



2011 UDC January/February/March Updates

Presentation on

2009 Uniform Dwelling Code



Chapter Comm 21

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By
Dept. of Commerce,
Safety & Building's Div.

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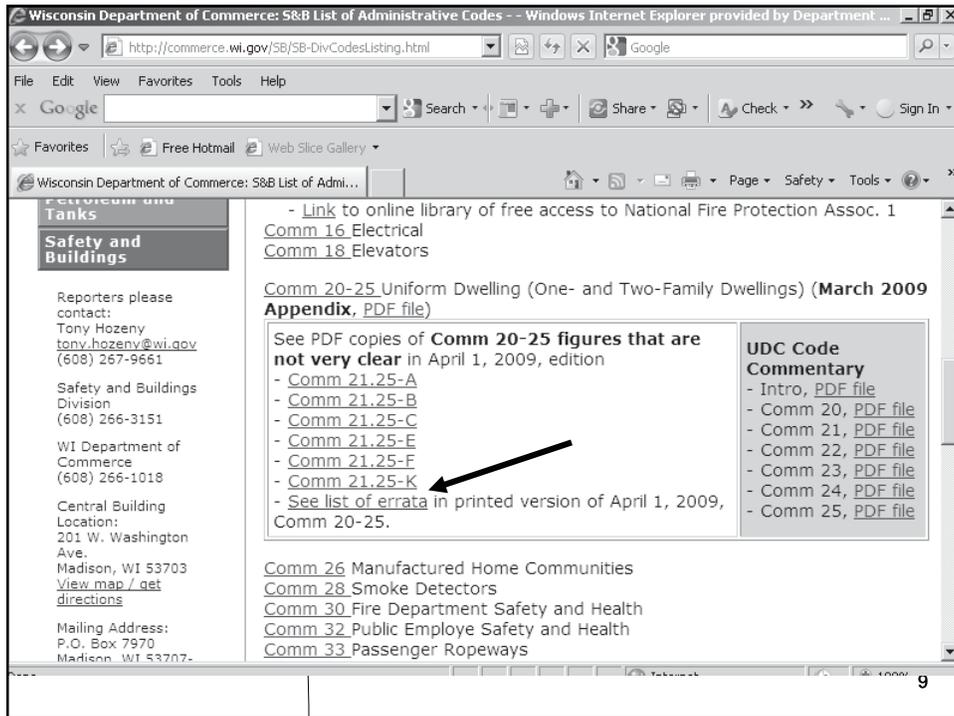
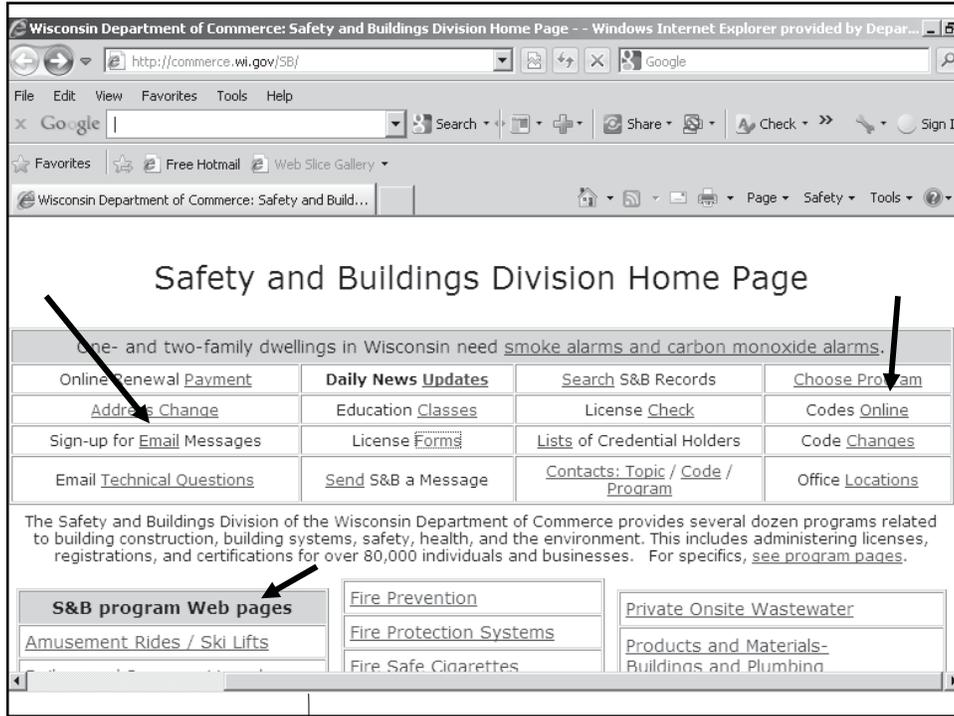
2011 Code Changes



6

- Watch S&B website for updates.
- Sign up for S&B E-mail notification service.
<http://commerce.wi.gov/SB/SB-DivEmailSignup.html>
- If you have any interest in any proposed code changes, you may attend the council meetings or contact your council representative. List of members may be found on the S&B Div codes webpage.

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Effective January 1, 2011

Comm 21

1. The reference to sub. (10) in s. Comm 21.03(1)(c) should be sub (8).

Comm 21.03 Exits. Exits, doors and hallways shall be constructed as specified in this section.

(1) EXITS FROM THE FIRST FLOOR.

(c) An additional exit may discharge to an outside balcony that complies with sub. (8).

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Effective January 1, 2011

Comm 21

2. The reference to Table 21.25-G in s. Comm 21.25(8)(e)2. should be 21.25-H.
3. The reference to Table 21.25-J in Table 21.25-H, footnote 5, should be 21.25-K.
4. The reference to subd. 1 in s. Comm 21.25(9)(b)3. should be subd. 2.
5. The reference to Table 21.25-G in s. Comm 21.25(8)(e)2. should be 21.25-H.

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Effective January 1, 2011

Comm 21

6. Footnote 2 in Comm Table 21.25-J is amended to read: For a garage supporting a roof only, a 4:1 aspect ratio is permitted for full-height sheathed wall segments on either side of the garage openings.

TABLE 21.25-J
LENGTH REQUIREMENTS FOR BRACED WALL PANELS IN A CONTINUOUSLY SHEATHED WALL¹

Minimum Length of Braced Wall Panel (inches)			Maximum Opening Clear Height Next to the Braced Wall Panel (% of wall height)	Braced Wall Panel Height to Width Ratio
8-foot wall	9-foot wall	10-foot wall		
48	54	60	100%	2:1
32	36	40	85%	3:1
24	27	30	67%	4:1 ²

¹Interpolation is permitted.

²A 4:1 aspect ratio is permitted for full-height sheathed wall segments on either side of garage openings.

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Effective January 1, 2011

Comm 21

5. The reference to sub. (9)(c)6. in Figure 21.25-G(c) should be sub.(9)(c)5.
6. S. Comm 21.26(8)(a) 3. is amended to read: Flashing that will be exposed to ultraviolet light shall consist of materials that which are durable and permanently UV-resistant, such as sheet metal or heavy-gauge PVC.

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Effective February 1, 2011 Comm 21

CO Alarms

- 2009 Wisconsin Act 158
 - The statute and rules that become effective February 1, 2011 applies to dwellings the initial construction of which was commenced before, on, or after the effective date of this subsection.
- s. Comm 21.097
- s. Comm 28.04

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http://commerce.wi.gov/SB/

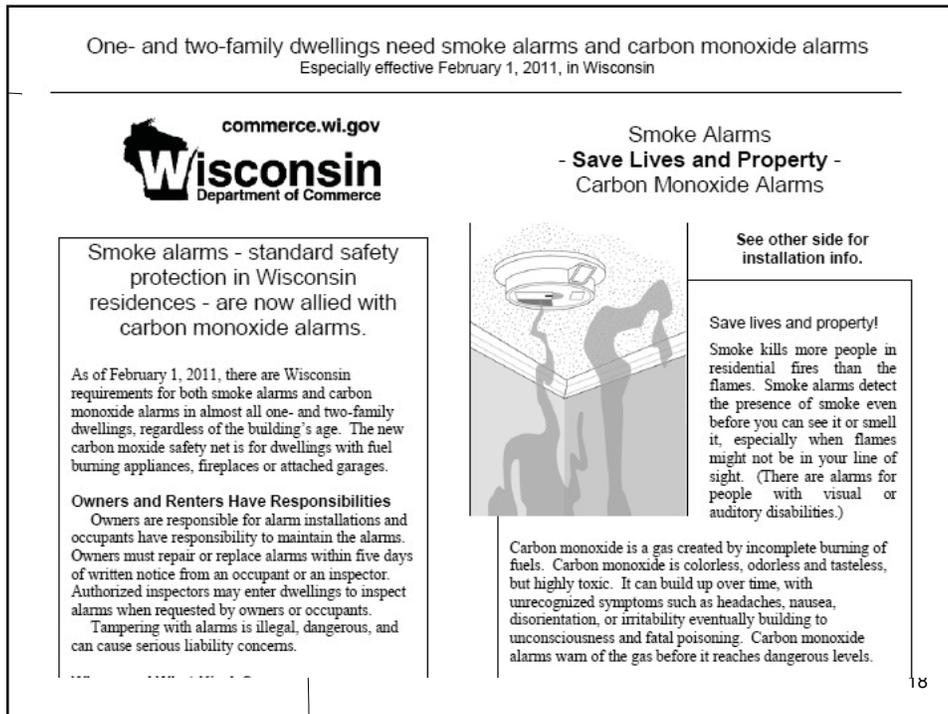
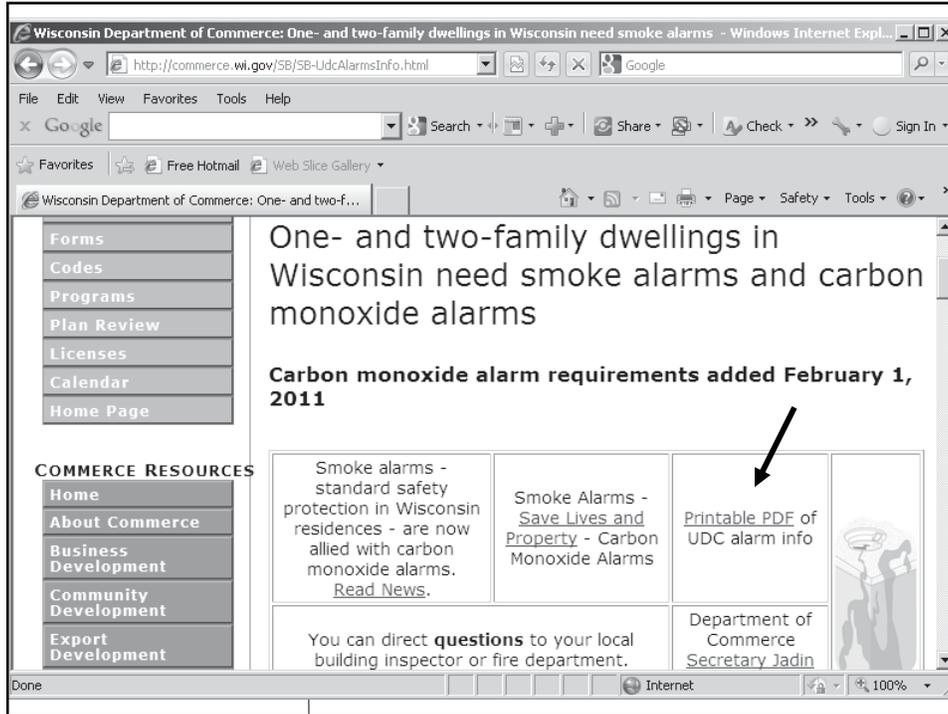
Safety and Buildings Division Home Page

One- and two-family dwellings in Wisconsin need smoke alarms and carbon monoxide alarms.

Online Renewal Payment	Daily News Updates	Search S&B Records	Choose Program
Address Change	Education Classes	License Check	Codes Online
Sign-up for Email Messages	License Forms	Lists of Credential Holders	Code Changes
Email Technical Questions	Send S&B a Message	Contacts: Topic / Code / Program	Office Locations

The Safety and Buildings Division of the Wisconsin Department of Commerce provides several dozen programs related to building construction, building systems, safety, health, and the environment. This includes administering licenses, registrations, and certifications for over 80,000 individuals and businesses. For specifics, [see program pages](#).

S&B program Web pages	Fire Prevention	Private Onsite Wastewater
Amusement Rides / Ski Lifts	Fire Protection Systems	Products and Materials- Buildings and Plumbing
	Fire Safe Cigarettes	



Comm 21.097

(2) NEW CONSTRUCTION. (a) *General.* Except as provided in sub. (4), listed and labeled carbon monoxide alarms shall be installed and maintained in accordance with s. 101.647 (2) to (6), Stats., in one and 2-family dwellings, for which building permit applications were made or construction commenced on or after February 1, 2011.

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Note: Section 101.647 (2) to (6), Stats., reads:

(2) INSTALLATION AND SAFETY CERTIFICATION. *The owner of a dwelling shall install any carbon monoxide detector required under this section according to the directions and specifications of the manufacturer of the carbon monoxide detector. A carbon monoxide detector required under this section shall bear an Underwriters Laboratories, Inc., listing mark and may be a device that is combined with a smoke detector.*

(3) REQUIREMENTS. (a) *The owner of a dwelling shall install a functional carbon monoxide detector in the basement of the dwelling and on each floor level except the attic, garage, or storage area of each dwelling unit. A carbon monoxide detector wired to the dwelling's electrical wiring system shall have a backup battery power supply. Except as provided under par. (b), the occupant of the dwelling unit shall maintain any carbon monoxide detector in that unit. This paragraph does not apply to the owner of a dwelling that has no attached garage, no fireplace, and no fuel-burning appliance.*

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(am) 1. If the building permit for the initial construction of a dwelling was issued on or after February 1, 2011, and the electrical service for the dwelling is provided by a public utility, as defined in s. 196.01 (5), the owner of the dwelling shall install each carbon monoxide detector required under par. (a) so that it is powered by the dwelling's electrical wiring system, except as provided under subd. 2.

2. The requirement that each carbon monoxide detector be installed in the manner provided under subd. 1. does not apply to a dwelling if the dwelling, when initially constructed, had no attached garage, no fireplace, and no fuel-burning appliance.

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Comm 21.097(2) [Cont'd]

(b) Location. 1. On floor levels that contain one or more sleeping areas, a carbon monoxide alarm shall be installed outside of the sleeping area, within 21 feet of the centerline of the door opening to any sleeping area and in an exit path from any sleeping area.

2. On floor levels that do not contain a sleeping area, a carbon monoxide alarm shall be installed in a common area on each floor level.

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Comm 21.097(2) [Cont'd]

(c) *Electrical service and interconnection.* 1. Except as provided in sub. 2., carbon monoxide alarms shall be continuously powered by the house electrical service, shall have a backup power supply and shall be interconnected so that activation of one alarm will cause activation of all alarms.

2. Dwellings with no electrical service shall be provided with battery-powered carbon monoxide alarms in the locations under par. (b). Interconnection is not required in these dwellings.

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Comm 21.097

(3) EXISTING DWELLINGS. Except as provided in sub. (4), listed and labeled carbon monoxide alarms shall be installed and maintained in accordance with s. 101.647 (2) to (6), Stats., in one and 2-family dwellings, for which building permit applications were made or initial construction commenced on or after June 1, 1980, and before February 1, 2011.

Note: See statutory reprint under s. Comm 21.097 (2) (a).

**** Chapter Comm 28** is for Pre-June 1, 1980 Dwellings

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Wall Bracing

Comm 21.25 (8) & (9)

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Why has bracing changed?



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**Open and screened porches and decks
do not have to meet the wall bracing provisions
of Comm 21.25 (8) & (9).**

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Comm 21.25 (8) & (9) Wall Bracing

There are a couple of terms a person will need to become familiar with whether using the intermittent bracing method of Comm 21.25 (8), alternate bracing method of Comm 21.25 (9)(b) or the continuous sheathing method of 21.25 (9) (c):

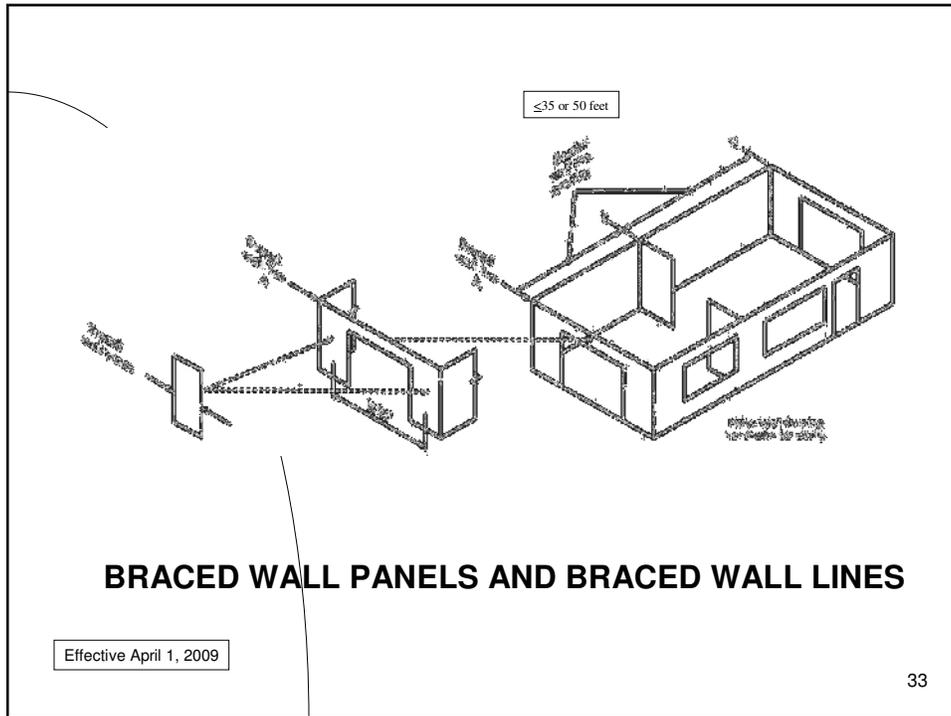
30

Braced Wall Line: A braced wall line (BWL) consists of wall segments that are off-set no more than 4' from the BWL. Within that braced wall line are braced wall panel(s) that provide resistance to wind loads. The spacing of a BWL shall not exceed 35', or 50' meeting certain additional conditions. [See Comm 21.25 (8)(e) and Fig. 21.25-A]

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Braced Wall Panel: A braced wall panel (BWP) is an individual bracing component that is installed within a braced wall line. Examples of types of BWP are let-in bracing, wood boards, wood structural panels, structural fiberboard, and gypsum board [See Comm 21.25 (8) (b)]. The BWP, unless otherwise specified in the code, shall begin no more than 12.5 feet from each end and shall be located every 25 feet on center.

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Comm 21.25 (8) WALL BRACING. (a) General.

Dwellings using wood-framed walls shall be braced in accordance with this section.

(b) Bracing Materials and Methods.

1. 1-inch-by-4-inch let-in bracing 60 to 45 degrees from the horizontal.
2. Metal T-bracing not less than 22 gage thick and 1 ¾ inch wide 60 to 45 degrees from the horizontal.
3. Wood boards of 5/8-inch net minimum thickness applied diagonally.
4. Wood structural panel sheathing with all edges fastened not less than 3/8 inch thick for 16-inch stud spacing and not less than 7/16 inch thick for 24-inch stud spacing.

Effective April 1, 2009

Comm 21.25 (8) WALL BRACING.

(b) *Bracing Materials and Methods.* (Cont'd)

5. Minimum one-half-inch thick structural fiberboard sheathing applied vertically or horizontally on studs spaced a maximum of 16 inches on center.
6. Gypsum board with minimum ½-inch thickness placed on studs spaced a maximum of 24 inches on center and fastened at panel edges including top and bottom plates at 7 inches on center
7. Alternative methods under par. (9).
8. Other approved wind bracing materials and methods.

Effective April 1, 2009

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Comm 21.25 (8) WALL BRACING. (Cont'd)

(c) *Minimum length of braced panels.* 1. 'General.'
Except as provide under subd. 2., the minimum lengths shall be as follows:

- a. For methods 3, 4 and 5, each braced wall panel shall be at least 48 inches in length, covering a minimum of three stud spaces where studs are spaced 16 inches on center and covering a minimum of two stud spaces where studs are spaced 24 inches on center.
- b. For method 6, each braced wall panel and shall be at least 96 inches in length where applied to one face of a braced wall panel and at least 48 inches in length where applied to both faces.

Effective April 1, 2009

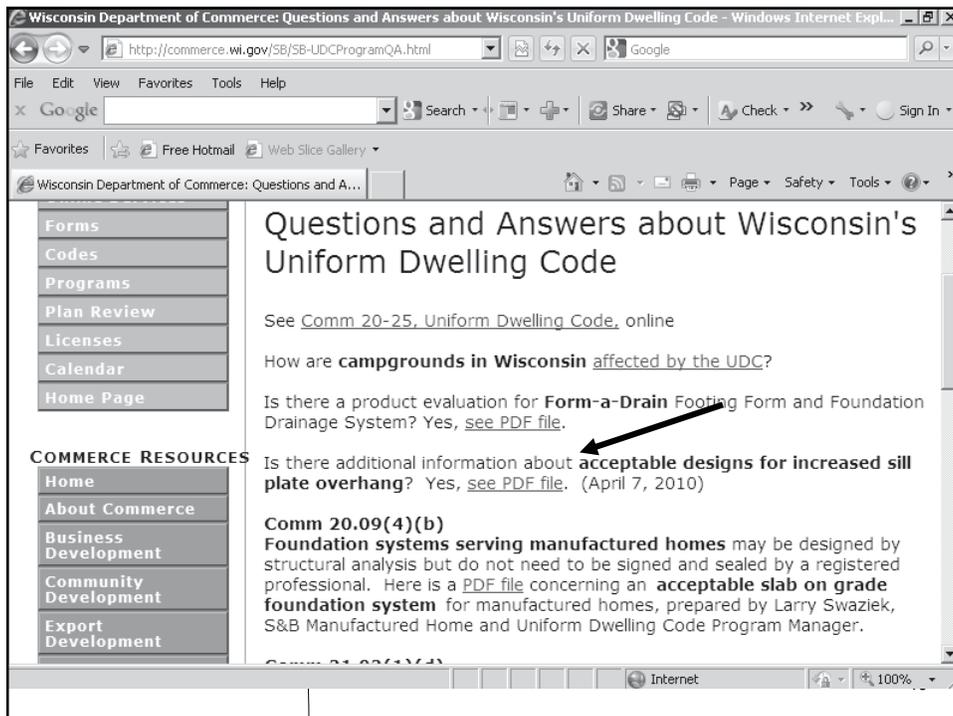
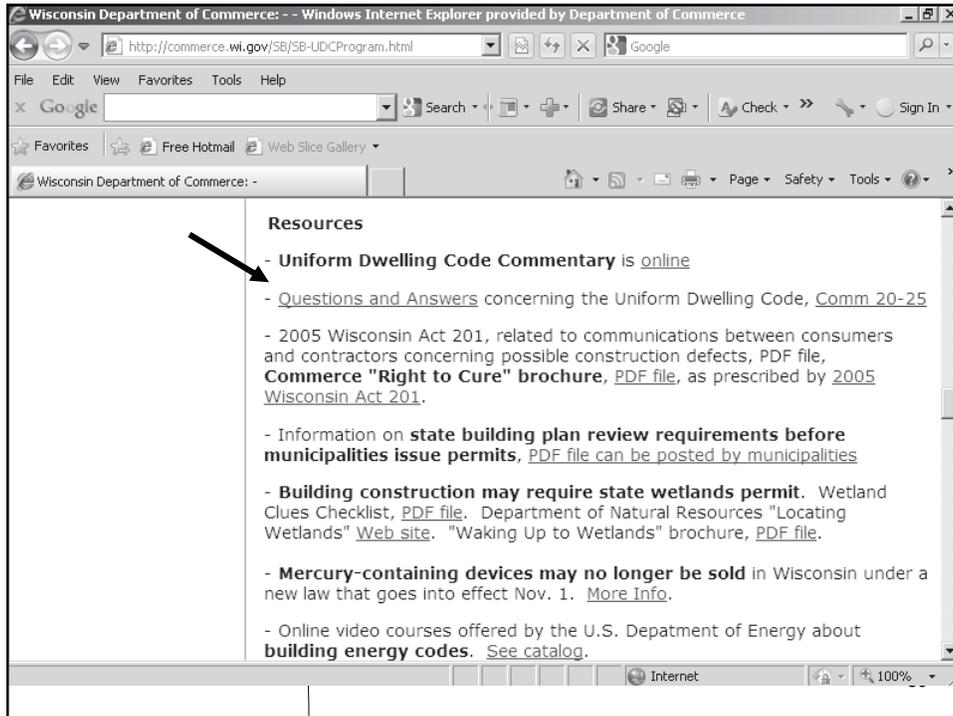
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UDC Appendix MINIMUM FASTENER SCHEDULE TABLE

Material	Fastener	Spacing of Fastener	
		Edges	Intermediate Supports
Engineered wood panel for sub-floor and roof sheathing and wall corner wind bracing to framing			
5/16" to 1/2"	6d common or deformed nail or staple, 1 1/2"	6"	12" 4
5/8" to 3/4"	8d smooth or common, 6d deformed nail, or staple, 14 ga. 1 1/4"	6"	12" 4
7/8" to 1"	8d common or deformed nail	6"	12"
1 1/8" to 1 1/4"	10d smooth or common, or 8d deformed nail	6"	12"
Combination subfloor/ underlayment to framing			
3/4" or less	6d deformed or 8d smooth or common nail	6"	12"
7/8" to 1"	8d smooth, common or deformed nail	6"	12"
1 1/8" to 1 1/4"	10d smooth or common or 8d deformed nail	6"	12"
Wood panel siding to framing			
1/2" or less	6d corrosion-resistant siding and casing nails	6"	12"
5/8"	8d corrosion-resistant siding and casing nails	6"	12"
1/2" structural cellulosic fiberboard sheathing	1 1/2" galvanized roofing nail; 8d common nail; staple 16 ga., 1 1/2" long	3"	6"

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The screenshot shows a web browser window displaying the Wisconsin Department of Commerce website. The page title is "Wisconsin Department of Commerce: - Windows Internet Explorer provided by Department of Commerce". The address bar shows the URL: <http://commerce.wi.gov/SB-UDCProgram.html>. The page content includes a navigation menu with "RESOURCES" (Contact S&B Staff, Online Services, Forms, Codes, Programs, Plan Review, Licenses, Calendar, Home Page) and "COMMERCE RESOURCES". The main content area features a "SHARE" button, a breadcrumb trail "Home > Safety & Buildings", and a tabbed interface with "Contacts", "Forms", "Code", "Email Group", and "Resources". The "Code" tab is active, displaying the "S&B Uniform Dwelling Code Program" for "One - and Two - Family Dwellings". The text on the page states: "The Uniform Dwelling Code (UDC) is the statewide building code for one- and two-family dwellings built since June 1, 1980. The Safety and Buildings Division provides consultation and education concerning UDC construction standards and inspection procedures. Building materials are evaluated for conformance with standards. UDC inspection and contractor credentials are administered. **There is enforcement of the UDC in all Wisconsin municipalities.**"



➤ **From 2009 UDC Code and Commentary**

Question: If my braced wall line spacing is more than 35 feet and is less than, or equal to, 50 ft. may I use wood or metal let-in bracing in those braced wall lines that are spaced more than 35 ft. apart?

Answer: No. Braced wall lines that are more than 35 ft. apart must have the required length of braced wall panels specified in Table 21.25-H increased by a factor of the braced wall line spacing divided by 35. Let-in bracing does not provide an equivalent amount of wind resistance as compared to the added sheathing required by this section.

Wisconsin Department of Commerce: S&B List of Administrative Codes - - Windows Internet Explorer provided by Department ...

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- [Link to online library of free access to National Fire Protection Assoc. 1](#)

[Comm 16 Electrical](#)
[Comm 18 Elevators](#)

[Comm 20-25 Uniform Dwelling \(One- and Two-Family Dwellings\) \(March 2009 Appendix, PDF file\)](#)

See PDF copies of **Comm 20-25 figures that are not very clear** in April 1, 2009, edition

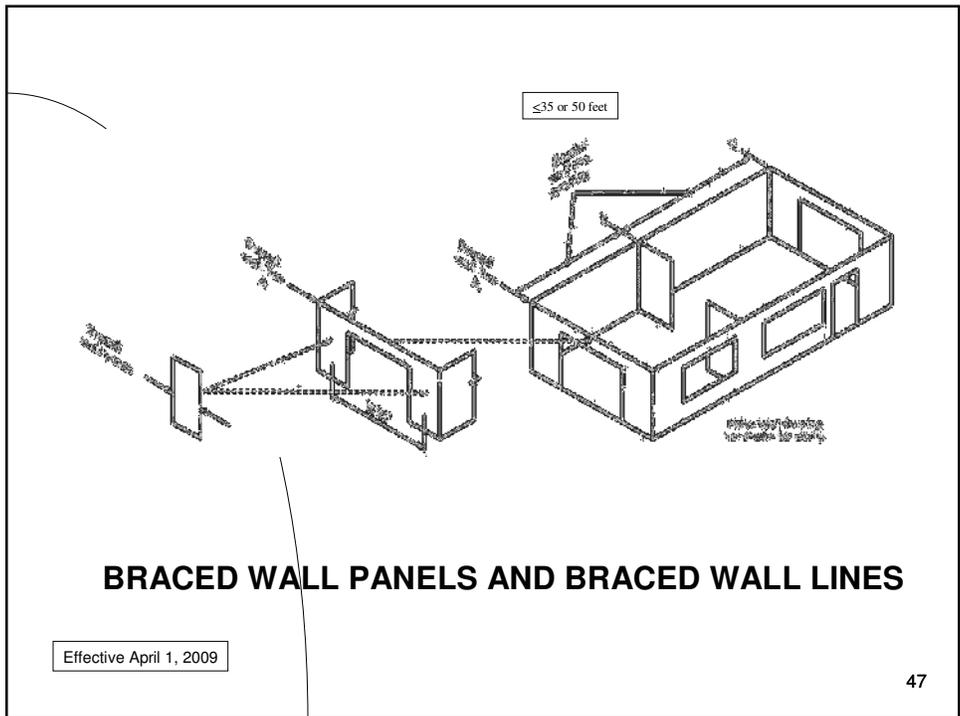
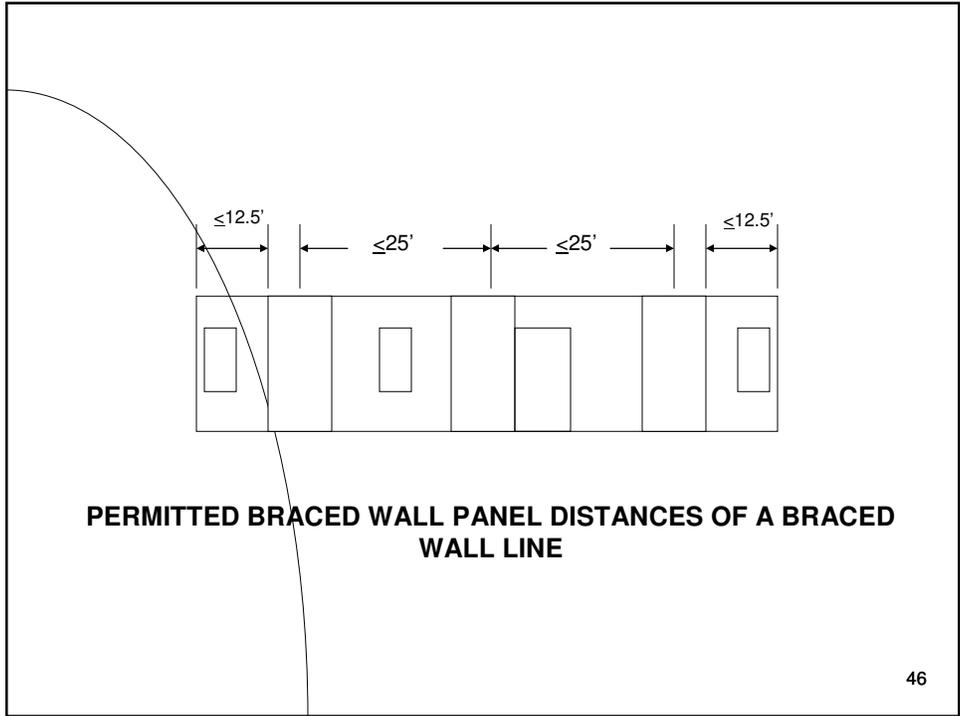
- [Comm 21.25-A](#)
- [Comm 21.25-B](#)
- [Comm 21.25-C](#)
- [Comm 21.25-E](#)
- [Comm 21.25-F](#)
- [Comm 21.25-K](#)
- See [list of errata](#) in printed version of April 1, 2009, Comm 20-25.

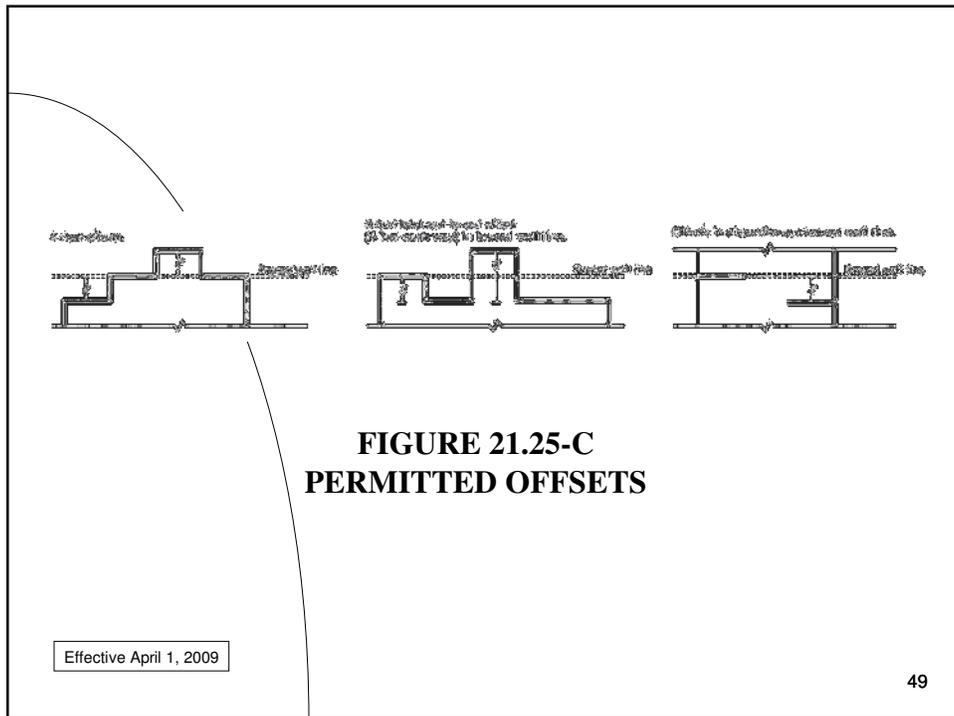
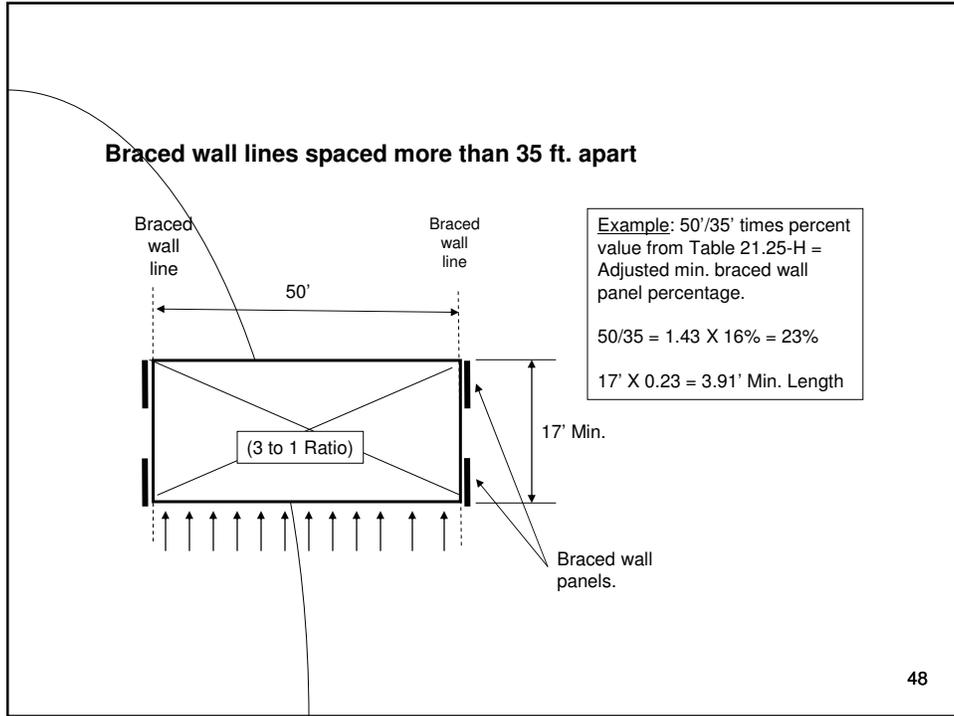
UDC Code Commentary

- Intro, [PDF file](#)
- Comm 20, [PDF file](#)
- Comm 21, [PDF file](#)
- Comm 22, [PDF file](#)
- Comm 23, [PDF file](#)
- Comm 24, [PDF file](#)
- Comm 25, [PDF file](#)

[Comm 26 Manufactured Home Communities](#)
[Comm 28 Smoke Detectors](#)
[Comm 30 Fire Department Safety and Health](#)
[Comm 32 Public Employee Safety and Health](#)
[Comm 33 Passenger Ropeways](#)

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➤ From 2009 UDC Code and Commentary

Question: Must a braced wall line with 4' offsets be in line with an actual building wall line as shown in Fig. 21.25-C?

Answer: No. A braced wall line can be located within actual building wall lines as long as the physical building wall lines are not offset by more than 4 ft. (See Fig. below). This method of determining the braced wall line is consistent with the wall bracing provisions of the 2009 International Residential Code which is an approved engineering analysis as set forth in Comm. 21.25(8)(1), footnote.

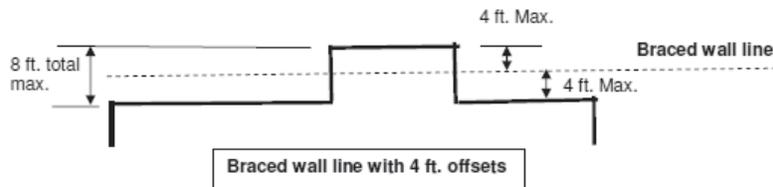


TABLE 21.25-F
MINIMUM BRACING REQUIREMENTS FOR EXTERIOR PARTY WALLS

Type of Support	Minimum Bracing Requirements for Exterior Party Walls	
	Minimum Bracing Requirements	Minimum Bracing Requirements
Concrete	1/4"	1/4"
Masonry	1/4"	1/4"
Wood	1/4"	1/4"

- The "Braced wall" condition in this table is defined as a wall that is braced with a braced wall line that is in line with the actual building wall line. The braced wall line is defined as a line that is in line with the actual building wall line.
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- The braced wall line is defined as a line that is in line with the actual building wall line.

Effective April 1, 2009

Minimum Bracing Lengths for Walls
Comm Table 21.25-H
(Intermittent Method)

Length of Braced Wall Line (Ft.)	Minimum Length of Braced Wall Panel in Braced Wall Line (Ft.), [Ft. - Inches] ^{1,2}					
	Wall Height (Ft.)					
	Up to 10'	>10' & ≤ 12' ³	Up to 10'	>10' & ≤ 12' ³	Up to 10'	>10' & ≤ 12' ³
	16%	19.2%	25%	30%	35%	42%
20	3.2 [3-3]	3.84 [3-10]	5 [5-0]	6 [6-0]	7 [7-0]	8.4 [8-5]
25	4 [4-0]	4.8 [4-10]	6.25 [6-3]	7.5 [7-6]	8.75 [8-9]	10.5 [10-6]
30	4.8 [4-10]	5.76 [5-10]	7.5 [6-6]	9 [9-0]	10.5 [10-6]	12.6 [12-8]
35	5.6 [5-8]	6.72 [6-9]	8.75 [8-9]	10.5 [10-6]	12.25 [12-3]	14.7 [14-9]
40	6.4 [6-5]	7.68 [7-9]	10 [10-0]	12 [12-0]	14 [14-0]	16.8 [16-10]
45	7.2 [7-3]	8.64 [8-8]	11.25 [11-3]	13.5 [13-6]	15.75 [15-9]	18.9 [18-11]
50	8 [8-0]	9.6 [9-8]	12.5 [12-6]	15 [15-0]	17.5 [17-6]	21 [21-0]
55	8.8 [8-10]	10.56 [10-7]	13.75 [13-9]	16.5 [16-6]	19.25 [19-3]	23.1 [23-2]
60	9.6 [9-8]	11.52 [11-7]	15 [15-0]	18 [18-0]	21 [21-0]	25.2 [25-3]

Footnotes:
¹ Based on Table 21.25-H
² Values based on braced wall line spacing of up to 35 feet. For braced wall line spacing's greater than 35 feet, multiply the values in the table by a factor of actual braced wall line spacing divided 35. In no case shall the braced wall line spacing be more than 50 feet. See s. Comm 21.25(8)(e)2.
³ In accordance with Footnote 4 of Table 21.25-H, the percent values of Table 21.25-H are increased by 20%. The braced wall height may not exceed 12 feet.

Comm 20.09 Procedure for obtaining uniform building permit.

(5) REQUIRED PLANS.

(b) *Floor plan.*

2. The following features shall be included on all floor plans:

d. The location and construction details of the braced wall lines.

➤ **From 2009 UDC Code and Commentary**

Question: If I fully sheath my homes have I automatically satisfied the requirements of the wall bracing provisions of the UDC?

Answer: No. The plans will have to clearly show the location and design detail of the braced wall panels, the location and details of required interior braced wall lines and their panel(s), location and details of required corner and 2- foot end-wall return(s), location and details of required tie-downs, etc. as specified in Comm 21.15 (8) and (9)(c).

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**Meets Continuously Sheathed
Bracing Method?**



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Comm 21.25 (9) (c) *Continuously sheathed braced wall line using wood structural panels.*

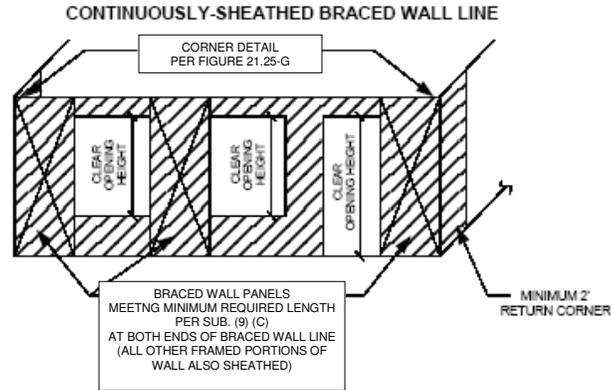
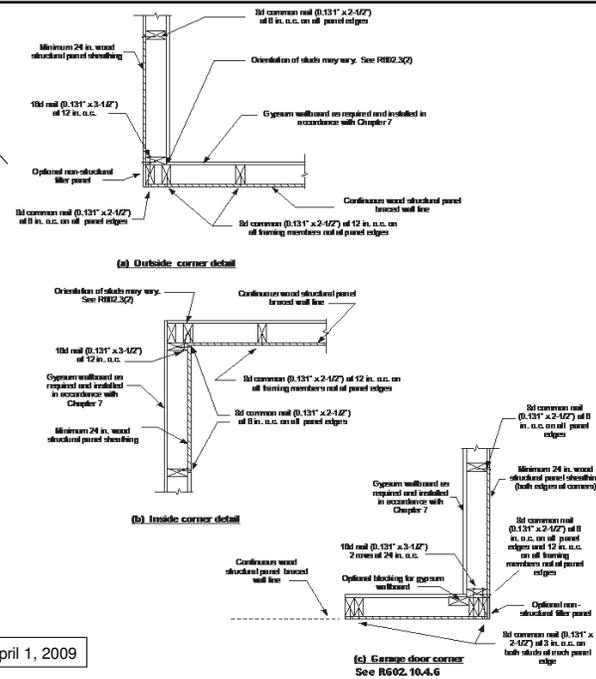


FIGURE 21.25-F
CONTINUOUSLY-SHEATHED BRACED WALL LINE

Effective April 1, 2009



Effective April 1, 2009

**TABLE 21.25-J
LENGTH REQUIREMENTS FOR BRACED WALL PANELS
IN A CONTINUOUSLY SHEATHED WALL ¹**

MINIMUM LENGTH OF BRACED WALL PANEL (inches)			MAXIMUM OPENING CLEAR HEIGHT NEXT TO THE BRACED WALL PANEL (% of wall height)	BRACED WALL PANEL HEIGHT TO WIDTH RATIO
8-foot wall	9-foot wall	10-foot wall		
48	54	60	100%	2:1
32	36	40	85%	3:1
24	27	30	67%	4:1 ²

¹ Interpolation is permitted.

² A 4:1 aspect ratio is permitted for full-height sheathed wall segments on either side of garage openings. (Supporting roof only.)

Effective April 1, 2009

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- A person may extrapolate table for wall heights up to 12 ft. by using the aspect ratios listed in the right-hand column.
- For example, a wall of 12 ft. height with adjacent opening no than 67% of wall would be permitted to have a wall bracing panel length of 36".
(12' / 4)

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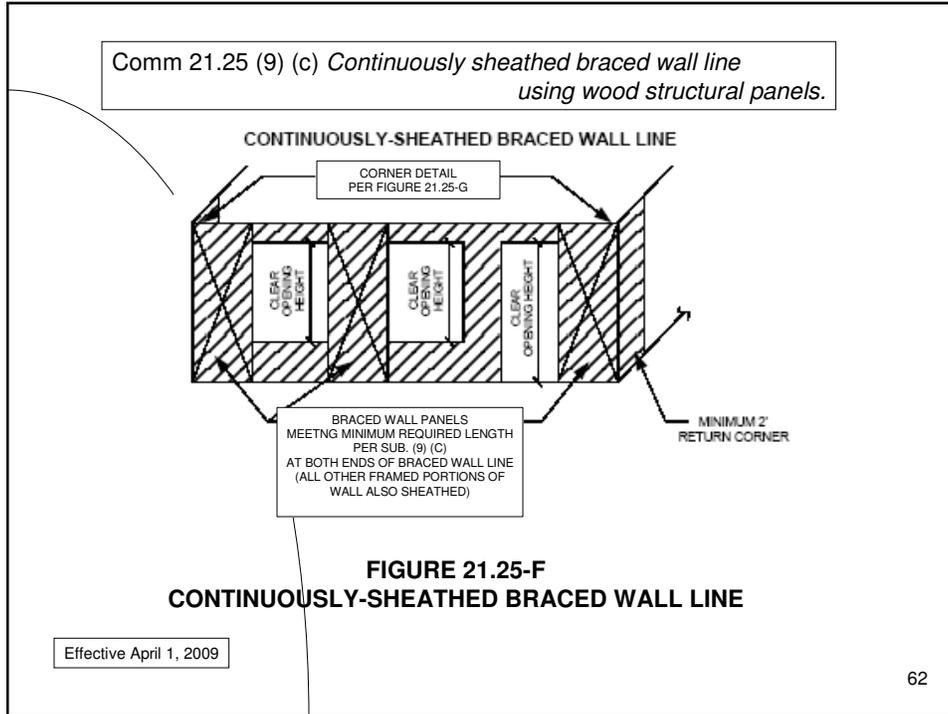


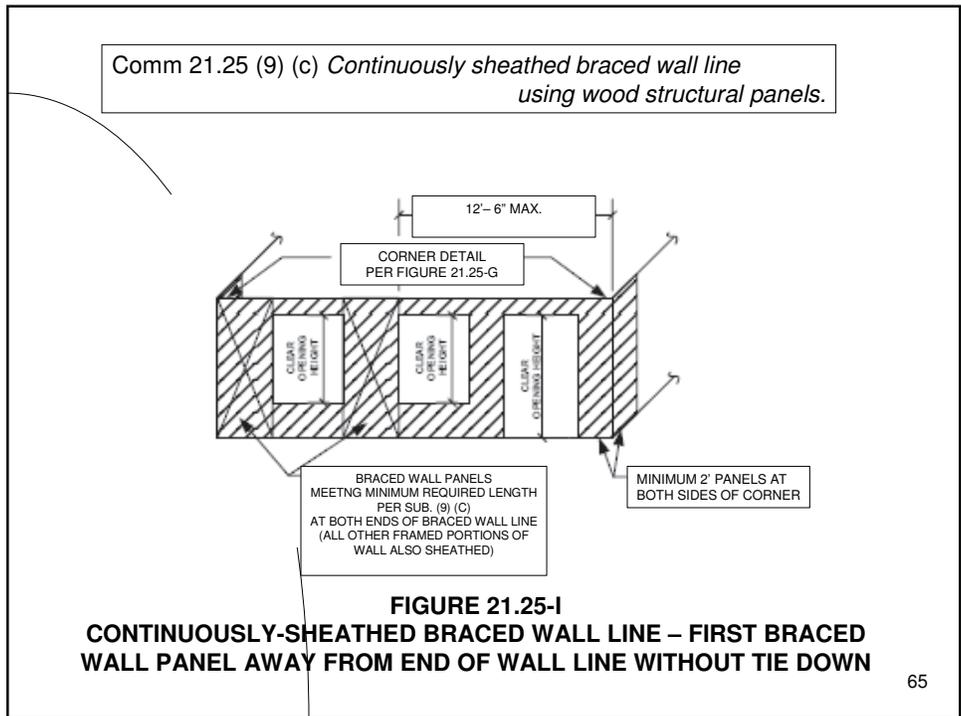
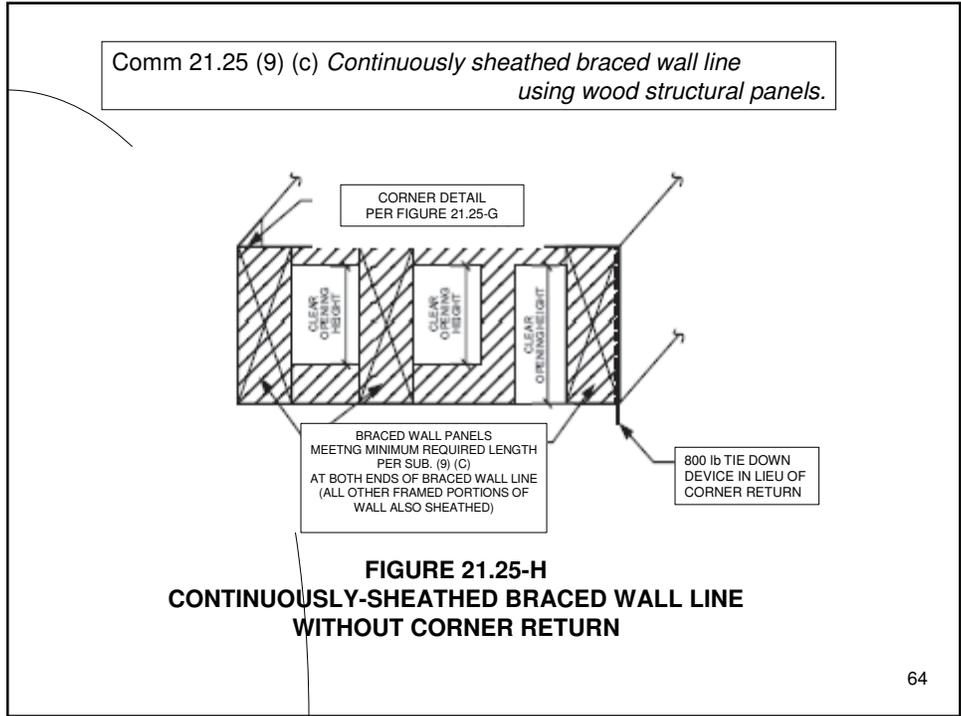
TABLE 21.25-K
ADJUSTMENT FACTORS TO THE PERCENTAGE OF REQUIRED BRACING PER WALL LINE – CONTINUOUSLY SHEATHED

ADJUSTMENT BASED ON MAXIMUM WALL CLEAR OPENING HEIGHT:		MULTIPLY PERCENTAGE OF BRACING PER WALL LINE BY:
Continuous wood structural panel sheathing when maximum opening height in wall line does not exceed *	85% of wall height	0.9
	67% of wall height	0.8

* Percentage of bracing for continuous wood structural panel sheathing shall be based on sub. (8) (b) 4 requirements.

Effective April 1, 2009

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Comm 21.25 (9) (c) *Continuously sheathed braced wall line using wood structural panels.*

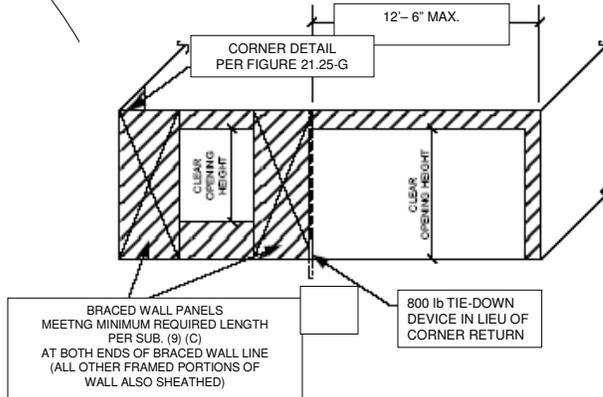


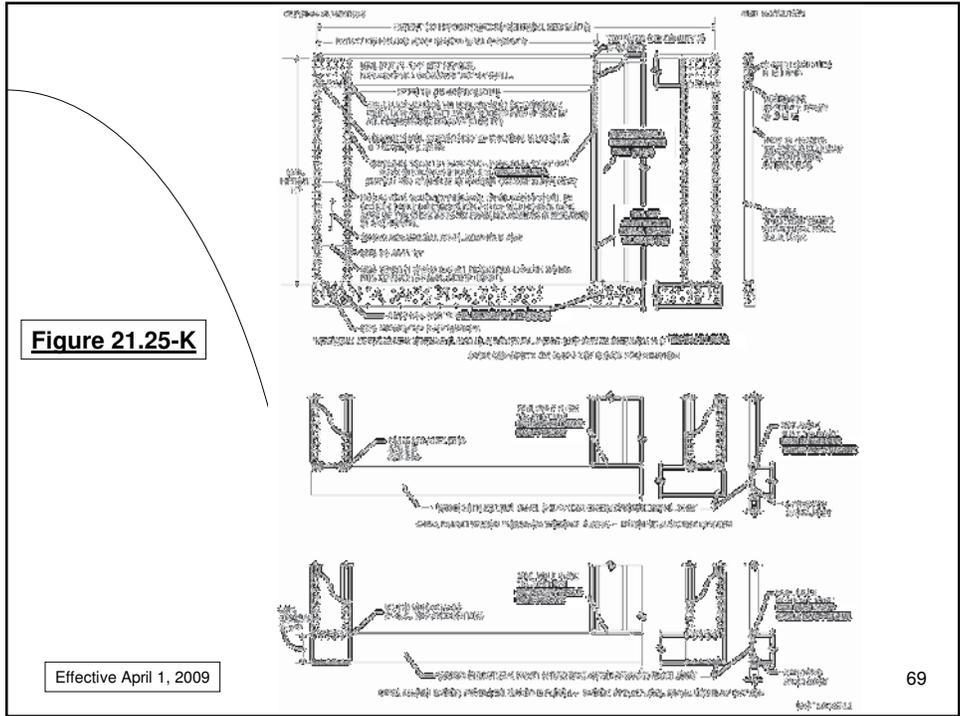
FIGURE 21.25-J
CONTINUOUSLY-SHEATHED BRACED WALL LINE – FIRST BRACED WALL PANEL AWAY FROM END OF WALL LINE WITH TIE DOWN

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6:1 Aspect Ratio (16" min-8' wall, 20" min-10' wall)
Comm 21.25 (9) (c) 5.

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The department will accept the use the
Portal Frame Bracing method set forth in
APA Technical Note Number J740

TECHNICAL NOTE

Portal Frame Bracing Without Hold-Down Devices

FOR USE IN CONTINUOUSLY SHEATHED WALLS

Number J740
July 2008

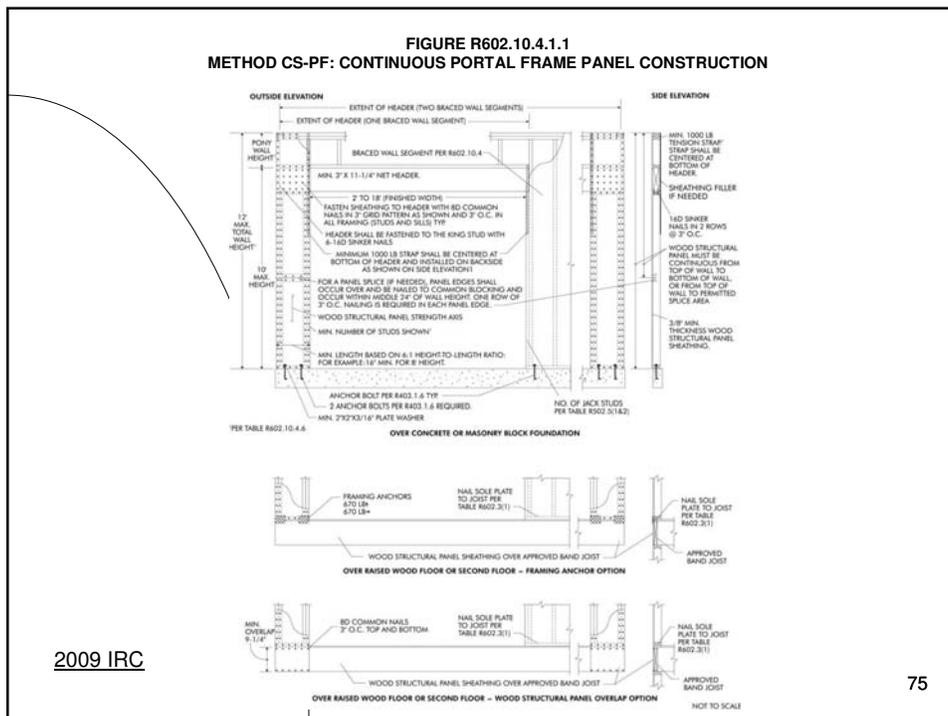
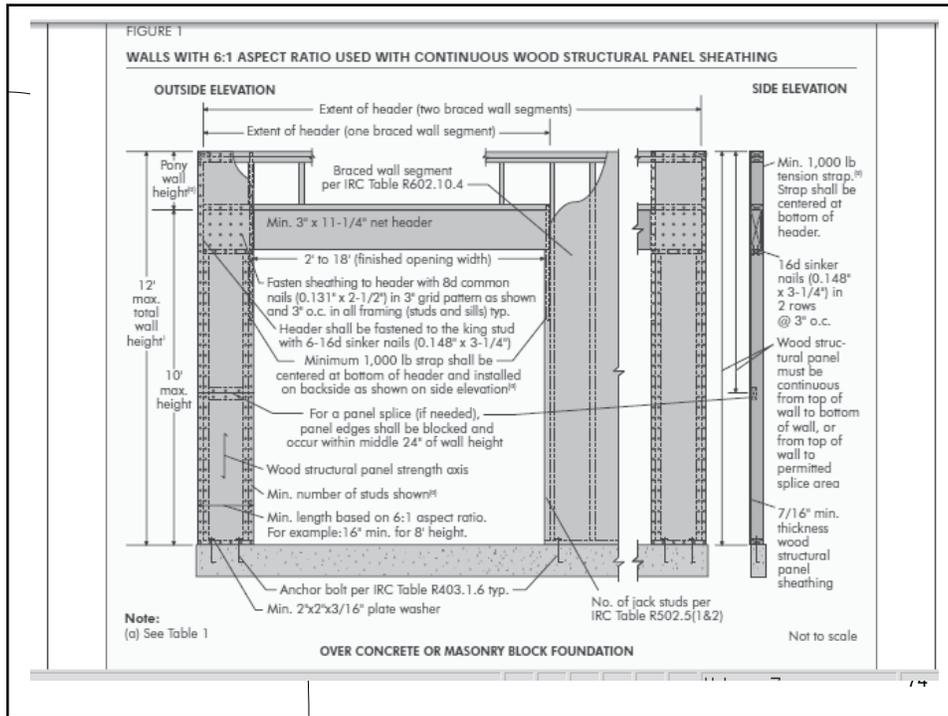
BACKGROUND

Wall bracing is required by the International Residential Code (IRC) to resist wall racking due to wind or seismic forces. Historically, wall bracing segments had to be a minimum of 48 inches in width. With modern home designs maximizing windows and minimizing wall sections, finding 48 inches to count toward bracing can be a challenge. APA developed the portal frame for wall bracing to help provide a segment as narrow as 16 inches that can be counted toward the overall bracing amount required by the code. The portal frame design relies on additional nailing and a semi-rigid connection between the wall segment sheathing and header to improve performance in a narrow wall segment. For information on IRC wall bracing requirements, refer to APA's publication, *Introduction to Wall Bracing*, Form F430.

This portal frame without hold downs is also sometimes referred to as "6:1 aspect ratio segments used with continuous structural panel sheathing" and/or the "APA narrow wall bracing method." This portal frame design has been tested to show bracing performance comparable to existing code-permitted bracing for residential structures. APA and three other independent labs have conducted nearly 100 cyclic tests¹⁾ showing that the 16-inch-wide portal frame design used in continuously sheathed wood structural panel walls with 6:1 aspect ratio segments at the vertical



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- Alternate Bracing Methods or Tools

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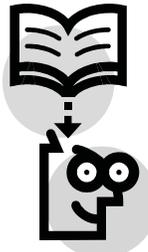
Comm 21.25 (8) WALL BRACING. (a) *General.*
..... Where a building, or a portion thereof, does not comply with one or more of the bracing requirements in this section, those portions shall be designed and constructed in accordance with accepted engineering practice.

Note: Acceptable engineering wall bracing practices include the provisions under s. R602.10 of the International Residential Code–2009.

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The International Residential Code (IRC) ?



Section	Code	Section	Code	Section	Code	Section	Code
10	0	000	10.1	10.1	10.1	10.1	10.1
			10.2	10.2	10.2	10.2	
			10.3	10.3	10.3	10.3	
			10.4	10.4	10.4	10.4	
			10.5	10.5	10.5	10.5	
			10.6	10.6	10.6	10.6	
			10.7	10.7	10.7	10.7	
			10.8	10.8	10.8	10.8	
			10.9	10.9	10.9	10.9	
			10.10	10.10	10.10	10.10	
			10.11	10.11	10.11	10.11	
			10.12	10.12	10.12	10.12	
11	0	000	11.1	11.1	11.1	11.1	
			11.2	11.2	11.2	11.2	
			11.3	11.3	11.3	11.3	
			11.4	11.4	11.4	11.4	
			11.5	11.5	11.5	11.5	
			11.6	11.6	11.6	11.6	
			11.7	11.7	11.7	11.7	
			11.8	11.8	11.8	11.8	
			11.9	11.9	11.9	11.9	
			11.10	11.10	11.10	11.10	
			11.11	11.11	11.11	11.11	
			11.12	11.12	11.12	11.12	
12	0	000	12.1	12.1	12.1	12.1	
			12.2	12.2	12.2	12.2	
			12.3	12.3	12.3	12.3	
			12.4	12.4	12.4	12.4	
			12.5	12.5	12.5	12.5	
			12.6	12.6	12.6	12.6	
			12.7	12.7	12.7	12.7	
			12.8	12.8	12.8	12.8	
			12.9	12.9	12.9	12.9	
			12.10	12.10	12.10	12.10	
			12.11	12.11	12.11	12.11	
			12.12	12.12	12.12	12.12	
13	0	000	13.1	13.1	13.1	13.1	
			13.2	13.2	13.2	13.2	
			13.3	13.3	13.3	13.3	
			13.4	13.4	13.4	13.4	
			13.5	13.5	13.5	13.5	
			13.6	13.6	13.6	13.6	
			13.7	13.7	13.7	13.7	
			13.8	13.8	13.8	13.8	
			13.9	13.9	13.9	13.9	
			13.10	13.10	13.10	13.10	
			13.11	13.11	13.11	13.11	
			13.12	13.12	13.12	13.12	
14	0	000	14.1	14.1	14.1	14.1	
			14.2	14.2	14.2	14.2	
			14.3	14.3	14.3	14.3	
			14.4	14.4	14.4	14.4	
			14.5	14.5	14.5	14.5	
			14.6	14.6	14.6	14.6	
			14.7	14.7	14.7	14.7	
			14.8	14.8	14.8	14.8	
			14.9	14.9	14.9	14.9	
			14.10	14.10	14.10	14.10	
			14.11	14.11	14.11	14.11	
			14.12	14.12	14.12	14.12	
15	0	000	15.1	15.1	15.1	15.1	
			15.2	15.2	15.2	15.2	
			15.3	15.3	15.3	15.3	
			15.4	15.4	15.4	15.4	
			15.5	15.5	15.5	15.5	
			15.6	15.6	15.6	15.6	
			15.7	15.7	15.7	15.7	
			15.8	15.8	15.8	15.8	
			15.9	15.9	15.9	15.9	
			15.10	15.10	15.10	15.10	
			15.11	15.11	15.11	15.11	
			15.12	15.12	15.12	15.12	

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The 2009 IRC may be viewed for free at the ICC website

www.iccsafe.org

- **In upper right-hand corner Search for “Free Ecodes”**
- **Click on first search result “eCodes, Free eCodes”**
- **Scroll down page and click on Learn more under the category FreeEcodes in middle of webpage**
- **Click on Browse the catalogue of Free Codes in the middle of the webpage**
- **Scroll down the page and select the category, International Codes (4)**

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- Simpson Strong-Tie has a Wall-Bracing-Length Calculator that based on the 2009 IRC.

You can access that at their website:

www.strongtie.com

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ASCE 7 – 2005?

When the dwelling is designed using structural analysis, the designer may use ASCE 7-2005 as a design tool. Even though the design wind pressures when using ASCE 7 may result in loads of less than 20 PSF required by s. Comm 21.02 (1) (c) it would be acceptable to the department because it is considered an acceptable method of structural analysis.

What should you look for when you get these calculations?

Comm 21.02 (1)(c)
& ASCE 7-05²

1. That the design wind speed is 90 MPH (3-Second Gust)

2. That the correct wind exposure factor is used
 - Exposure factors are B, C, and D and are based on surface roughness of terrain.
 - Pictures showing examples of B, C, and D terrains are given in ASCE 7

6.5.6 *Exposure category*: The exposure category is based on ground surface roughness that is determined from natural topography, vegetation, and constructed facilities.

- Surface Roughness Categories are:
 - B; Urban and suburban areas, wooded areas or other terrain....
 - C; Open terrain with scattered obstructions having heights generally less than 30 ft..
 - D; Flat, unobstructed areas and water surfaces outside hurricane prone regions. ...
- Exposure categories are similar – B, C , D – and related to surface roughness.

Where have we seen this exposure category used in the current code?

TABLE 21.25-L
HEADER TO JACK STUD STRAP AND THE NUMBER OF ADDITIONAL JACK STUDS REQUIRED FOR RESISTING WIND PRESSURES PERPENDICULAR TO 6:1 ASPECT RATIO WALLS LOCATED IN WIND EXPOSURE CATEGORIES C AND D^c

Required Strap Capacity (lb) ^a	Wall Height (ft)	Wind Exposure Category C			Wind Exposure Category D		
		85 mph	90 mph	less than 110 mph	85 mph	90 mph	less than 110 mph
	10 and less	1000	1200	2275	1375	1750	3050
Number of additional 2x4 Jack Studs ^b	8	—	—	—	—	—	1
	9	—	—	1	—	1	2
	10	—	1	2	1	2	3

^a If 2x6 framing is used, then the required strap capacity may be multiplied by 0.65, but in no case shall the required strap capacity be less than 1,000 lb.

^b If 2x6 framing is used, then no additional framing shall be required.

^c Exposure category B is comprised of urban and suburban areas, wooded areas, or other terrain with numerous closely-spaced obstructions having the size of single-family dwellings or larger. Exposure B shall be assumed unless the site meets the definition of another type exposure.

Exposure category C is comprised of flat open country and grasslands with scattered obstructions, including surface undulations or other irregularities, having heights generally less than 30 feet extending more than 1,500 feet from the building site in any quadrant. This exposure also applies to any building located within Exposure B type terrain where the building is directly adjacent to open areas of Exposure C type terrain in any quadrant for a distance of more than 600 feet.

Exposure category D is comprised of flat, unobstructed areas exposed to wind flowing over open water for a distance of at least 1 mile. This exposure applies only to those buildings and other structures exposed to the wind coming from over the water. Exposure D extends inland from the shoreline a distance of 1,500 feet or 10 times the height of the building or structure, whichever is greater.

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