UDC Wall Bracing Provisions quiz

Instructions

1. Print these pages. **Fee $30**
2. Answer the **Simple questions** that follow mini sections of the code language.
3. Circle the correct answers and transfer the answers to the answer sheets (see pages 21-22).
4. After answering the simple questions you will become familiar with the new code changes.
5. Page down to the last page for the verification form, answer sheets and mailing instructions.
6. Optional: Watch this video http://www.youtube.com/watch?v=MHaPb1ieAHo

3 hour course for: **Course #15654**

1. Dwelling Contractor Qualifier Certification.
2. UDC Construction Inspector.

Questions call 920-381-6714 or email tmklinka@hotmail.com

UDC Wall Bracing Provisions
Emergency Rules tentative effective date 4/1/2014
A 'How To' guide for use of the new provisions

Summary: Forget what you knew about the previous wall bracing provisions- this method is a different concept. The provisions are generally based on the 2012 IRC Simplified Wall Bracing Provisions. In a nut shell, the new prescriptive Tables provide, depending on the method used, intermittent braced wall panels or continuously sheathed, the number of braced wall panels required in a braced wall line OR the prescriptive total length of braced wall required in wood frame walls parallel to the wind direction being considered.

What hasn't changed? Generally the bracing materials and fastening in Table 321.25-G (with the exception of Portland Cement Plaster as a newly allowed bracing material) remain unchanged.

Major Assumptions:

- Interior side of exterior walls are sheathed with ½" gypsum board.
- 10' wall heights
- Wind Exposure category B
- For intermittent bracing method roof eave to ridge height is 10'

1. The tables depend on the_____ method(s) used, which defines the number of braced wall panels required in a braced wall line OR the prescriptive total length of braced wall required in wood frame walls parallel to the wind direction being considered.
   a. optional bracing concept
   b. intermittent braced
   c. continuously sheathed
   d. both b & c
2. Major Assumptions: Interior side of exterior walls are sheathed with ___" gypsum board.
   a. 3/8
   b. 1/2
   c. 1/4
   d. none of the above
3. The provisions are generally based on the 2014 UDC Simplified Wall Bracing Provisions.
   a. true
   b. false
4. Major assumptions: ____ wall heights.

a. 8’
b. 9’
c. 10’
d. 12’

5. Major Assumptions: Wind Exposure category ____
a. A
b. B
c. C
d. all of the above

6. Major Assumptions: For intermittent bracing method roof eave to ridge height is ___'
a. 8’
b. 9’
c. 10’
d. 12’

Starting with the topmost story ...

STEP 1: Define the braced wall locations by circumscribing the outermost extents of the building at each floor level with a rectangle. The maximum length of any side of the rectangle is 75' for intermittent bracing and 80' for continuously sheathed bracing. For either method the maximum length to width ratio is 3: 1. If the length of the building exceeds the prescriptive limit of the respective table or the length to width ratio exceeds 3: 1 the building must be circumscribed or divided with more than one rectangle. See examples below from the rules -Figure 321.25-B.

7. The maximum length of any side of the rectangle is ____ for intermittent bracing.
a. 70’
b. 75’
c. 80’
d. any of the above

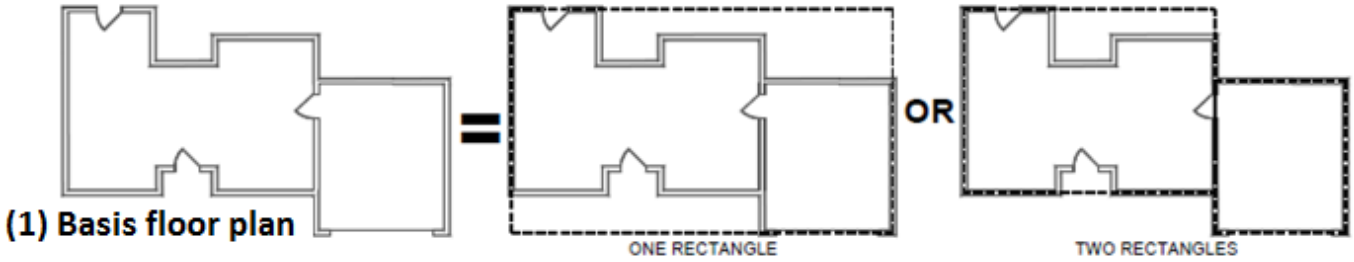
8. The maximum length of any side of the rectangle is ____ for continuously sheathed bracing.
a. 70’
b. 75’
c. 80’
d. none of the above

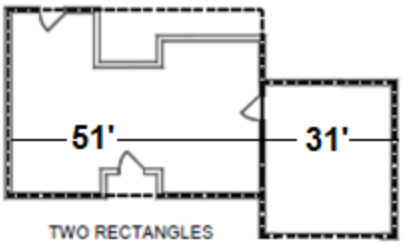
9. For either of the above methods the maximum length to width ratio is _____.
a. 1: 1
b. 2: 1
c. 3: 1
d. 4: 1

10. If the length of the building exceeds the prescriptive limit of the respective table or the length to width ratio the building must be circumscribed or divided with more than one _____.
a. area
b. circle
c. rectangle
d. all of the above

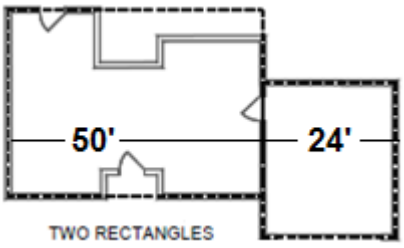
11. Define the braced wall locations by circumscribing the outermost extents of the building at each _____ with a rectangle.
a. wall area
b. building area
c. floor level
d. none of the above

Figure 321.25–B
DEFINING BUILDING SIDES AND LENGTHS WITH A CIRCUMSCRIBED RECTANGLE[a,b,c]

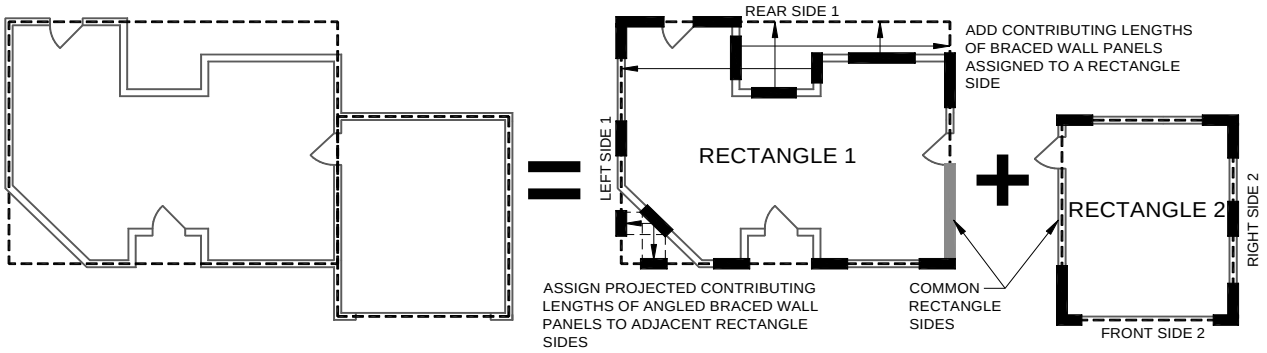


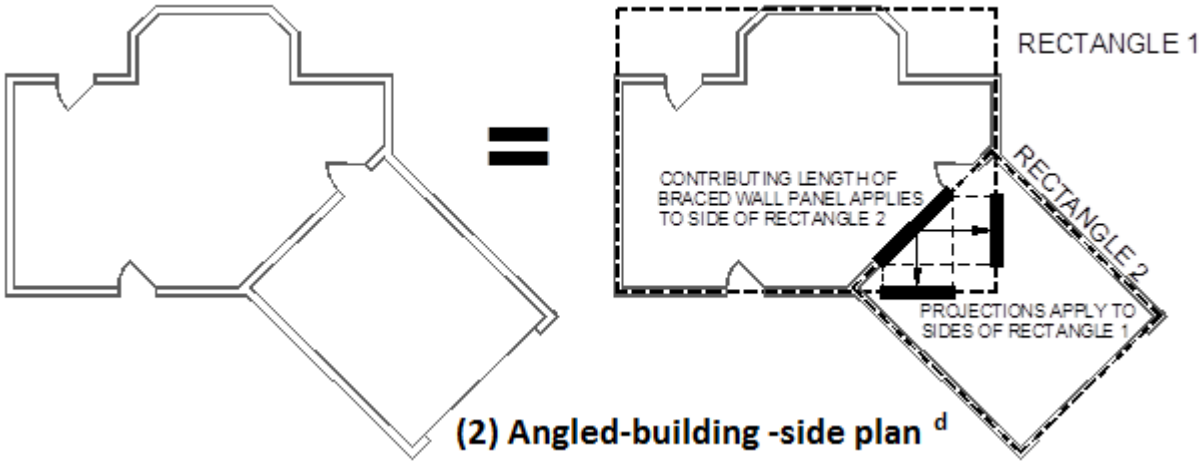


12. The above diagram is required to be divided into two rectangles because _____.
    a. the buildings length of any side of the rectangle exceeds 75’ for intermittent bracing
    b. the buildings length of any side of the rectangle exceeds 80’ for continuously sheathed bracing
    c. the buildings length of any side of the rectangle exceeds 80’ for intermittent bracing
    d. both a & b



13. The above diagram is not required to be divided into two rectangles because _____.
    a. the buildings length of any side of the rectangle is less than 75’ for intermittent bracing
    b. the buildings length of any side of the rectangle is less than 80’ for continuously sheathed bracing
    c. the buildings length of any side of the rectangle is less than 80’ for intermittent bracing
    d. both a & b





(2) Angled-building -side plan [d]

a. Each floor plan level shall be circumscribed with one or more rectangles around the entire floor plan at the floor level under consideration as shown. When multiple rectangles are used, each side shall be braced as though it were a separate building and the bracing amount added together along the common wall where adjacent rectangles overlap or abut.
b. Rectangles shall surround all enclosed plan offsets and projections. **Chimneys**, partial height projections, and open structures, such as carports and decks, **shall be excluded** from the rectangle.
c. Each rectangle shall have a maximum rectangle length-to-width ratio of 3:1.
d. Projected contributing lengths of angled braced wall panels shall be assigned to the closest rectangle sides, as shown for the angled corner in the angled-building-side-plan shown above.
e. Braced wall panels located on a common wall where angled rectangles intersect, as shown in Figure 321.25-B(3), shall have their contributing length applied towards the required length of bracing for the parallel rectangle side and its projected contributing lengths towards the adjacent angled rectangle sides. Where the common side of rectangle 2 as shown in Figure 321.25-B(3) has no physical wall, the portion shall be designed in accordance with s. SPS 321.25 (8) (a).

14. When multiple rectangles are used, each side shall be braced as though it were _____ building.
    a. the same
    b. part of the
    c. a separate
    d. none of the above
15. When multiple rectangles are used, each side shall have the bracing amount added together along the common wall where adjacent rectangles _____.
    a. connect
    b. touch
    c. overlap
    d. none of the above
16. Rectangles shall surround all enclosed plan _____.
    a. offsets
    b. carports
    c. decks
    d. both a & b
17. Chimneys, partial height projections, and open structures, such as carports and decks, shall be _____ from the rectangle.
    a. included
    b. excluded
    c. independent
    d both a or b

18. Each rectangle shall have a _____ rectangle length-to-width ratio of 3:1.
    a. minimum
    b. maximum
    c. both a or b
    d. none of the above
19. Chimneys shall be included from the rectangle.
    a. true
    b. false

STEP 2: Select the wall bracing method (intermittent or continuous), materials, and panel width from Table 321.25-G. If using intermittent braced wall panels, in general most of the bracing methods are considered equivalent and the method simply tells you the NUMBER of panels required in a braced wall line. For continuously sheathed braced walls the method yields the total LENGTH of braced wall required in each braced wall line.

20. For continuously sheathed braced walls the method yields the total _____ of braced wall required in each braced wall line.
    a. number
    b. length
    c. both a or b
    d none of the above
21. If using intermittent braced wall panels, in general most of the bracing methods are considered equivalent and the method simply tells you the _____ of panels required in a braced wall line.
    a. number
    b. length
    c. both a or b
    d none of the above
22. If using intermittent braced wall panels, in general _____ of the bracing methods are considered equivalent.
    a. all
    b. most
    c. none
    d. none of the above

SPS 321.25 (8) (b) *Bracing materials and methods.* Wall bracing shall use the materials and methods listed in Table 321.25–G or approved alternatives capable of providing the required wind load resistance as determined in accordance with SPS 321.02 (1) (c). Alternative bracing methods that are an approved as equivalent to one of the bracing methods listed in Table 321.25–G shall be permitted to use the requirements for that bracing method contained herein.

23. Alternative bracing methods that are approved as equivalent to one of the bracing methods listed in _____ shall be permitted to use the requirements for that bracing method contained herein.
    a. Table 321.25–H
    b. Table 321.25–G
    c. Table 321.25–I
    d. Table 321.25–J
24. The required wind load resistance is determined in accordance with _____.
    a. the local authorities
    b. the highest recorded wind loads
    c. SPS 321.02 (1) (c)
    d. all of the above

Table 321.25–G
BRACING METHODS[a]

Method	Minimum Brace Material Thickness or Size	Maximum Nominal Wall Height[b]	Minimum Braced Wall Panel Width or Brace Angle	Connection Criteria	
				Minimum Fasteners	Maximum Spacing
Intermittent Bracing Methods					
LIB[c] Let-in bracing	1x4 wood brace (or approved metal brace installed per manufacturer instructions)	10'	45° angle and maximum 16" o.c. stud spacing[b]	2-8d common nails or 3-8d box nails (2-1/2" long x 0.113" diameter)	Per stud and top and bottom plates[e]
DWB Diagonal wood boards	¾" (1" nominal) for maximum 24" o.c. stud spacing	10'	48"	2-8d box nails (2-1/2" long x 0.113" diameter) or 2 – 1-3/4" long 16 gage staples	Per stud and top and bottom plates[e]
WSP Wood structural panel	3/8" for maximum 16"o.c. stud spacing; 7/16" for maximum 24" o.c. stud spacing	10'	48"	6d common nail or 8d box nail (2-1/2" long x 0.113" diameter) or 7/16" crown 16 gage staples, 1-1/4" long	6" edges, 12" field (nails) 3" edges, 6" field (staples)
SFB Structural fiberboard sheathing	½" for maximum 16" o.c. stud spacing	10'	48"	1-1/2" long x 0.120" diameter galvanized roofing nails or 1" crown 16 gage staples, 1-1/4" long	3" edges, 6" field
GB Gypsum board (installed on both sides of wall)	½" for maximum 24" o.c. stud spacing	10'	96"	5d cooler nails, or #6 screws	7" edges, 7" field (including top and bottom plates)
PCP Portland cement plaster	¾" for maximum 16" o.c. stud spacing	10'	48"	1-1/2" long, 11 gage, 7/16" diameter head nails or 7/8" long, 16 gage staples	6" o.c. on all framing members
Continuous Sheathed Bracing Methods					
CS-WSP[d] Continuous sheathed WSP	3/8" for maximum 16"o.c. stud spacing; 7/16" for maximum 24" o.c. stud spacing	12'	Refer to Table 321.25-H	Same as WSP	Same as WSP
CS-SFB[d] Continuous sheathed SFB	½" for maximum 16" o.c. stud spacing			Same as SFB	Same as SFB
Narrow Panel Bracing					
PF Portal frame	7/16"	12'	Refer to Figure 321.25–A	Refer to Figure 321.25–A	Refer to Figure 321.25–A

a. The interior side of all exterior walls shall be sheathed with minimum ½" gypsum wall board. All edges of panel-type wall bracing, except horizontal joints in GB bracing, shall be attached to framing or blocking.
b. The actual measured wall height shall include stud height and thickness of top and bottom plates. The actual wall height shall be permitted to exceed the listed nominal values by not more than 4 inches. Tabulated bracing amounts in s. SPS 321.25 (8) (c) are based on a 10-foot nominal wall height for all bracing methods and shall be permitted to be adjusted to other nominal wall heights not exceeding 12 feet in accordance with footnotes to Table 321.25–I or Table 321.25–J.
c. LIB is not be permitted for walls supporting a roof and two floors. Two LIB braces installed at a 60 degree angle from horizontal shall be permitted to be substituted for each 45 degree angle LIB brace.
d. Bracing with CS-WSP and CS-SFB shall have sheathing installed on all sheathable surfaces above, below, and between wall openings.
e. Shall be attached to the top and bottom plates and any intermediate studs, in one continuous length.
f. Each braced panel may contain no more than one hole, having a maximum dimension of no more than ten percent of the least dimension of the panel, and confined to the middle three-fourths of the panel.

25. **e**. Shall be attached to the top and bottom plates and any intermediate studs, in one continuous length is required for _____.
    a. LIB
    b. DWB
    c. GB
    d. both a & b
26. Method LIB may be permitted for walls supporting a roof and one floor.
    a. true
    b. false
27. Minimum fastener size for a CS-WSP would be _____.
    a. 6d common nail
    b. 8d box nail
    c. same as WSP
    d. all of the above
28. Maximum fastener spacing for a CS-WSP would be _____.
    a. 6" edges, 12" field (nails)
    b. 3" edges, 6" field (staples)
    c. same as WSP
    d. all of the above
29. Maximum nominal wall height for LIB would be _____'.
    a. 10
    b. 12
    c. none of the above
    d. both a & b
30. **a**. The interior side of all exterior walls shall be sheathed minimum ½" gypsum wall board. All edges of panel-type wall bracing, except horizontal joints in GB bracing, shall be attached to framing or blocking is required for all BRACING METHODS.
    a. true
    b. false
31. **b**. The actual measured wall height shall include stud height and thickness of top and bottom plates. The actual wall height shall be permitted to exceed the listed nominal values by not more than ___ inches.
    a. 1
    b. 2
    c. 3
    d. 4

32. Tabulated bracing amounts in s. SPS 321.25 (8) (c) are based on a ___ foot nominal wall height for all bracing methods.
    a. 8
    b. 9
    c. 10
    d. 12
33. Tabulated bracing amounts in s. SPS 321.25 (8) (c) shall be permitted to be adjusted to other nominal wall heights not exceeding ___ feet in accordance with footnotes to Table 321.25–I or Table 321.25–J.
    a. 8
    b. 9
    c. 10
    d. 12
34. **c.** ____ LIB braces installed at a 60 degree angle from horizontal shall be permitted to be substituted for each 45 degree angle LIB brace.
    a. one
    b. two
    c. three
    d. none of the above
35. Bracing methods _____ shall have sheathing installed on all sheathable surfaces above, below, and between wall openings.
    a. CS-WSP
    b. CS-SFB
    c. none of the above
    d. both a & b
36. Braced wall panel width for GB would be _____.
    a. 48”
    b. 96”
    c. c. refer to table 321.25-H
    d. either a or b
37. Braced wall panel method for GB would be _____.
    a. installed on one side
    b. installed on both sides
    c. reduced to 50% if installed on both sides
    d. both a & c
38. Minimum thickness bracing material for CS-WSP 16” o.c. would be?
    a. ¼”
    b. 3/8”
    c. 7/16”
    d. ½”
39. Minimum thickness bracing material for CS-SFB 16” o.c. would be?
    a. ¼”
    b. 3/8”
    c. 7/16”
    d. ½”
40. Maximum nominal wall height for CS-WSP would be?
    a. 8
    b. 9
    c. 10
    d. 12
41 Minimum brace wall panel width for CS-WSP would be?

a. 48”
b. 96”
c. refer to table 321.25-H
d. all of the above

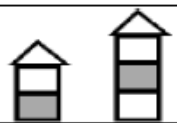
STEP 3: DETERMINE# OF PANELS OR REQUIRED LENGTH OF BRACING USING ONE OF THE FOLLOWING

A) Intermittent braced wall panels. Determine the NUMBER of braced panels in each braced wall line (rectangle side) using Table 321.25-1 based on the length of the perpendicular side. NOTE a minimum of 2 braced wall panels is required in each braced wall line.

42. A minimum of ___ braced wall panels is required in each braced wall line.
a. 1
b. 2
c. 3
d. 4

43. Intermittent braced wall panels. Determine the NUMBER of braced panels in each braced wall line (rectangle side) using Table 321.25-1 based on the length of the _____ side.
a. adjacent
b. parallel
c. perpendicular
d. farthest

Table 321.25–I
REQUIRED NUMBER OF INTERMITTENT BRACED WALL PANELS ON WALLS PARALLEL TO EACH RECTANGLE SIDE AT EACH FLOOR LEVEL[a,b,c,d,e,f,g,h]

Wall Supporting:		Required Number of Brace Panels on a Building Side — Length of Perpendicular Side (feet) ≤25’	50’	75’
Roof and ceiling only		1[i]	2	3
One floor, roof and ceiling		2	4	6
Two floors, roof and ceiling		3	6	9

a. Interpolation is permitted. Extrapolation is prohibited.
b. This table applies to wind exposure category B. For wind exposure category C or D, multiply the number of braced wall panels required by 1.3 or 1.6, respectively.

Wind 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.

Wind 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.

Wind 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.

c. Tabulated values are based on a nominal wall height of 10 feet. For nominal wall heights other than 10 feet and not more than 12 feet, multiply the required number of brace panels by the following factors: 0.9 for 8 feet, 0.95 for 9 feet, 1.15 for 11 feet, or 1.3 for 12 feet.

d. Tabulated values are based on a roof with a top-of-wall-to-ridge height of 10 feet. For roof top-of-wall-to-ridge heights other than 10 feet, multiply the required number of brace panels by the following factors for each floor level support condition:

Roof only – 0.7 for 5 feet, 1.3 for 15 feet, or 1.6 for 20 feet
Roof + 1 Floor – 0.85 for 5 feet, 1.15 for 15 feet, or 1.3 for 20 feet
Roof + 2 Floors – 0.9 for 5 feet or 1.1 for 15 feet.

e. Where minimum ½" gypsum wall board is not included on the interior side of the wall, multiply the number of braced wall panels by 1.7 for LIB bracing or 1.4 for all other bracing methods, except this increase is not required for the portal frame method.

f. Adjustments in footnotes b to e apply cumulatively. Fractions of panels shall be rounded to the nearest one-half braced wall panel.

g. Perpendicular sides to the front and rear sides are the left and right sides. Perpendicular sides to the left and right sides are the front and rear sides. See Figure 321.25–B.

h. The following braced wall panel conditions shall be permitted to be counted as one-half a braced wall panel toward meeting the required number of panels: (1) one 60 degree LIB; (2) one 48" GB or one 96" GB with gypsum wall board on one side; (3) one 36" WSP or SFB braced wall panel for wall heights not more than 9 feet; (4) a 48" WSP or SFB braced wall panel where there is no more than one unblocked horizontal joint; or (5) one PF brace panel complying with Figure 321.25–A.

i. This value of less than 2 serves only as the beginning value for calculation purposes. The resulting value shall be 2 or greater, to be consistent with subd. 2.

44. All of the footnotes (a-i) below Table 321.25-I are applicable.
    a. true
    b. false

45. The required number of intermittent braced wall panels on exterior walls parallel to each rectangle side with a roof and ceiling only would be _____ with a length of 24' on the perpendicular side.
    a. 6
    b. 2
    c. 3
    d. 4

46. The required number of intermittent braced wall panels on exterior walls parallel to each rectangle side with a roof and ceiling only would be _____ with a length of 26' on the perpendicular side.
    a. 6
    b. 2
    c. 3
    d. 4

47. The required number of intermittent braced wall panels on exterior walls parallel to each rectangle side with two floors, roof and ceiling would be _____ with a length of 49' on the perpendicular side.
    a. 6
    b. 2
    c. 3
    d. 4

48. The required number of intermittent braced wall panels on exterior walls parallel to each rectangle side with two floors, roof and ceiling would be _____ with a length of 25' on the perpendicular side.
    a. 6
    b. 2
    c. 3
    d. 4
49. Interpolation and extrapolation is permitted.
    a. true
    b. false
50. Table applies to wind exposure category B. For wind exposure category ____, multiply number of braced wall panels required by 1.3 or 1.6, respectively.
    a. B
    b. C
    c. D
    d. both C or D
51. Wind exposure category ___ 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. This exposure shall be assumed unless the site meets the definition of another type exposure.
    a. B
    b. C
    c. D
    d. both C or D
52. Wind exposure category ____ 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.
    a. B
    b. C
    c. D
    d. both C or D
53. Wind exposure category ___ 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.
    a. B
    b. C
    c. D
    d. both C or D
54. Exposure ___ extends inland from the shoreline a distance of 1,500 feet or 10 times the height of the building or structure, whichever is greater.
    a. B
    b. C
    c. D
    d. both C or D
55. Tabulated values are based on a nominal wall height of ___ feet.
    a. 8
    b. 9
    c. 10
    d. 12

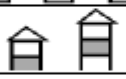
56. For nominal wall heights other than 10 feet and not more than 12 feet, multiply the required number of brace panels by the following factors:
    a. 0.8 for 8 feet
    b. 0.95 for 9 feet
    c. 1.10 for 10 feet
    d. none of the above
57. For nominal wall heights other than 10 feet and not more than 12 feet, multiply the required number of brace panels by the following factors:
    a. 1.15 for 11 feet
    b. 1.3 for 12 feet
    c. 1.5 for 13 feet
    d. both a & b
58. Tabulated values are based on a with a top-of-wall-to-ridge height of feet of __ feet.
    a. 8
    b. 9
    c. 10
    d. 12
59. For top-of-wall-to-ridge height other than 10 feet_____ the required number of brace panels by the following factors for each floor level support condition.
    a. divide
    b. add
    c. subtract
    d. multiply
60. The multiplier for Roof + 1 Floor would be _____.
    a. .85 for 5 feet
    b. 1.15 for 15 feet
    c. 1.3 for 20 feet
    d. all of the above
61. Where minimum ½" gypsum wall board is not included on the interior side of the wall, multiply the number of braced wall panels by 1.7 for _____.
    a. WSP
    b. DWB
    c. LIB
    d. GB
62. Where minimum ½" gypsum wall board is not included on the interior side of the wall, multiply the number of braced wall panels by 1.4 for _____.
    a. WSP
    b. DWB
    c. GB
    d. all of the above
63. Adjustments in footnotes b-d apply cumulatively. Fractions of panels shall be rounded to the nearest _____ braced wall panel.
    a. whole
    b. ¼
    c. ½
    d. all of the above
64. The following braced wall panel conditions shall be permitted to be counted as one-half a braced wall panel toward meeting the required number of panels:
    a. one 60 degree DWB
    b. one 48" GB

c. one 96" GB with gypsum wall board on one side
d. only b & c

65. The following braced wall panel conditions shall be permitted to be counted as one-half a braced wall panel toward meeting the required number of panels:
a. one 36" WSP or SFB braced wall panel for wall heights not more than 12 feet
b. 48" WSP or SFB braced wall panel where there is no more than 2 unblocked horizontal joint
c. one PF brace panel complying with Figure 321.25–A
d. all of the above

B) Continuously Sheathed braced walls. Determine the LENGTH of braced wall panels in each braced wall line (rectangle side) using Table 321.25-J based on the length of the perpendicular side.

Table 321.25–J
REQUIRED LENGTH OF CONTINUOUS BRACING ON WALLS PARALLEL TO EACH RECTANGLE SIDE AT EACH FLOOR LEVEL[a,b,c,d, e,g,h]

Top-of-Wall-to-Ridge Height (feet)	Wall Supporting:		Total Required Length (feet) of Full-Height Bracing on Any Side of Rectangle							
			Length of Perpendicular Side (feet)[f]							
			10	20	30	40	50	60	70	80
10	Roof and ceiling only		2.0[i]	3.5[i]	5.0	6.0	7.5	9.0	10.5	12.0
	One floor, roof and ceiling		3.5[i]	6.5	9.0	12.0	14.5	17.0	19.8	22.6
	Two floors, roof and ceiling		5.0	9.5	13.5	17.5	21.5	25.5	29.2	33.4
15	Roof and ceiling only		2.6[i]	4.6	6.5	7.8	9.8	11.7	13.7	15.7
	One floor, roof and ceiling		4.0	7.5	10.4	13.8	16.7	19.6	22.9	26.2
	Two floors, roof and ceiling		5.5	10.5	14.9	19.3	23.7	27.5	32.1	36.7
20	Roof and ceiling only		2.9[i]	5.2	7.3	8.8	11.1	13.2	15.4	17.6
	One floor, roof and ceiling		4.5	8.5	11.8	15.6	18.9	22.1	25.8	29.5
	Two floors, roof and ceiling		6.2	11.9	16.8	21.8	27.3	31.1	36.3	41.5

a. Interpolation is permitted; extrapolation shall be prohibited.
b. Table applies to wind exposure category B. For wind exposure category C or D, multiply the number of braced wall panels required by 1.3 or 1.6, respectively. Wind exposure categories are as defined in Table 321.25–I footnote b.
c. Tabulated values are based on a nominal wall height of 10 feet. For nominal wall heights other than 10 feet, multiply the required length of bracing by the following factors: 0.90 for 8 feet, 0.95 for 9 feet , 1.05 for 11 feet, or 1.10 for 12 feet.
d. Where minimum ½" gypsum wall board interior finish is not provided, the required bracing amount for the affected rectangle side shall be multiplied by 1.4, except this increase is not required for the portal frame method.
e. Adjustments in footnotes b to d apply cumulatively.

f. Perpendicular sides to the front and rear sides are the left and right sides. Perpendicular sides to the left and right sides are the front and rear sides. See Figure 321.25–B.
g. Continuous sheathing shall be applied to all surfaces of the wall, including areas between brace panels and above and below wall openings.
h. When used on a wall line with continuous sheathing, each portal frame panel is counted for its actual length in contributing toward the length of continuous sheathing used on other portions of the same wall line, such as the building side at a given story level.
i. Any value of less than 4.0 in this table serves only as the beginning value for calculation purposes. The resulting value shall be 4.0 or greater, to be consistent with Table 321.25–H and subd. 2.

66. Table applies to wind exposure category __.
    a. B
    b. C
    c. D
    d. both b or c
67. For wind exposure category ___, multiply number of braced wall panels required by 1.3 or 1.6, respectively.
    a. B
    b. C
    c. D
    d. both b or c
68. Tabulated values are based on a nominal wall height of __ feet.
    a. 8
    b. 9
    c. 10
    d. 12
69. For nominal wall heights other than 10 feet, multiply the required length of bracing by the following factors:
    a. 0.90 for 8 feet
    b. 0.95 for 9 feet
    c. 1.05 for 10 feet
    d. both a & b
70. For nominal wall heights other than 10 feet, multiply the required length of bracing by the following factors:
    a. 1.00 for 11 feet
    b. 1.10 for 12 feet
    c. 1.15 for 13 feet
    d. 1.20 for 14 feet
71. Where minimum ½" gypsum wall board interior finish is not provided, the required bracing amount for the affected rectangle side shall be multiplied by_____.
    a. 1.20
    b. 1.30
    c. 1.40
    d. 1.50
72. Perpendicular sides to the front and rear sides are the _____ sides. See Figure 321.25–B
    a. left and right
    b. front and rear
    c. both a & b
    d. none of the above
73. Perpendicular sides to the left and right sides are the _____ sides. See Figure 321.25–B
    a. left and right

b. front and rear
c. both a & b
d. none of the above

74. Eave to ridge height is 10', length of perpendicular side is 30', and the wall is supporting one floor, roof, and ceiling. What is the required length of bracing on any side of rectangle?
a. 5'
b. 6.5'
c. 9'
d. 12'

75. Top-of-wall-to-ridge is 15', length of perpendicular side is 60', and the wall is supporting one floor, roof, and ceiling. What is the required length of bracing on any side of rectangle?
a. 22.9'
b. 16.7'
c. 19.6'
d. 11.7'

STEP 4: If desired or required, apply any adjustment factors (adjustments may decrease or increase the required bracing amount) per the footnotes to the Tables. For example wall heights taller than 10' and wind exposure category C or D would both increase the bracing amount. Absence of interior ½" gypsum board sheathing increases required bracing amount.

76. Wall heights taller than 10' and wind exposure category C or D would both _____the bracing amount.
a. increase
b. decrease
c. complicate
d. all of the above

77. Absence of interior ½" gypsum board sheathing will _____ the required bracing amount.
a. increase
b. decrease
c. complicate
d. all of the above

STEP 5: Repeat steps 2 through 4 considering wind in the perpendicular direction.

STEP 6: Determine the minimum required width of braced wall panels. For intermittent bracing method the minimum length of braced wall panel is given in Table 321.25-G. For continuously sheathed bracing method the minimum width is determined using Table 321.25-H dependent on the maximum opening height adjacent to the panel and the wall height. **PF Method:** For Intermittent bracing, per Table 321.25-1 footnote 'h', each PF panel (16-24" wide per Figure 321.25-A) counts as 1/2 of a braced wall panel when determining compliance with Table 321.25-1. For Continuously Sheathed bracing, the actual length of each PF panel (16-24" wide per Figure 321.15-A) in feet counts toward the required total length of bracing required.

78. For intermittent bracing method the minimum length of braced wall panel is given in Table _____.
a. 321.25-G
b. 321.25-H
c. both a & b
d. none of the above

79. For continuously sheathed bracing method the minimum width is determined using Table _____.
a. 321.25-G

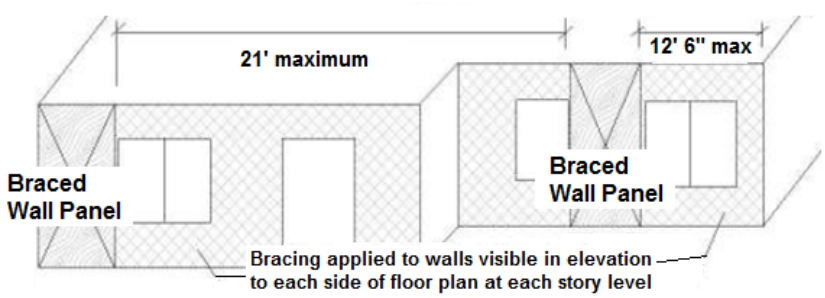
b. 321.25-H
c. both a & b
d. none of the above

80. For Intermittent bracing, per Table 321.25-1 footnote 'h', each PF panel (16-24" wide per Figure 321.25-A) counts as _____of a braced wall panel when determining compliance with Table 321.25-1.
a. ¼
b. 1/3
c. ½
d. feet counts toward the required total length of bracing required

81. For Continuously Sheathed bracing, _____ (16-24" wide per Figure 321.15-A) in feet counts toward the required total length of bracing required.
a. ¼ of a braced wall panel
b. 1/3 of a braced wall panel
c. ½ of a braced wall panel
d. the actual length of each PF panel

STEP 7: Check that location of braced wall panels meets Figure 321.25-C ... start of a panel max 12 1/2' from the building comer and panels spaced maximum of 21' edge to edge along the building side/elevation. For intermittent or continuous methods, each PF panel meeting min. required width of Fig. 321.25-A counts as a braced wall panel when evaluating of Fig. 321.25-C.

FIGURE 321.25-C
LOCATION OF BRACED WALL PANELS ALONG A BUILDING SIDE a



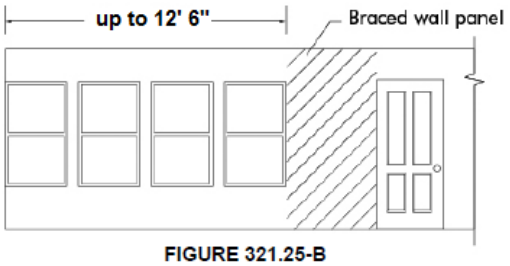


FIGURE 321.25-B
PERMITTED BRACED WALL PANEL DISTANCES
FROM ENDS OF A BRACED WALL LINE

a. A braced wall panel can be anything from one-half to one brace panel.

---

82. Panel maximum is ____ from the building comer.
a. 10’
b. 12 ½’
c. 21’
d. 25’

83. Panels spaced maximum of ____ edge to edge along the building side/elevation.
a. 10’
b. 12 ½’
c. 21’
d. 25’

84. For _____methods, each PF panel meeting min. required width of Fig. 321.25-A counts as a braced wall panel when evaluating of Fig. 321.25-C.
a. intermittent
b. continuous

c. both a & b
d. none of the above

STEP 8: Repeat steps 1 through 7 for additional stories.

Table 321.25–H[a, b]
MINIMUM WIDTHS OF CS-WSP AND CS-SFB BRACED WALL PANELS

Maximum Opening Height Adjacent to Braced Wall Panel	Minimum Length of Full-Height Braced Wall Panel (inches)			
	8' Tall Wall	9' Tall Wall	10' Tall Wall	12' Tall Wall
5'– 4"	24	27	30	36
6'– 8"	32	30	30	36
8'	48	41	38	36
9'	-	54	46	41
10'	-	-	60	48
12'	-	-	-	72

[a] Sheathing shall extend from the top of the top plate to the bottom of the bottom plate and may be multiple sheets. All joints shall be blocked.

[b] Interpolation is permitted.

85. The minimum width of method CS-WSP braced wall panels with a maximum opening height adjacent to brace wall panel of up to 8', with a 9' tall wall, what is the minimum length of the required braced wall panel?

a. 30"
b. 41"
c. 54"
d. 38"

86. The minimum width of method CS-SFB braced wall panels with a maximum opening height adjacent to brace wall panel of up to 8', with a 10' tall wall, what is the minimum length of the required braced wall panel?

a. 30"
b. 41"
c. 54"
d. 38"

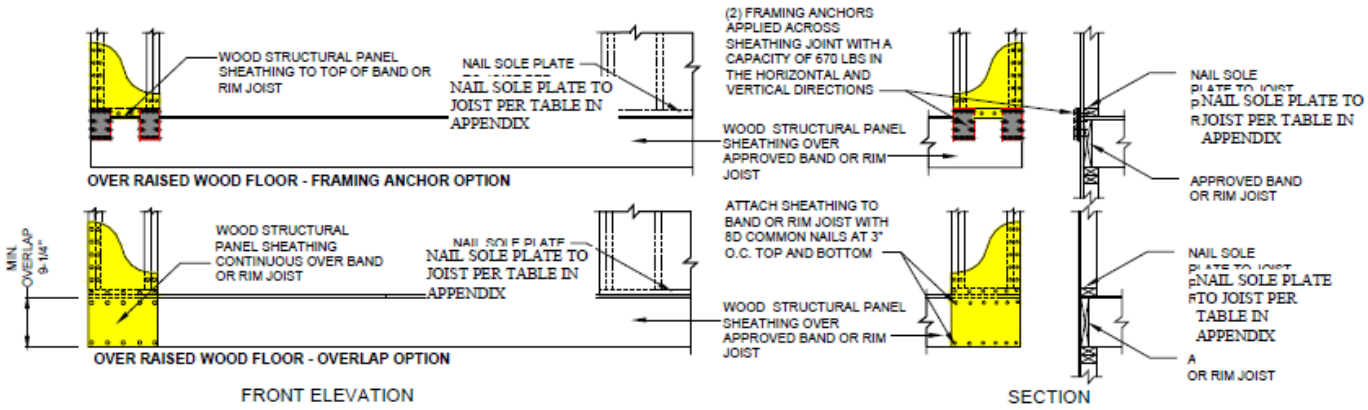
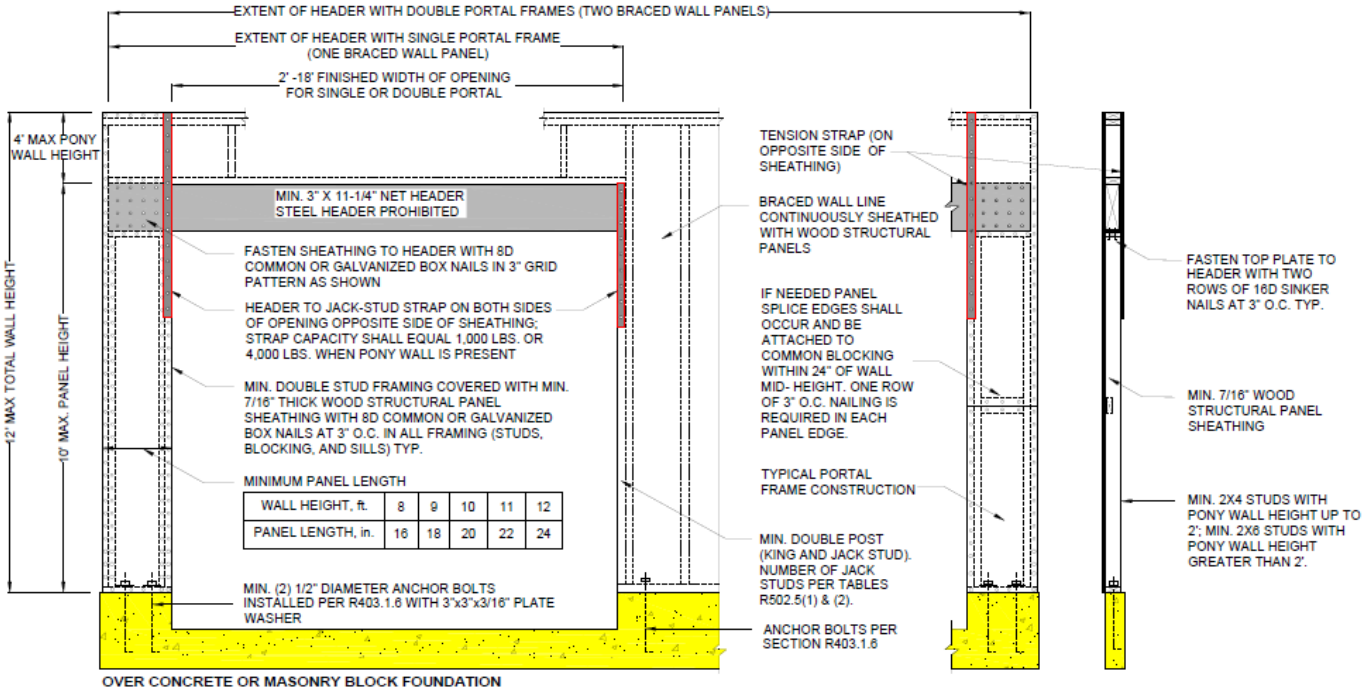


Figure 321.25-A
PF - PORTAL FRAME BRACE CONSTRUCTION



87. EXTENT OF HEADER WITH DOUBLE PORTAL FRAMES equals _____.
    a. one braced wall panel
    b. two braced wall panels
    c. ½ a braced wall panel
    d. none of the above

88. FASTEN SHEATHING TO HEADER WITH 8D COMMON OR GALVANIZED BOX NAILS IN ____ GRID PATTERN AS SHOWN
    a. 2”
    b. 3”
    c. 4”
    d. 6”

89. HEADER TO JACK-STUD STRAP ON BOTH SIDES AT 3" O.C. TYP. OF OPENING OPPOSITE SIDE OF SHEATHING; STRAP CAPACITY SHALL EQUAL _____ LBS.
    a. 500
    b. 1,000
    c. 3000
    d. 4000

90. HEADER TO JACK-STUD STRAP ON BOTH SIDES AT 3" O.C. TYP. OF OPENING OPPOSITE SIDE OF SHEATHING; _____ LBS. WHEN PONY WALL IS PRESENT
    a. 500
    b. 1,000
    c. 3000
    d. 4000

91. Method PF has a wall height of 10’ would require a minimum panel length of ____.
    a. 16”
    b. 18”
    c. 20”
    d. 22”

(c) *Bracing amount.* Bracing methods and materials complying with Table 321.25–G shall be applied to exterior walls in accordance with all of the following requirements:

1. For the purpose of determining bracing amounts, the outermost extents of the building plan at each floor level shall be circumscribed with a rectangle to define the overall length of each building side as shown in Figure 321.25–B.
2. In no case may the amount of bracing be less than two braced wall panels on exterior walls parallel to each rectangle side for each floor level of the building.
3. Where used, the number of intermittent brace panels applied to walls parallel to each rectangle side shall comply with Table 321.25–I.
4. Where used, the total length of continuous sheathed brace panels applied to walls parallel to each building side shall comply with Table 321.25–J.
5. The location of brace panels applied to walls parallel to each building side shall comply with Figure 321.25–C.
6. The interior side of exterior walls shall be sheathed with minimum ½" gypsum board interior finish unless otherwise permitted to be excluded by this subsection.
7. Balloon-frame walls shall have a maximum height of two floors unless constructed in accordance with an approved design. Wall framing shall be continuous from the lowest floor to the wall top plate at the roof. All edges of sheathing shall be supported on and fastened to blocking or framing. Braced wall panels may not be required on the balloon-frame wall portion provided the bracing amount and brace spacing requirement are satisfied for the building side. Where brace panels must be located on the balloon-frame wall portion to satisfy bracing requirements for the building side containing the balloon-frame wall portion, brace wall panels shall extend to the full height of the balloon-frame wall.

92. Balloon-frame walls shall have a maximum height of ____ floors unless constructed in accordance with an approved design.
    a. 1
    b. 2
    c. 3
    d. 4
93. Balloon-frame walls shall have all edges of sheathing supported on and fastened to _____.
    a. blocking
    b. framing
    c. both a & b
    d. none of the above
94. Where brace panels must be located on the balloon-frame wall portion to satisfy bracing requirements for the building side containing the balloon-frame wall portion, brace wall panels **may** extend to the full height of the balloon-frame wall.
    a. true
    b. false

SECTION 1. SPS 321.02 (1) (c) is amended to read:
SPS 321.02 (1) (c) *Wind loads.* 1. Dwellings shall be designed and constructed to withstand a horizontal and uplift pressure of 20 pounds per square foot acting over the surface area, except wind loads may be determined in accordance with ASCE 7–05, *Minimum Design Loads for Buildings and Other Structures*.
2. No wind load reduction may be permitted for the shielding effect of other buildings.
3. Compliance with the prescriptive construction requirements of this chapter shall be deemed to be compliance with this paragraph.
SECTION 2. SPS 321.23 is amended to read: Walls shall comply with the design requirements of s. SPS 321.02. Compliance with the prescriptive construction requirements of s. SPS 321.25 shall be deemed to be compliance with this section.

95. *Wind loads.* 1. Dwellings shall be designed and constructed to withstand a horizontal and uplift pressure of ___ pounds per square foot acting over the surface area.

a. 10
b. 15
c. 20
d. 25

96. Wind load reduction may be permitted for the shielding effect of other buildings.
a. true
b. false

UDC Wall Bracing Provisions quiz -Answer Sheet

1	a	b	c	d	33	a	b	c	d	65	a	b	c	d
2	a	b	c	d	34	a	b	c	d	66	a	b	c	d
3	a	b	c	d	35	a	b	c	d	67	a	b	c	d
4	a	b	c	d	36	a	b	c	d	68	a	b	c	d
5	a	b	c	d	37	a	b	c	d	69	a	b	c	d
6	a	b	c	d	38	a	b	c	d	70	a	b	c	d
7	a	b	c	d	39	a	b	c	d	71	a	b	c	d
8	a	b	c	d	40	a	b	c	d	72	a	b	c	d
9	a	b	c	d	41	a	b	c	d	73	a	b	c	d
10	a	b	c	d	42	a	b	c	d	74	a	b	c	d
11	a	b	c	d	43	a	b	c	d	75	a	b	c	d
12	a	b	c	d	44	a	b	c	d	76	a	b	c	d
13	a	b	c	d	45	a	b	c	d	77	a	b	c	d
14	a	b	c	d	46	a	b	c	d	78	a	b	c	d
15	a	b	c	d	47	a	b	c	d	79	a	b	c	d
16	a	b	c	d	48	a	b	c	d	80	a	b	c	d
17	a	b	c	d	49	a	b	c	d	81	a	b	c	d
18	a	b	c	d	50	a	b	c	d	82	a	b	c	d
19	a	b	c	d	51	a	b	c	d	83	a	b	c	d
20	a	b	c	d	52	a	b	c	d	84	a	b	c	d
21	a	b	c	d	53	a	b	c	d	85	a	b	c	d
22	a	b	c	d	54	a	b	c	d	86	a	b	c	d
23	a	b	c	d	55	a	b	c	d	87	a	b	c	d
24	a	b	c	d	56	a	b	c	d	88	a	b	c	d
25	a	b	c	d	57	a	b	c	d	89	a	b	c	d
26	a	b	c	d	58	a	b	c	d	90	a	b	c	d
27	a	b	c	d	59	a	b	c	d	91	a	b	c	d
28	a	b	c	d	60	a	b	c	d	92	a	b	c	d
29	a	b	c	d	61	a	b	c	d	93	a	b	c	d
30	a	b	c	d	62	a	b	c	d	94	a	b	c	d
31	a	b	c	d	63	a	b	c	d	95	a	b	c	d
32	a	b	c	d	64	a	b	c	d	96	a	b	c	d

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