



2010 UDC January/February/March Updates

Presentation on

2009 Uniform Dwelling Code



WALL-BRACING

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



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2009 Code Change



Status of 2009 Code Change

- Effective April 1, 2009.
- Watch S&B website for updates.
- 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.

- About Commerce
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[page.](#)

See [packet of information](#) about **April 1, 2009, Uniform Dwelling Code Changes**

See improved PDF copies of **figures that are not very clear** in April 1, 2009, edition of [Comm 20-25](#):

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



Important [Explanation](#) of **Dwelling Contractor Education**

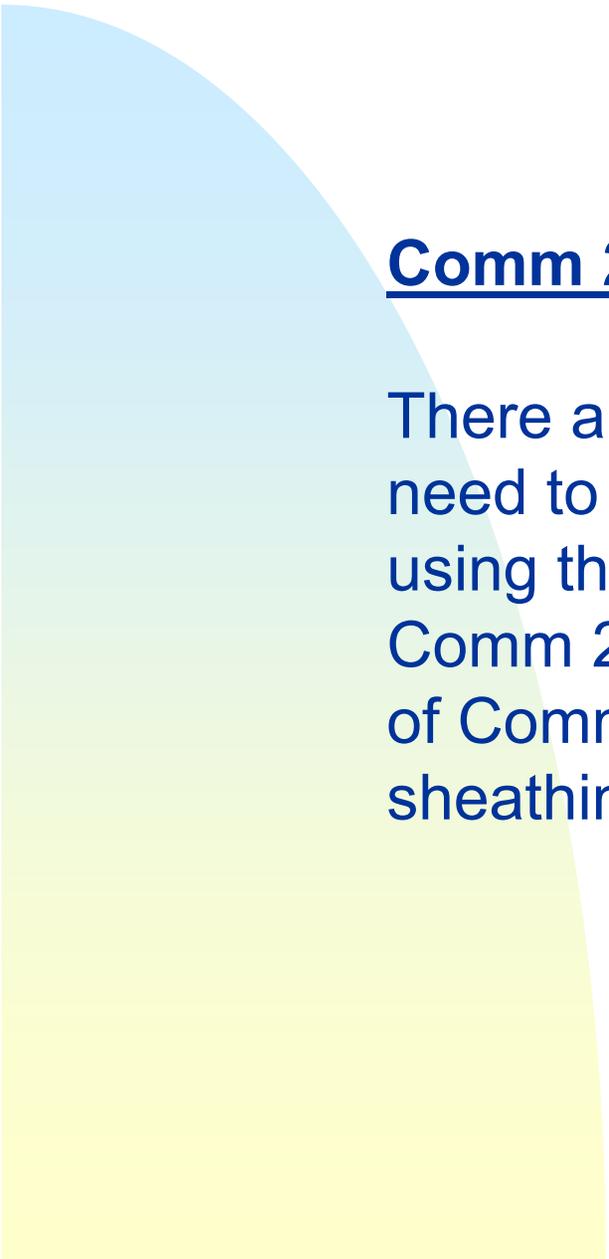
Proposed draft permanent rule

credentials are administered.
There is enforcement of the UDC in all Wisconsin municipalities.

1. UDC Program contacts [GO](#)
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6. [You can sign up](#) to receive occasional messages from the Safety and Buildings Division about news that is important to people interested in Wisconsin's Uniform Dwelling Code Program.
7. The Wisconsin Building Safety Network ([WBSN](#))

List of errata in printed version of April 1, 2009 Comm 20-25.

1. The reference to sub. (10) in s. Comm 21.03(1)(c) should be sub (8).
 2. Section Comm 21.11(1)(b)1. should be 1/2 - inch gypsum wallboard
 3. Section Comm 21.11(1)(b)2. should be 1/2 - inch nominal wood structural panel
 4. Section Comm 21.11(1)(b)3. should be 3/4 - inch sawn lumber with tongue-and-groove or lap joints
(For items 2,3,4, these number were missing on the earlier copies of the UDC that were distributed. It has been changed since then)
 5. The reference to Table 21.25-G in s. Comm 21.25(8)(e)2. should be 21.25-H.
 6. The reference to Table 21.25-J in Table 21.25-H, footnote 5, should be 21.25-K.
 7. The reference to sub. (9)(c)6. in Figure 21.25-G(c) should be sub.(9)(c)5.
-



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):

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]*

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.



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

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 $\frac{3}{4}$ 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.

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 1/2-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

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

Comm 20.09 Procedure for obtaining uniform building permit.

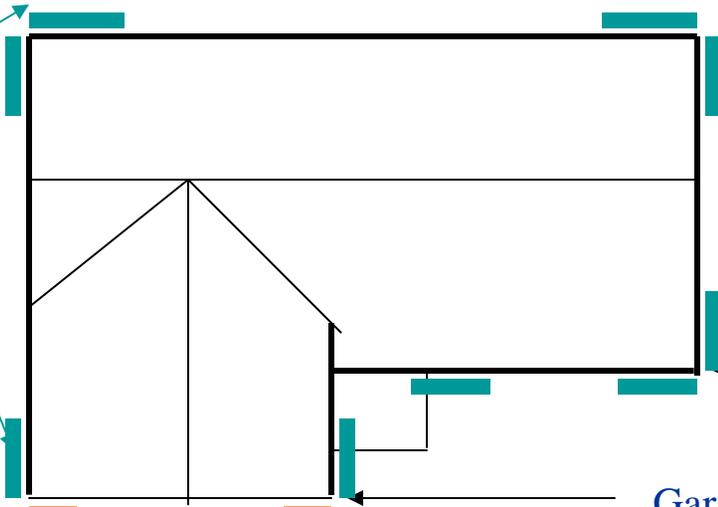
(5) REQUIRED PLANS.

(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.

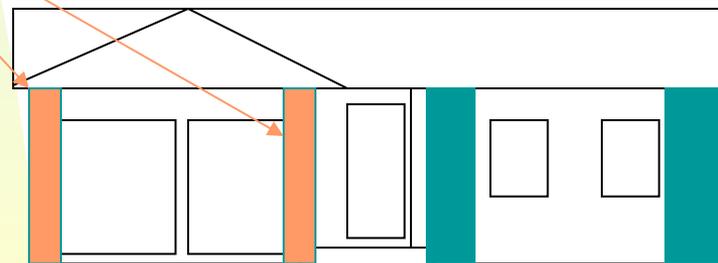
■ Braced per
Comm 21.25 (1) (b)



House brace line

Garage brace line

■ Fully sheathed
per bulletin



Bracing Example

Why has bracing changed?



Why has bracing changed?



Bracing Methods

Intermittent Methods (Except M7 Continuous)

Method	Description	Min. Width
1	Let-in bracing, wood 1x4	55" to 96"
2	Let-in bracing, metal T	55" to 96"
3	Diagonal lumber boards	48"
4	Wood Structural Panels	48"
5	Fiberboard	48"
6	Gypsum (1-or 2-sided)	96" or 48"
7	Alternate braced panels w/ holddowns Continuously sheathed w/ WSP's	28" - 42" 16" - 24"
8	Other approved wind bracing methods	

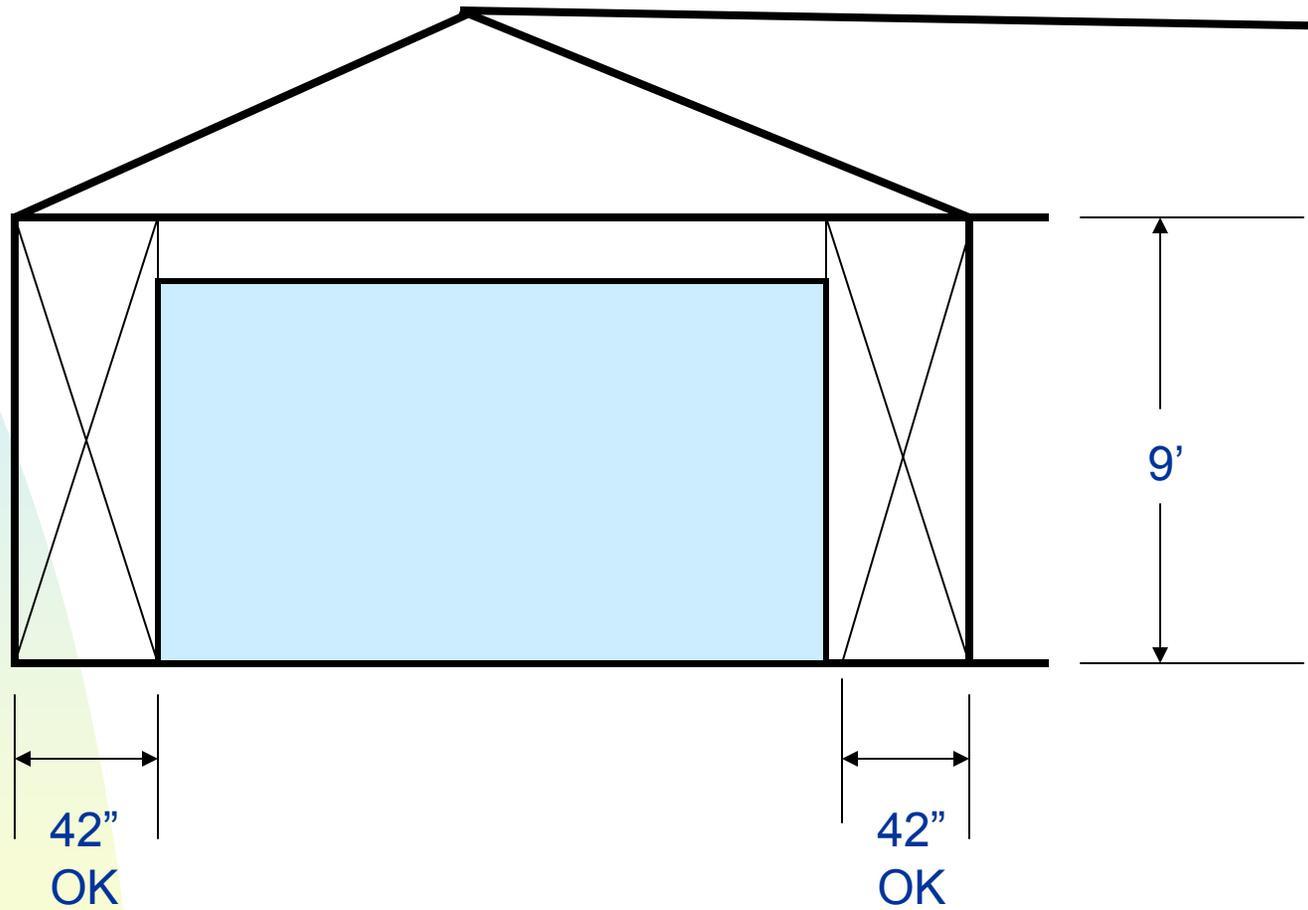
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Comm 21.25 (8) (c) 2. c.

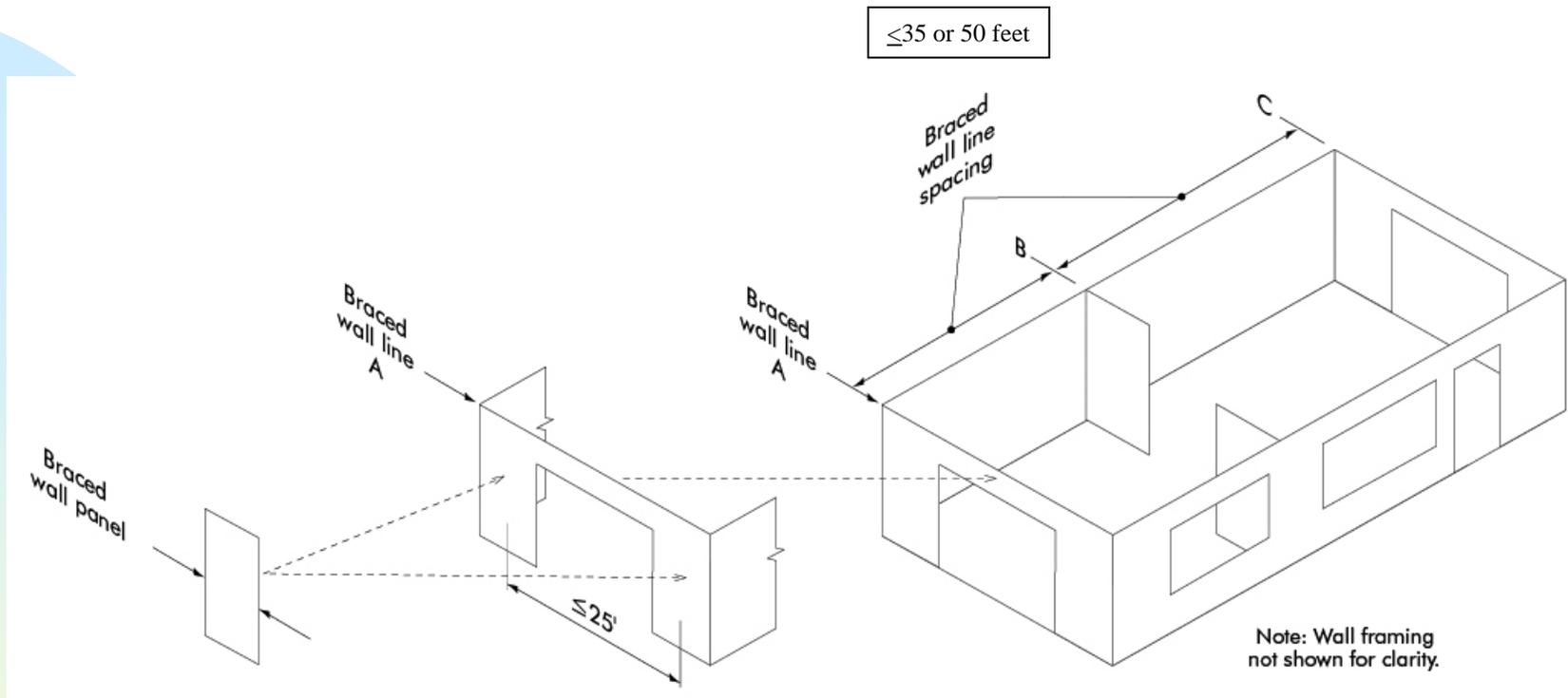
For methods under par. (b) 3., 4. and 5., panels between 36 inches and 48 inches in length shall be permitted to count towards the required percentage of bracing in Table 21.25–H, and the effective contribution shall comply with Table 21.25–G.

TABLE 21.25-G
EFFECTIVE LENGTHS FOR BRACE WALL PANELS
LESS THAN 48 INCHES IN ACTUAL LENGTH
 (BRACING METHODS PAR. (b) 3., 4. and 5.)

Actual Length of Braced Wall Panel (inches)	Effective Length of Braced Wall Panel (inches)		
	8-foot Wall Height	9-foot Wall Height	10-foot Wall Height
48	48	48	48
42	36	36	N/A
36	27	N/A	N/A



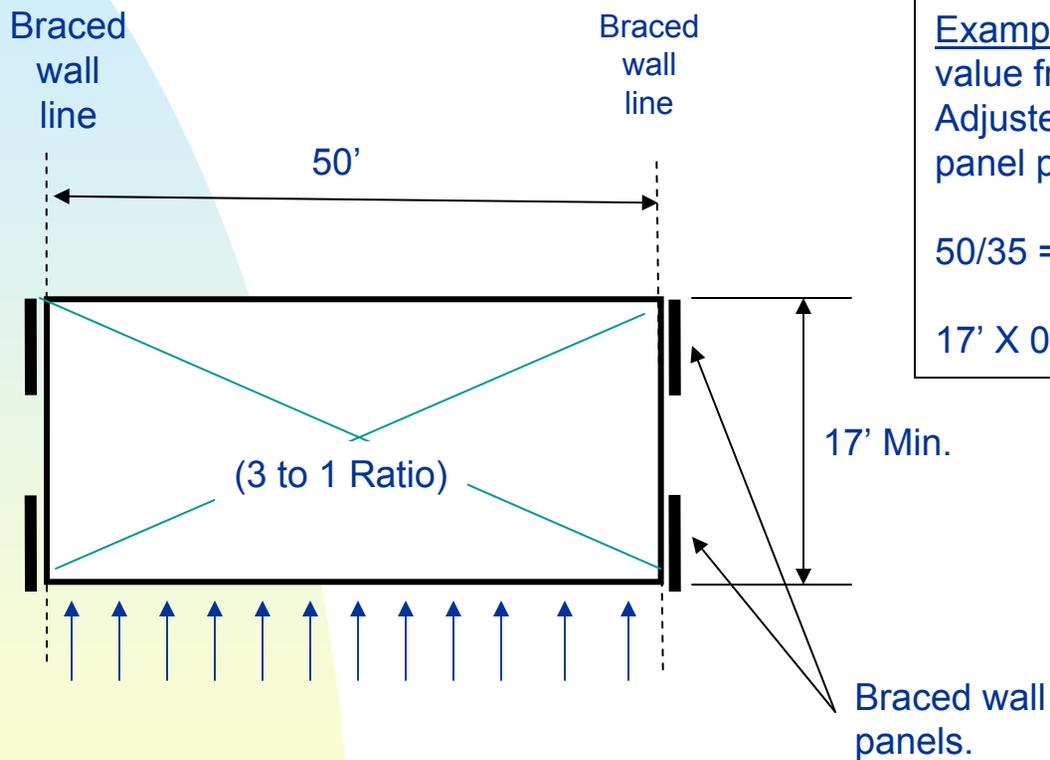
Intermittent Wall Bracing
Table 21.25-G



BRACED WALL PANELS AND BRACED WALL LINES

Effective April 1, 2009

Braced wall lines spaced more than 35 ft. apart



Example: 50'/35' times percent value from Table 21.25-H = Adjusted min. braced wall panel percentage.

$$50/35 = 1.43 \times 16\% = 23\%$$

$$17' \times 0.23 = 3.91' \text{ Min. Length}$$

➤ 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.

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Notice: All Wisconsin Department of Commerce office locations will be closed for business on Monday, October 12 as part of the employee furloughs specified in the 2009-2011 state budget.

Education Classes from S&B and Other Providers

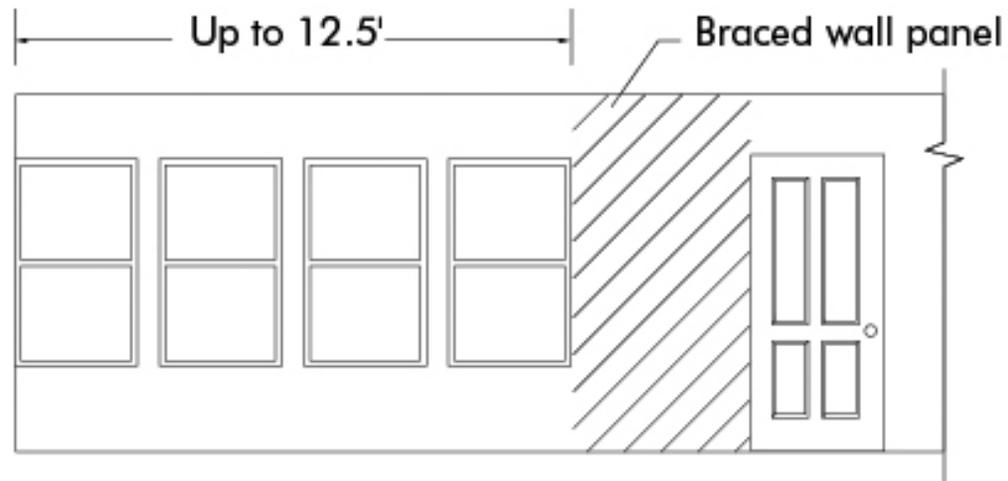
<p>Plumbing and POWTS 2009 / 2010 Continuing Education PDF Brochure - Register Online (Registered and Paid List)</p>	<p>An 11-session series of classes in Sheboygan beginning Oct. 24, 2009, to prepare people to take the master or journeyman electrician exams. See brochure, PDF file.</p>	<p>Order a computer disc for potential 12 hours of Dwelling Contractor Qualifier continuing education. More info. Dwelling Contractor Education Questions?</p>	<p>Get approved continuing ed in the listings below. This link is not used to register for a class or to prove class attendance. This link is for course providers, not attendees.</p>
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Choose the initials of the credential for education that providers have chosen to list here.

- | | |
|---|--|
| <p>AFSC Automatic Fire Sprinkler Contractor
 AFSCM Auto Fire Sprinkler Cont - Mainten.
 BPVI Boiler - Pressure Vessel Inspector
 CBI Commercial Building Inspector
 CEI Commercial Electrical Inspector</p> | <p>LM Lift Mechanic
 ME Master Electrician
 MHI Manufactured Home Installer
 MP Master Plumber
 MPRA Master Plumber - Restricted Appliance</p> |
|---|--|

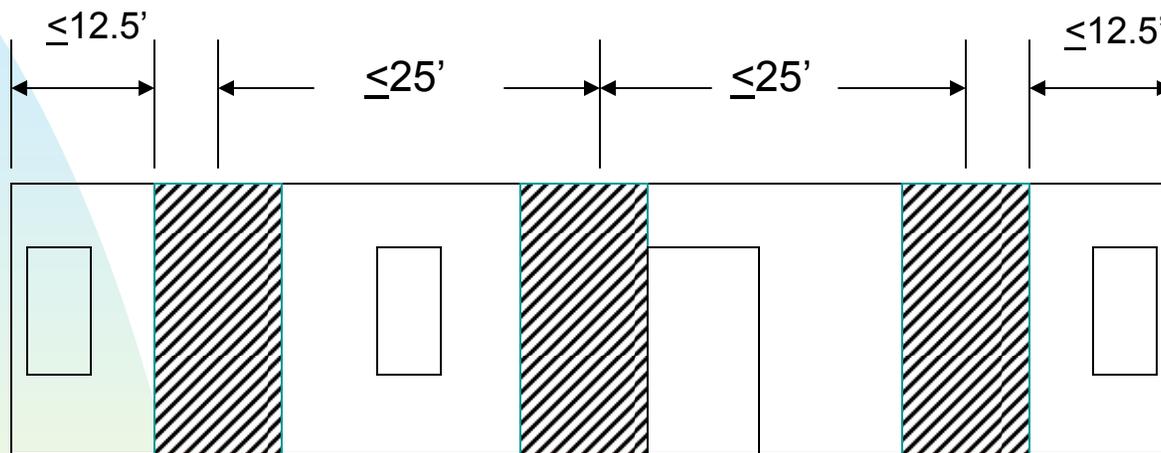
Safety and Buildings Classes

*** Dwelling Contractor Qualifier Continuing Education: 12 Credit Hours; **2009 S&B DCQ 12 Hour CE CD**; Covers Comm 5 and Comm 20-25, Wisconsin Administrative Code. The disk includes copies of all codes and the UDC Commentary for Comm 20-25. View the PowerPoint and answer the 147 question quiz at your own pace from your home computer (Internet access not required). The disc is free upon request. The fee for the education credits is \$100, payable when the request for credits and the quiz are sent to S&B. The disc has a complete explanation of the process. Contact the Safety and Buildings Credentialing Unit at 608-261-8467 or by email at madisoncred@commerce.state.wi.us and a disk will be mailed to you; S&B Course #10744; approval expiration date is 06/01/2012.



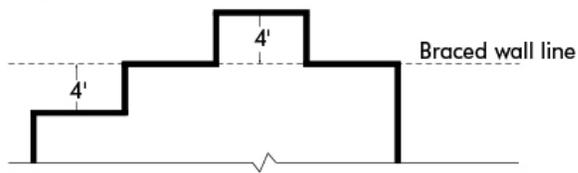
PERMITTED BRACED WALL PANEL DISTANCES FROM ENDS OF A BRACED WALL LINE

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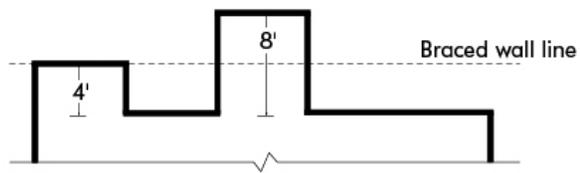


PERMITTED BRACED WALL PANEL DISTANCES OF A BRACED WALL LINE

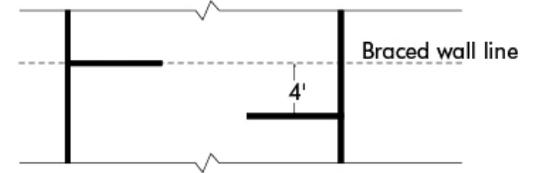
4-foot offsets.



8 feet total out-to-out offset
(4 feet each way) in braced wall line.



Offsets in discontinuous braced wall line.



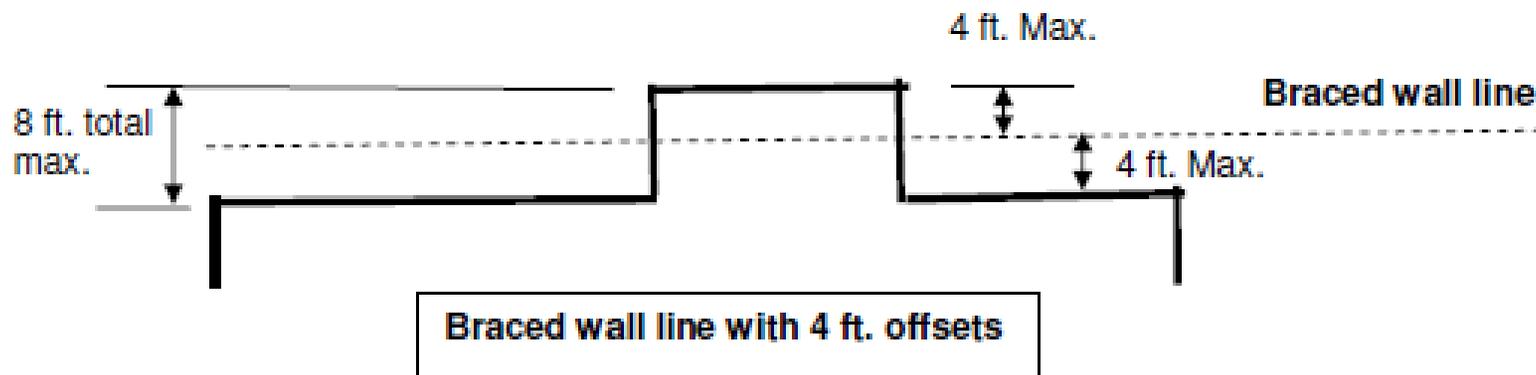
**FIGURE 21.25-C
PERMITTED OFFSETS**

Effective April 1, 2009

➤ **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-H
MINIMUM REQUIRED BRACING AMOUNTS FOR WALLS**

Wall Supporting:	AMOUNT OF BRACING PER WALL LINE⁴	
	Braced segments shall be located at least every 25-ft o.c. but not less than the following percentages:	
	Wood Structural Panel Sheathing [Sub. (8) (b) 4., (9) (b) &(9) (c)]	Other Methods Permitted [Sub. (8) (b) 1, 2, 3, 5& 6.]
Roof only¹	16%	16% ²
Floor and roof	16%	25% ²
Two Floors and roof	25%	35% ³

¹ The 'Roof only' condition also applies to one braced wall line of wood frame construction on the ground floor where all other exterior walls on the ground floor are constructed of masonry or concrete in accordance with s. Comm. 21.18.

² Wood and metal let in bracing exempt from % bracing requirement, but not spacing requirement.

³ Wood and metal let in bracing not permitted as a bracing method.

⁴ Maximum wall heights equal 12 feet. For wall heights over 10 feet, increase percent bracing requirement an additional 20%.

⁵ For continuous sheathing method with wood structural panels, percent requirement may be decreased 10% when openings on the wall line do not exceed 85% of wall height and may be decreased 20% when openings do not exceed 67% of wall height. **See Table 21.25-J**

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Wall Supporting

Roof only

Floor and roof

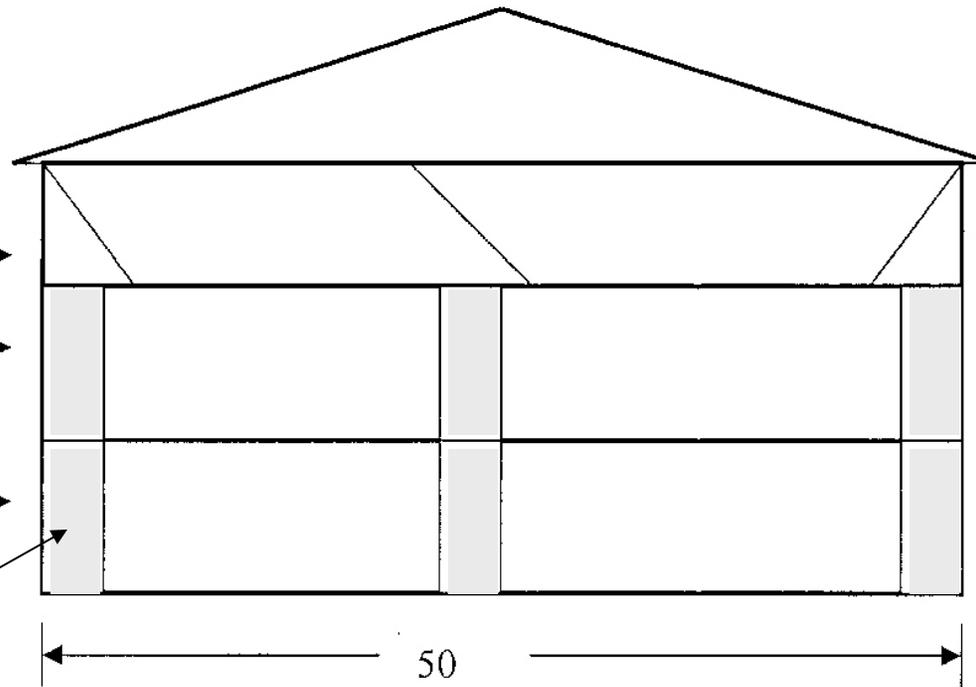
Two Floors and roof

Amount of Bracing

← 16% = 8' or 3 let-in braces

← 16% = 8'

← 25% = 15'



4 foot long panel typ.

Appendix Fig. 21.25-E
Wall Bracing Example
(Wood Panel Sheathing and Let-in Bracing)

Effective April 1, 2009



Example
This is a test!

➤ From 2009 UDC Code and Commentary

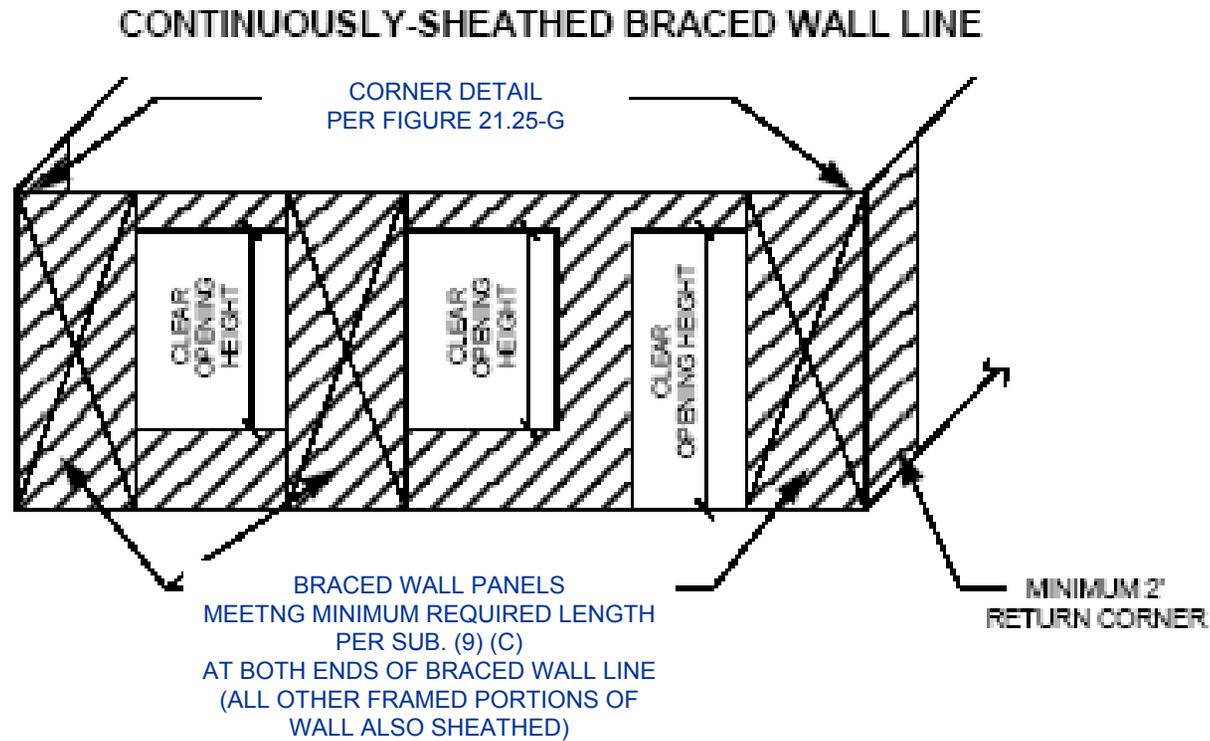
Question: If I fully sheath my homes have I automatically satisfied the requirements of the wall bracing provisions of the UDC?

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).

Meets Continuously Sheathed Bracing Method?

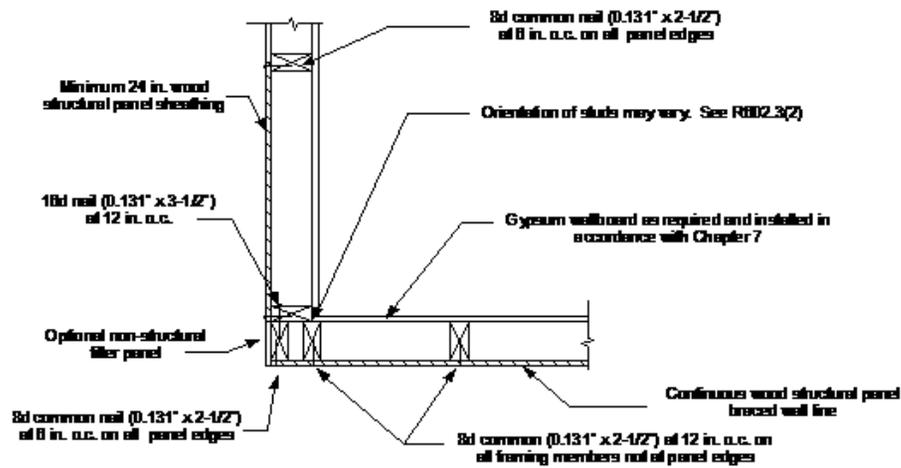


Comm 21.25 (9) (c) *Continuously sheathed braced wall line
using wood structural panels.*

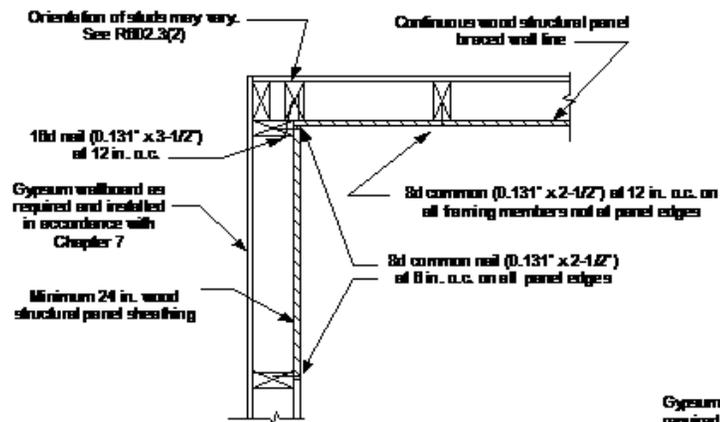


**FIGURE 21.25-F
CONTINUOUSLY-SHEATHED BRACED WALL LINE**

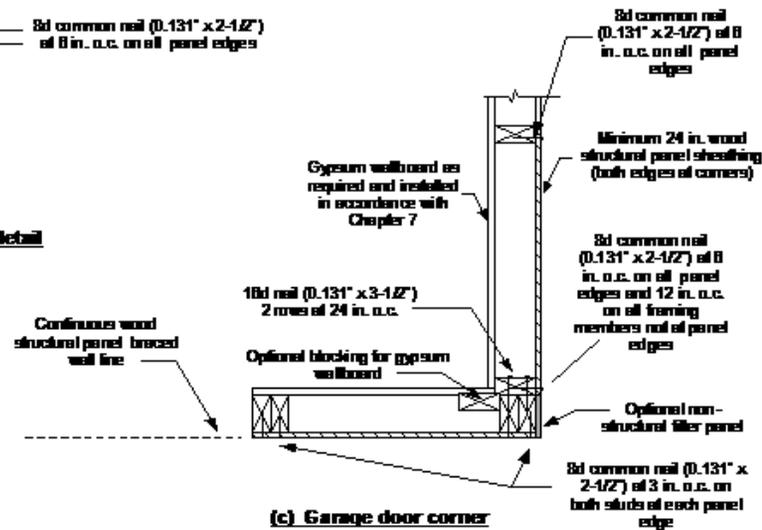
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(a) Outside corner detail



(b) Inside corner detail



**(c) Garage door corner
See R602.10.4.6**

Effective April 1, 2009

➤ From 2009 UDC Code and Commentary

Question: Fig. 21.25-G specifies that 8d nails be used while the fastener table in the appendix permits 6d nails for wall bracing panels with a thickness of 5/16" to 1/2". Is the 6d nail permitted in these corners when use sheathing in that thickness range?

~~*Answer:* No. The most restrictive applies. 8d nails shall provided in those areas shown in Figure 21.25-G.~~

Modified Answer: Yes.

UDC Appendix

MINIMUM FASTENER SCHEDULE TABLE

Panel Sheathing			
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, $1\frac{1}{2}''$	6"	12" 4
$5/8''$ to $3/4''$	8d smooth or common, 6d deformed nail, or staple, 14 ga. $1\frac{3}{4}''$	6"	12" 4
$7/8''$ to $1''$	8d common or deformed nail	6"	12"
$1\frac{1}{8}''$ to $1\frac{1}{4}''$	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"
$1\frac{1}{8}''$ to $1\frac{1}{4}''$	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	$1\frac{1}{2}''$ galvanized roofing nail; 8d common nail; staple 16 ga., $1\frac{1}{2}''$ long	3"	6"

Note: As an alternative to Fastener Table in UDC Appendix can use alternate fasteners specified in ICC ESR report 1539. You may access that at <http://www.icc-es.org/>



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ICC-ES Evaluation Report

ESR-1539

Reissued July 1, 2009

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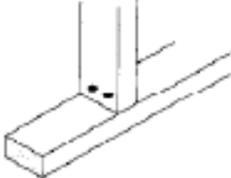
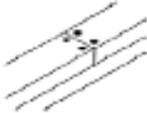
“NAILPRO”—BRAND NAME
JAACO CORPORATION
18080 NE 68TH STREET, SUITE C130
REDMOND, WASHINGTON 98052

“MASTER FASTENERS”—BRAND NAME
MASTER FASTENERS INTERNATIONAL, LLC
724 WEST COWLES STREET
LONG BEACH, CALIFORNIA 90813

“MAX”—BRAND NAME
MAX USA CORP.
257 EAST 2ND STREET
MINEOLA, NEW YORK 11501

From ESR Report 1539

TABLE 23—WALL FRAMING¹

CONNECTION ² (NAIL SIZE AND POSITION EXAGGERATED FOR ILLUSTRATIVE PURPOSES)	FASTENER MINIMUM NOMINAL LENGTH IN INCHES X MINIMUM NOMINAL NAIL DIAMETER IN INCHES	QUANTITY PER CONNECTION, OR SPACING BETWEEN FASTENERS (INCHES ON CENTER) ⁴
Top or sole plate to stud (face nail) 	3 1/4" x 0.162" nail (16d common) ³	2
	3" x 0.148" nail (10d common)	3
	3 1/4" x 0.131" nail	
	3" x 0.131" nail	
	3 1/4" x 0.120" nail	4
3" x 0.120" nail		
Stud to top or sole plate (toe nail) 	2 1/2" x 0.131" nail (8d common) ³	4
	3 1/2" x 0.162" nail (16d common)	3
	3" x 0.148" nail (10d common)	4
	3 1/4" x 0.131" nail	
	3" x 0.131" nail	
	3 1/4" x 0.120" nail	
	3" x 0.120" nail	5
	2 7/8" x 0.113" nail	
	2" x 0.113" nail	
	2 1/4" x 0.105" nail	
2 1/4" x 0.099" nail		
Cap/top plate laps and intersections 	3 1/2" x 0.162" nail (16d common) ³	2 each side of lap
	3" x 0.148" nail	3 each side of lap
	3 1/4" x 0.131" nail	
	3" x 0.131" nail	
	3 1/4" x 0.120" nail	
3" x 0.120" nail		
Diagonal bracing 	3 1/2" x 0.162" nail (16d common)	2
	2 1/2" x 0.131" nail (8d common) ³	
	3" x 0.148" nail (10d common)	
	3 1/4" x 0.131" nail	3
	3" x 0.131" nail	
	3 1/4" x 0.120" nail	
3" x 0.120" nail		

**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

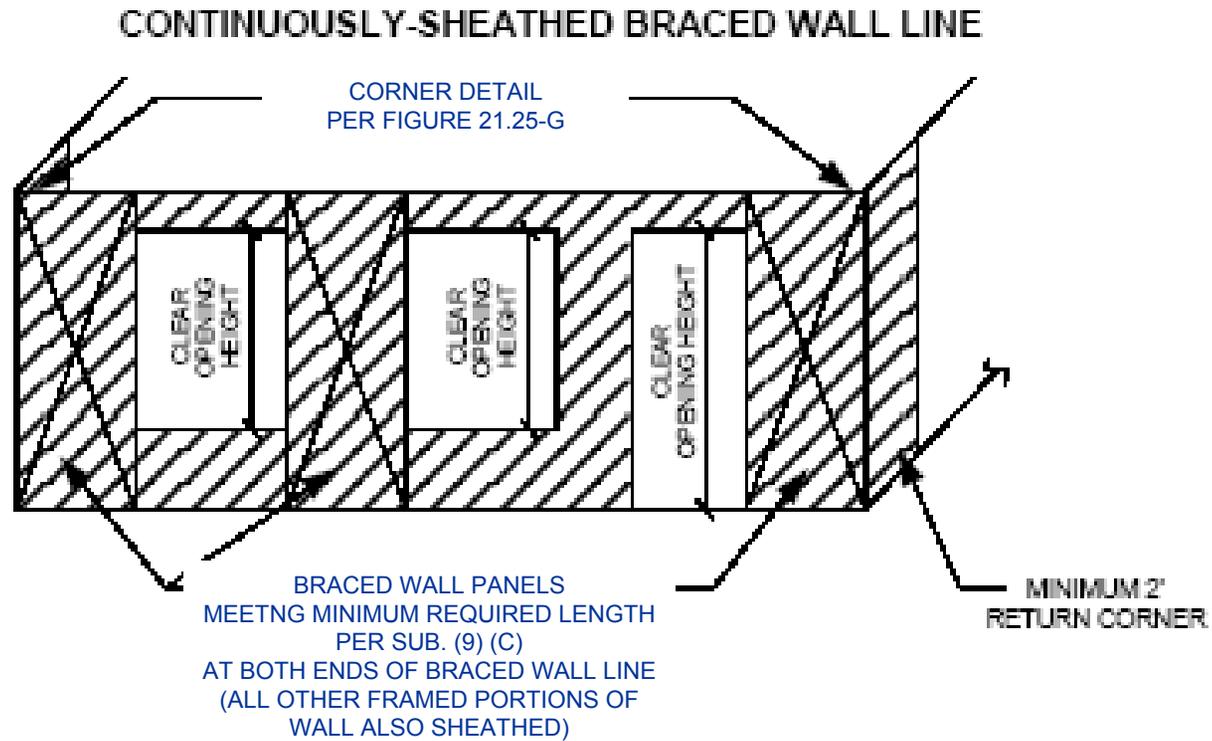
¹ Interpolation is permitted.

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

- 
- 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)

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

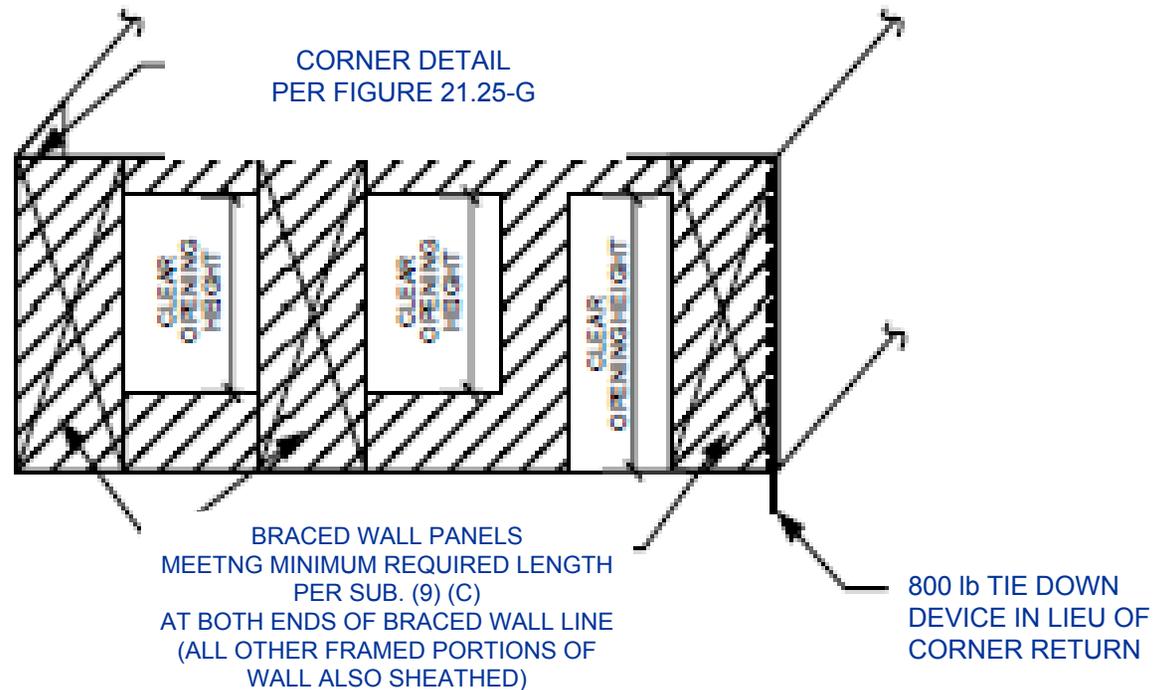
TABLE 21.25-K
ADJUSTMENT FACTORS TO THE PERCENTAGE OF REQUIRED BRACING
PER WALL LINE – CONTINUOUSLY SHEATHED

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.

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



**FIGURE 21.25-H
CONTINUOUSLY-SHEATHED BRACED WALL LINE
WITHOUT CORNER RETURN**

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

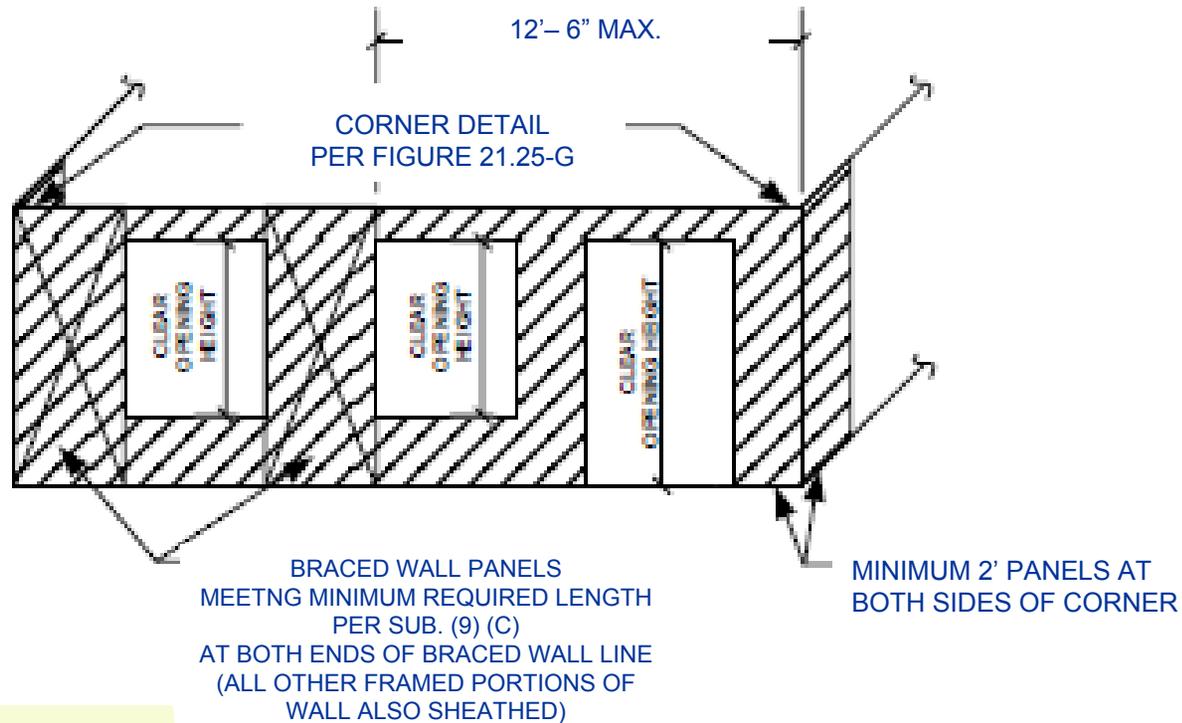


FIGURE 21.25-I
**CONTINUOUSLY-SHEATHED BRACED WALL LINE – FIRST BRACED
WALL PANEL AWAY FROM END OF WALL LINE WITHOUT TIE DOWN**

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

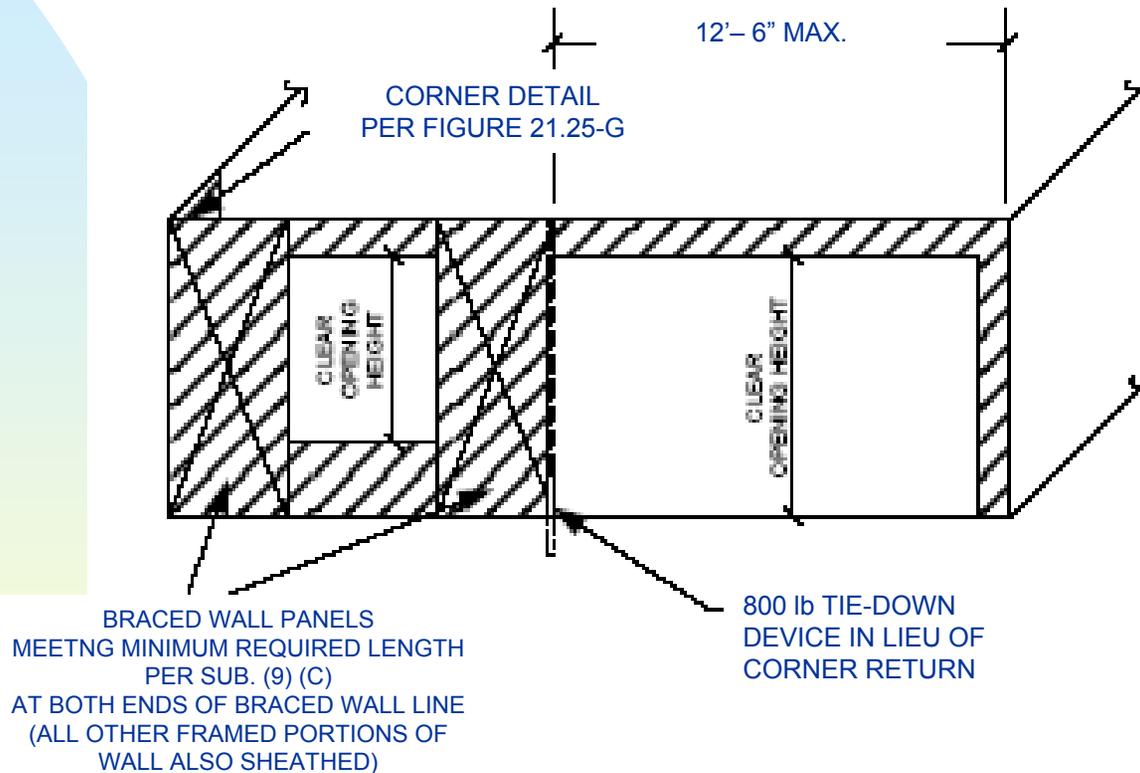
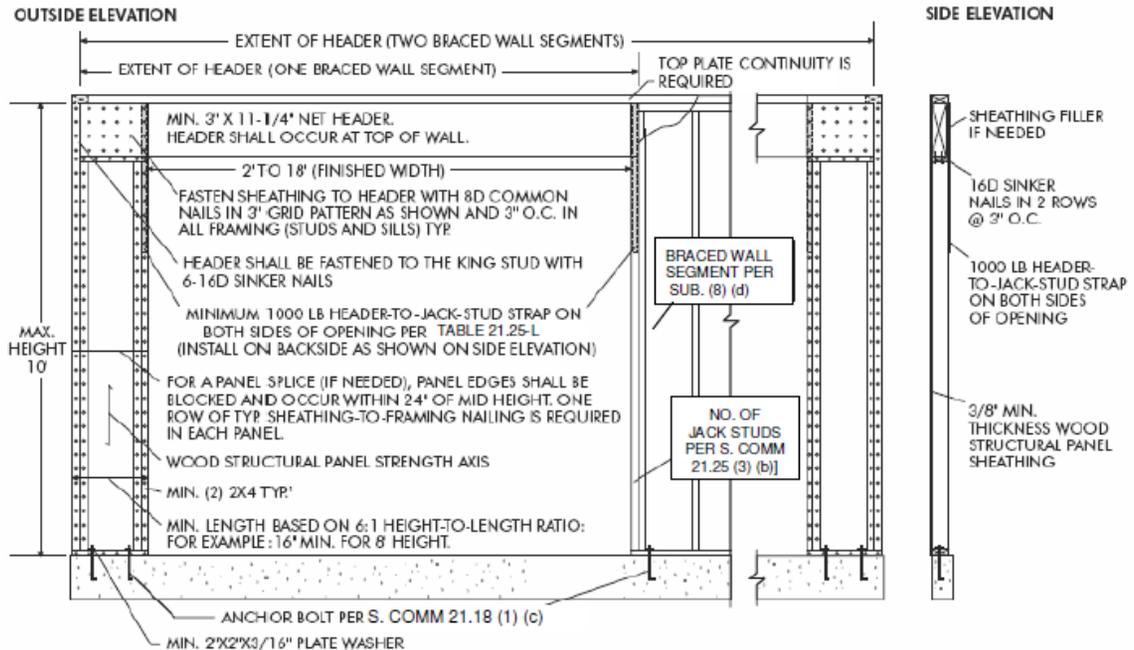


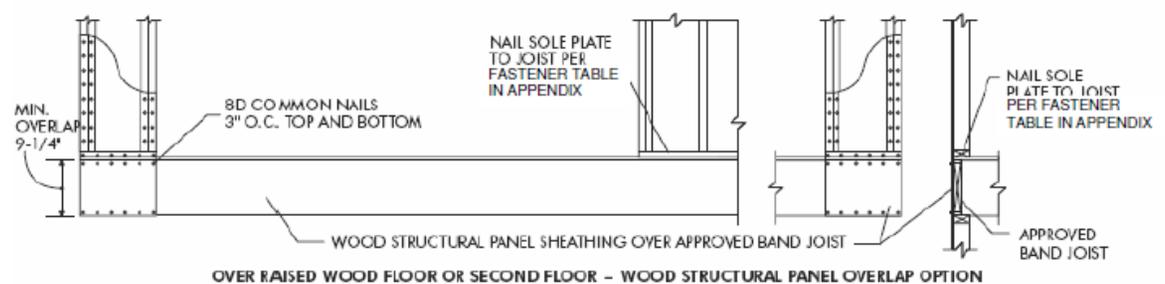
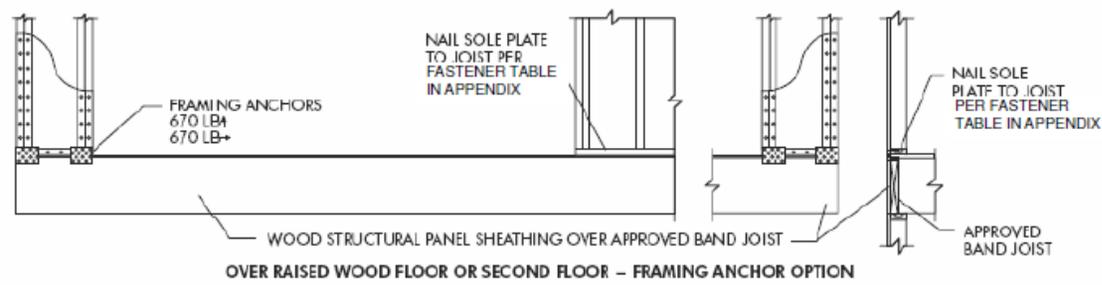
FIGURE 21.25-J
**CONTINUOUSLY-SHEATHED BRACED WALL LINE – FIRST BRACED
WALL PANEL AWAY FROM END OF WALL LINE WITH TIE DOWN**



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



*FOR WIND EXPOSURE CATEGORIES C AND D, ADDITIONAL JACK STUDS MAY BE REQUIRED PER TABLE 21.25-L
OVER CONCRETE OR MASONRY BLOCK FOUNDATION



NOT TO SCALE

Figure 21.25-K

Effective April 1, 2009



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

T E C H N I C A L N O T E

Portal Frame Bracing Without Hold-Down Devices

FOR USE IN CONTINUOUSLY SHEATHED WALLS

*Number J740
July 2008*

BACKGROUND

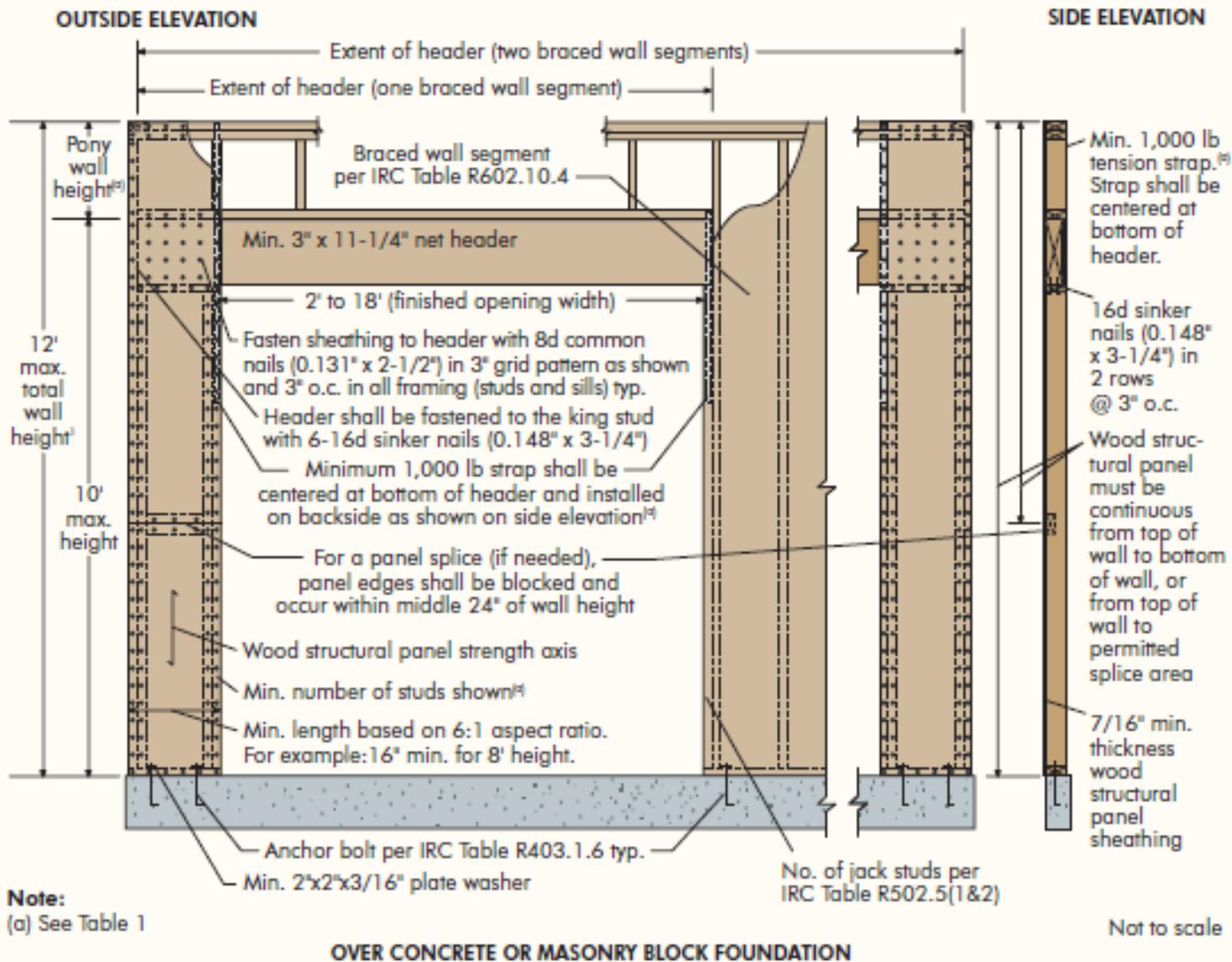
Wall bracing is required by the International Residential Code (IRC) to resist wall racking due to wind or seismic forces. Historically, wall bracing segments had to be a minimum of 48 inches in width. With modern home designs maximizing windows and minimizing wall sections, finding 48 inches to count 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 tests⁽¹⁾ showing that the 16-inch-wide portal frame design used in a continuously sheathed wood structural panel wall with a 6:1 aspect ratio as measured at the vertical



FIGURE 1

WALLS WITH 6:1 ASPECT RATIO USED WITH CONTINUOUS WOOD STRUCTURAL PANEL SHEATHING



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.

Effective April 1, 2009

The International Residential Code (IRC) ?

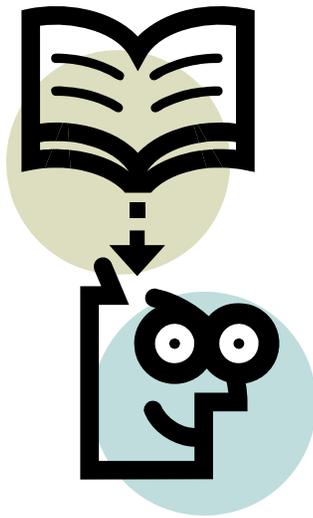
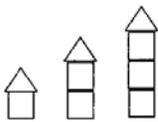
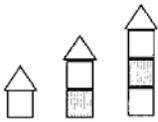
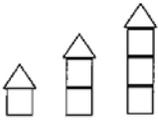


TABLE R602.10.1.2(1)^{a,b,c,d,e}
BRACING REQUIREMENTS BASED ON WIND SPEED
(AS A FUNCTION OF BRACED WALL LINE SPACING)

EXPOSURE CATEGORY B 30 FT MEAN ROOF HEIGHT 10 FT EAVE TO RIDGE HEIGHT 10 FT WALL HEIGHT 2 BRACED WALL LINES			MINIMUM TOTAL LENGTH (FEET) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE			
BASIC WIND SPEED	STORY LOCATION	BRACED WALL LINE SPACING (FT)	METHOD LIB ^{f,h}	METHOD GB (DOUBLE SIDED) ^g	METHODS DWB, WSP, SFB, PBS, PCP, HPS ⁱ	CONT. SHEATHING
≤85 MPH		10	3.5	3.5	2.0	1.5
		20	6.0	6.0	3.5	3.0
		30	8.5	8.5	5.0	4.5
		40	11.5	11.5	6.5	5.5
		50	14.0	14.0	8.0	7.0
		60	16.5	16.5	9.5	8.0
		10	6.5	6.5	3.5	3.0
		20	11.5	11.5	6.5	5.5
		30	16.5	16.5	9.5	8.0
		40	21.5	21.5	12.5	10.5
		50	26.5	26.5	15.0	13.0
		60	31.5	31.5	18.0	15.5
		10	NP	9.0	5.5	4.5
		20	NP	17.0	10.0	8.5
		30	NP	24.5	14.0	12.0
		40	NP	32.0	18.0	15.5
		50	NP	39.0	22.5	19.0
		60	NP	46.5	26.5	22.5
≤90 MPH		10	3.5	3.5	2.0	2.0
		20	7.0	7.0	4.0	3.5
		30	9.5	9.5	5.5	5.0
		40	12.5	12.5	7.5	6.0
		50	15.5	15.5	9.0	7.5
		60	18.5	18.5	10.5	9.0
		10	7.0	7.0	4.0	3.5
		20	13.0	13.0	7.5	6.5
		30	18.5	18.5	10.5	9.0
		40	24.0	24.0	14.0	12.0
		50	29.5	29.5	17.0	14.5
		60	35.0	35.0	20.0	17.0
		10	NP	10.5	6.0	5.0
		20	NP	19.0	11.0	9.5
		30	NP	27.5	15.5	13.5
		40	NP	35.5	20.5	17.5
		50	NP	44.0	25.0	21.5
		60	NP	52.0	30.0	25.5

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Number of Stories	Exposure/Height Factors		
	Exposure B	Exposure C	Exposure D
1	1.0	1.2	1.5
2	1.0	1.3	1.6
3	1.0	1.4	1.7

c. For other roof-to-eave ridge heights, the required bracing length shall be multiplied by the appropriate factor from the following table:

Support Condition	Roof Eave-to-Ridge Height			
	5'-0" or less	10 ft	15 ft	20 ft
Roof Only	0.7	1.0	1.3	1.6
Roof+Floor	0.85	1.0	1.15	1.3
Roof + 2 Floors	0.9	1.0	1.1	NP

1. Interpolation shall be permitted.

- d. For a maximum 9-foot wall height, the table values shall be permitted to be multiplied by 0.95. For a maximum 8-foot wall height, the table values shall be permitted to be multiplied by 0.90. For a maximum 12-foot wall height, the table values shall be multiplied by 1.1.
- e. For three or more braced wall lines in a given plan direction, the required bracing length on each braced wall line shall be multiplied by the appropriate factor from the following table:

Number of Braced Wall Lines	Adjustment Factor
3	1.30
4	1.45
5	1.60

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- f. Bracing lengths are based on the application of gypsum board finish (or equivalent) applied to the inside face of a braced wall panel. When gypsum board finish (or equivalent) is not applied to the inside face of braced wall panels, the tabulated lengths shall be multiplied by the appropriate factor from the following table:

Bracing Method	Adjustment Factor
Method LIB	1.8
Methods DWB, WSP, SFB, PBS, PCP, HPS	1.4

- g. Bracing lengths for Method GB are based on the application of gypsum board on both faces of a braced wall panel. When Method GB is provided on only one side of the wall, the required bracing amounts shall be doubled. When Method GB braced wall panels installed in accordance with Section R602.10.2 are fastened at 4 inches (102 mm) on center at panel edges, including top and bottom plates, and are blocked at all horizontal joints, the required bracing percentage for wind loading only shall be permitted to be multiplied by 0.7.
- h. Method LIB bracing shall have gypsum board attached to at least one side according to the Section R602.10.2 Method GB requirements.
- i. Required bracing length for Methods DWB, WSP, SFB, PBS, PCP and HPS in braced wall lines located in one-story buildings and in the top story of two or three story buildings shall be permitted to be multiplied by 0.80 when an approved tie-down device with a minimum uplift design value of 800 pounds (3560 N) is fastened to the end studs of each braced wall panel in the braced wall line and to the foundation or framing below.

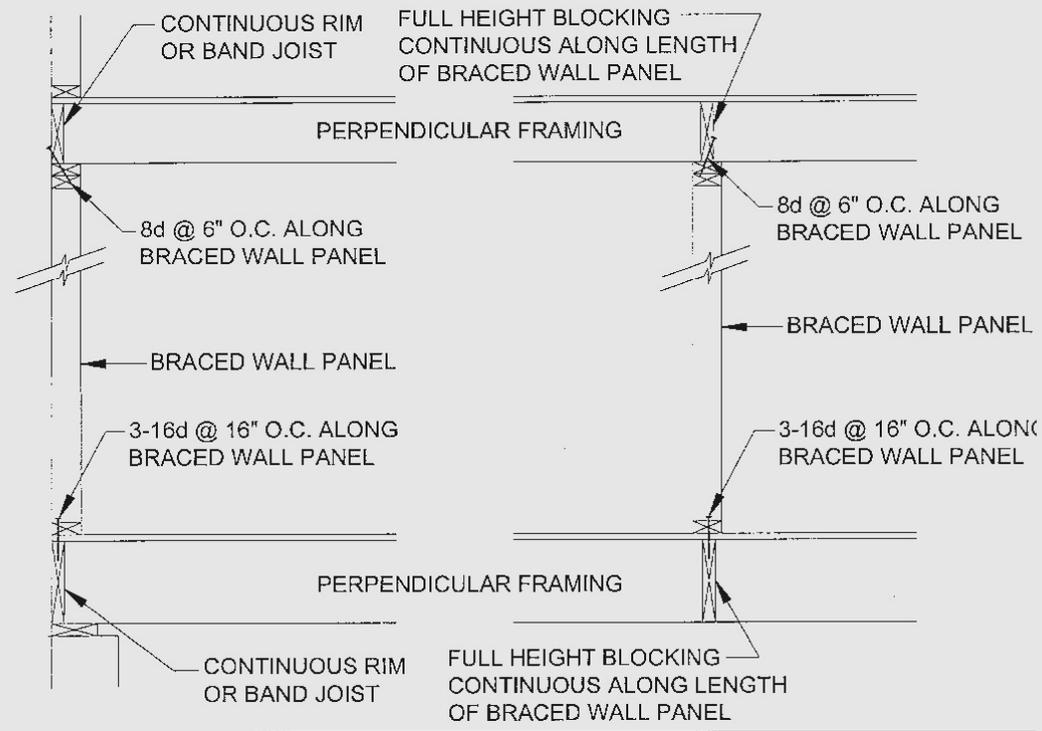
RB143-07/08, RB144-07/08, RB148-07/08

TABLE R602.10.1.2(2) ^{a,b,c}
BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY
(AS A FUNCTION OF BRACED WALL LINE LENGTH)

SOIL CLASS D ^a WALL HEIGHT = 10 FT 10 PSF FLOOR DEAD LOAD 15 PSF ROOF/CEILING DEAD LOAD BRACED WALL LINE SPACING ≤25 FT			MINIMUM TOTAL LENGTH (FEET) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE			
SEISMIC DESIGN CATEGORY (SDC)	STORY LOCATION	BRACED WALL LINE LENGTH	METHOD LIB	METHODS DWB, SFB, GB, PBS, PCP, HDS	METHOD WSP	CONT. SHEATHING
SDC A and B, and Detached Dwellings in C		Exempt from Seismic Requirements Use Table R602.10.1(1) for bracing requirements				

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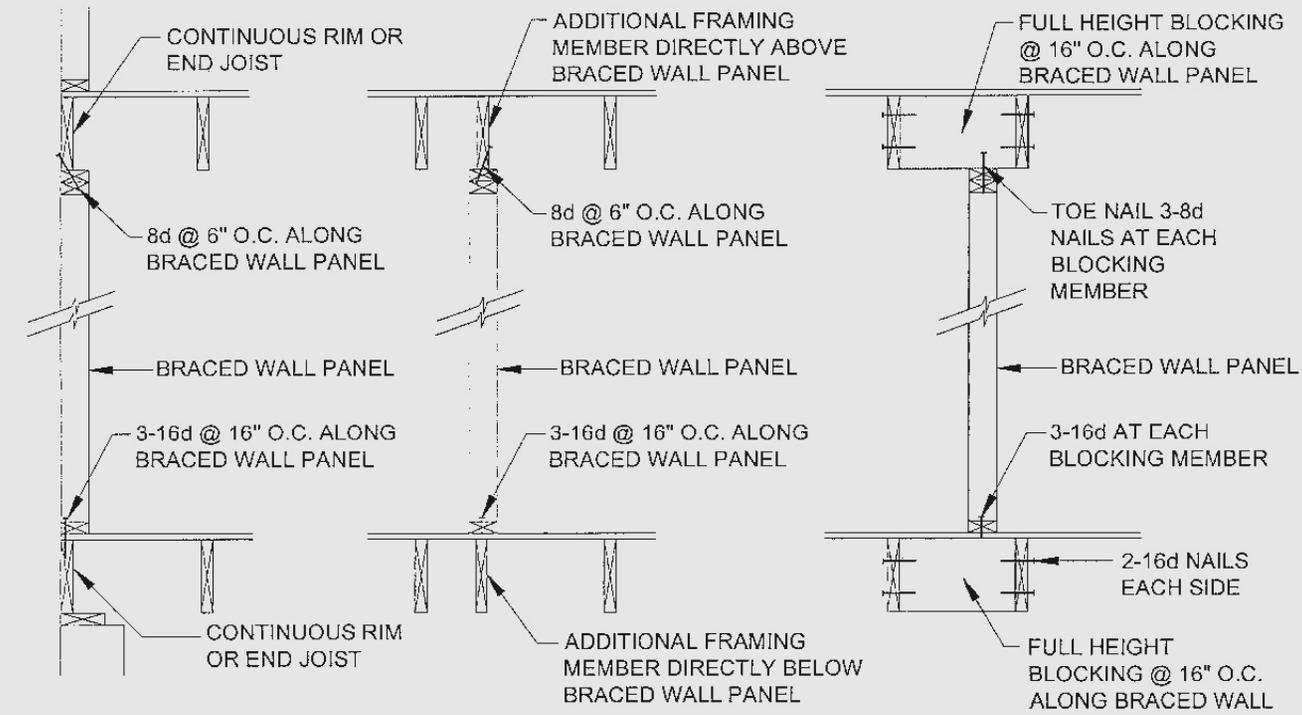
Figure R602.10.6(1) and R602.10.6(2) Add new figures as shown: (RB163-07/08)



For SI: 1 inch = 25.4 mm

FIGURE R602.10.6(1)
BRACED WALL PANEL CONNECTION WHEN
PERPENDICULAR TO FLOOR/CEILING FRAMING

Effective April 1, 2009



For SI: 1 inch = 25.4 mm

FIGURE R602.10.6(2)
BRACED WALL PANEL CONNECTION WHEN
PARALLEL TO FLOOR/CEILING FRAMING

Effective April 1, 2009

This information prepared by the ICC Ad Hoc Wall Bracing Committee of the 2009 IRC wall bracing provisions can be found by accessing the ICC website

www.iccsafe.org

[ICC Ad Hoc Committee on Wall Bracing (AHC-WB)]

The final version of the IRC wall bracing provisions will be reprinted, with the approval of ICC, in the UDC appendix. This reprint may not be available prior to the effective of the UDC, April 1, 2009.

Websites

- **Safety and Buildings Home Page**

 - ☞ www.commerce.wi.gov/SB

- **Commerce Codes**

 - ◆ www.commerce.wi.gov/SB/SB-DivCodes.html

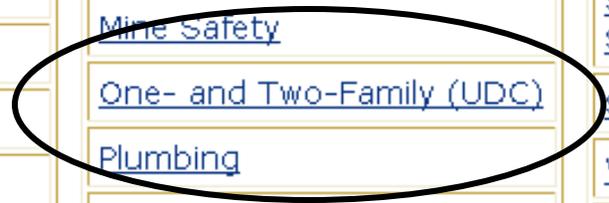
- **Wisconsin Administrative Codes**

 - ☞ www.legis.state.wi.us/rsb/code/codtoc.html

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page.

See [packet of information](#) about **April 1, 2009, Uniform Dwelling Code Changes**

See improved PDF copies of **figures that are not very clear** in April 1, 2009, edition of [Comm 20-25](#):

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

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Proposed draft permanent rule



credentials are administered.

There is enforcement of the UDC in all Wisconsin municipalities.

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6. [You can sign up](#) to receive occasional messages from the Safety and Buildings Division about news that is important to people interested in Wisconsin's Uniform Dwelling Code Program.
7. The Wisconsin Building Safety Network ([WBSN](#))



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

[Comm 26](#) Manufactured Home Communities

[Comm 28](#) Smoke Detectors

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[Comm 34](#) Amusement Rides and Attractions

Internet

Start 9 Microsoft... R2009-CH2... Untitled.rck... Wisconsin... 2009 UDC C... 2009 UDC U... 2:50 PM

Any Questions?



Now it is my time to ask questions.



1. What is a BWP?

Braced Wall Panel

2. Braced Wall Panels must start within ____ feet of the wall end?

12.5

3. Braced Wall Panels can be spaced up to ____ feet apart?

25

4. BWL stands for?

Braced Wall Line

5. Braced Wall Lines may be spaced up to ____ feet apart?

35

50

60

With increased wall bracing
Using 2009 IRC

6. Wall bracing methods may vary from floor to floor.

True

7. For intermittent wall bracing using wood structural sheathing the minimum panel length is _____ feet?

4

Less if using Table 21.25-G

8. Braced wall panels may be offset out-of-plane up to ____ feet from their braced wall line?

4

9. You may designate an imaginary braced wall line.

True

10. You can continuously sheath with wood structural panels or structural fiberboard.

True

11. The minimum length for a continuously sheathed, extended header wall bracing method (Fig. 21.25-K) is:

16"

12. What are the benefits of labeling the wall bracing on your building plans?

- Reduces plan review time
- Reduces inspection time
- Reduces installation mistakes
- ✓ All of the Above