced wall line and start no more than 8 feet from each end of the braced wall line.

**Q:** The bracing required by [Table 2308.12.4](#) is not totally clear. For  $SDS > 1.00g$ , the table requires 12 feet of wall bracing for every 25 feet of wall line. Does this mean each braced wall panel must be a minimum of 12 feet in length, or can the 12 feet of required bracing consist of braced wall panels prescribed in Section 2308.9.3?

**A:** The bracing can be made up of braced wall panels prescribed in Section 2308.9.3. Section 2308.12.4 states that the sum of lengths of braced wall panels at each braced wall line shall conform to [Table 2308.12.4](#). It should also be noted that Section 2308.12 covers additional requirements for Seismic Design Category D or E, in addition to the requirements for Seismic Design Category B and C. Section 2308.12.11 covers additional requirements for Seismic Design Category B and C, in addition to the requirements covered in Section 2308.1 through 2308.10.

**Q:** Footnote "a" of [Table 2308.12.4](#) states that the height-to-width ratio for braced wall panels cannot exceed 2:1. For a typical 8-foot-high wall, this means the minimum length of the braced wall panel must be 4 feet. The alternate braced wall panel described in Section 2308.9.3.1 is 2 feet, 8 inches in length, and the alternate braced wall panels adjacent to an opening in Section

2308.9.3.2 are 16 inches in length for a one-story building. Does footnote "a" in effect mean that the alternate braced wall panels of Section 2308.9.3.1 and 2308.9.3.2 cannot be used in Seismic Design Category D and E because of the restriction on height-to-width ratio?

**A:** No. Footnote "a" restricts the height-to-width ratio of braced wall panels to 2:1, not alternate braced wall panels. The footnote was not intended to limit the use of alternate braced wall panels in SDC D and E. [Table 2308.12.4](#) of the IBC was derived from Section 12.4 and Table 12.4-2 of the 2003 edition of the National Earthquake Reduction Program (NEHRP) provisions, which are the basis for seismic requirements in the IBC. The conventional light-frame bracing requirements in the NEHRP provisions do not include alternate braced wall panels. In addition, the conventional light-frame bracing requirements in the NEHRP provisions do not require overturning restraint at braced wall panels. Thus, the purpose of limiting the aspect ratio of braced wall panels is to minimize overturning demand due to the lack of overturning restraint. In contrast, the alternate braced wall panels do address overturning directly by requiring overturning restraint devices, and thus are not subject to the 2:1 height-to-width limitation.

Note that Sections 2308.9.3.1 and 2308.9.3.2 state that any bracing required by Section 2308.9.3 is permitted to be replaced by alternate braced wall panels constructed in accordance with the requirements prescribed in the two sections. The application of the provisions may be described by the following step-by-step procedure:

- \* **Step 1**—Select the type of wall bracing material to be used. G-P = gypsum board, fiberboard, particleboard, lath and plaster, or gypsum sheathing boards; S-W = wood structural panels and diagonal wood sheathing.
- \* **Step 2**—Determine the required amount of bracing from [Table 2308.12.4](#) based on the type of sheathing used and the seismic ground motion parameter, SDS.
- \* **Step 3**—Check maximum 2:1 height-to-width ratio in accordance with Footnote "a" of [Table 2308.12.4](#).
- \* **Step 4**—Determine the number of braced wall panels required to meet the minimum length of bracing prescribed in the table.
- \* **Step 5**—The braced wall panels must not be spaced more than 25 feet on center in accordance with Figure 2308.9.3, and must begin no more than 8 feet from each end of each braced line in Seismic Design Category D and E.
- \* **Step 6**—Once the above requirements are met, each braced wall panel may be replaced by an alternate braced wall panel constructed in accordance with Section 2308.9.3.1 or Section 2308.9.3.2. It should be noted that both of these sections impose a 10-foot height limit on alternate braced wall panels.

*Disclaimer: The building official has the final authority in rendering interpretations of the code as prescribed in IBC Section 104.1. Opinions by ICC staff are based solely on the published model code and do not consider federal, state, or local amendments, ordinances, or policies.*

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