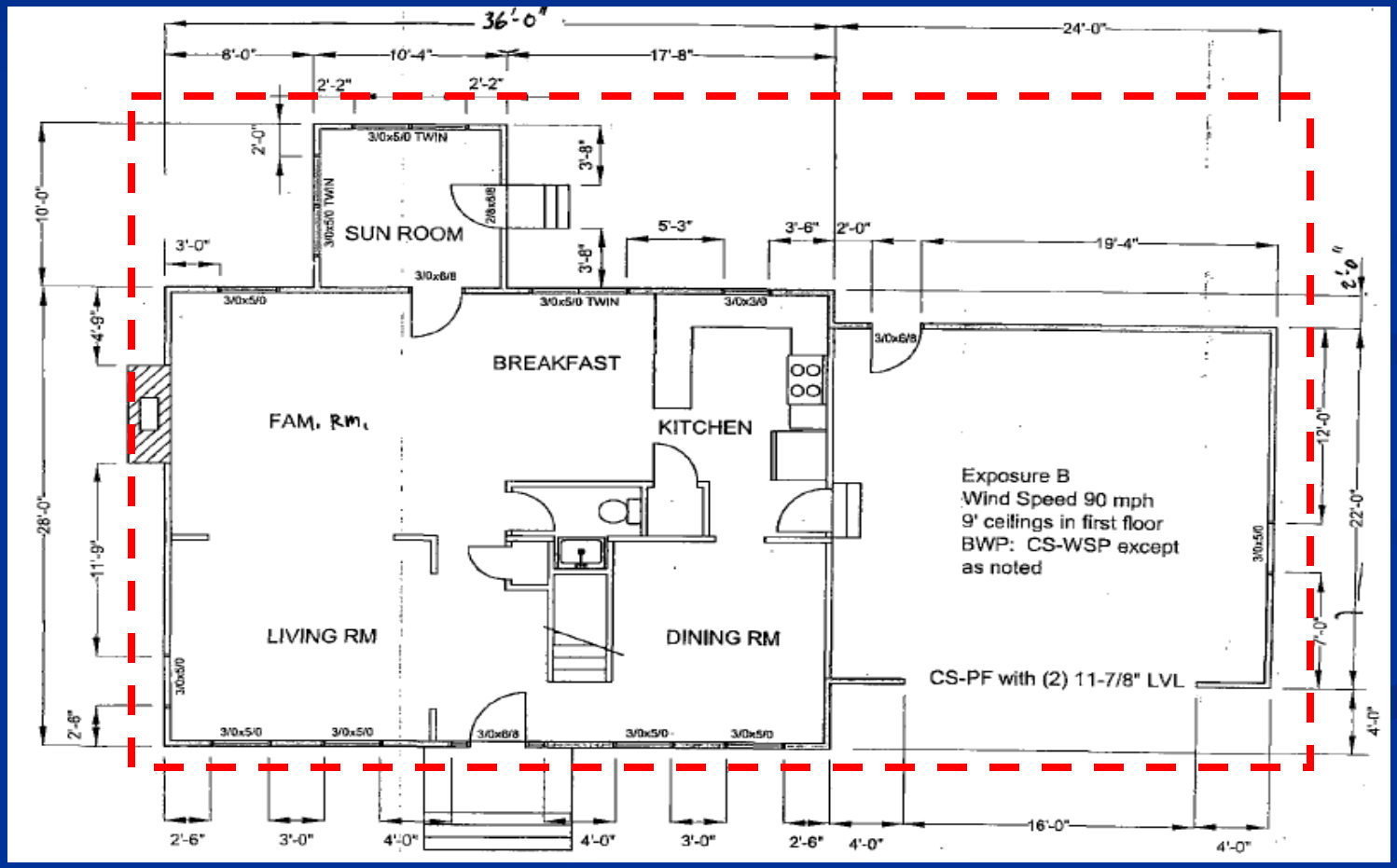
2009 SIMPLIFIED WALL BRACING

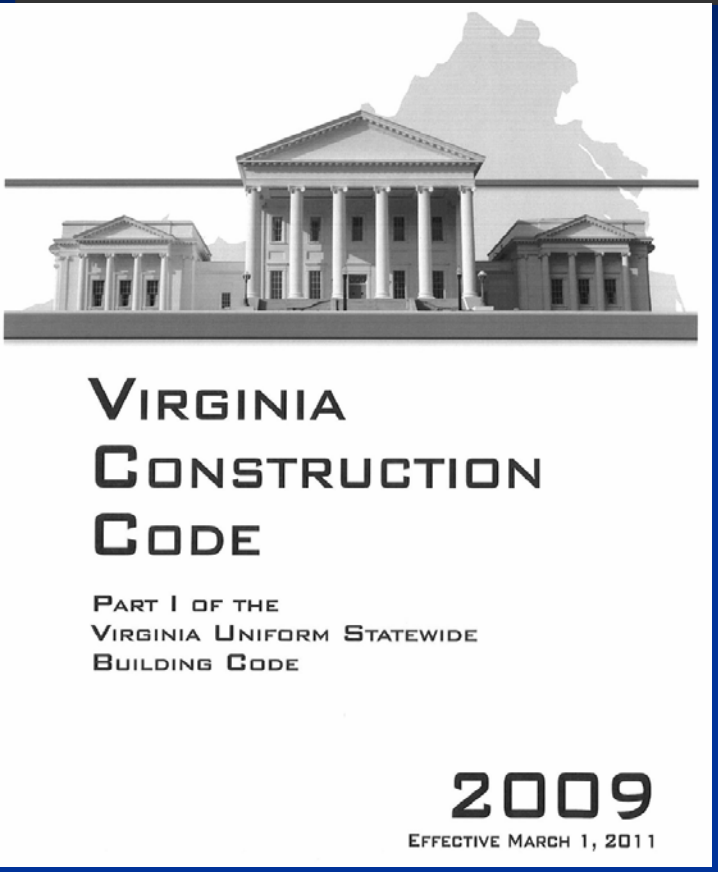
R602.12

R602.12 Simplified wall bracing method



2009 SIMPLIFIED WALL BRACING

WALL BRACING REQUIREMENTS IN USBC



Simplified wall bracing

USBC section R602.12

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

2009 SIMPLIFIED WALL BRACING

AN ALTERNATE TO CLASSICAL METHOD

R602.12 Simplified wall bracing Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

The simplified method may be used as an alternate to the classic method,

2009 SIMPLIFIED WALL BRACING

AN ALTERNATE TO CLASSICAL METHOD

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

The simplified method may be used as an alternate to the classic method, but only if all the prerequisites are met

Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

AN ALTERNATE TO CLASSICAL METHOD

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

The simplified method may be used as an alternate to the classic method, only if all the prerequisites are met.

The prerequisites basically eliminate all of the adjustment factors.

Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

8 PREREQUISITES

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

1. There shall be no more than two stories above the top of a concrete or masonry foundation or basement wall. Permanent wood foundations shall not be permitted.
2. Floors shall not cantilever more than 24 inches (607 mm) beyond the foundation or bearing wall below.
3. Wall height shall not be greater than 10 feet (2743 mm).
4. The building shall have a roof eave-to-ridge height of 15 feet (4572 mm) or less.
5. All exterior walls shall have gypsum board with a minimum thickness of 1/2 inches (12.7 mm) installed on the interior side fastened in accordance with Table R702.3.5.
6. The structure shall be located where the basic wind speed is less than or equal to 90 mph (40 m/s), and the Exposure Category is A or B.
7. The structure shall be located in Seismic Design Category of A, B or C for detached one- and two-family dwellings or Seismic Design Category A or B for townhouses.
8. Cripple walls shall not be permitted in two-story buildings.

2009 SIMPLIFIED WALL BRACING

PREREQUISITE #1

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

1. There shall be no more than two stories above the top of a concrete or masonry foundation or basement wall. Permanent wood foundations shall not be permitted.

A maximum of 2 stories above the top of a concrete or masonry foundation or basement wall

2009 SIMPLIFIED WALL BRACING

PREREQUISITE #2

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

2. Floors shall not cantilever more than 24 inches (607 mm) beyond the foundation or bearing wall below.

No floor cantilever > 24”

2009 SIMPLIFIED WALL BRACING

PREREQUISITE #3

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

3. Wall height shall not be greater than 10 feet (2743 mm).

Max. 10’ wall height

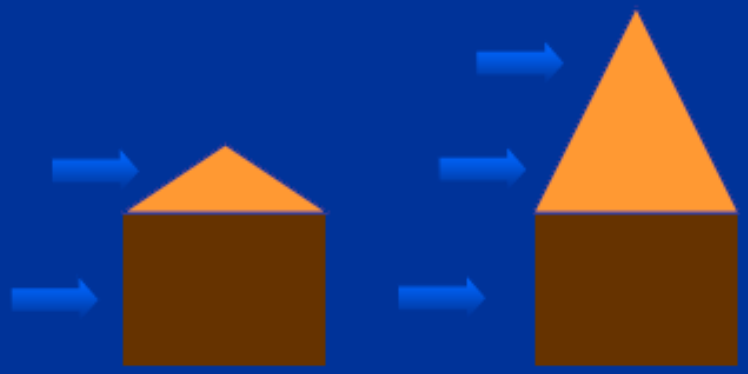
2009 SIMPLIFIED WALL BRACING

PREREQUISITE #4

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

4. The building shall have a roof eave-to-ridge height of 15 feet (4572 mm) or less.

Max. 15’ roof eave to ridge height



2009 SIMPLIFIED WALL BRACING

PREREQUISITE #5

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

5. All exterior walls shall have gypsum board with a minimum thickness of 1/2 inches (12.7 mm) installed on the interior side fastened in accordance with Table R702.3.5.

Gyp. board installed on the interior of all exterior walls

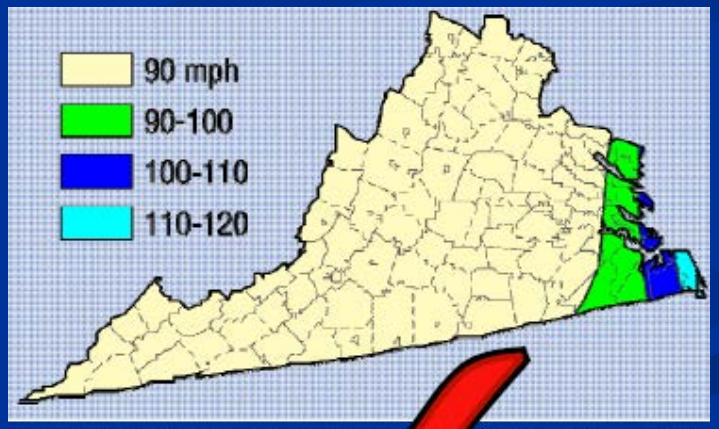
2009 SIMPLIFIED WALL BRACING

PREREQUISITE #6

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

6. The structure shall be located where the basic wind speed is less than or equal to 90 mph (40 m/s), and the Exposure Category is A or B.

Located in 90 mph and exposure category A or B



2009 SIMPLIFIED WALL BRACING

PREREQUISITE #7

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

7. The structure shall be located in Seismic Design Category of A, B or C for detached one- and two-family dwellings or Seismic Design Category A or B for townhouses.

Located in Seismic Design Category SDC A,B or C (SDC A or B for townhouses)

2009 SIMPLIFIED WALL BRACING

PREREQUISITE #8

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

8. Cripple walls shall not be permitted in two-story buildings.

Cripple walls not permitted in two story buildings

2009 SIMPLIFIED WALL BRACING

R602.12 Simplified Wall Bracing

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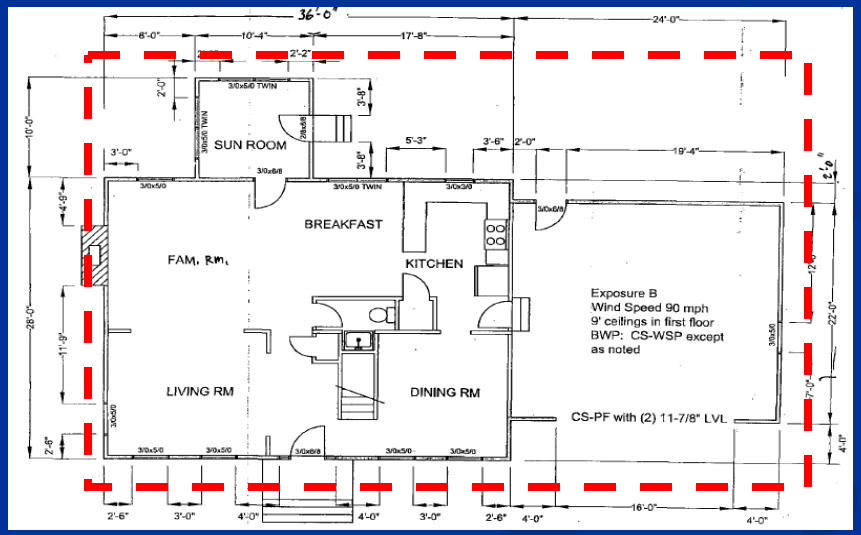
You must meet <u>ALL</u> 8 of the prerequisites to use the simplified method



2009 SIMPLIFIED WALL BRACING

R602.12 Simplified Wall Bracing

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You must meet <u>ALL</u> 8 of the prerequisites to use the simplified method

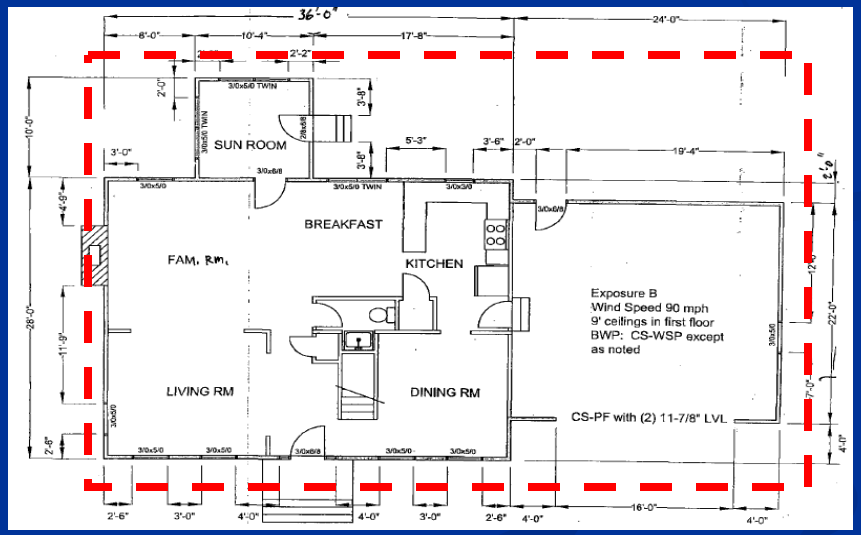
If not…you must use the classic method

2009 SIMPLIFIED WALL BRACING

R602.12 Entire building to use simplified

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of R602.10, except as specified herein, shall not be permitted.

NOTE: The entire structure must be braced using the simplified method. Cannot mix simplified method and classical method.

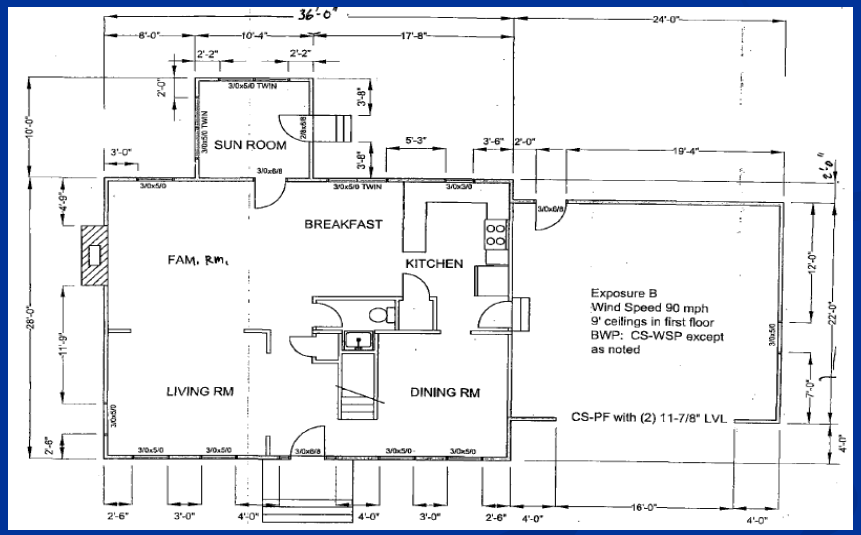


2009 SIMPLIFIED WALL BRACING

R602.12 Simplified Wall Bracing

How does it work?

NEW



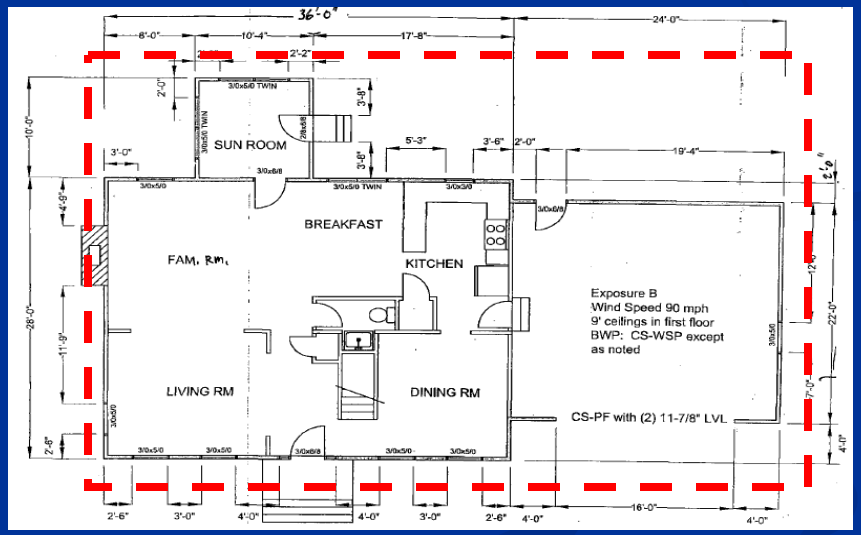
2009 SIMPLIFIED WALL BRACING

R602.12 Simplified Wall Bracing

How does it work?

Draw a rectangle around the structure

NEW



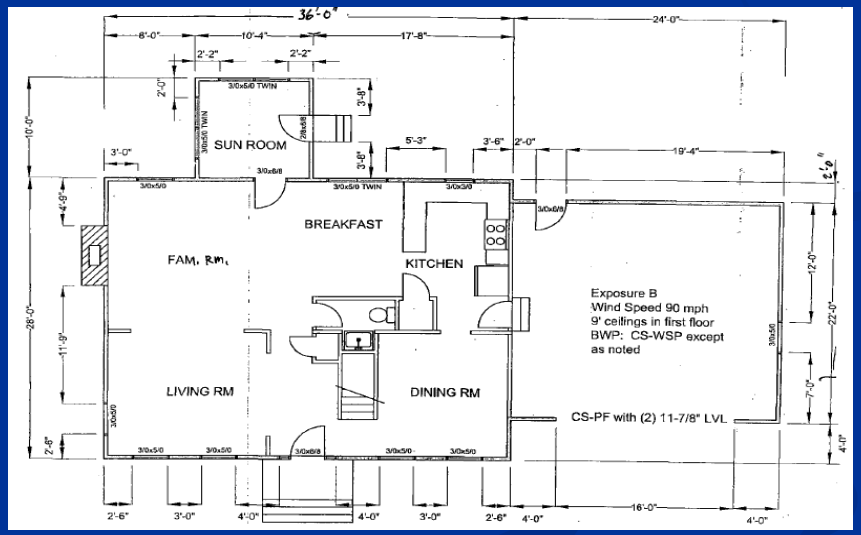
2009 SIMPLIFIED WALL BRACING

R602.12 Simplified Wall Bracing

How does it work?

Draw a rectangle around the structure

Look up the number of bracing units required for each side of the rectangle per Table R602.12.4



2009 SIMPLIFIED WALL BRACING

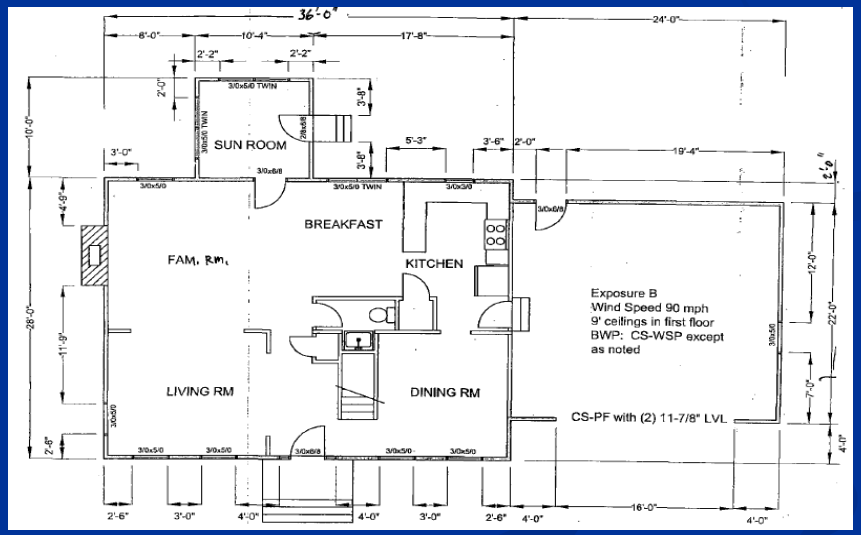
R602.12 Simplified Wall Bracing

How does it work?

Draw a rectangle around the structure

Look up the number of bracing units required for each side of the rectangle per Table R602.12.4

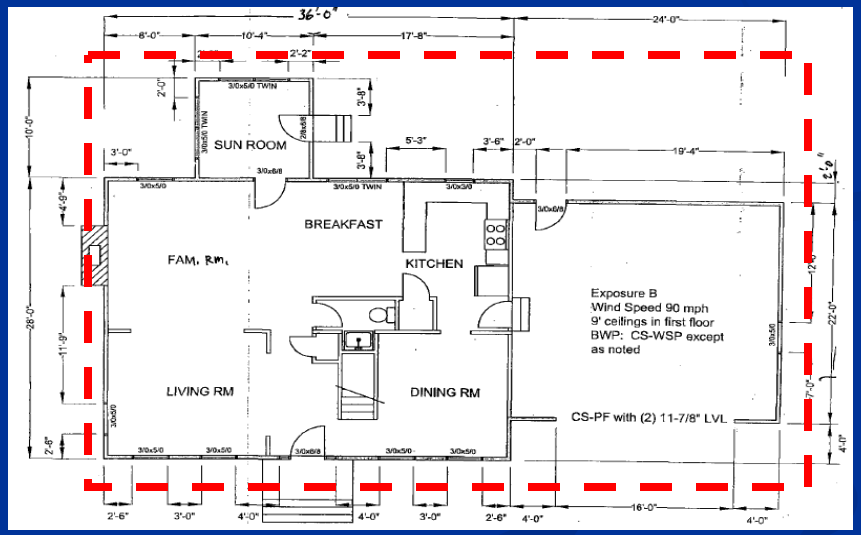
Verify the amount of BUs provided equals or exceeds the amount required



2009 SIMPLIFIED WALL BRACING

R602.12 Simplified Wall Bracing

All of the bracing is applied to the outside of the house.
No interior wall bracing…
No BWLs!!!

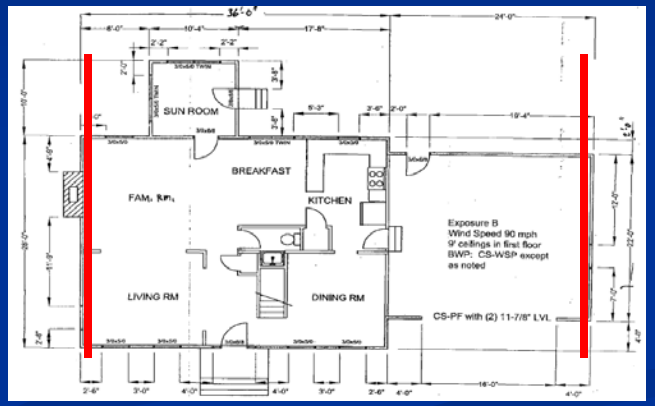


2009 SIMPLIFIED WALL BRACING

R602.12 Simplified Wall Bracing

All of the bracing is applied to the outside of the house.
No interior wall bracing…
No BWLs!!!

The amount of bracing required on the short side is a function of the length of the long side.



More bracing required

Bigger "sail" area

2009 SIMPLIFIED WALL BRACING

R602.12 Simplified Wall Bracing

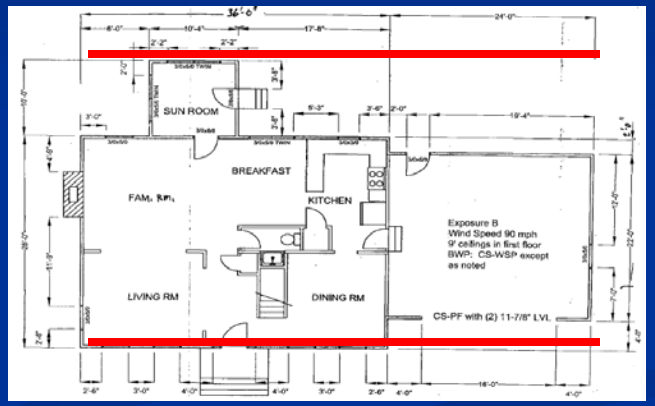
All of the bracing is applied to the outside of the house.
No interior wall bracing…
No BWLs!!!

The amount of bracing required on the short side is a function of the length of the long side.

The amount of the bracing required on the long side is a function of the length of the short side.

Less bracing required

Smaller "sail" area

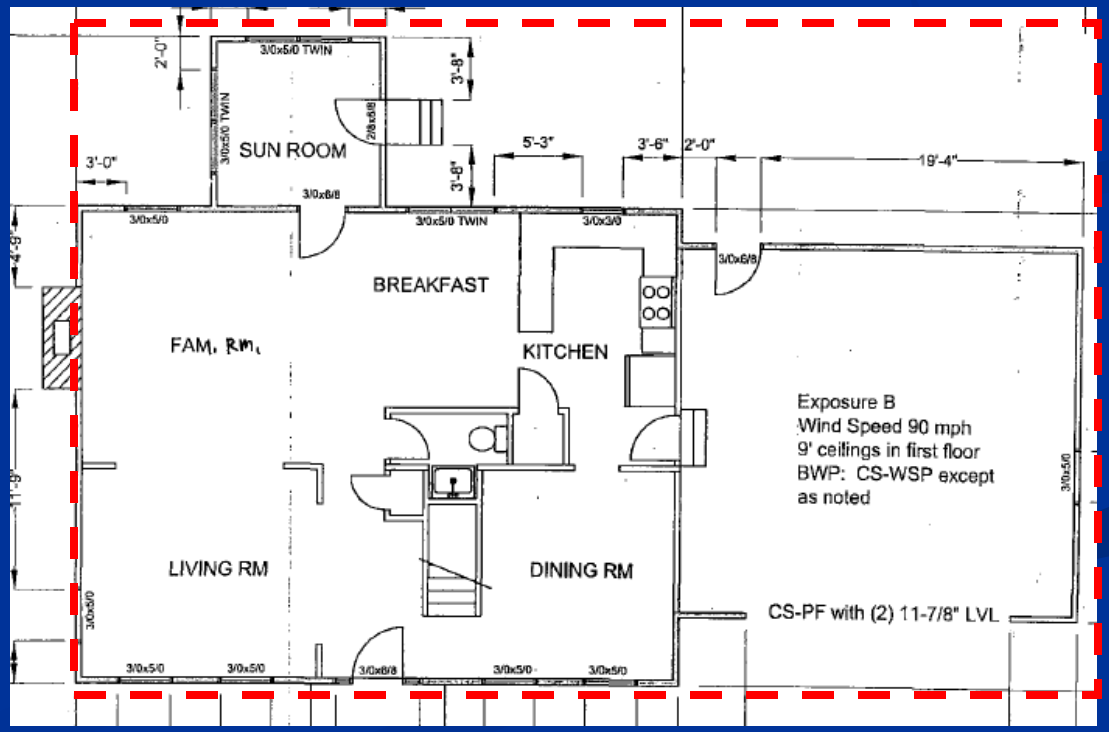


2009 SIMPLIFIED WALL BRACING

R602.12.1 Circumscribed rectangle

R602.12.1 Circumscribed rectangle. Required bracing shall be determined by circumscribing a rectangle around the entire building on each floor as shown in Figure R602.12.1. The rectangle shall surround all enclosed offsets and projections such as sunrooms and attached garages. Open structures, such as carports and decks shall be permitted to be excluded. The rectangle shall have no side greater than 60 feet (18 288 mm), and the ratio between the long side and short side shall be a maximum of 3:1.

The rectangle shall surround all enclosed offsets and projections



2009 SIMPLIFIED WALL BRACING

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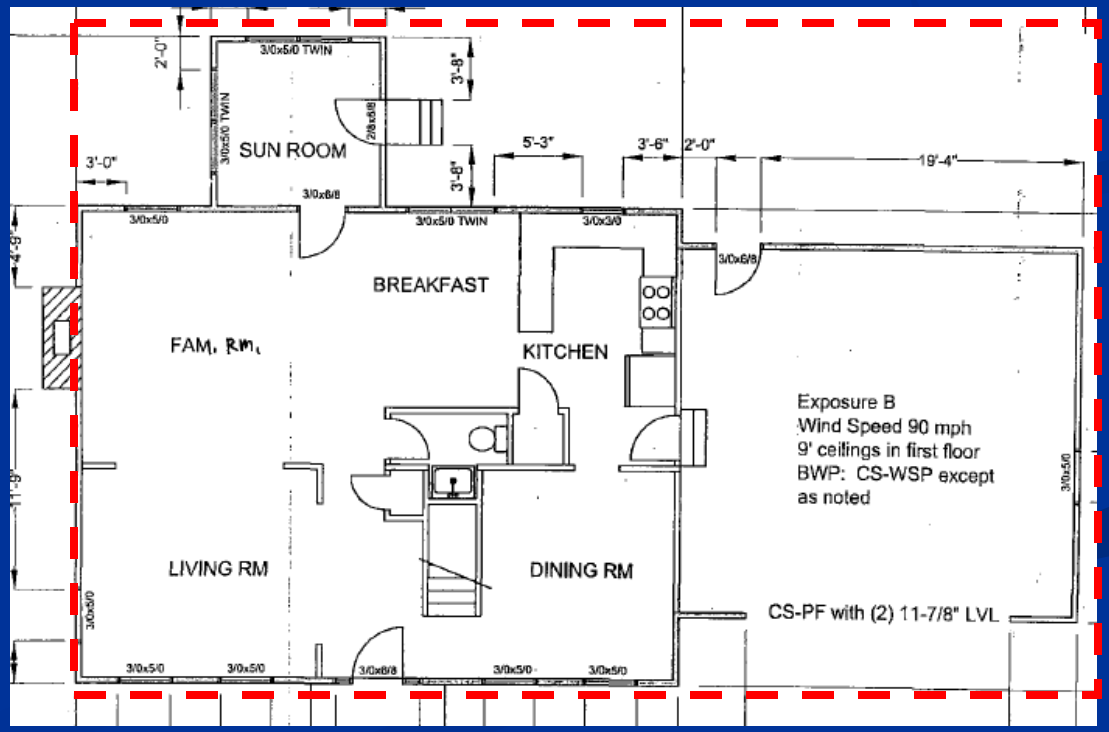
Open structures such as porches, decks and carports shall be excluded



2009 SIMPLIFIED WALL BRACING

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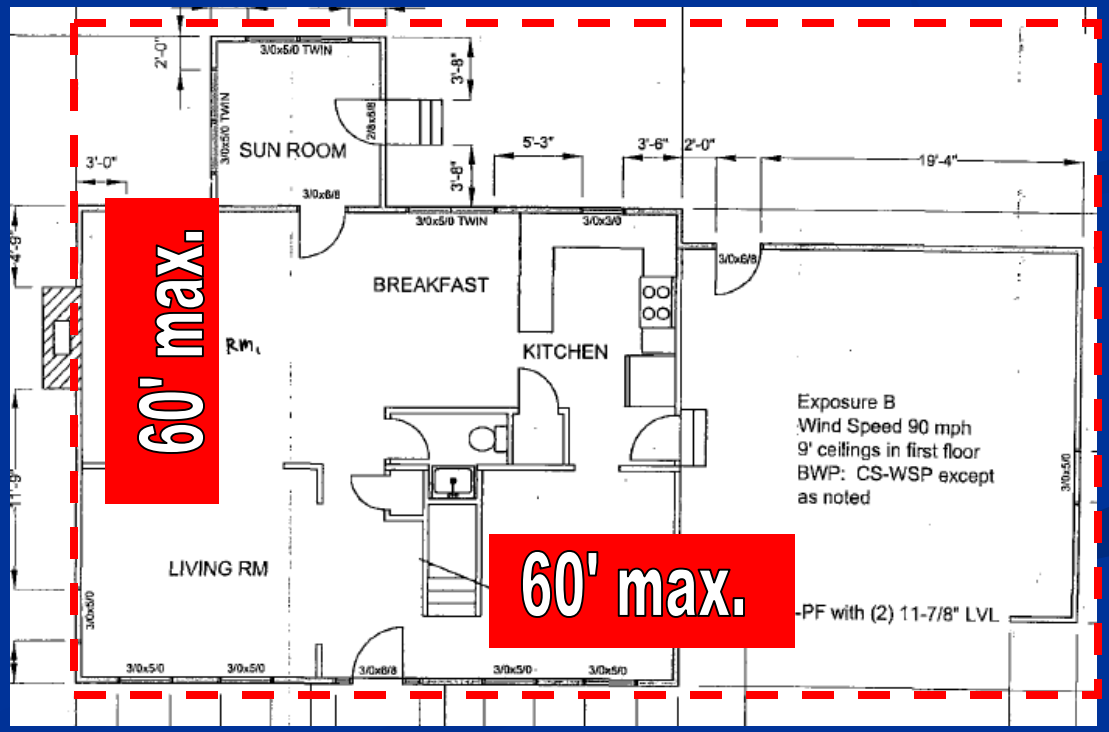
The rectangle shall have no side greater than 60’



2009 SIMPLIFIED WALL BRACING

R602.12.1 Circumscribed rectangle

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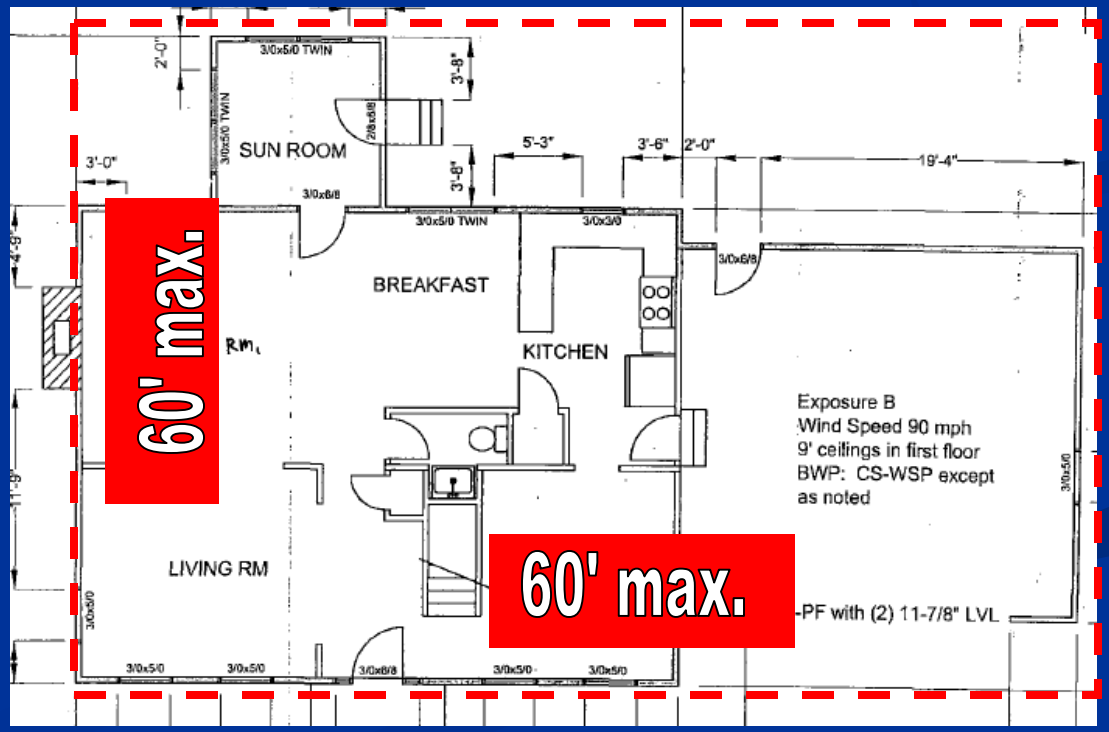
The rectangle shall have no side greater than 60’

So… 60’x60’ is the largest house that can utilize the simplified method



2009 SIMPLIFIED WALL BRACING

R602.12.1 Circumscribed rectangle

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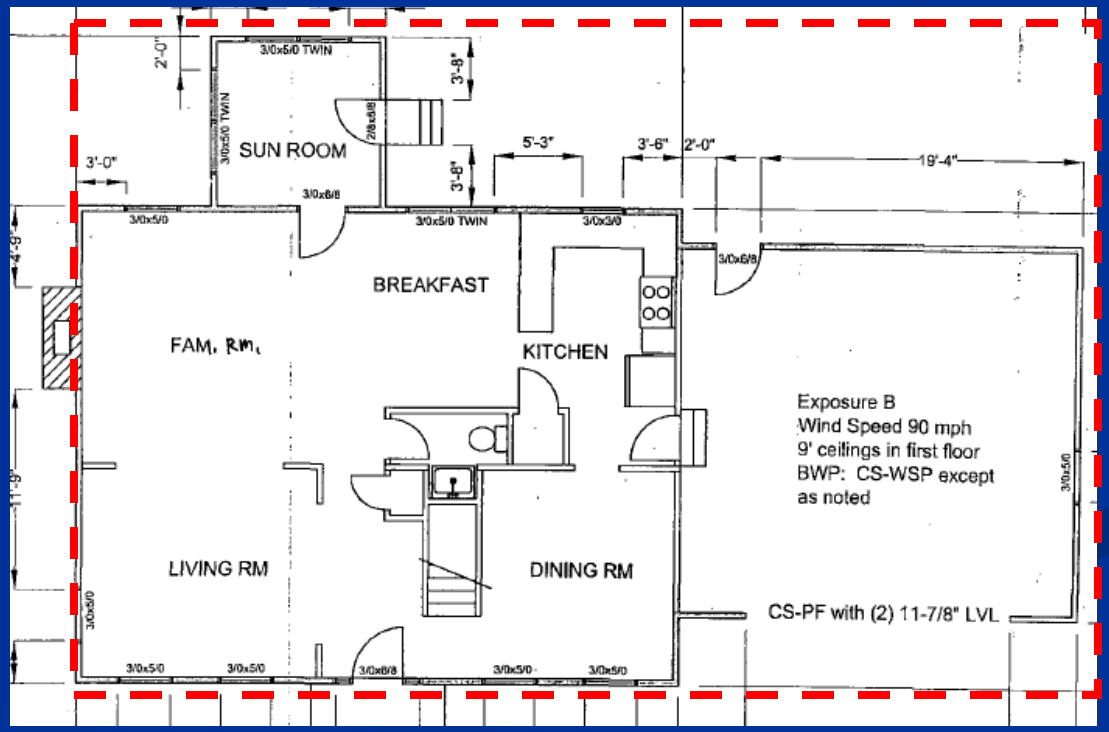
$$\frac{\text{LONG SIDE}}{\text{SHORT SIDE}} \leq 3$$



2009 SIMPLIFIED WALL BRACING

R602.12.2 Sheathing materials

R602.12.2 Sheathing materials. The following sheathing materials installed on the exterior side of exterior walls shall be used to construct a bracing unit as defined in Section R602.12.3. Mixing materials is prohibited.

1. Wood structural panels with a minimum thickness of 3/8 inch (9.5 mm) fastened in accordance with Table R602.3(3).

Min. 3/8” wood structural panels (OSB or plywood) OR

2009 SIMPLIFIED WALL BRACING

R602.12.2 Sheathing materials

R602.12.2 Sheathing materials. The following sheathing materials installed on the exterior side of exterior walls shall be used to construct a bracing unit as defined in Section R602.12.3. Mixing materials is prohibited.

2. Structural fiberboard sheathing with a minimum thickness of 1/2 inch (12.7 mm) fastened in accordance with Table R602.3(1).

Min. ½” structural fiberboard

2009 SIMPLIFIED WALL BRACING

R602.12.2 Sheathing materials

R602.12.2 Sheathing materials. The following sheathing materials installed on the exterior side of exterior walls shall be used to construct a bracing unit as defined in Section R602.12.3. Mixing materials is prohibited.

Mixing materials is prohibited. Cannot mix WSP and SFB on the same house

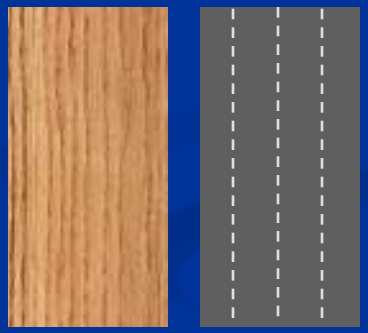
2009 SIMPLIFIED WALL BRACING

R602.12.3 Bracing Unit

R602.12.3 Bracing unit A bracing unit shall be a full-height sheathed segment of the exterior wall with no openings or vertical or horizontal offsets and a minimum length as specified below. Interior walls shall not contribute toward the amount of required bracing. Mixing of Items 1 and 2 below is prohibited on the same story.

The simplified method uses something called a bracing unit

A bracing unit is the simplified wall bracing's equivalent to a braced wall panel



WSP SFB

2009 SIMPLIFIED WALL BRACING

R602.12.3 Bracing Unit length

R602.12.3 Bracing unit. A bracing unit shall be a full-height sheathed segment of the exterior wall with no openings or vertical or horizontal offsets and a minimum length as specified below. Interior walls shall not contribute toward the amount of required bracing. Mixing of Items 1 and 2 below is prohibited on the same story.

The minimum length of a bracing unit depends on the application

Min. length

2009 SIMPLIFIED WALL BRACING

R602.12.3 Bracing Unit length

R602.12.3 Bracing unit. A bracing unit shall be a full-height sheathed segment of the exterior wall with no openings or vertical or horizontal offsets and a minimum length as specified below. Interior walls shall not contribute toward the amount of required bracing. Mixing of Items 1 and 2 below is prohibited on the same story.

1. Where all framed portions of all exterior walls are sheathed in accordance with Section R602.12.2, including wall areas between bracing units, above and below openings and on gable end walls the minimum length of a bracing unit shall be 3 feet (914 mm).

3' Min.

If using continuously sheathed the min. length of a bracing unit = 3'

2009 SIMPLIFIED WALL BRACING

R602.12.3 Bracing Unit length

R602.12.3 Bracing unit. A bracing unit shall be a full-height sheathed segment of the exterior wall with no openings or vertical or horizontal offsets and a minimum length as specified below. Interior walls shall not contribute toward the amount of required bracing. Mixing of Items 1 and 2 below is prohibited on the same story.

2. Where the exterior walls are braced with sheathing panels in accordance with Section R602.12.2 and areas between bracing units are covered with other materials, the minimum length of a bracing unit shall be 4 feet (1219 mm).

4' Min.

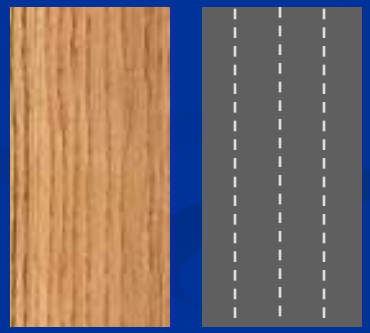
If using intermittent sheathed the min. length of a bracing unit = 4'

2009 SIMPLIFIED WALL BRACING

R602.12.3 Do not mix methods

R602.12.3 Bracing unit. A bracing unit shall be a full-height sheathed segment of the exterior wall with no openings or vertical or horizontal offsets and a minimum length as specified below. Interior walls shall not contribute toward the amount of required bracing. Mixing of Items 1 and 2 below is prohibited on the same story.

Cannot mix continuous and intermittent on the same story



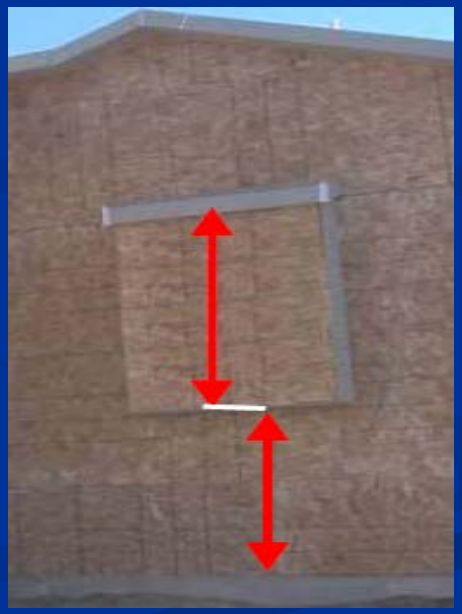
WSP SFB

2009 SIMPLIFIED WALL BRACING

R602.12.3 Bracing Unit

R602.12.3 Bracing unit. A bracing unit shall be a full-height sheathed segment of the exterior wall with no openings or vertical or horizontal offsets and a minimum length as specified below. Interior walls shall not contribute toward the amount of required bracing. Mixing of Items 1 and 2 below is prohibited on the same story.

A bracing unit cannot have vertical offsets



2009 SIMPLIFIED WALL BRACING

R602.12.3 Bracing Unit

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A bracing unit cannot have vertical offsets

A bracing unit cannot have horizontal offsets

2009 SIMPLIFIED WALL BRACING

R602.12.3 Bracing Unit

R602.12.3 Bracing unit. A bracing unit shall be a full-height sheathed segment of the exterior wall with no openings or vertical or horizontal offsets and a minimum length as specified below. Interior walls shall not contribute toward the amount of required bracing. Mixing of Items 1 and 2 below is prohibited on the same story.

Interior walls do not contribute…..

No interior bracing units

2009 SIMPLIFIED WALL BRACING

R602.12.3.1 Multiple Bracing Units

R602.12.3.1 Multiple bracing units. Segments of wall compliant with Section R602.12.3 and longer than the minimum bracing unit length shall be considered as multiple bracing units. The number of bracing units shall be determined by dividing the wall segment length by the minimum bracing unit length. Full-height sheathed segments of wall narrower than the minimum bracing unit length shall not contribute toward a bracing unit except as specified in Section R602.12.6.

Continuously sheathed

2009 SIMPLIFIED WALL BRACING

R602.12.3.1 Multiple Bracing Units

R602.12.3.1 Multiple bracing units. Segments of wall compliant with Section R602.12.3 and longer than the minimum bracing unit length shall be considered as multiple bracing units. The number of bracing units shall be determined by dividing the wall segment length by the minimum bracing unit length. Full-height sheathed segments of wall narrower than the minimum bracing unit length shall not contribute toward a bracing unit except as specified in Section R602.12.6.

Continuously sheathed
3' min. length

2009 SIMPLIFIED WALL BRACING

R602.12.3.1 Multiple Bracing Units

R602.12.3.1 Multiple bracing units. Segments of wall compliant with Section R602.12.3 and longer than the minimum bracing unit length shall be considered as multiple bracing units. The number of bracing units shall be determined by dividing the wall segment length by the minimum bracing unit length. Full-height sheathed segments of wall narrower than the minimum bracing unit length shall not contribute toward a bracing unit except as specified in Section R602.12.6.

Continuously sheathed
3’ min. length
13’ segment is a multiple bracing unit

2009 SIMPLIFIED WALL BRACING

R602.12.3.1 Multiple Bracing Units

R602.12.3.1 Multiple bracing units. Segments of wall compliant with Section R602.12.3 and longer than the minimum bracing unit length shall be considered as multiple bracing units. The number of bracing units shall be determined by dividing the wall segment length by the minimum bracing unit length. Full-height sheathed segments of wall narrower than the minimum bracing unit length shall not contribute toward a bracing unit except as specified in Section R602.12.6.

Continuously sheathed
3’ min. length
13’ segment is a
multiple bracing unit

13’ 3’ = 4.33 BU

2009 SIMPLIFIED WALL BRACING

R602.12.3.1 Multiple Bracing Units

R602.12.3.1 Multiple bracing units. Segments of wall compliant with Section R602.12.3 and longer than the minimum bracing unit length shall be considered as multiple bracing units. The number of bracing units shall be determined by dividing the wall segment length by the minimum bracing unit length. Full-height sheathed segments of wall narrower than the minimum bracing unit length shall not contribute toward a bracing unit except as specified in Section R602.12.6.

Continuously sheathed
3’ min. length
2.5’ segment does not contribute

2.5’ 3’ < 1
Therefore 0 BU

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

R602.12.4 Number of bracing units. Each side of the circumscribed rectangle, as shown in Figure R602.12.1, shall have, at a minimum, the number of bracing units per Table R602.12.4 placed on the parallel exterior walls facing the side of the rectangle. Bracing units shall then be placed using the distribution requirements specified in Section R602.12.5.

Table R602.12.4 determines the number of BUs

TABLE R602.12.4
MINIMUM NUMBER OF BRACING UNITS ON EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE

STORY LEVEL	EAVE-TO RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE[a, b]						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE[a, b]					
		Length of short side (ft)[c]						Length of long side (ft)[c]					
		10	20	30	40	50	60	10	20	30	40	50	60
	10	1	2	2	2	3	3	1	2	2	2	3	3
		2	3	3	4	5	6	2	3	3	4	5	6
	15	1	2	3	3	4	4	1	2	3	3	4	4
		2	3	4	5	6	7	2	3	4	5	6	7

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

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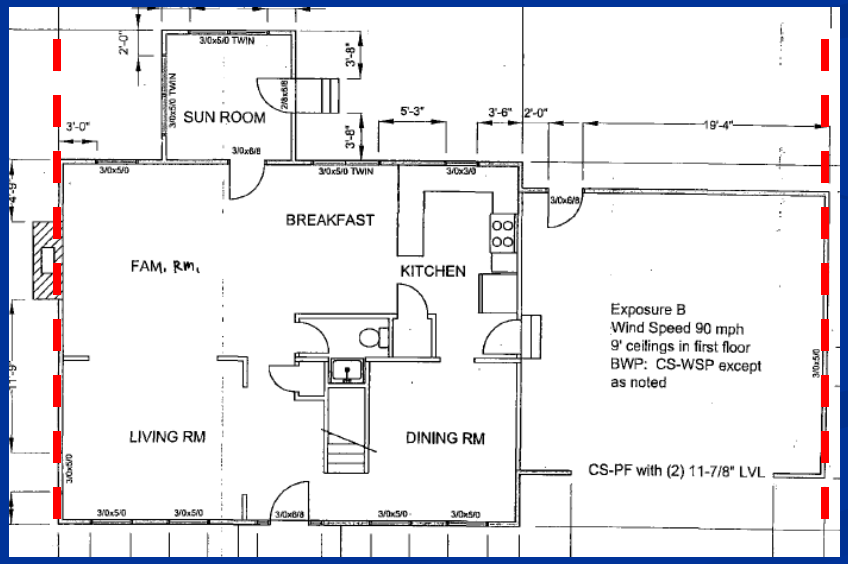
BUs are required on each side of the rectangle

BU per table



BU per table

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

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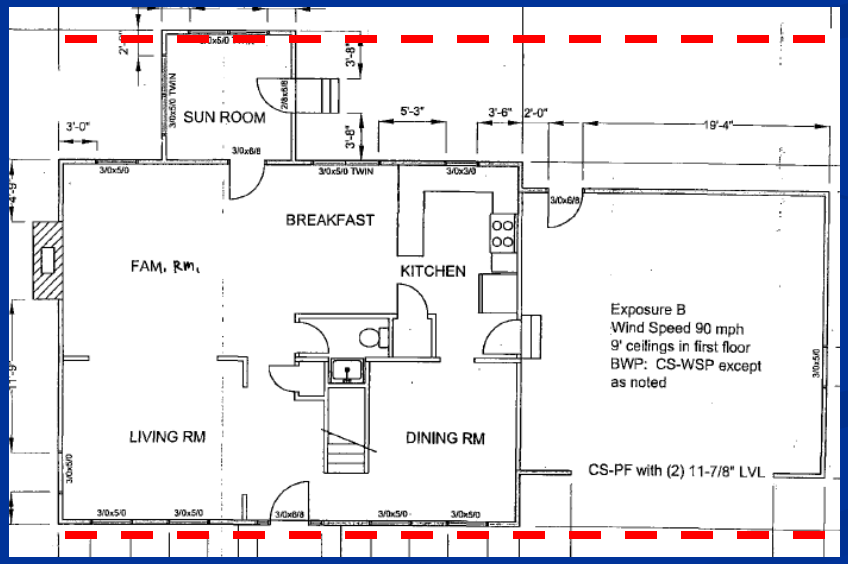
The bracing units are required on each side of the rectangle

BU per table



BU per table

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

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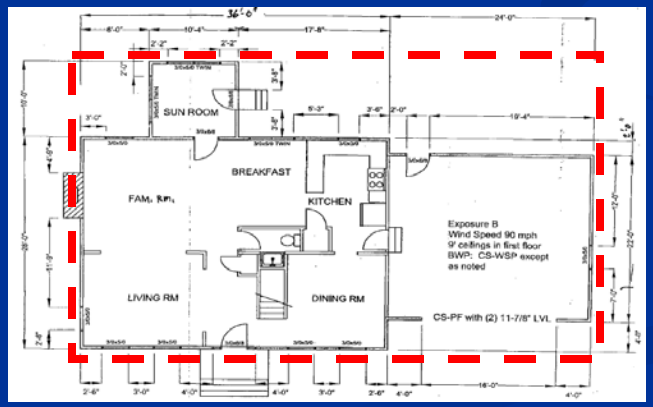
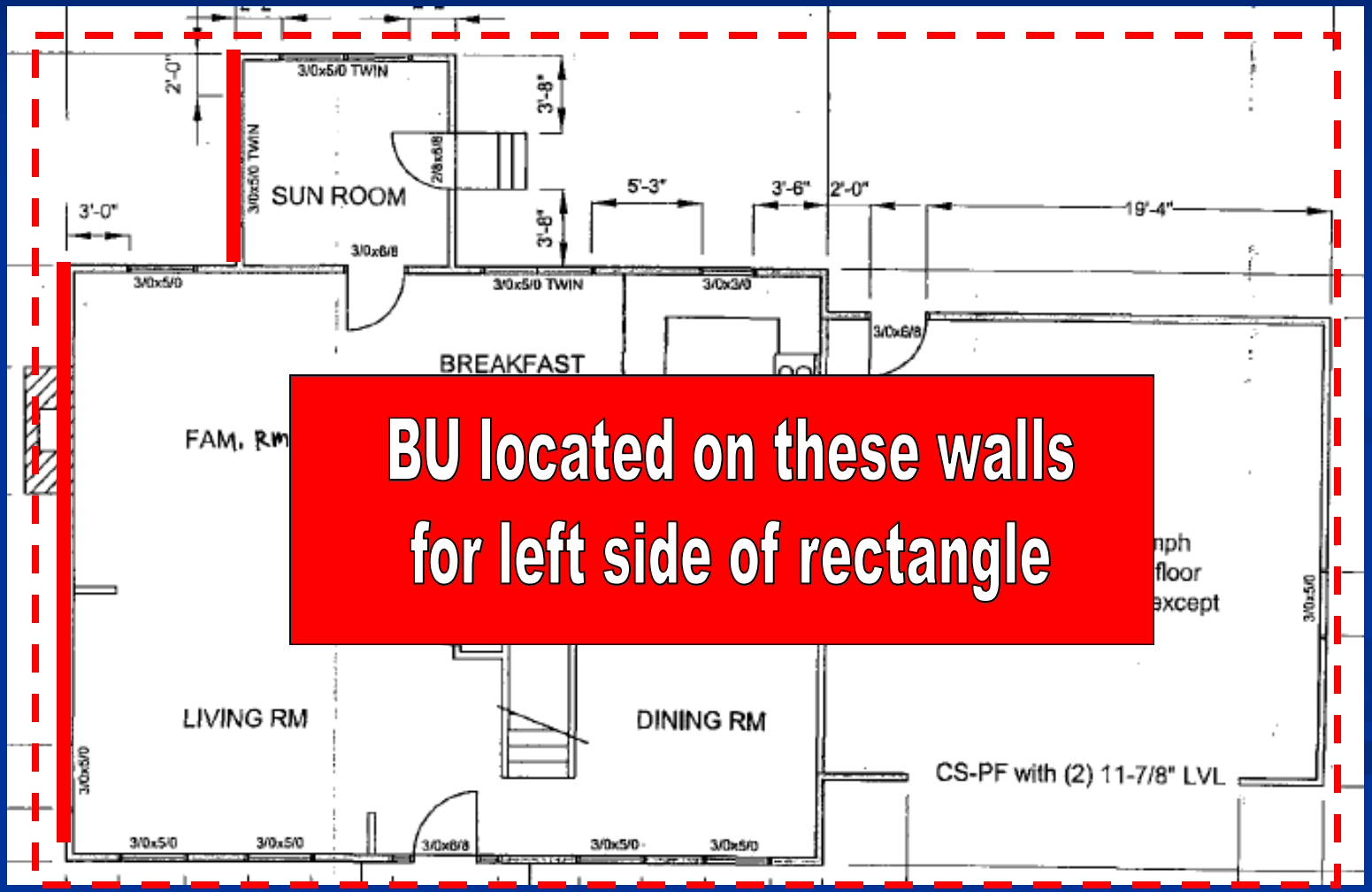
The bracing units are to be placed on the parallel walls facing the rectangle so……..



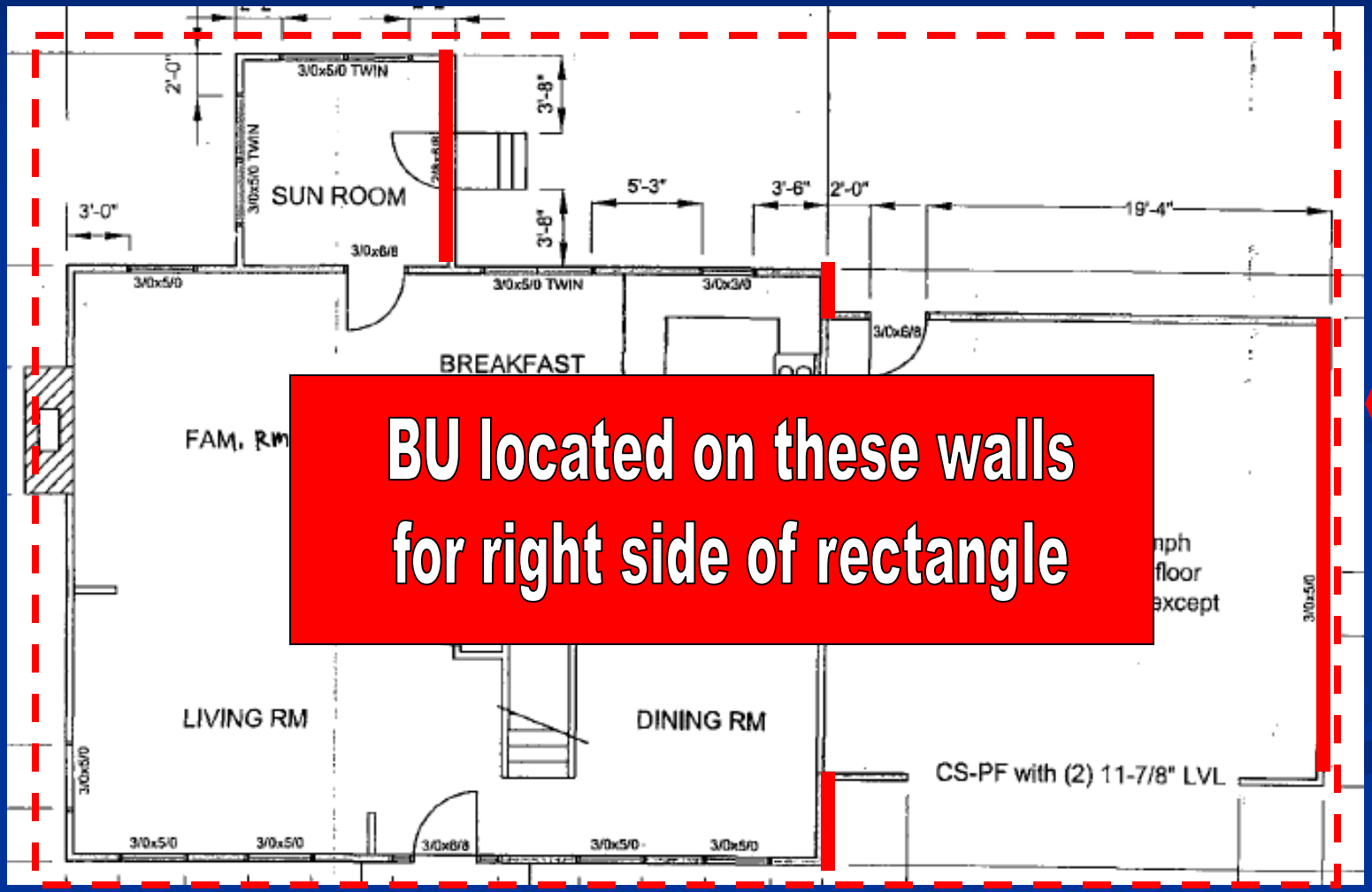
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units



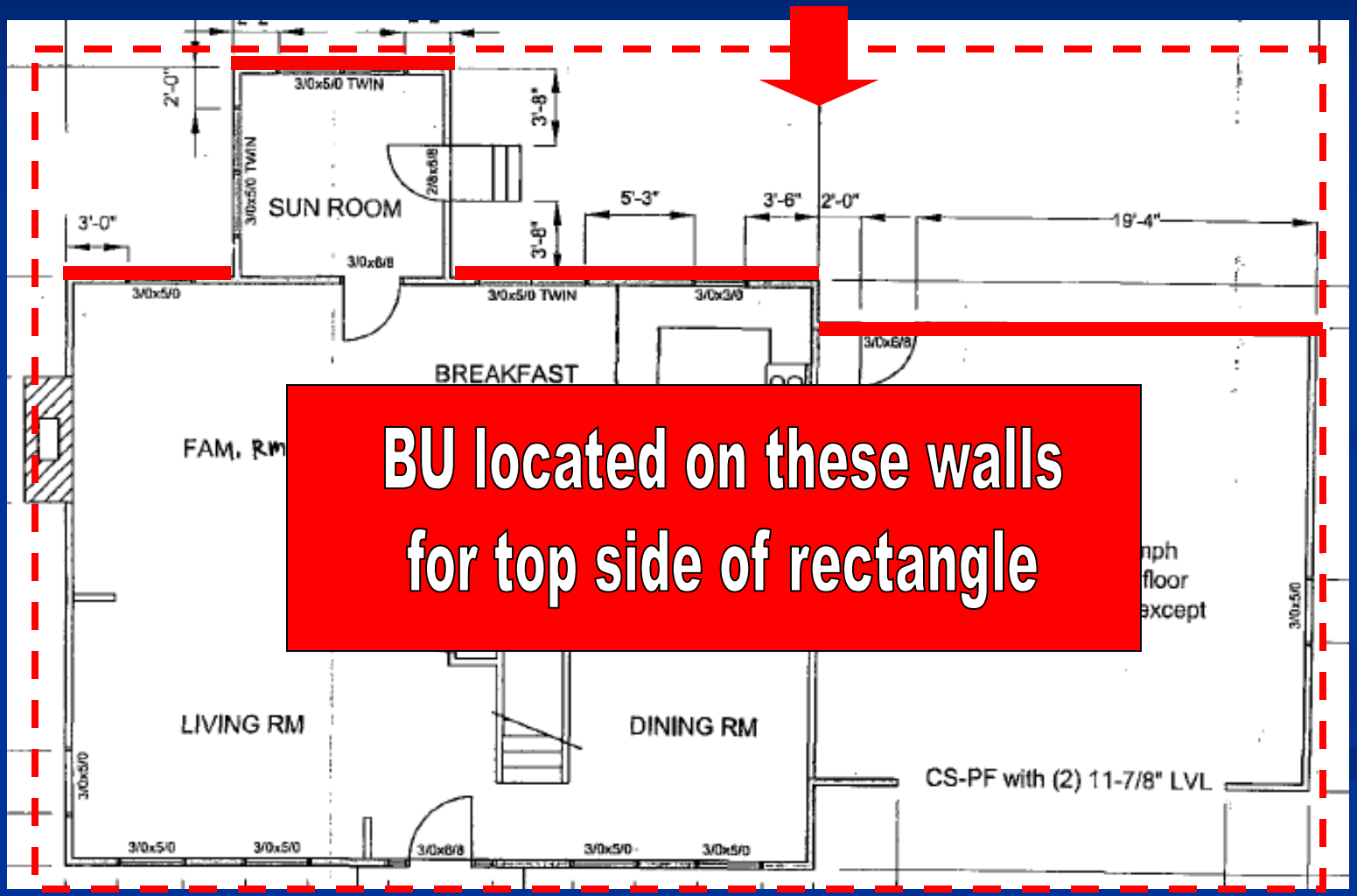
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units



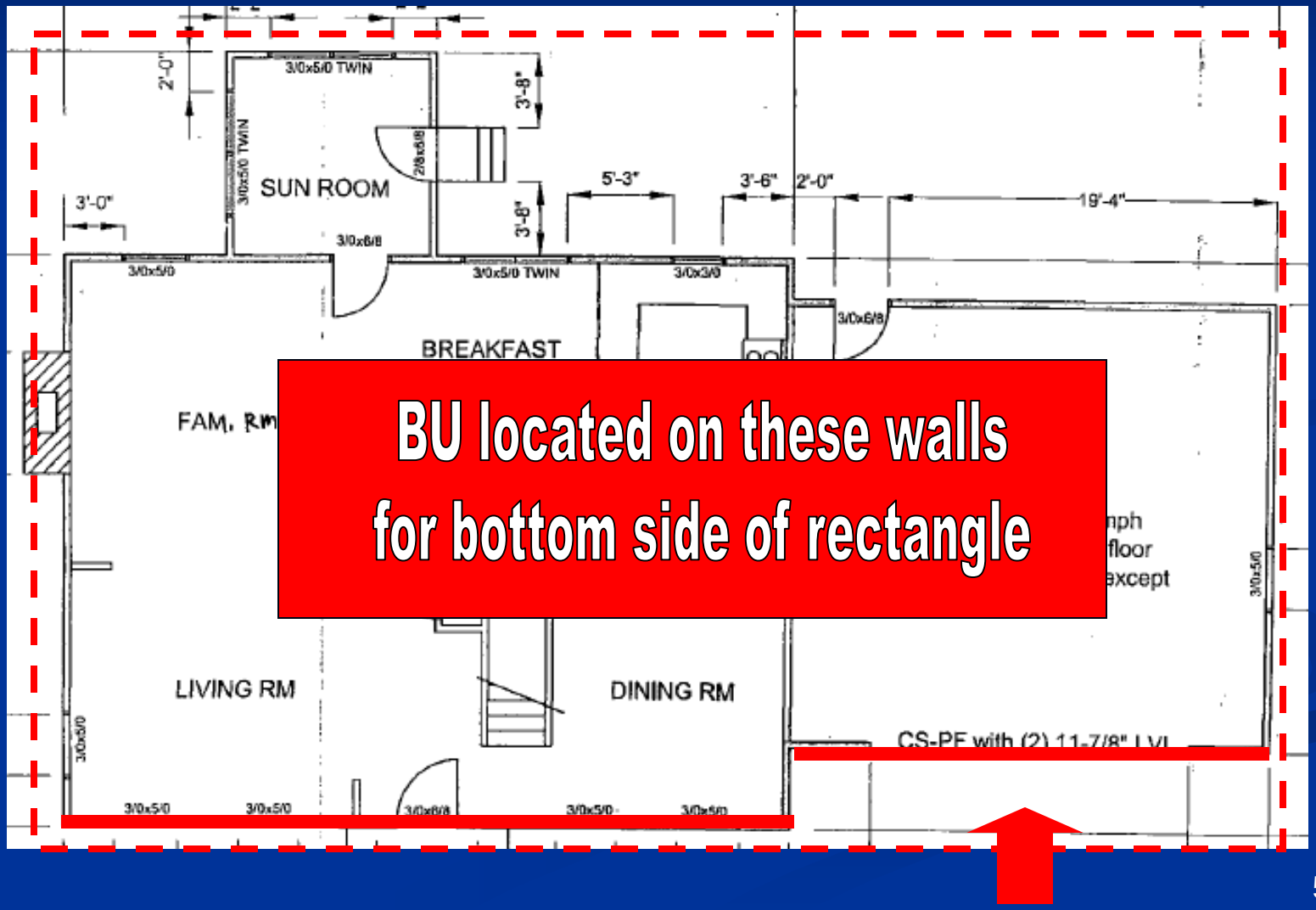
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units



2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units



2009 SIMPLIFIED WALL BRACING

R602.12.5 Distribution of bracing units

R602.12.5 Distribution of bracing units. The placement of bracing units on exterior walls shall meet all of the following requirements as shown in Figure R602.12.5.

1. A bracing unit shall begin no more than 12 feet (3658 mm) from any wall corner.
2. The distance between adjacent edges of bracing units shall be no greater than 20 feet (6096 mm).
3. Segments of wall greater than 8 feet (2438 mm) in length shall have a minimum of one bracing unit.

Shall begin no more than 12’ from any wall corner

2009 SIMPLIFIED WALL BRACING

R602.12.5 Distribution of bracing units

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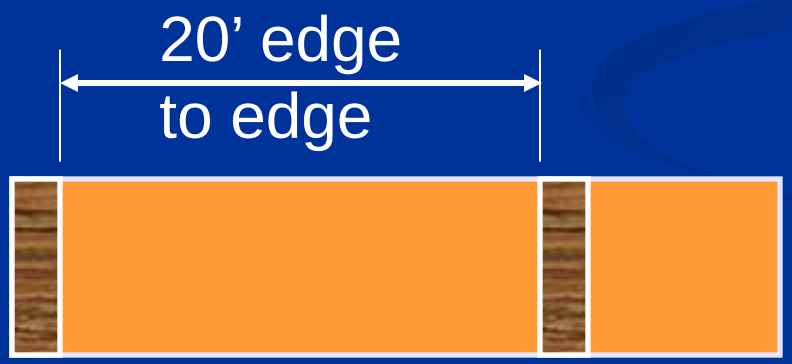

No greater than 20’ between adjacent edges

2009 SIMPLIFIED WALL BRACING

R602.12.5 Distribution of bracing units

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1. A bracing unit shall begin no more than 12 feet (3658 mm) from any wall corner.
2. The distance between adjacent edges of bracing units shall be no greater than 20 feet (6096 mm).
3. Segments of wall greater than 8 feet (2438 mm) in length shall have a minimum of one bracing unit.

8’ ≤

Segments of wall greater than 8’ shall have at least one bracing unit

BREAK

10 MINUTE BREAK !!!

2009 SIMPLIFIED WALL BRACING

SAMPLE FLOOR PLAN

WORK ON THE SIMPLIFIED WALL BRACING FOR OUR FLOOR PLAN AS A GROUP

Permit Number / Project _____ **Date** _____

Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

Circumscribed Rectangle

Long side
Side 1
Short Side Side 4 Side 3
Side 2

Include:
Attached garages
Sunrooms
Enclosed Structures

Exclude:
Decks/porches
Chimneys
Carports
Open structures

Ratio of long side to short side:

Long Side = ft. / Short Side ft. = ≤ 3.0

Required B.U.
Table R602.12.4; interpolation prohibited

Story Level	Eave-to-Ridge Ht.	Required B.U.s on each LONG Side — SHORT Side Dimension (A&B) (rounded-up) 10'	20'	30'	40'	50'	60'	Required B.U.s on each SHORT Side — LONG Side Dimension (1&2) (rounded-up) 10'	20'	30'	40'	50'	60'
	≤10'	1	2	2	2	3	3	1	2	2	2	3	3
		2	3	3	4	5	6	2	3	3	4	5	6
	≤15'	1	2	3	3	4	4	1	2	3	3	4	4
		2	3	4	5	6	7	2	3	4	5	6	7

Actual Wall Segments

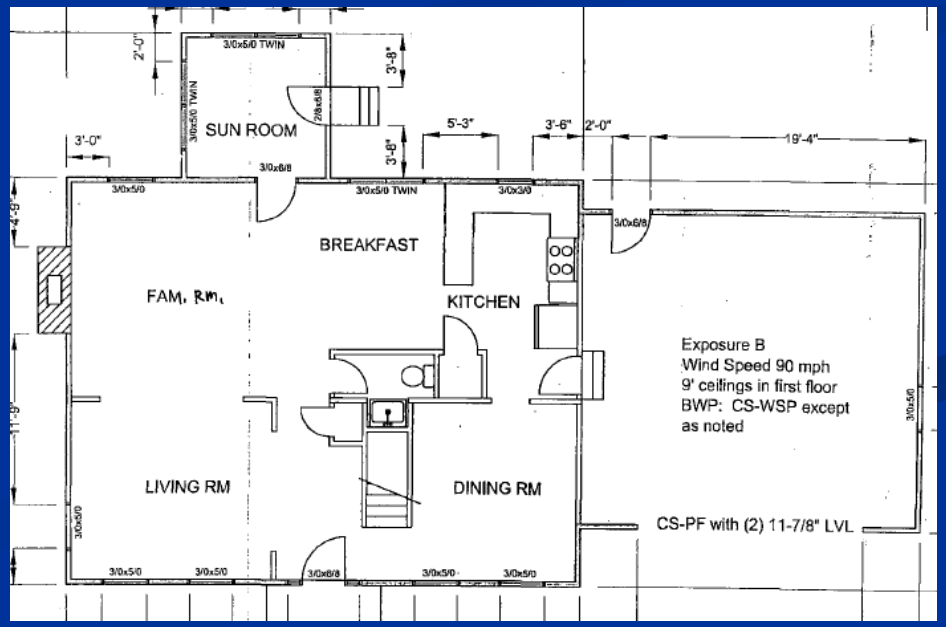
B.U. wall length equivalents:
3' fully sheathed = 1 B.U.
4' intermittent = 1 B.U.

Methods B.U. equivalents:
PFH = 1 B.U.
PFG = 0.75 B.U.
CS-G = 0.5 B.U.
CS-PF = 0.5 B.U.

	Long Side 1 method/length(ft)	B.U.s	Long Side 2 method/length(ft)	B.U.s	Short Side A method/length(ft)	B.U.s	Short Side B method/length(ft)	B.U.s
Total actual B.U.s provided								
Actual B.U.s ≥ Required B.U.s	Y - N		Y - N		Y - N		Y - N	

Distribution

	Long Side 1	Long Side 2	Short Side A	Short Side B
Walls >8' have at least 1 B.U.	Y - N - NA	Y - N - NA	Y - N - NA	Y - N - NA
B.U. within 12' of each corner	Y - N	Y - N	Y - N	Y - N
B.U. within 20' edge to edge	Y - N - NA	Y - N - NA	Y - N - NA	Y - N - NA
PASS / FAIL	PASS FAIL	PASS FAIL	PASS FAIL	PASS FAIL



2009 SIMPLIFIED WALL BRACING

8 PREREQUITES

1. There shall be no more than two stories above the top of a concrete or masonry foundation or basement wall. Permanent wood foundations shall not be permitted.

Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

8 PREREQUITES

3. Wall height shall not be greater than 10 feet (2743 mm).

Exposure B
Wind Speed 90 mph
9' ceilings in first floor
BWP: CS-WSP except as noted

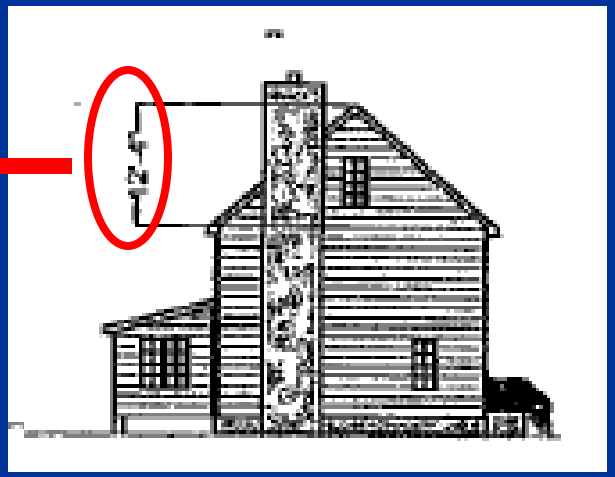
Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

8 PREREQUITES

4. The building shall have a roof eave-to-ridge height of 15 feet (4572 mm) or less.

12'-4"



Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

8 PREREQUITES

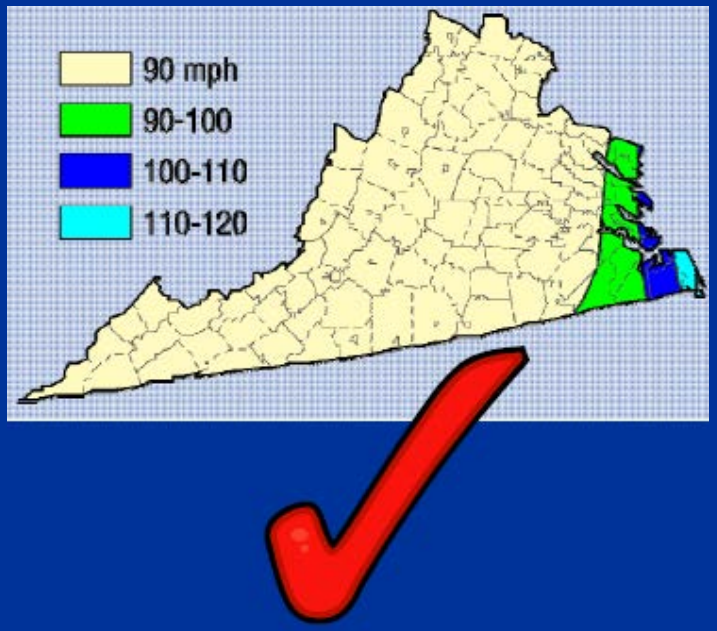
5. All exterior walls shall have gypsum board with a minimum thickness of 1/2 inches (12.7 mm) installed on the interior side fastened in accordance with Table R702.3.5.

Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

8 PREREQUITES

6. The structure shall be located where the basic wind speed is less than or equal to 90 mph (40 m/s), and the Exposure Category is A or B.



Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

8 PREREQUITES

6. The structure shall be located where the basic wind speed is less than or equal to 90 mph (40 m/s), and the Exposure Category is A or B.

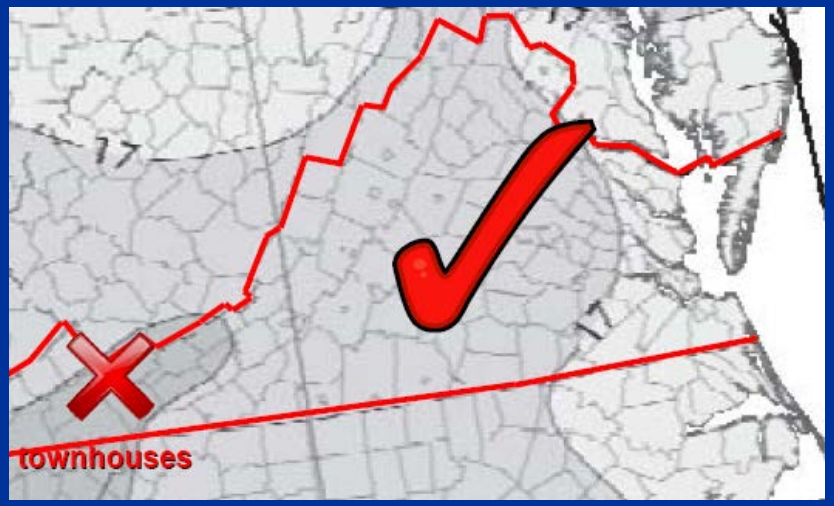
Exposure B
Wind Speed 90 mph
9' ceilings in first floor
BWP: CS-WSP except as noted

Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

8 PREREQUITES

7. The structure shall be located in Seismic Design Category of A, B or C for detached one- and two-family dwellings or Seismic Design Category A or B for townhouses.



Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

8 PREREQUITES

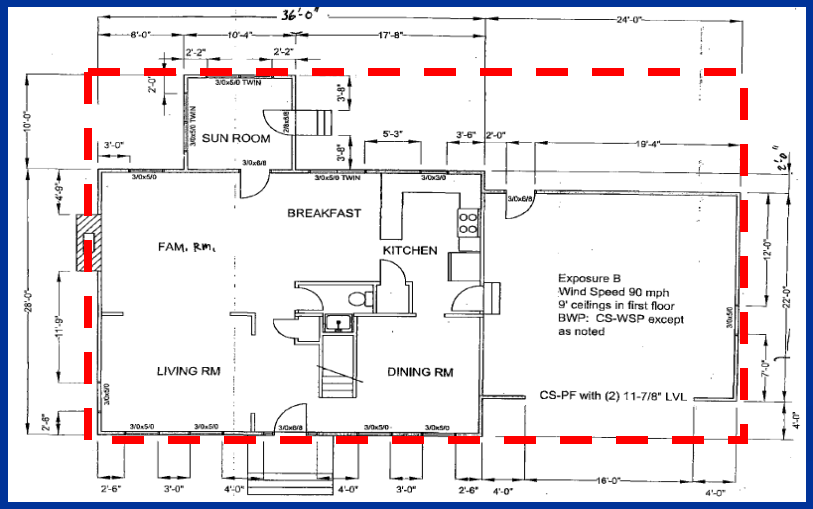
8. Cripple walls shall not be permitted in two-story buildings.

Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

8 PREREQUITES

ALL 8 PREREQUITES HAVE BEEN SATISFIED, THIS HOUSE QUALIFIES TO USE THE SIMPLIFIED WALL BRACING



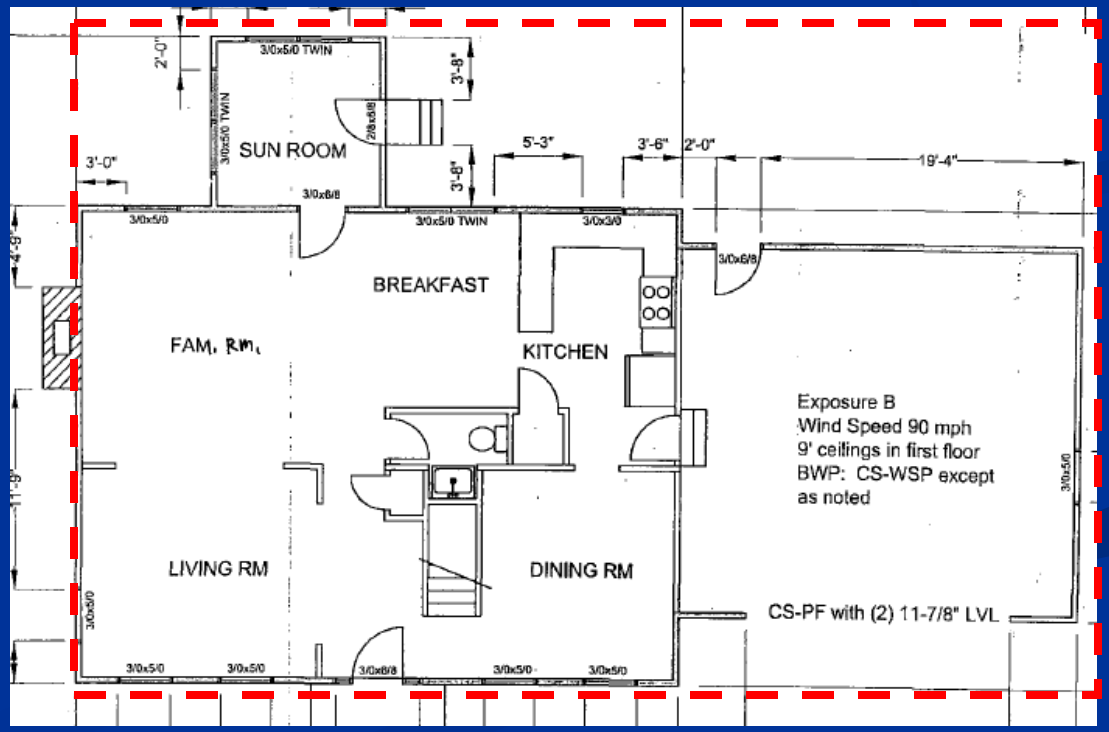
Prerequisites	
Max 2 story	Y - N
Wall height ≤ 10'	Y - N
Eave to ridge ≤ 15'	Y - N
GB on inside of B.U.s	Y - N
Wind ≤ 90 mph	Y - N
Exposure B	Y - N
SDC A,B,C (no C townhouses)	Y - N
Cripple walls: one story building	Y - N
two story building	NP
Prerequisites Pass	Y - N

2009 SIMPLIFIED WALL BRACING

R602.12.1 Circumscribed rectangle

R602.12.1 Circumscribed rectangle. Required bracing shall be determined by circumscribing a rectangle around the entire building on each floor as shown in Figure R602.12.1. The rectangle shall surround all enclosed offsets and projections such as sunrooms and attached garages. Open structures, such as carports and decks shall be permitted to be excluded. The rectangle shall have no side greater than 60 feet (18 288 mm), and the ratio between the long side and short side shall be a maximum of 3:1.

Step 1: Draw the rectangle around the house



2009 SIMPLIFIED WALL BRACING

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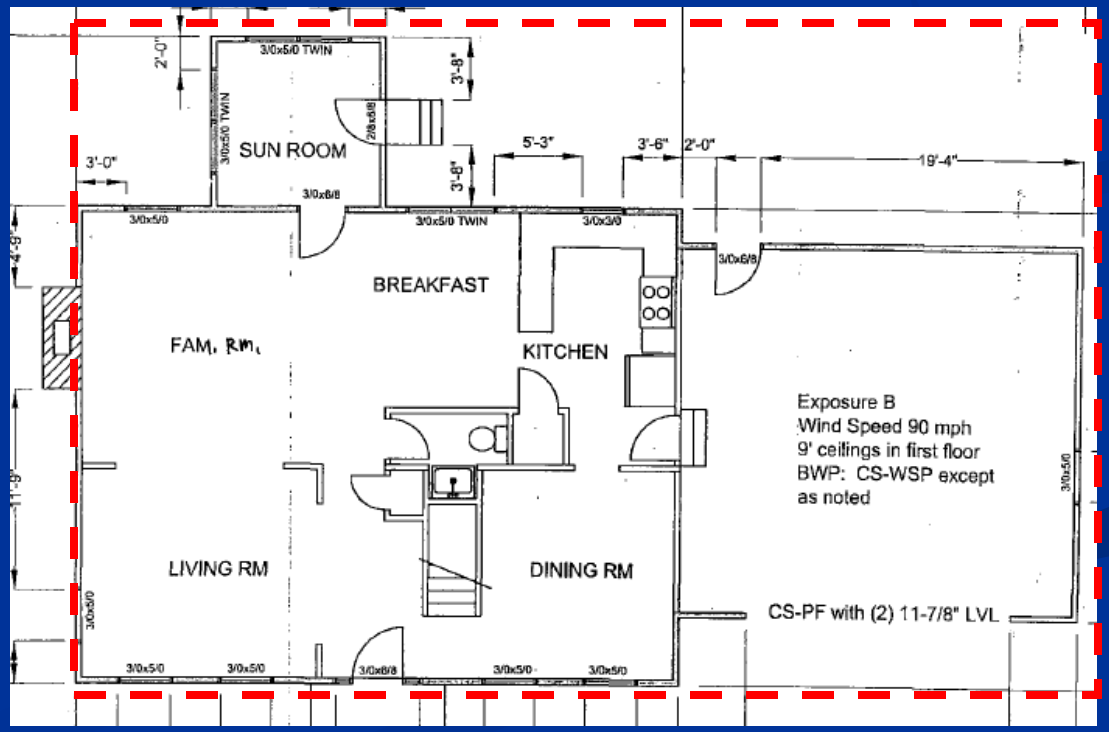
Step 2: Verify 60' maximum



2009 SIMPLIFIED WALL BRACING

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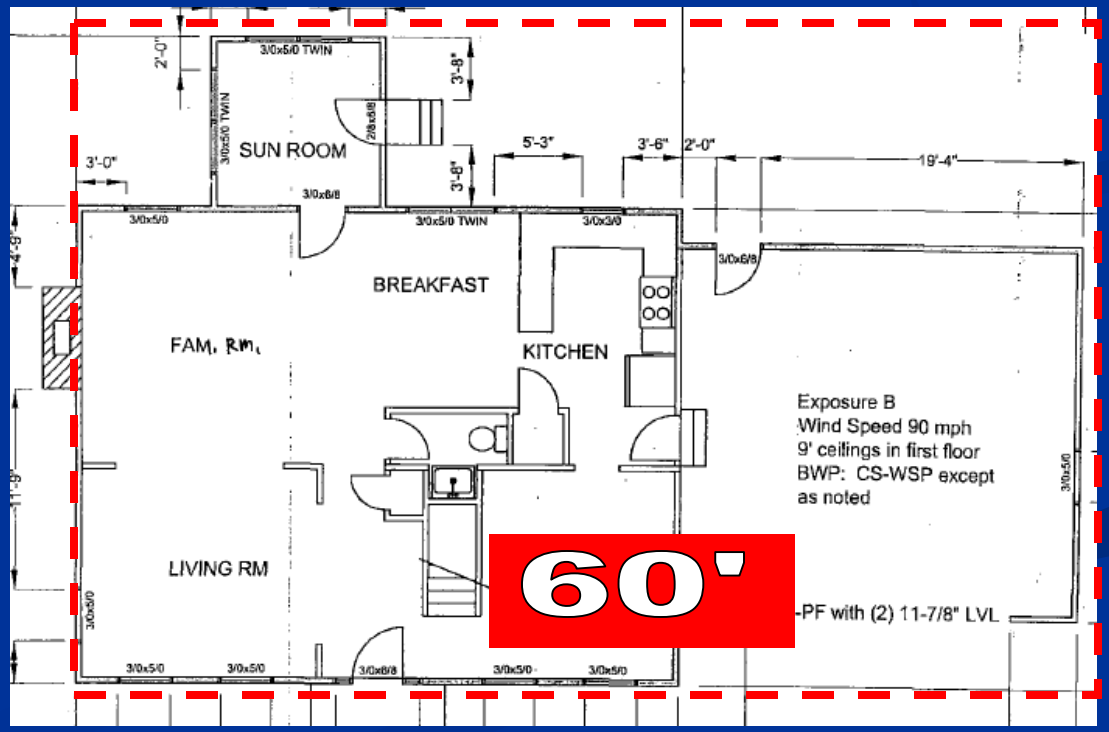

2009 SIMPLIFIED WALL BRACING

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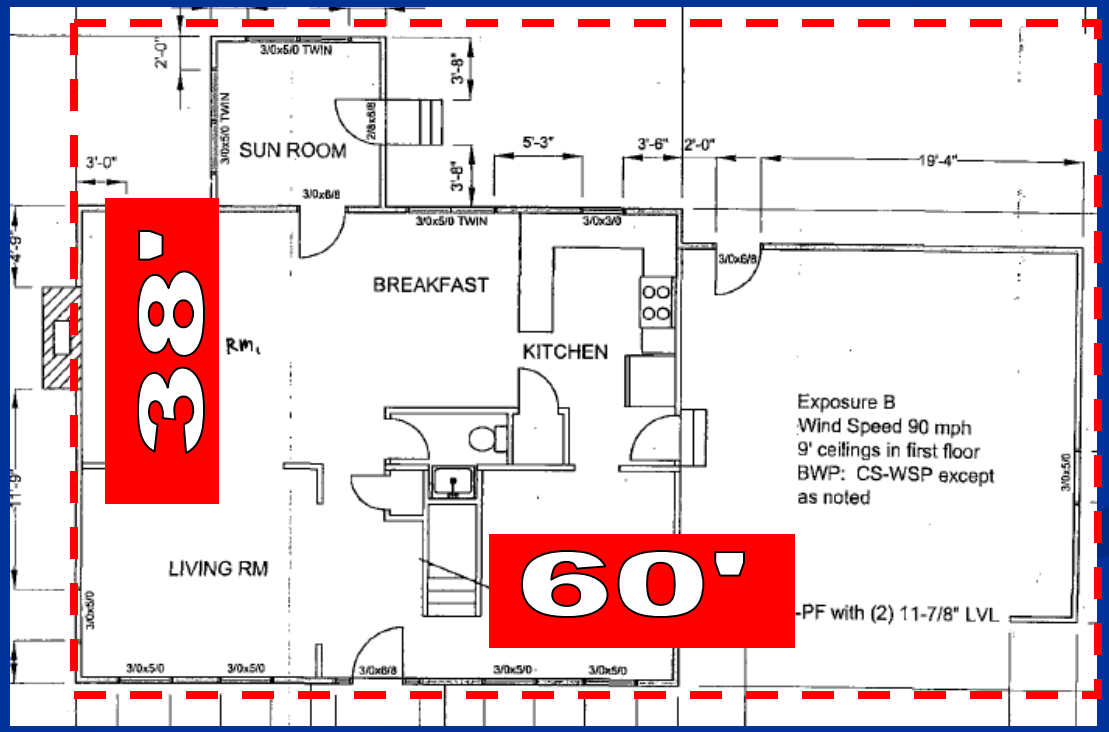
Step 2: Verify 60' maximum



2009 SIMPLIFIED WALL BRACING

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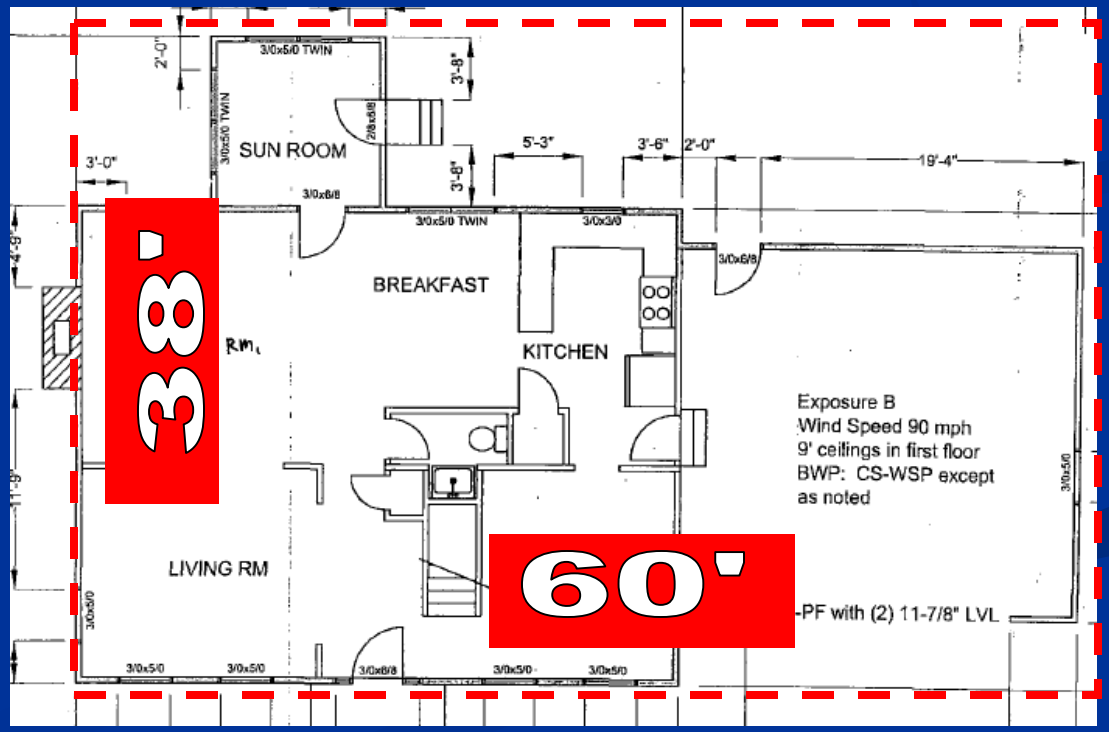
Step 2: Verify 60' maximum



2009 SIMPLIFIED WALL BRACING

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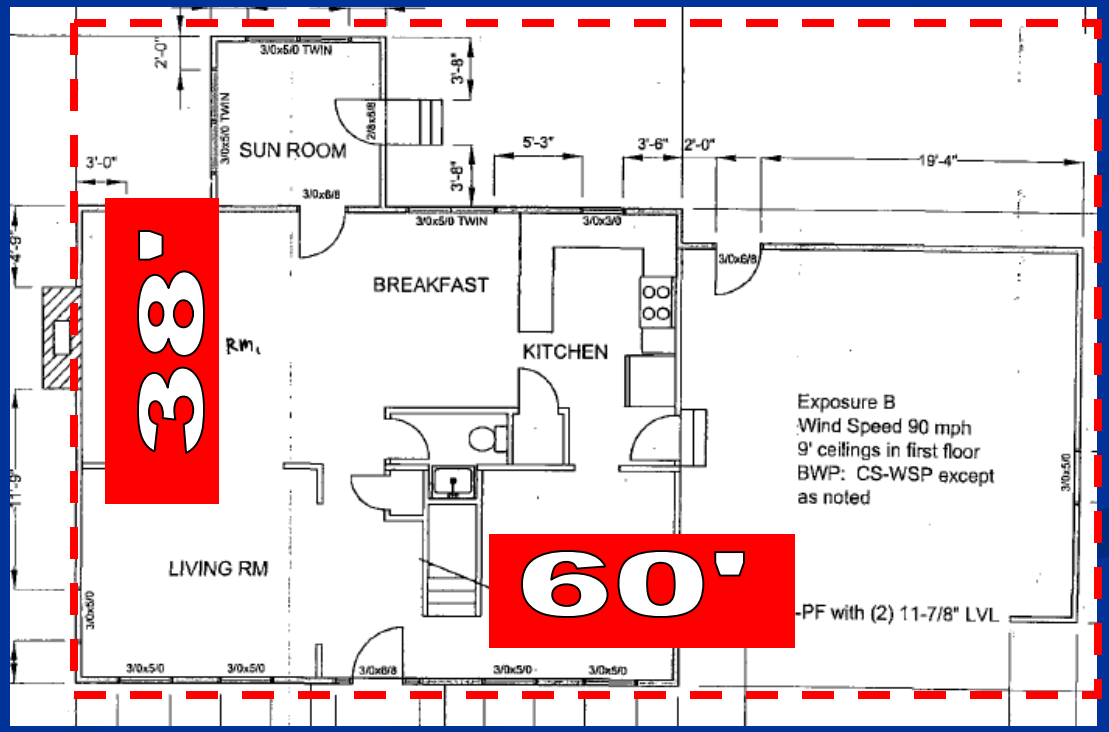
Step 3: Verify 3:1 maximum ratio



2009 SIMPLIFIED WALL BRACING

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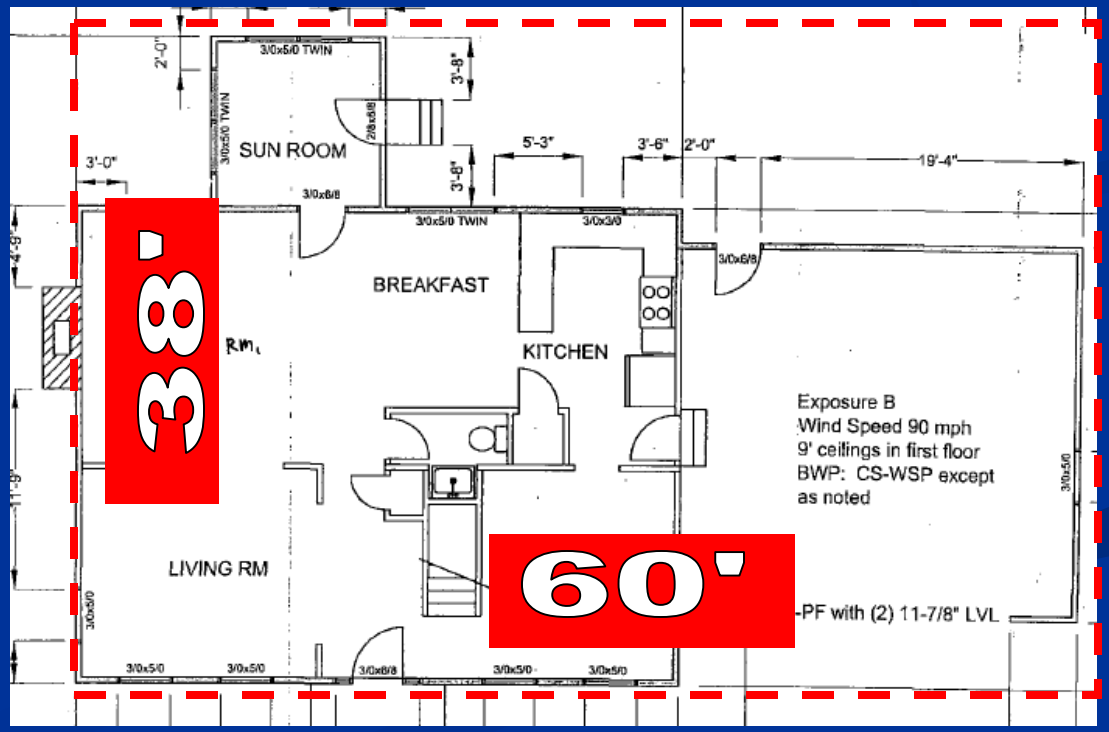
Step 3: Verify 3:1 maximum ratio

60 38 = 1.58 ✓

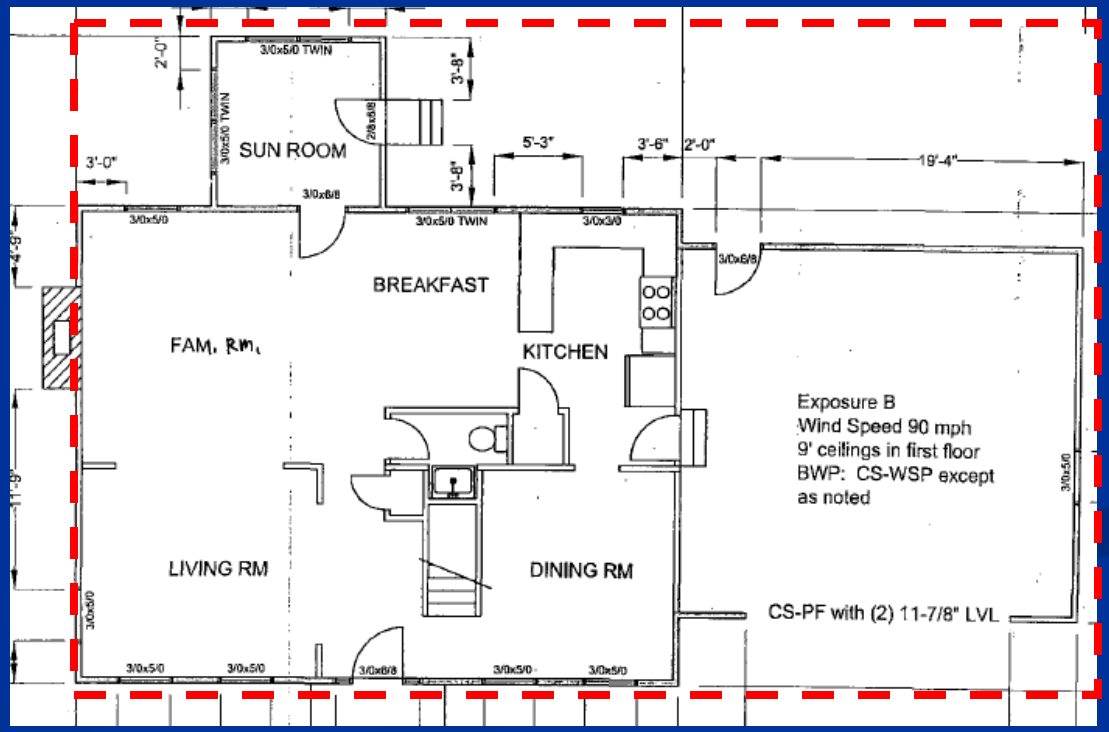


2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

R602.12.4 Number of bracing units Each side of the circumscribed rectangle, as shown in Figure R602.12.1, shall have, at a minimum, the number of bracing units per Table R602.12.4 placed on the parallel exterior walls facing the side of the rectangle. Bracing units shall then be placed using the distribution requirements specified in Section R602.12.5.

Step 4: Determine the number of bracing units for each side



2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

R602.12.4 Number of bracing units. Each side of the circumscribed rectangle, as shown in Figure R602.12.1, shall have, at a minimum, the number of bracing units per Table R602.12.4 placed on the parallel exterior walls facing the side of the rectangle. Bracing units shall then be placed using the distribution requirements specified in Section R602.12.5.

Step 4: Determine the number of bracing units for each side

Table R602.12.4

TABLE R602.12.4
MINIMUM NUMBER OF BRACING UNITS ON EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE

STORY LEVEL	EAVE-TO RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE[a, b]						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE[a, b]					
		Length of short side (ft)[c]						Length of long side (ft)[c]					
		10	20	30	40	50	60	10	20	30	40	50	60
	10	1	2	2	2	3	3	1	2	2	2	3	3
		2	3	3	4	5	6	2	3	3	4	5	6
	15	1	2	3	3	4	4	1	2	3	3	4	4
		2	3	4	5	6	7	2	3	4	5	6	7

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

c. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Step 4: Determine the number of bracing units

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

c. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Step 4: Determine the number of bracing units

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Eave-to-Ridge height is …

TABLE R602.12.4

MINIMUM NUMBER OF BRACING UNITS ON EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE

STORY LEVEL	EAVE-TO RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE[a, b]						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE[a, b]					
		Length of short side (ft)[c]						Length of long side (ft)[c]					
		10	20	30	40	50	60	10	20	30	40	50	60
	10	1	2	2	2	3	3	1	2	2	2	3	3
		2	3	3	4	5	6	2	3	3	4	5	6
	15	1	2	3	3	4	4	1	2	3	3	4	4
		2	3	4	5	6	7	2	3	4	5	6	7

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

c. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Eave-to-Ridge height is …12’-4” SO MUST USE 15’

TABLE R602.12.4
MINIMUM NUMBER OF BRACING UNITS ON EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE

STORY LEVEL	EAVE-TO RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE[a, b]						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE[a, b]					
		Length of short side (ft)[c]						Length of long side (ft)[c]					
		10	20	30	40	50	60	10	20	30	40	50	60
	10	1	2	2	2	3	3	1	2	2	2	3	3
		2	3	3	4	5	6	2	3	3	4	5	6
	15	1	2	3	3	4	4	1	2	3	3	4	4
		2	3	4	5	6	7	2	3	4	5	6	7

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

c. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Length of short side is …

TABLE R602.12.4
MINIMUM NUMBER OF BRACING UNITS ON EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE

STORY LEVEL	EAVE-TO RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE[a, b]						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE[a, b]					
		Length of short side (ft)[c]						Length of long side (ft)[c]					
		10	20	30	40	50	60	10	20	30	40	50	60
	10	1	2	2	2	3	3	1	2	2	2	3	3
		2	3	3	4	5	6	2	3	3	4	5	6
	15	1	2	3	3	4	4	1	2	3	3	4	4
		2	3	4	5	6	7	2	3	4	5	6	7

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

c. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Length of short side is … 38’ MUST USE 40’

TABLE R602.12.4
MINIMUM NUMBER OF BRACING UNITS ON EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE

STORY LEVEL	EAVE-TO RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE[a, b]						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE[a, b]					
		Length of short side (ft)[c]						Length of long side (ft)[c]					
		10	20	30	40	50	60	10	20	30	40	50	60
	10	1	2	2	2	3	3	1	2	2	2	3	3
		2	3	3	4	5	6	2	3	3	4	5	6
	15	1	2	3	3	4	4	1	2	3	3	4	4
		2	3	4	5	6	7	2	3	4	5	6	7

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

c. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

5 BU required for each LONG SIDE of the rectangle

TABLE R602.12.4
MINIMUM NUMBER OF BRACING UNITS ON EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE

STORY LEVEL	EAVE-TO RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE[a, b]						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE[a, b]					
		Length of short side (ft)[c]						Length of long side (ft)[c]					
		10	20	30	40	50	60	10	20	30	40	50	60
	10	1	2	2	[illegible]	3	3	1	2	2	2	3	3
		2	3	3	[illegible]	5	6	2	3	3	4	5	6
	15	1	2	3	[illegible]	4	4	1	2	3	3	4	4
		[illegible]	[illegible]	[illegible]	5	6	7	2	3	4	5	6	7

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

c. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Length of long side is …

TABLE R602.12.4
MINIMUM NUMBER OF BRACING UNITS ON EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE

STORY LEVEL	EAVE-TO RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE[a, b]						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE[a, b]					
		Length of short side (ft)[c]						Length of long side (ft)[c]					
		10	20	30	40	50	60	10	20	30	40	50	60
	10	1	2	2	2	3	3	1	2	2	2	3	3
		2	3	3	4	5	6	2	3	3	4	5	6
	15	1	2	3	3	4	4	1	2	3	3	4	4
		2	3	4	5	6	7	2	3	4	5	6	7

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

c. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Length of long side is … 60’

TABLE R602.12.4

MINIMUM NUMBER OF BRACING UNITS ON EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE

STORY LEVEL	EAVE-TO RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE[a, b]						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE[a, b]					
		Length of short side (ft)[c]						Length of long side (ft)[c]					
		10	20	30	40	50	60	10	20	30	40	50	60
	10	1	2	2	2	3	3	1	2	2	2	3	3
		2	3	3	4	5	6	2	3	3	4	5	6
	15	1	2	3	3	4	4	1	2	3	3	4	4
		2	3	4	5	6	7	2	3	4	5	6	7

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

c. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

7 BU required for each SHORT SIDE of rectangle

TABLE R602.12.4
MINIMUM NUMBER OF BRACING UNITS ON EACH SIDE OF THE CIRCUMSCRIBED RECTANGLE

STORY LEVEL	EAVE-TO RIDGE HEIGHT (FEET)	MINIMUM NUMBER OF BRACING UNITS ON EACH LONG SIDE[a, b]						MINIMUM NUMBER OF BRACING UNITS ON EACH SHORT SIDE[a, b]					
		Length of short side (ft)[c]						Length of long side (ft)[c]					
		10	20	30	40	50	60	10	20	30	40	50	60
	10	1	2	2	2	3	3	1	2	2	2	3	[illegible]
		2	3	3	4	5	6	2	3	3	4	5	[illegible]
	15	1	2	3	3	4	4	1	2	3	3	4	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7

For SI: 1 ft = 304.8 mm

a. Interpolation shall not be permitted.

b. Cripple walls or wood-framed basement walls in a walk-out condition of a one-story structure shall be designed as the first floor of a two-story house.

c. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.

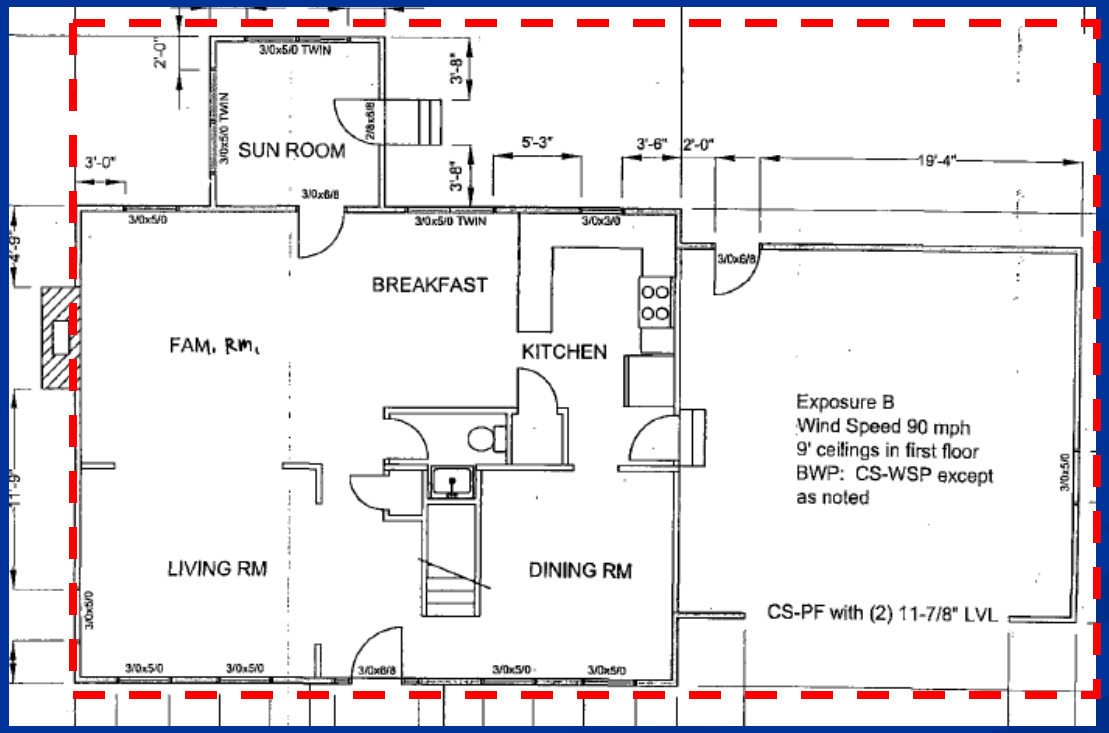
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Summary of required BU for each side of rectangle

5 BU

7 BU



7 BU

5 BU

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

required BU for each side ≤ actual wall segments ?

Actual Wall Segments	Long Side 1		Long Side 2		Short Side A		Short Side B	
	method/length(ft)	B.U.s	method/length(ft)	B.U.s	method/length(ft)	B.U.s	method/length(ft)	B.U.s
B.U. wall length equivalents: 3' fully sheathed = 1 B.U. 4' intermittent = 1 B.U. Methods B.U. equivalents: PFH = 1 B.U. PFG = 0.75 B.U. CS-G = 0.5 B.U. CS-PF = 0.5 B.U.								
Total actual B.U.s provided								
Actual B.U.s ≥ Required B.U.s	Y - N		Y - N		Y - N		Y - N	

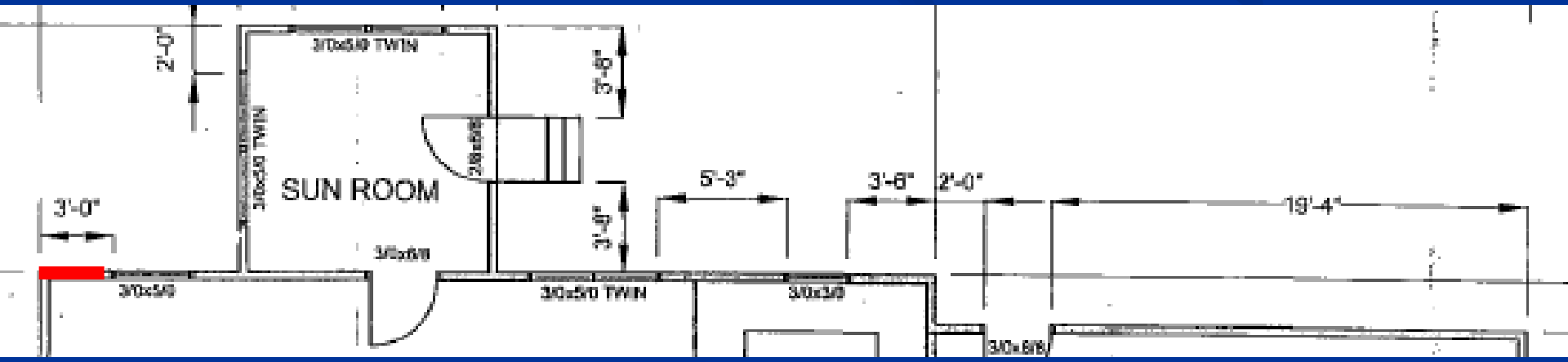
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Let's check the actual BU for top side of rectangle

0 BU

<3' = 0 BU



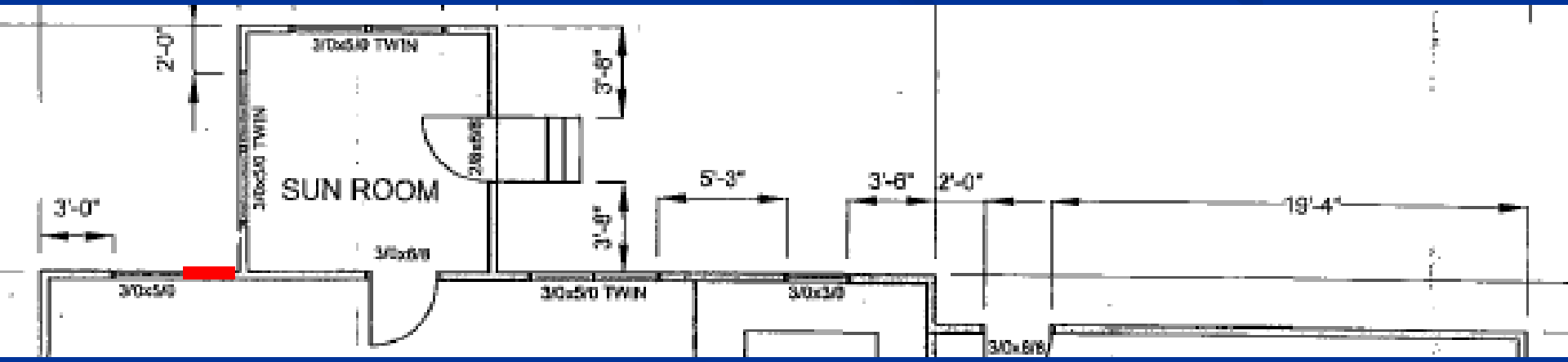
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for top side of rectangle

0 + 0 BU

<3’ = 0 BU



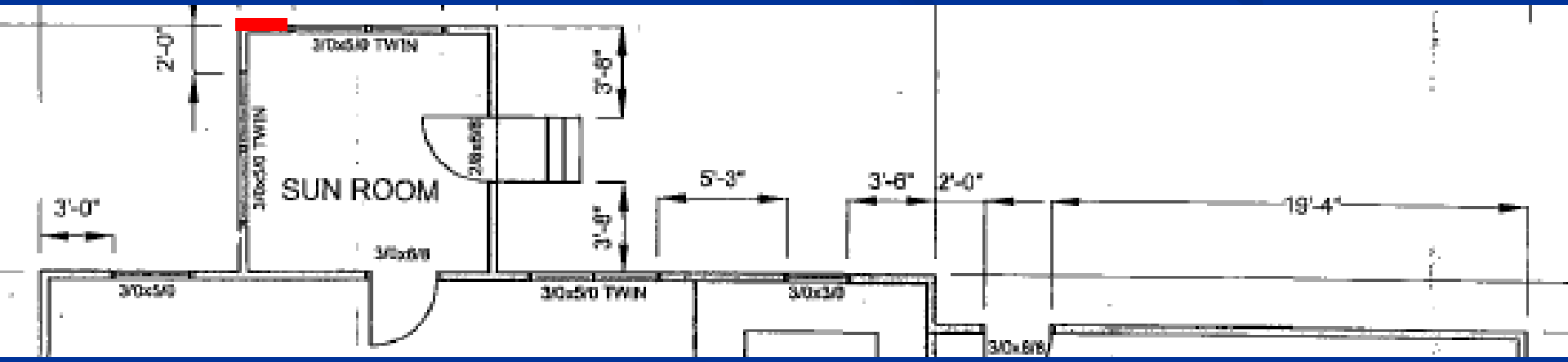
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for top side of rectangle

0 + 0 + 0 BU

<3’ = 0 BU



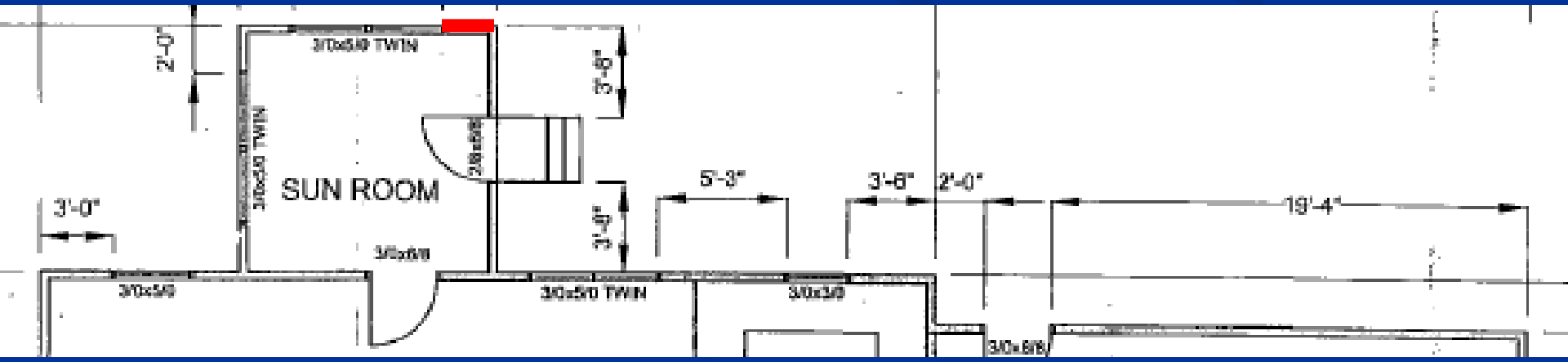
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for top side of rectangle

0 + 0 + 0 + 0 BU

<3’ = 0 BU



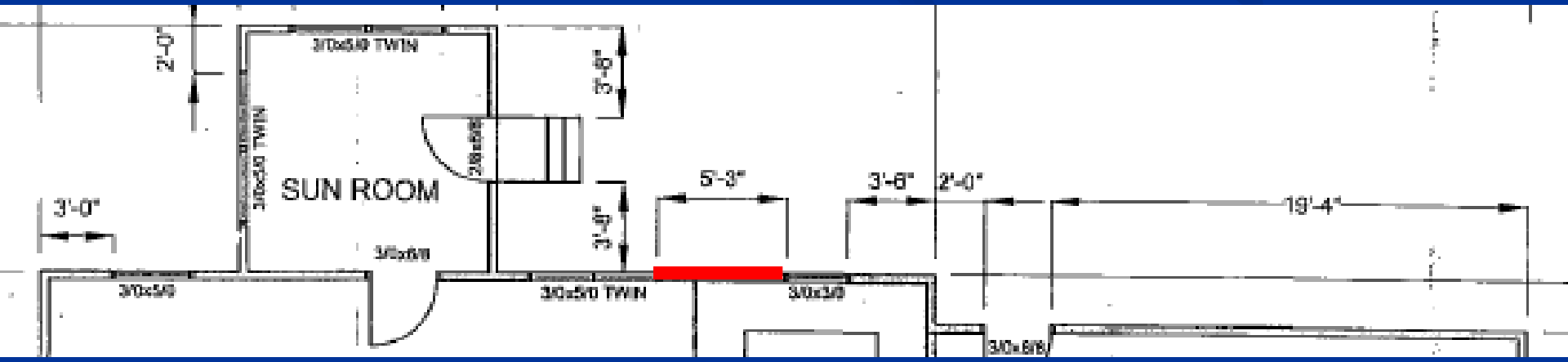
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for top side of rectangle

0 + 0 + 0 + 0 + 1.69 BU

5.08’ 3’ = 1.69 BU



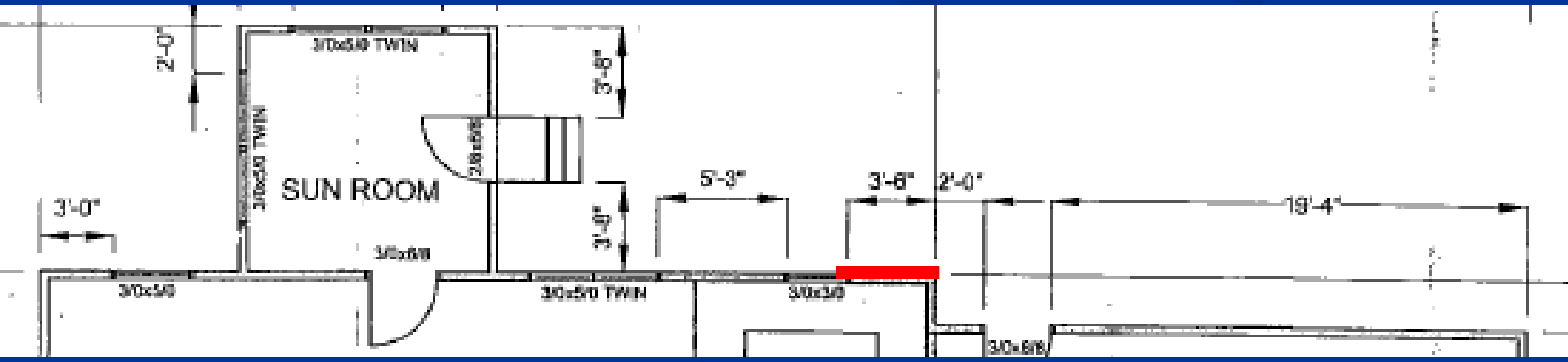
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for top side of rectangle

0 + 0 + 0 + 0 + 1.69 + 1.14 BU

3.41’ 3’ = 1.14 BU



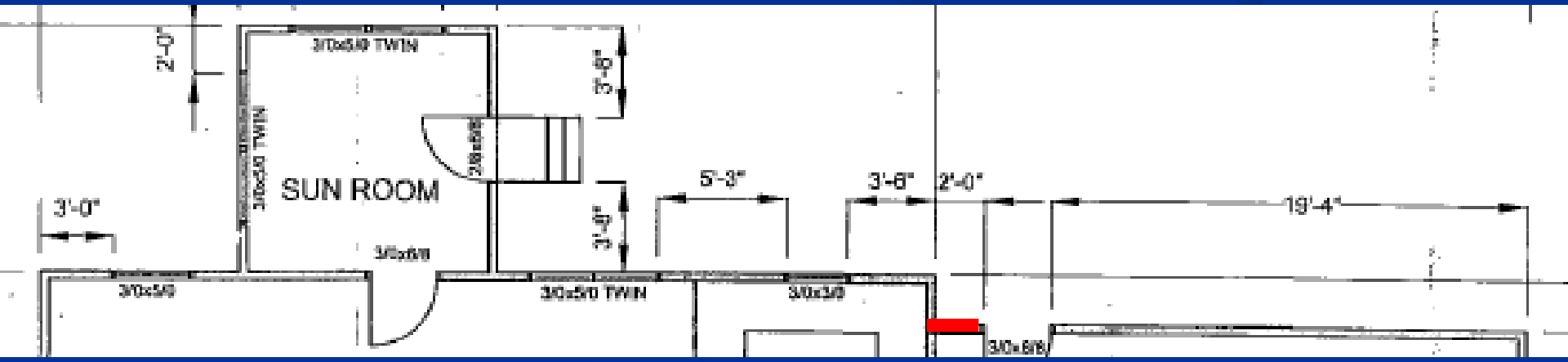
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for top side of rectangle

0 + 0 + 0 + 0 + 1.69 + 1.14 + 0 BU

<3’ = 0 BU



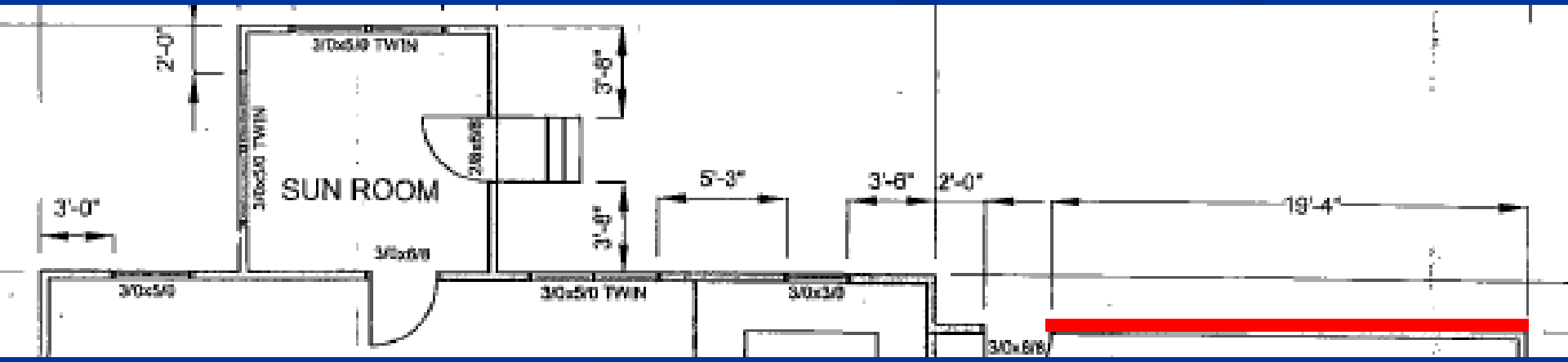
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for top side of rectangle

0 + 0 + 0 + 0 + 1.69 + 1.14 + 0 + 6.42 BU

19.25’ 3’ = 6.42 BU

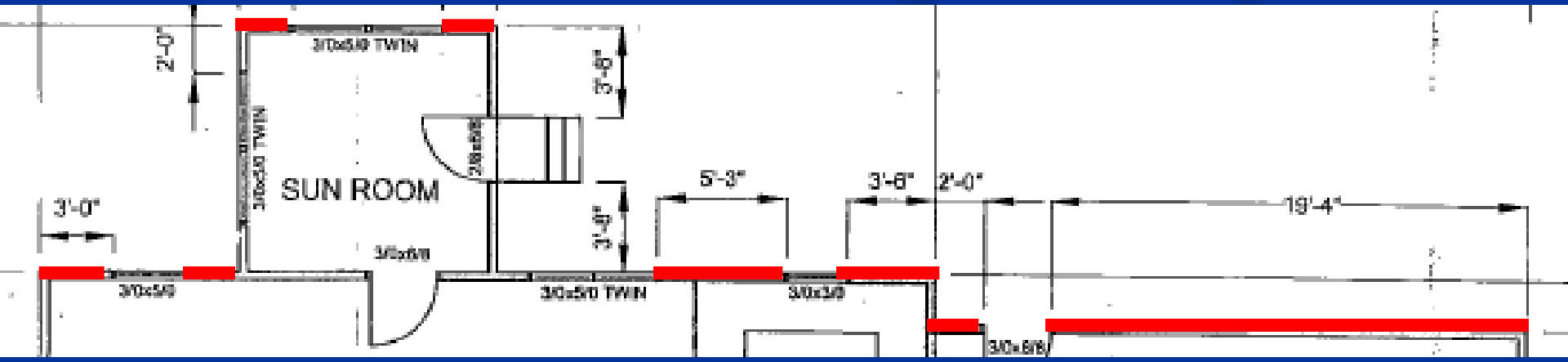


2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for top side of rectangle

0 + 0 + 0 + 0 + 1.69 + 1.14 + 0 + 6.42 = 9.25 BU



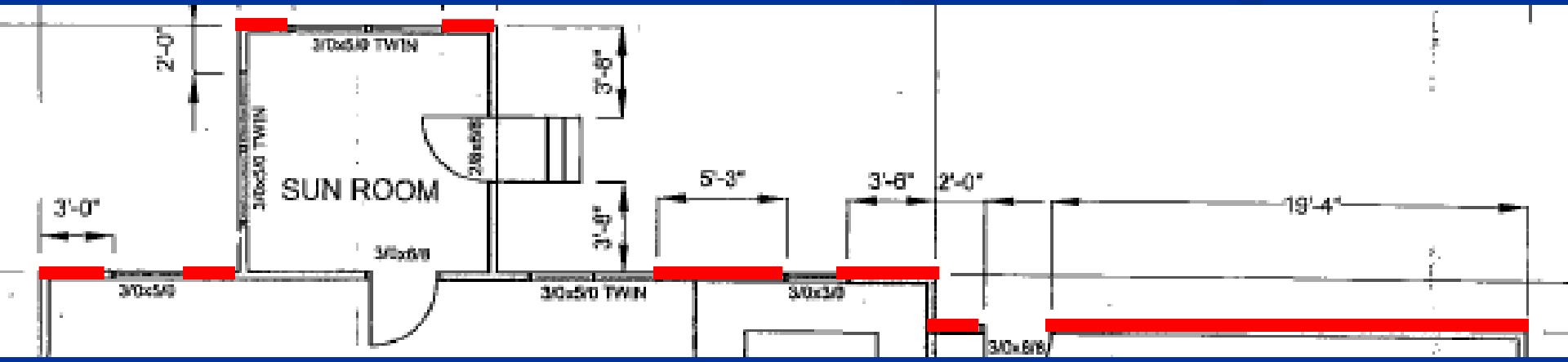
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for top side of rectangle

0 + 0 + 0 + 0 + 1.69 + 1.14 + 0 + 6.42 = 9.25 BU

9.25 BU > 5 min. BU ✓



2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

required BU for each side ≤ actual wall segments ?

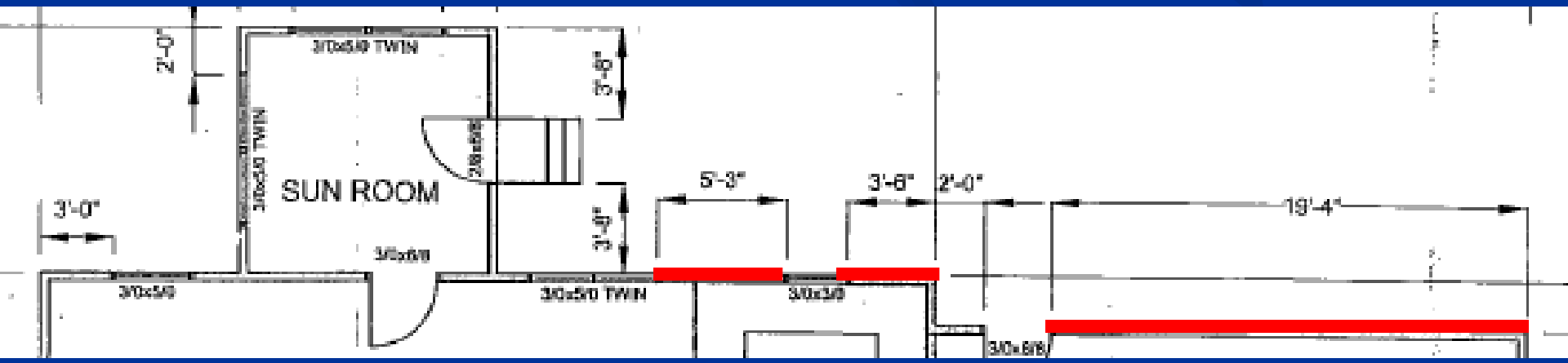
0 + 0 + 0 + 0 + 1.69 + 1.14 + 0 + 6.42 = 9.25 BU

Actual Wall Segments	Long Side 1	
	Length	BUs
BU wall length equivalents: 3' fully sheathed = 1 B.U. 4' intermittent = 1 B.U. Methods B.U. equivalents PFH = 1 B.U. PFG = 0.75 B.U. CS-G = 0.5 B.U. CS-PF = 0.5 B.U.	5.08'	1.69 BU
	3.41'	1.14 BU
	19.25'	6.42 BU
Total actual BUs provided	9.25 BU	
Total required BUs ea. side	5 BU	
Actual BUs ≥ Required BUs	Y - N	

2009 SIMPLIFIED WALL BRACING

R602.12.5 Distribution of bracing units

Distribution	Long Side 1
Walls > 8' have at least 1 BU	Y - N - NA
BU within 12' of ea. corner	Y - N
BU within 20' edge to edge	Y - N - NA
PASS / FAIL	PASS FAIL

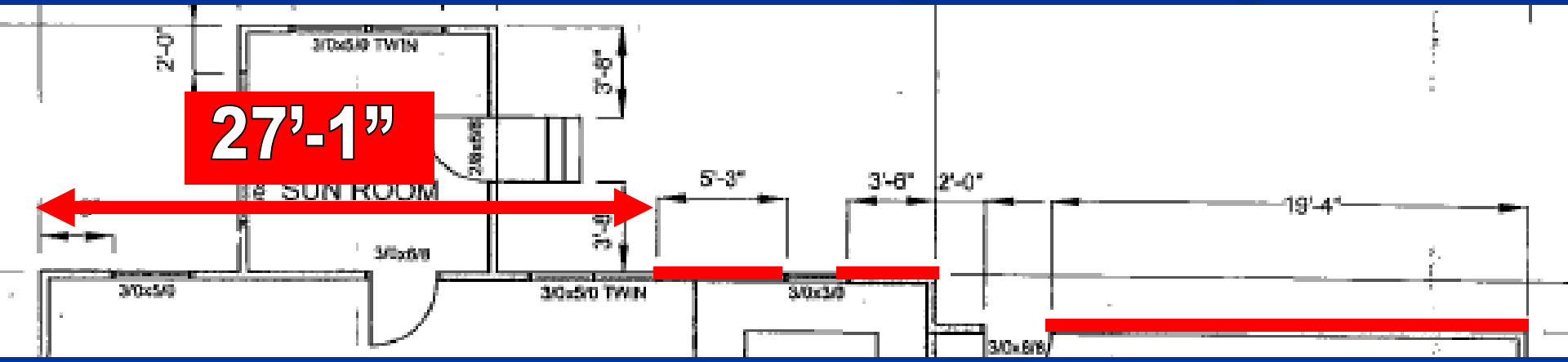


2009 SIMPLIFIED WALL BRACING

R602.12.5 Distribution of bracing units

Distribution	Long Side 1
Walls > 8’ have at least 1 BU	Y - N - NA
BU within 12’ of ea. corner	Y - N
BU within 20’ edge to edge	Y - N - NA
PASS / FAIL	PASS FAIL

27’-1” > max. 12’ corner distance

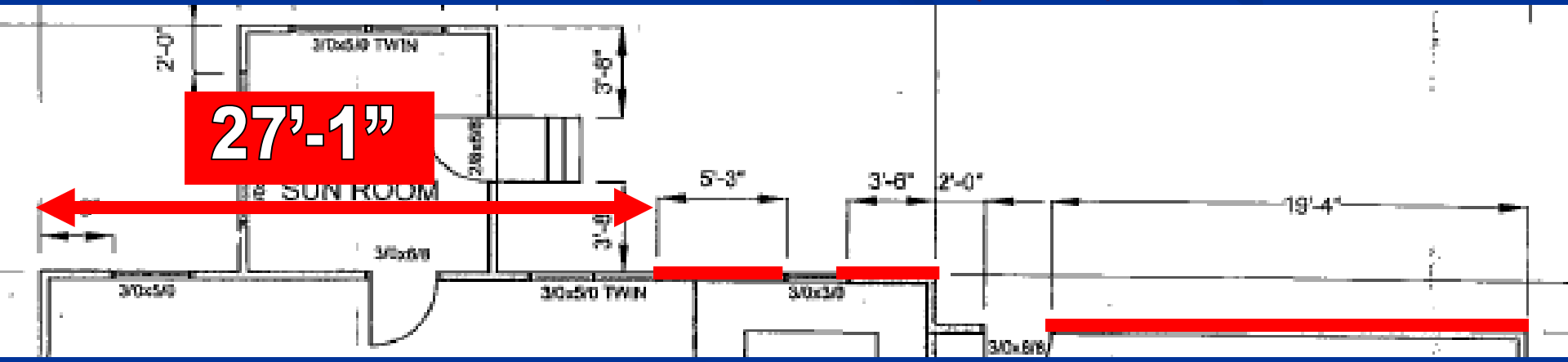


2009 SIMPLIFIED WALL BRACING

R602.12.5 Distribution of bracing units

Distribution	Long Side 1
Walls > 8’ have at least 1 BU	Y - N - NA
BU within 12’ of ea. corner	Y - N
BU within 20’ edge to edge	Y - N - NA
PASS / FAIL	PASS FAIL

27’-1” > max. 12’ corner distance

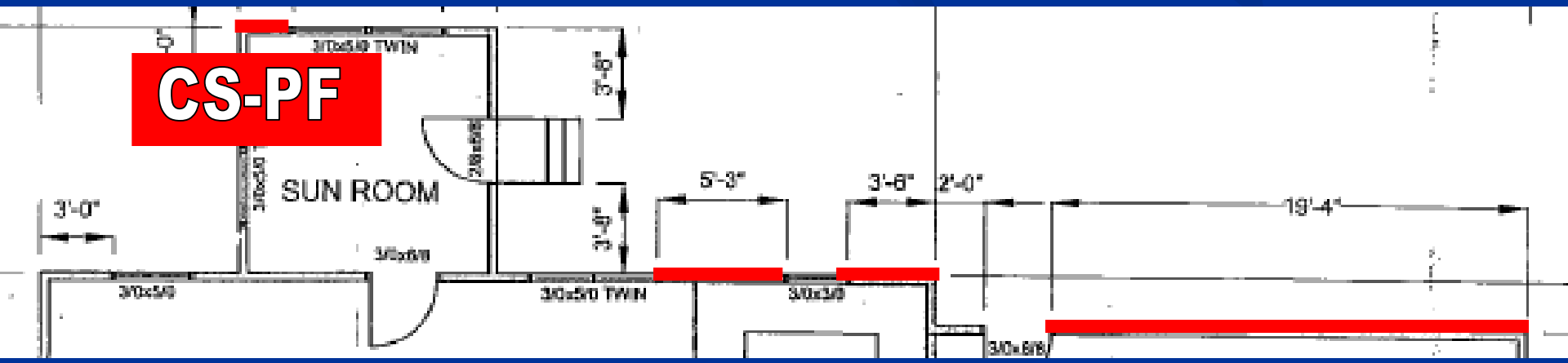


2009 SIMPLIFIED WALL BRACING

R602.12.5 Distribution of bracing units

Distribution	Long Side 1
Walls > 8' have at least 1 BU	Y - N - NA
BU within 12' of ea. corner	Y - N
BU within 20' edge to edge	Y - N - NA
PASS / FAIL	PASS FAIL

If CS-PF is added at sun room…



2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

required BU for each side ≤ actual wall segments ?

1.69 + 1.14 + 6.42 + 0.5 = 9.75 BU

Actual Wall Segments	Long Side 1	
	Length	BUs
BU wall length equivalents: 3' fully sheathed = 1 B.U. 4' intermittent = 1 B.U. Methods B.U. equivalents PFH = 1 B.U. PFG = 0.75 B.U. CS-G = 0.5 B.U. CS-PF = 0.5 B.U.	5.08'	1.69 BU
	3.41'	1.14 BU
	19.25'	6.42 BU
	2.0' PF	0.5 BU
Total actual BUs provided	9.75 BU	
Total required BUs ea. side	5 BU	
Actual BUs ≥ Required BUs	Y - N	

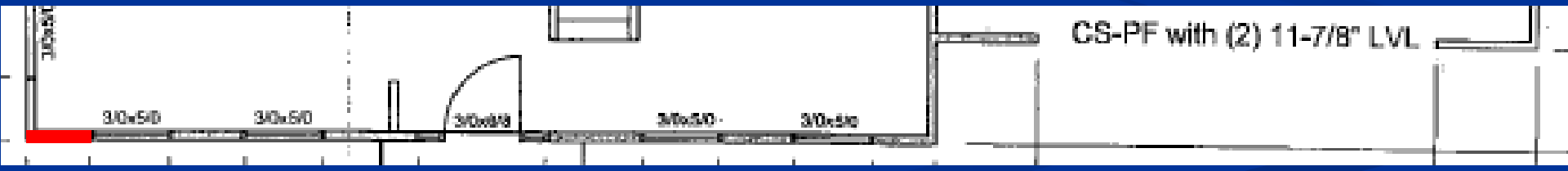
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 BU

<3’ = 0 BU



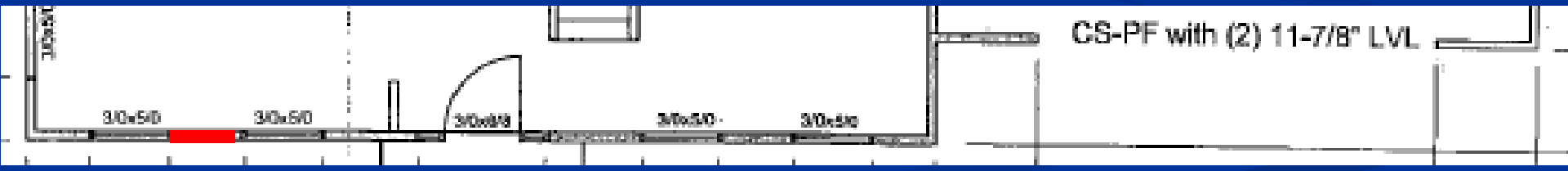
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 + 0 BU

<3’ = 0 BU



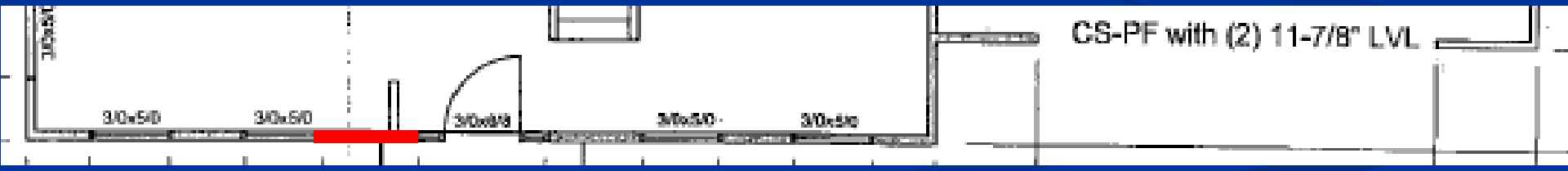
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 + 0 + 1.28 BU

3.83 3’ = 1.28 BU



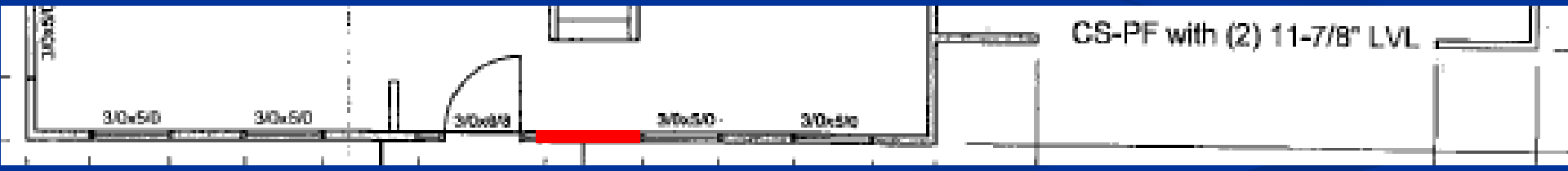
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 + 0 + 1.28 + 1.28 BU

3.83 3’ = 1.28 BU



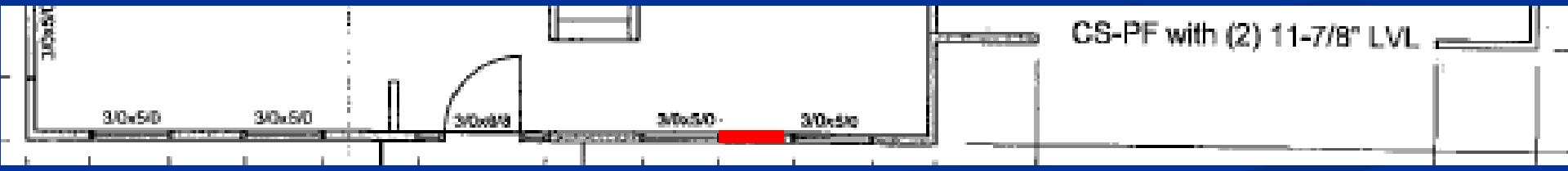
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 + 0 + 1.28 + 1.28 + 0 BU

<3’ = 0 BU



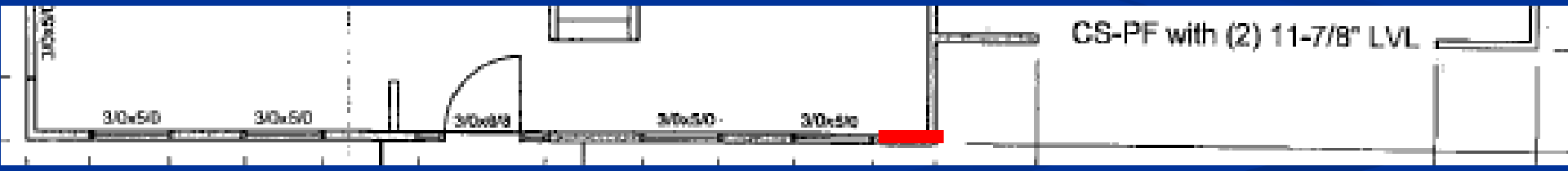
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 + 0 + 1.28 + 1.28 + 0 + 0 BU

<3’ = 0 BU



2009 SIMPLIFIED WALL BRACING

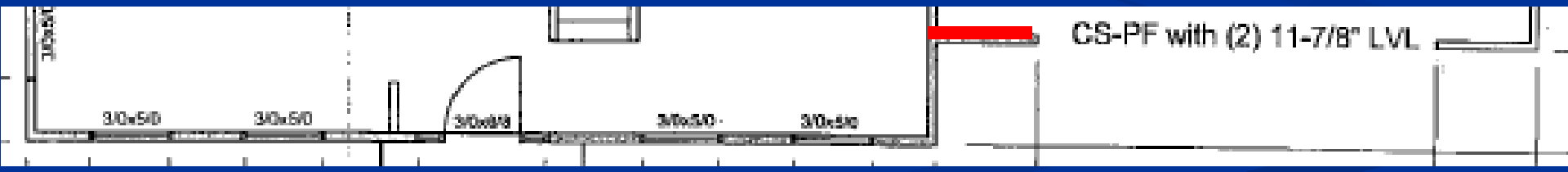
R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 + 0 + 1.28 + 1.28 + 0 + 0 + 0.5 BU

CS-PF = 0.5 BU

R602.12.6.2 Method CS-PF. Braced wall panels constructed as Method CS-PF in accordance with Section R602.10.6.4 shall be permitted when all framed portions of all exterior walls are sheathed with wood structural panels. Each CS-PF panel shall equal 0.5 bracing units. A maximum of four CS-PF panels shall be permitted on all the segments of walls parallel to each side of the circumscribed rectangle.



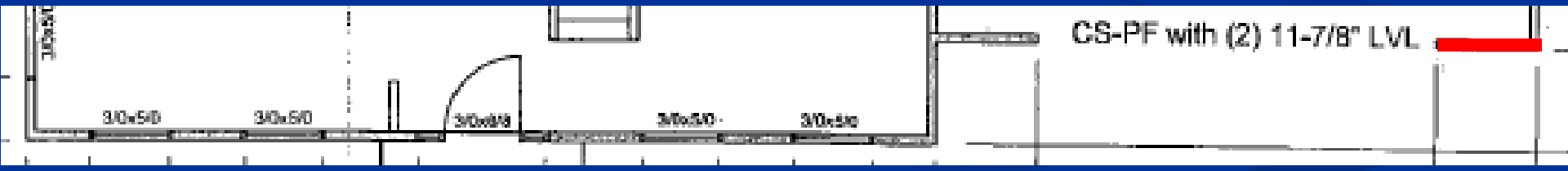
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 + 0 + 1.28 + 1.28 + 0 + 0 + 0.5 + 0.5 BU

CS-PF = 0.5 BU

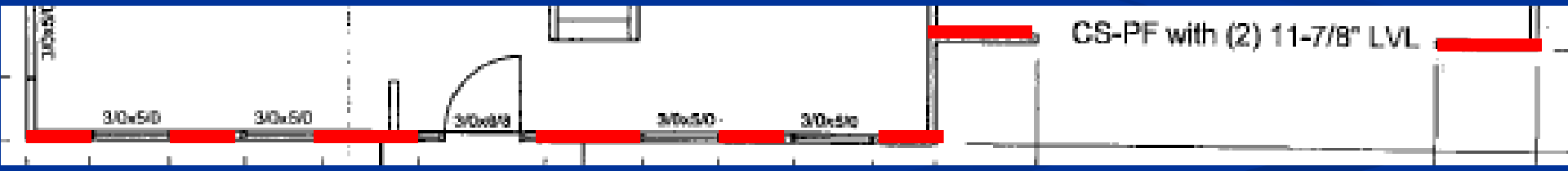


2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 + 0 + 1.28 + 1.28 + 0 + 0 + 0.5 + 0.5 = 3.56 BU



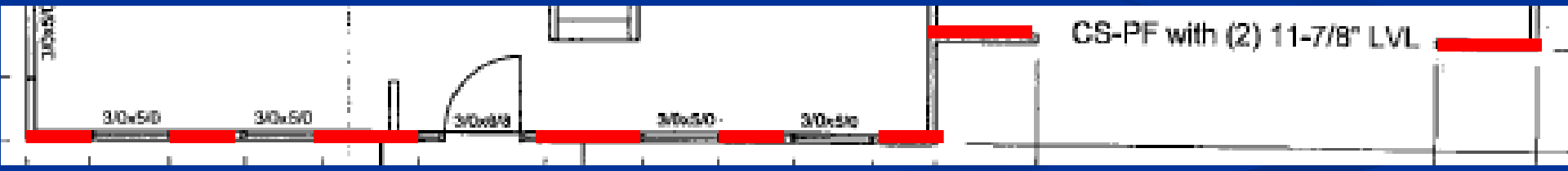
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 + 0 + 1.28 + 1.28 + 0 + 0 + 0.5 + 0.5 = 3.56 BU

3.56 BU < 5 min. BU



2009 SIMPLIFIED WALL BRACING

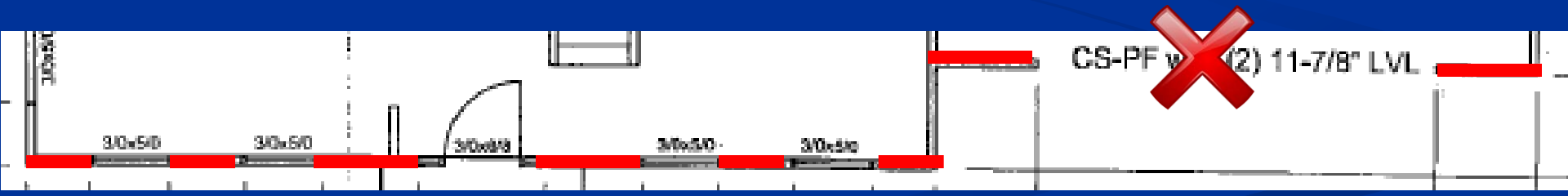
R602.12.4 Number of bracing units

Actual BU for bottom side of rectangle

0 + 0 + 1.28 + 1.28 + 0 + 0 + 1.33 + 1.33 = 5.22 BU

5.22 BU > 5 min. BU ✓

CS-PF NOT REQUIRED USE CS-WSP
4’ 3’ = 1.33 BU



2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

required BU for each side ≤ actual wall segments ?

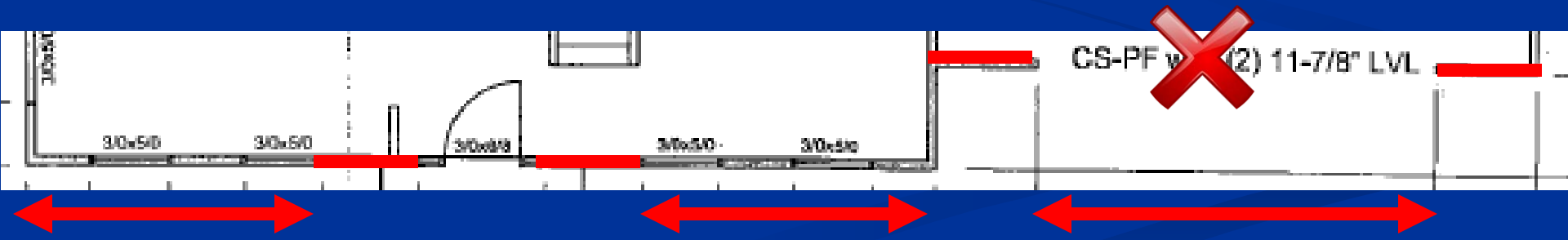
0 + 0 + 1.28 + 1.28 + 0 + 0 + 1.33 + 1.33 = 5.22 BU

Actual Wall Segments	Long Side 2	
	Length	BUs
BU wall length equivalents: 3' fully sheathed = 1 B.U. 4' intermittent = 1 B.U. Methods B.U. equivalents PFH = 1 B.U. PFG = 0.75 B.U. CS-G = 0.5 B.U. CS-PF = 0.5 B.U.	3.83'	1.28 BU
	3.83'	1.28 BU
	4.0'	1.33 BU
	4.0'	1.33 BU
Total actual BUs provided	5.22 BU	
Total required BUs ea. side	5 BU	
Actual BUs ≥ Required BUs	Y - N	

2009 SIMPLIFIED WALL BRACING

R602.12.5 Distribution of bracing units

Distribution	Long Side 2
Walls > 8’ have at least 1 BU	Y - N - NA
BU within 12’ of ea. corner	Y - N
BU within 20’ edge to edge	Y - N - NA
PASS / FAIL	PASS FAIL



11’-4”

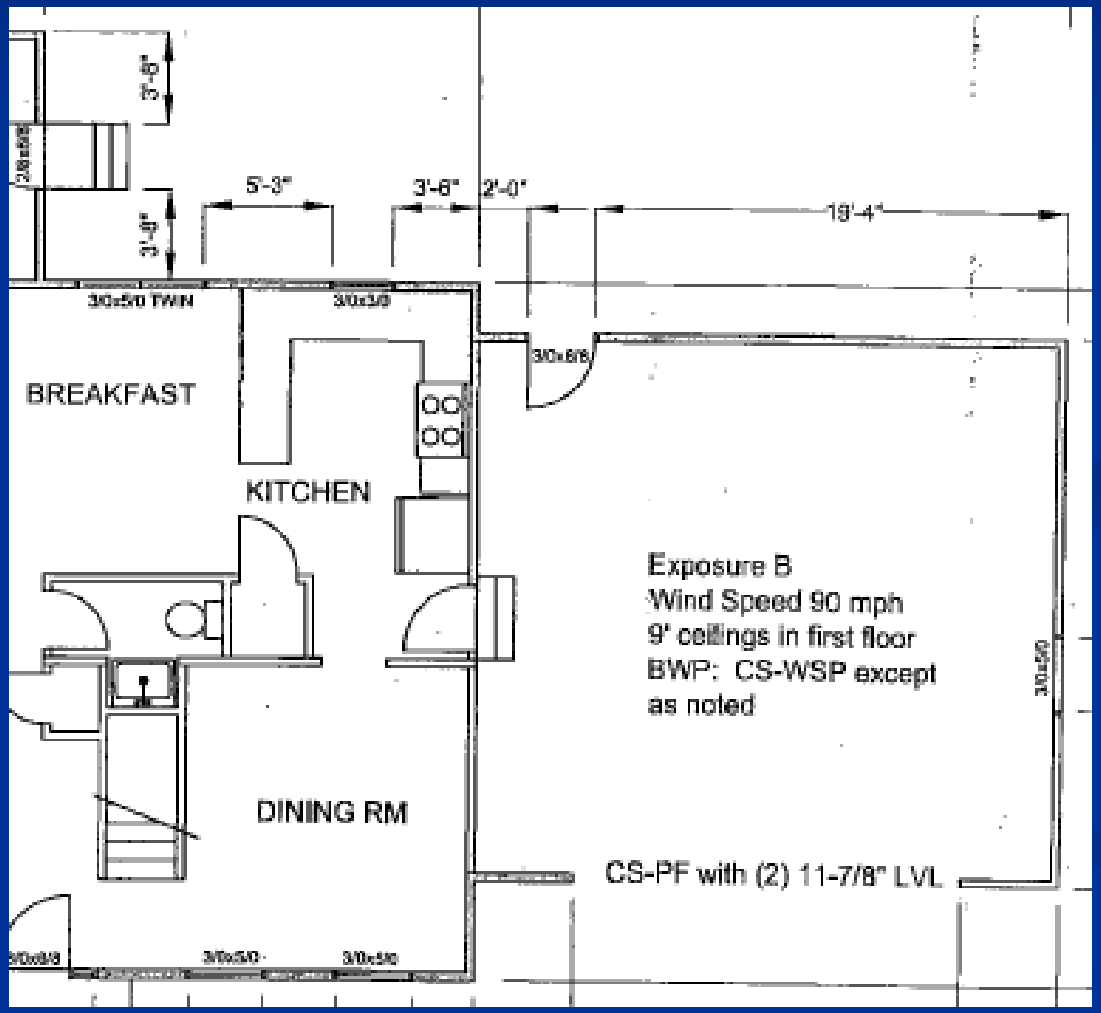
11’-4”

16’-0”

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

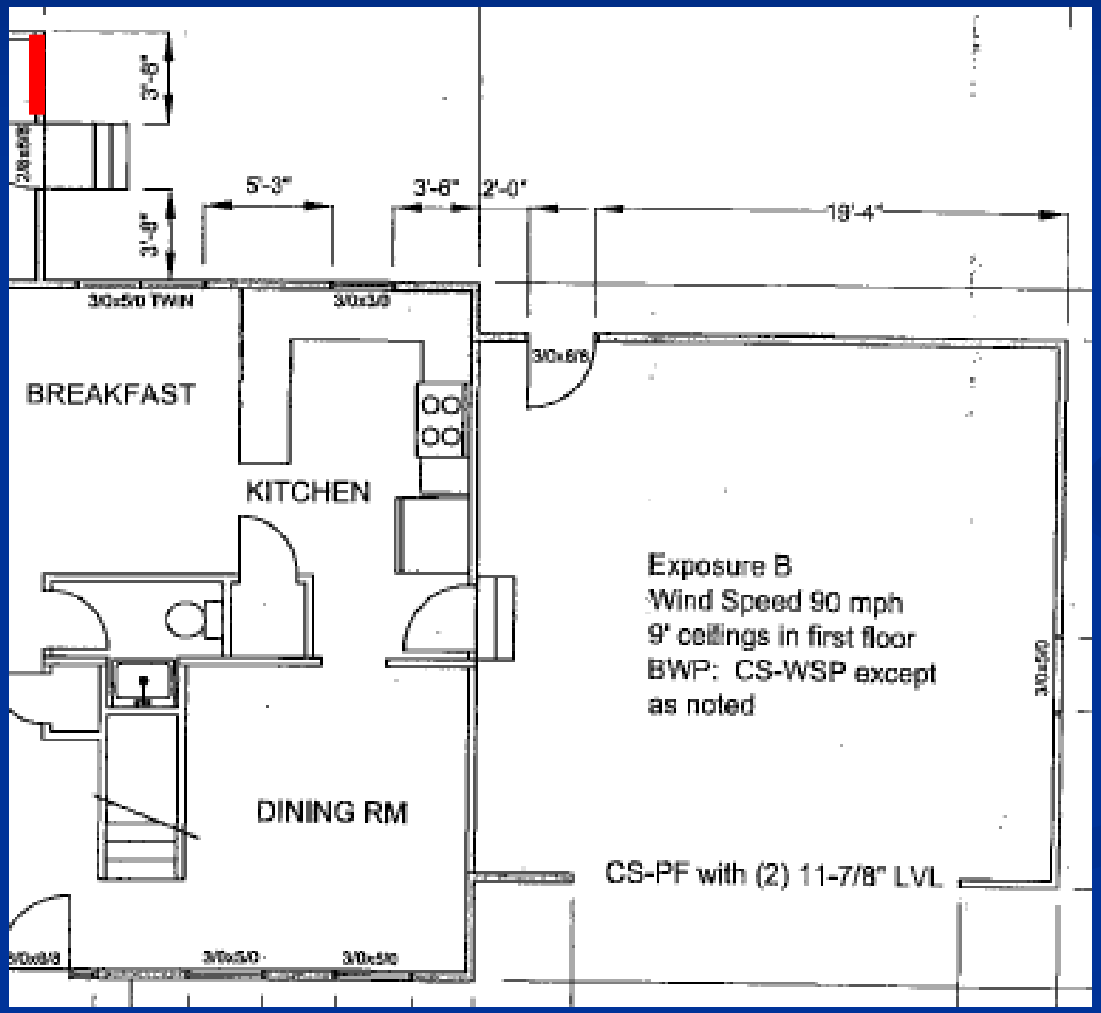
Figure out the BUs for the right side of the rectangle



2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for right side of rectangle

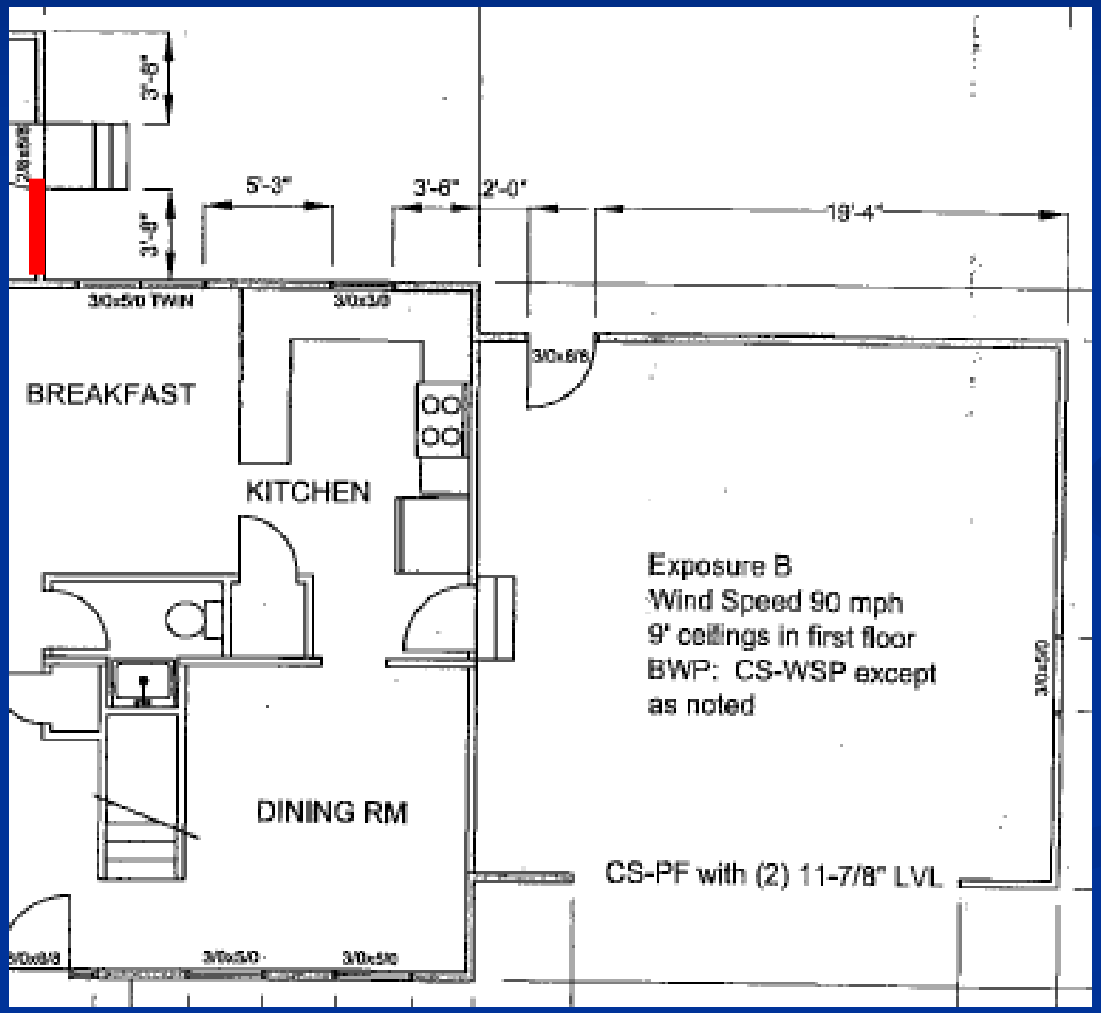


3.58’ 3’ = 1.19 BU

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for right side of rectangle

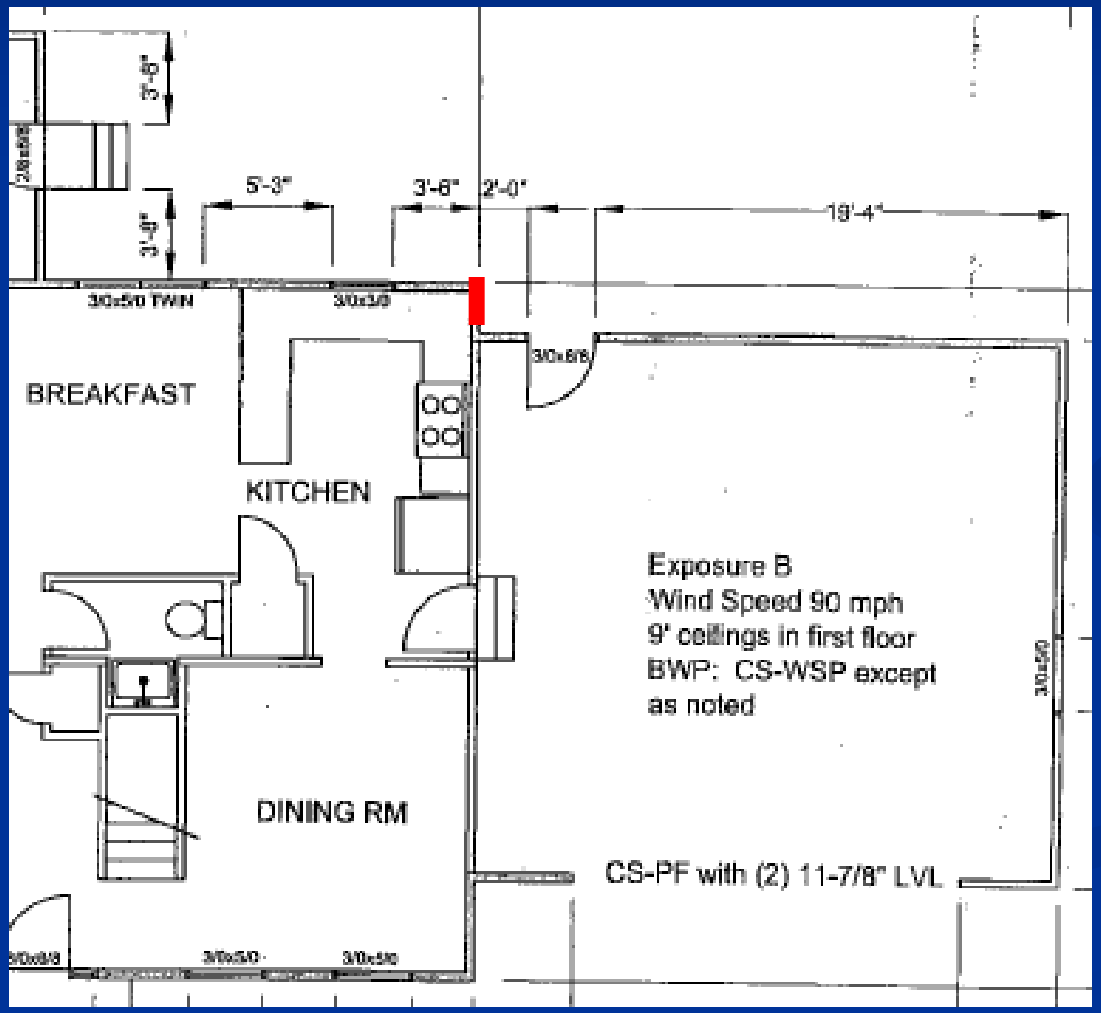


3.58’ 3’ = 1.19 BU

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for right side of rectangle

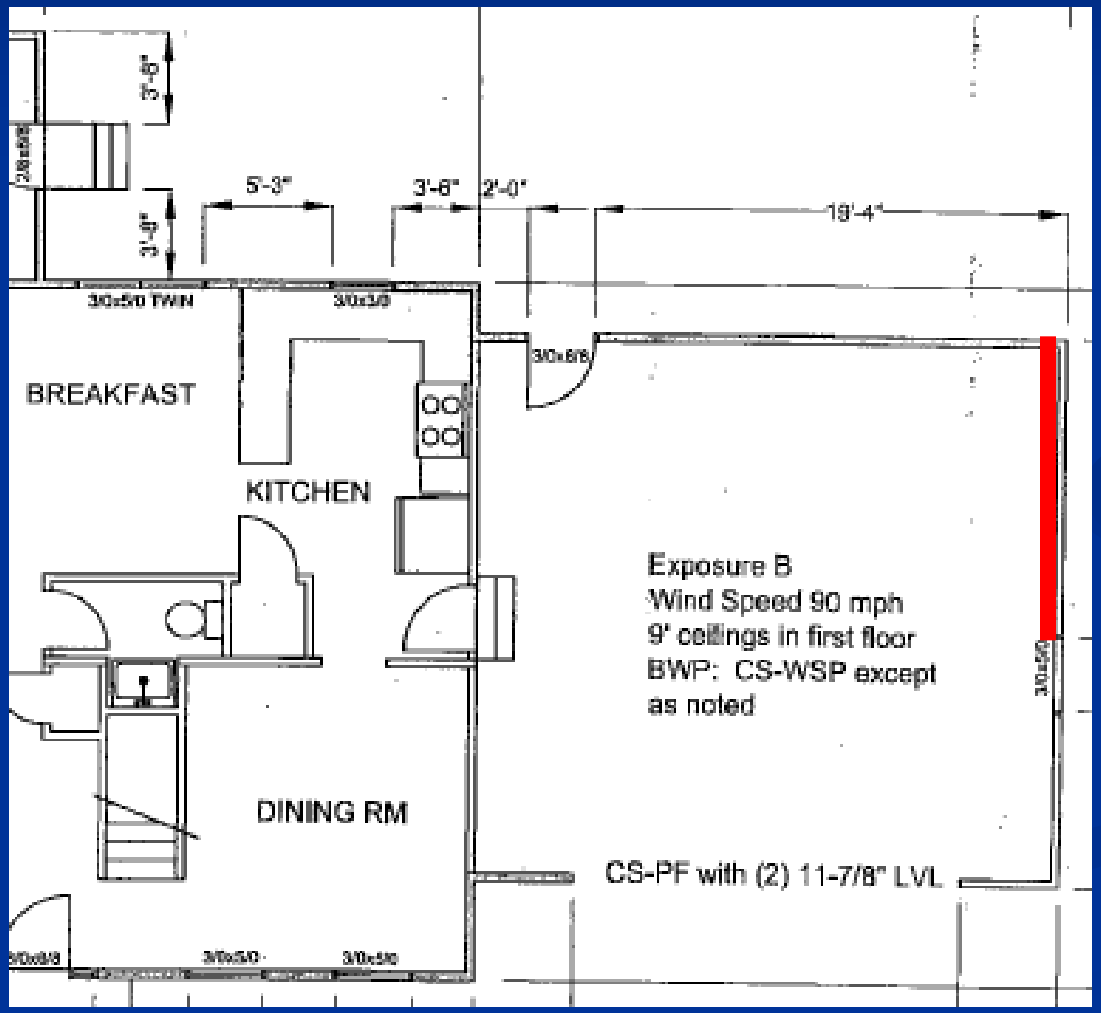


<3' = 0 BU

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for right side of rectangle

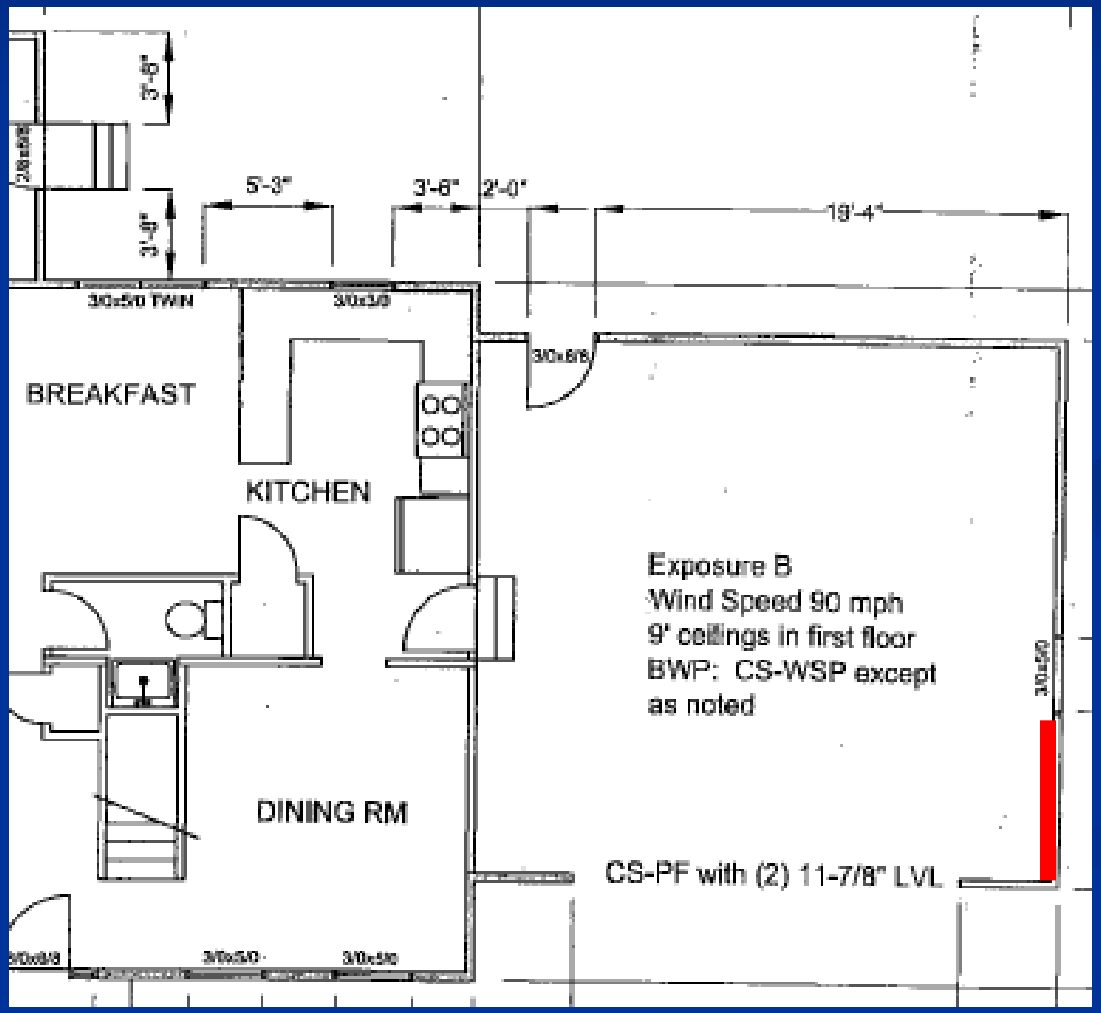


11.92’ 3’ = 3.97 BU

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for right side of rectangle

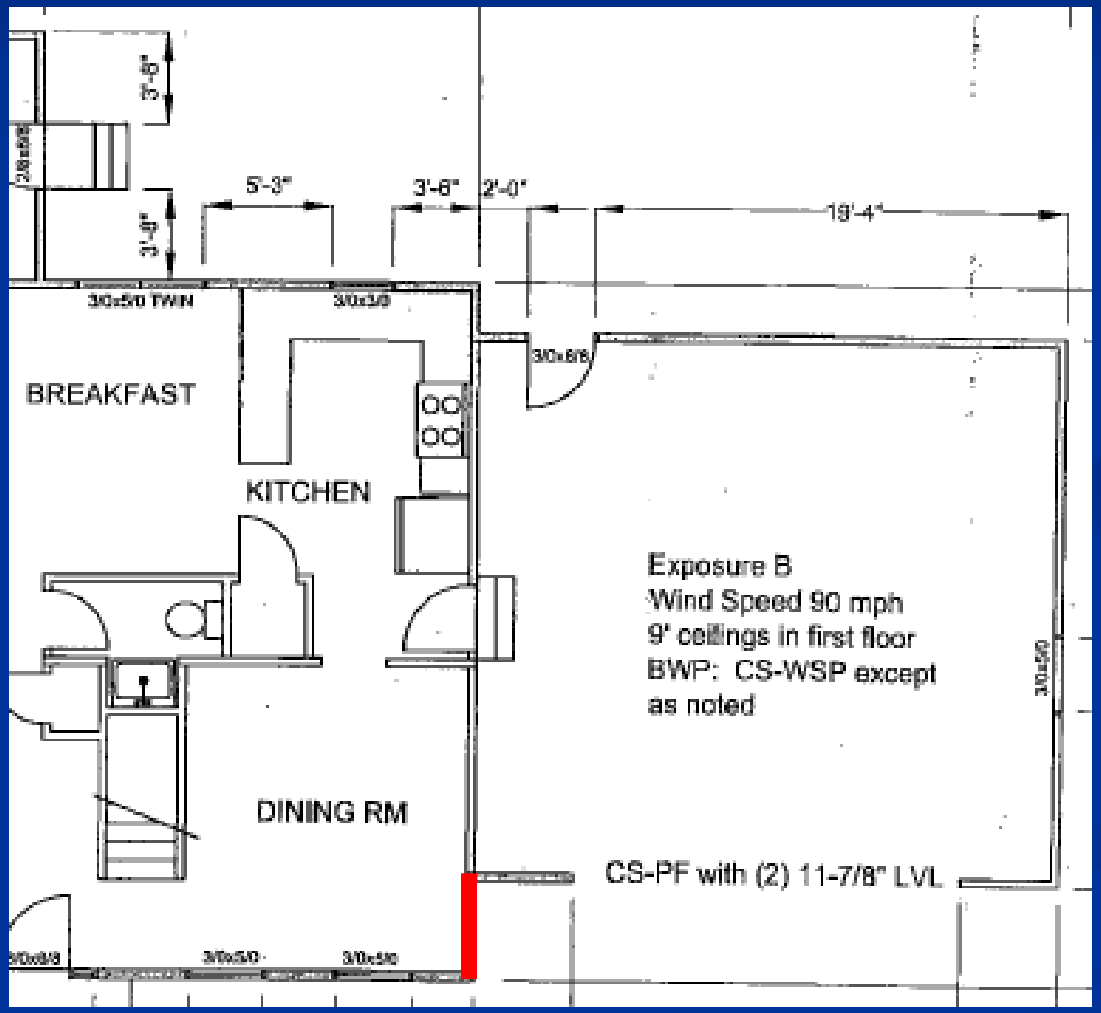


6.92’ 3’ = 2.31 BU

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for right side of rectangle



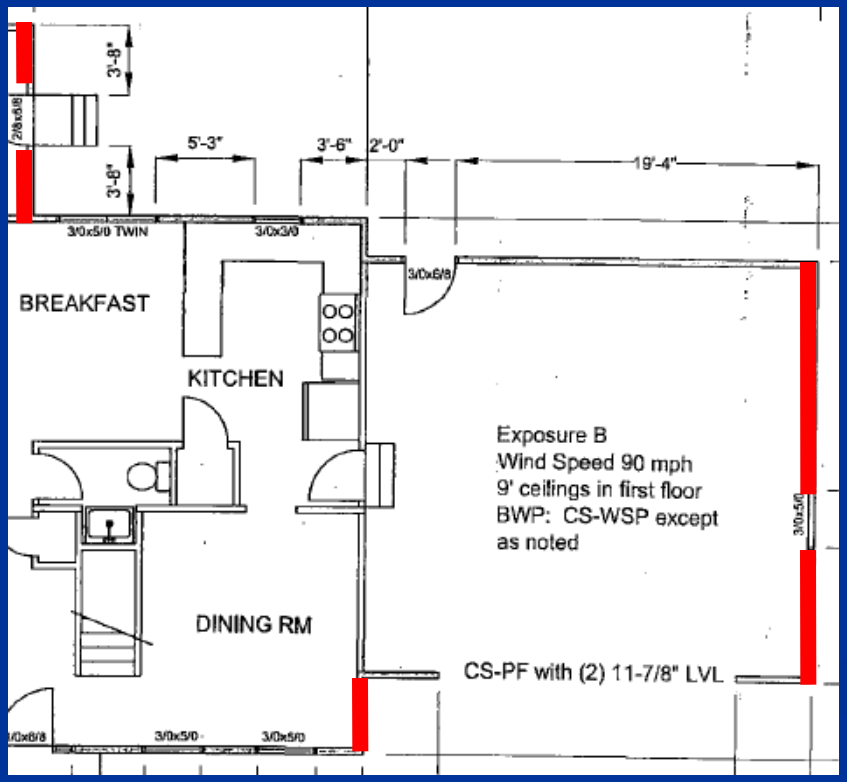
4’ 3’ = 1.33 BU

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for right side of rectangle

1.19 + 1.19 + 0 + 3.97 + 2.31+ 1.33 = 9.99



9.99 BU > 7 min. BU ✓

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

required BU for each side ≤ actual wall segments ?

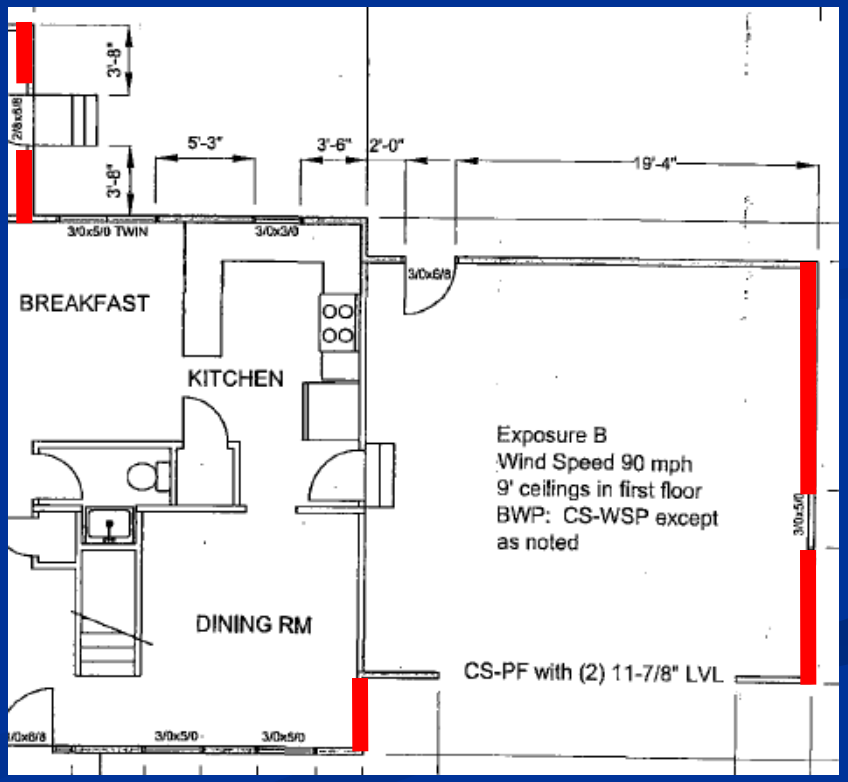
1.19 + 1.19 + 0 + 3.97 + 2.31+ 1.33 = 9.99

Actual Wall Segments	Short Side 1	
	Length	BUs
BU wall length equivalents: 3' fully sheathed = 1 B.U. 4' intermittent = 1 B.U. Methods B.U. equivalents PFH = 1 B.U. PFG = 0.75 B.U. CS-G = 0.5 B.U. CS-PF = 0.5 B.U.	3.57'	1.19 BU
	3.57'	1.19 BU
	11.91'	3.97 BU
	6.93'	2.31 BU
	4.0'	1.33 BU
Total actual BUs provided	9.99 BU	
Total required BUs ea. side	7 BU	
Actual BUs ≥ Required BUs	Y - N	

2009 SIMPLIFIED WALL BRACING

R602.12.5 Distribution of bracing units

Distribution	Short Side 1
Walls > 8' have at least 1 BU	Y - N - NA
BU within 12' of ea. corner	Y - N
BU within 20' edge to edge	Y - N - NA
PASS / FAIL	PASS FAIL



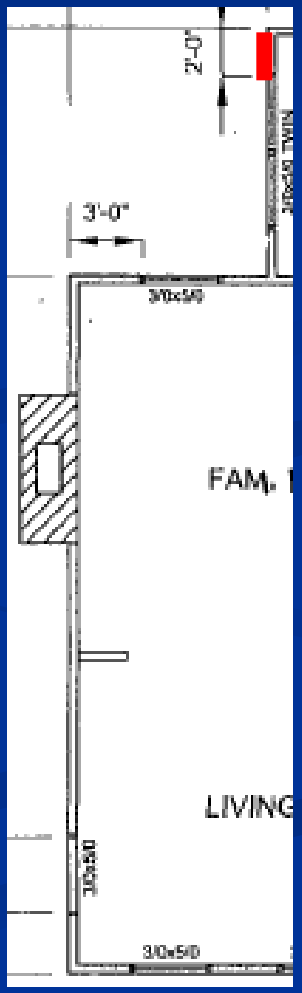
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for left side of rectangle

0 BU

<3’ = 0 BU



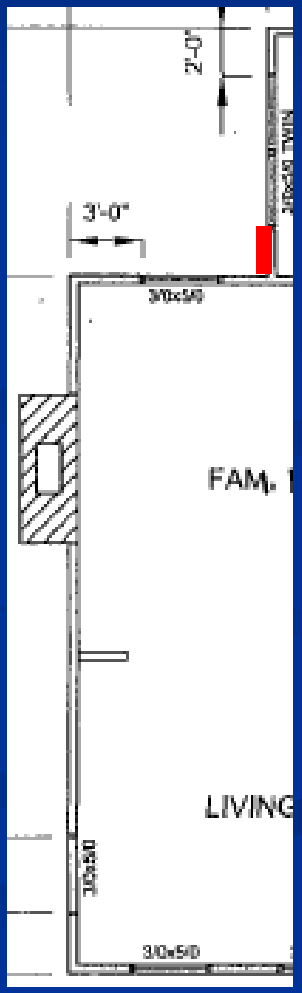
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for left side of rectangle

0 + 0 BU

<3’ = 0 BU



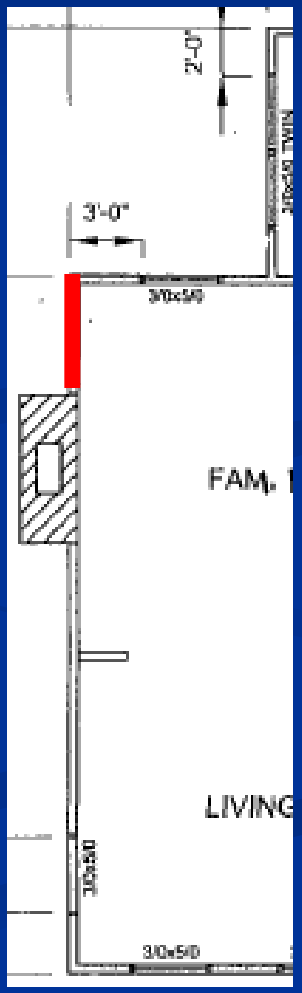
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for left side of rectangle

0 + 0 + 1.56 BU

4.67’ 3’ = 1.56 BU



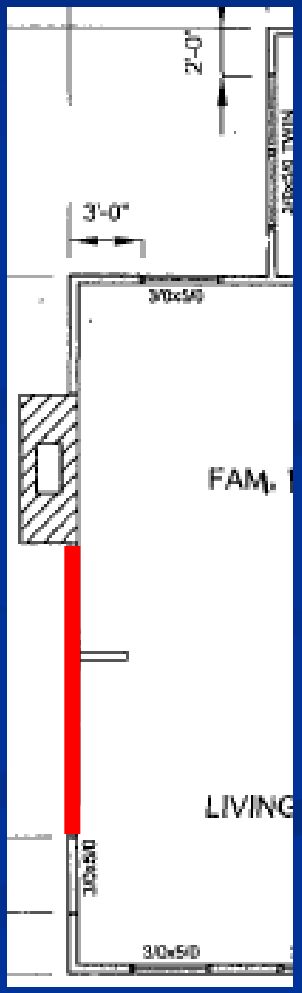
2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for left side of rectangle

0 + 0 + 1.56 + 3.86 BU

11.58’ 3’ = 3.86 BU

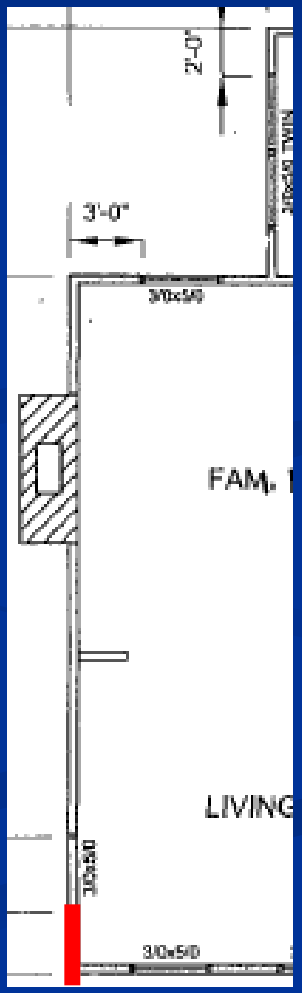


2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

Actual BU for left side of rectangle

0 + 0 + 1.56 + 3.86 + 0 BU



<3' = 0 BU

2009 SIMPLIFIED WALL BRACING

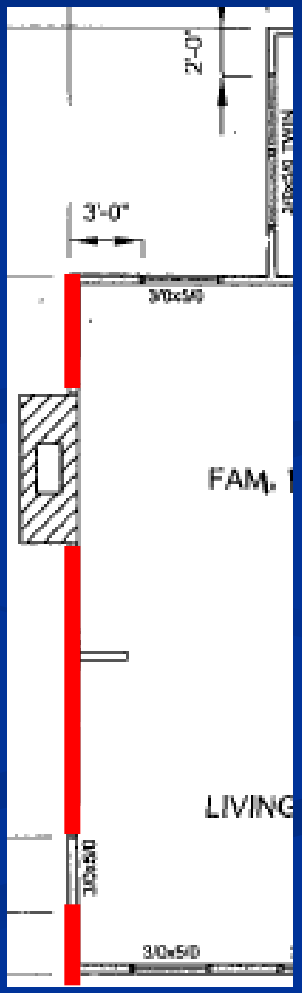
R602.12.4 Number of bracing units

Actual BU for left side of rectangle

0 + 0 + 1.56 + 3.86 + 0 = 5.42 BU

5.42 BU < 7 min. BU

SIMPLIFIED WALL BRACING DOES NOT WORK AS SHOWN



2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

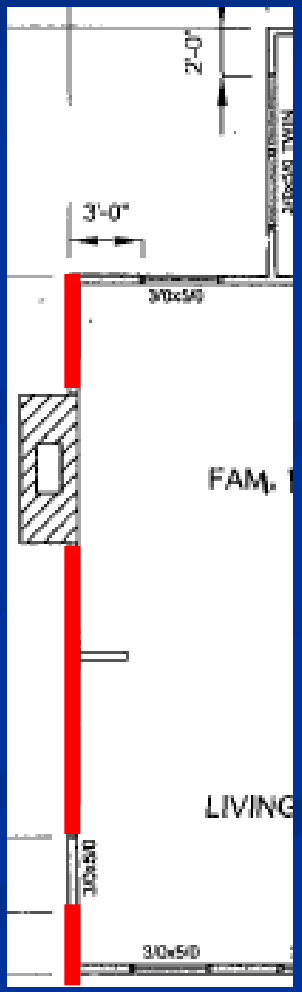
Actual BU for left side of rectangle

0 + 0 + 1.56 + 3.86 + 0 = 5.42 BU

5.42 BU < 7 min. BU

SIMPLIFIED WALL BRACING DOES NOT WORK AS SHOWN

WHAT IF ELIMINATE THE WINDOW?

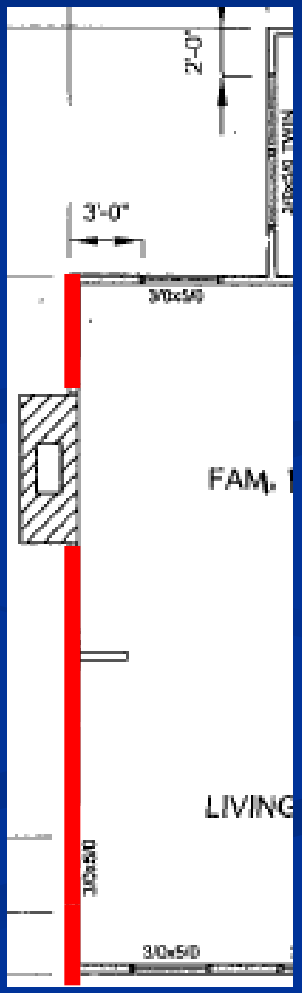


2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

0 + 0 + 1.56 + 5.75 + 0 = 7.31 BU

7.31 BU > 7 min. BU ✓



Moving the window up enough to obtain 1 BU at the bottom of the wall will also work (Try this on your own).

2009 SIMPLIFIED WALL BRACING

R602.12.4 Number of bracing units

required BU for each side ≤ actual wall segments ?

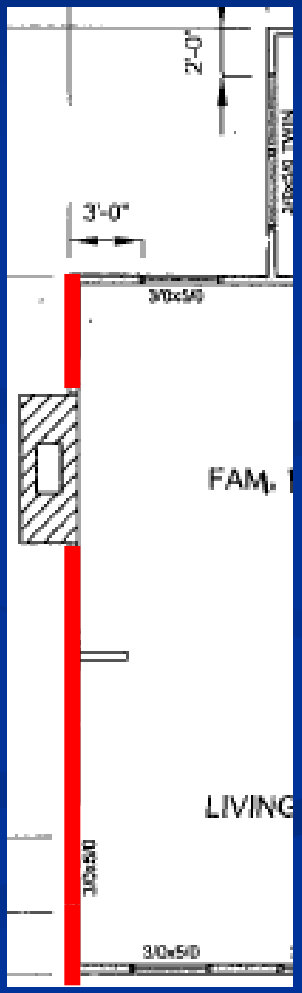
0 + 0 + 1.56 + 5.75 + 0 = 7.31 BU

Actual Wall Segments	Short Side 2	
	Length	BUs
BU wall length equivalents: 3' fully sheathed = 1 B.U. 4' intermittent = 1 B.U. Methods B.U. equivalents PFH = 1 B.U. PFG = 0.75 B.U. CS-G = 0.5 B.U. CS-PF = 0.5 B.U.	4.67'	1.56 BU
	17.25'	5.75 BU
Total actual BUs provided	7.31 BU	
Total required BUs ea. side	7 BU	
Actual BUs ≥ Required BUs	Y - N	

2009 SIMPLIFIED WALL BRACING

R602.12.5 Distribution of bracing units

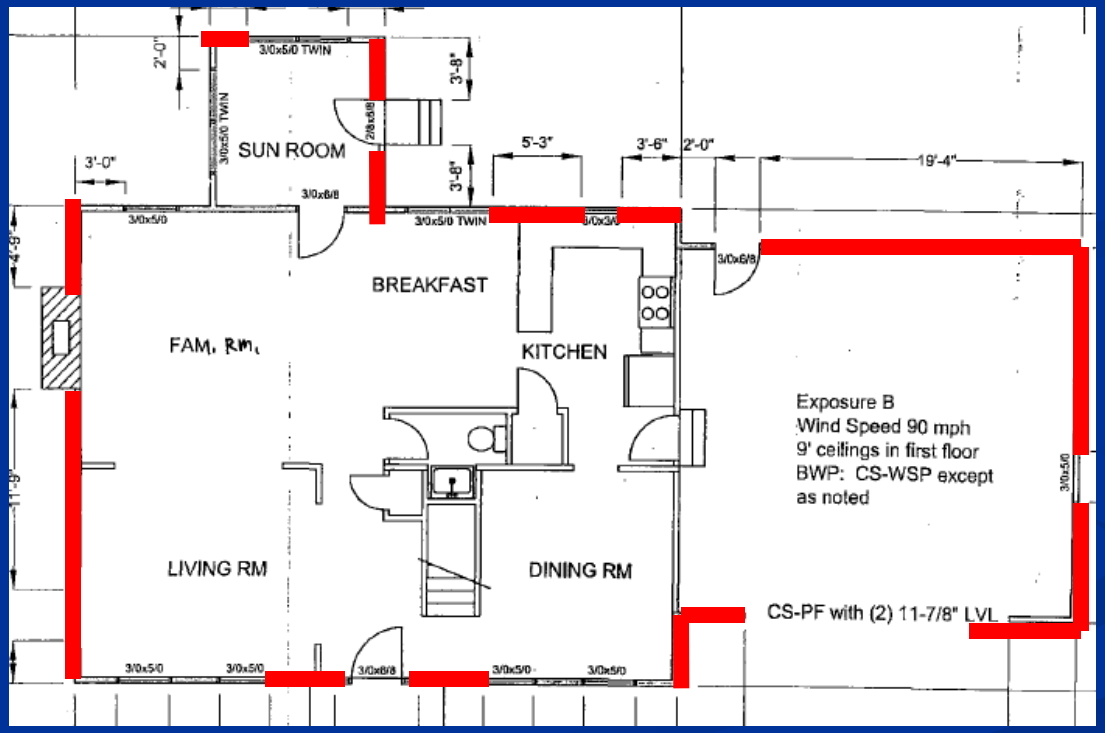
Distribution	Short Side 2
Walls > 8' have at least 1 BU	Y - N - NA
BU within 12' of ea. corner	Y - N
BU within 20' edge to edge	Y - N - NA
PASS / FAIL	PASS FAIL



2009 SIMPLIFIED WALL BRACING

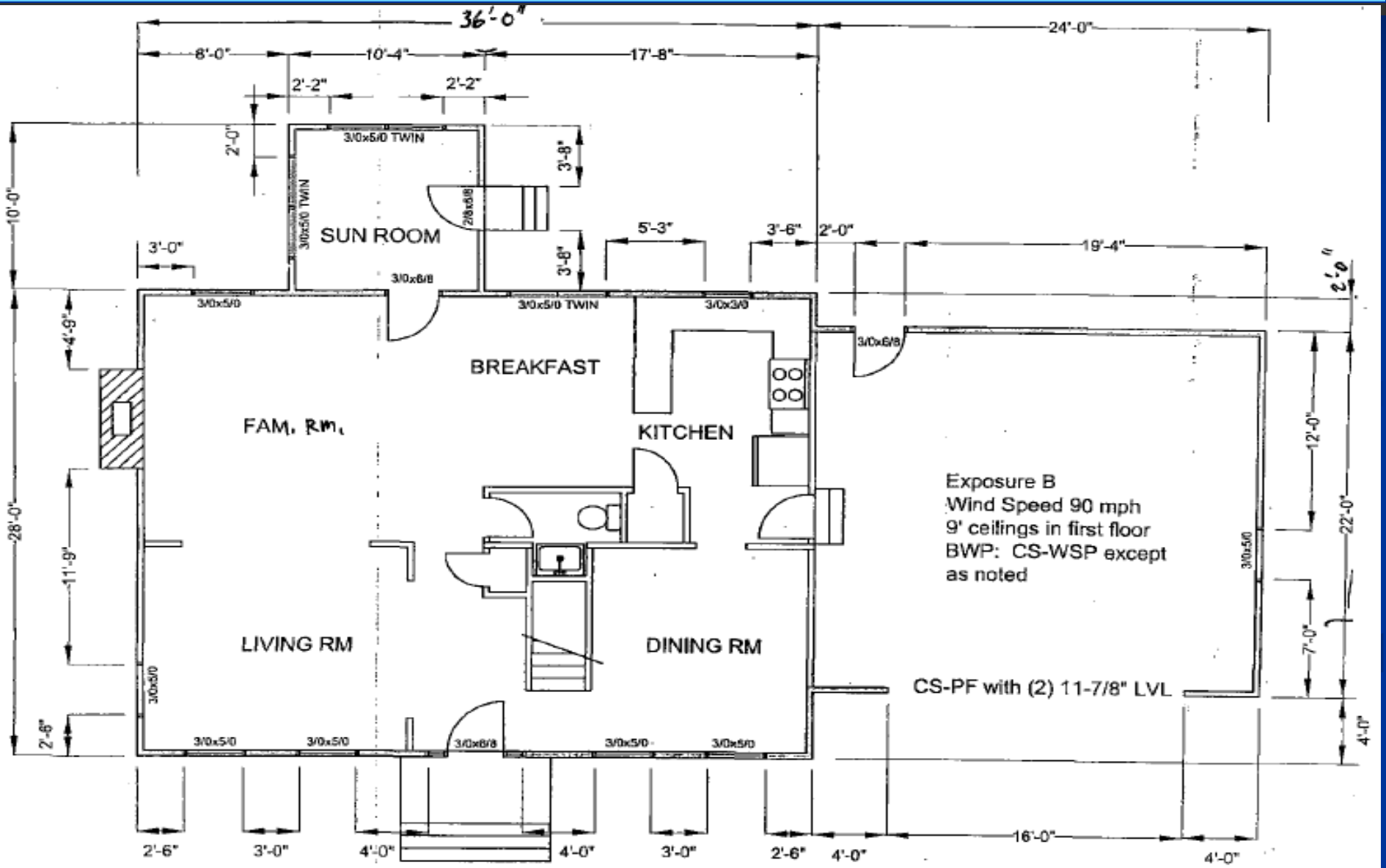
THE END RESULT

WE ARE FINISHED!!! THIS BRACING UNIT LAYOUT SATISFIES USBC SECTION R602.10.2



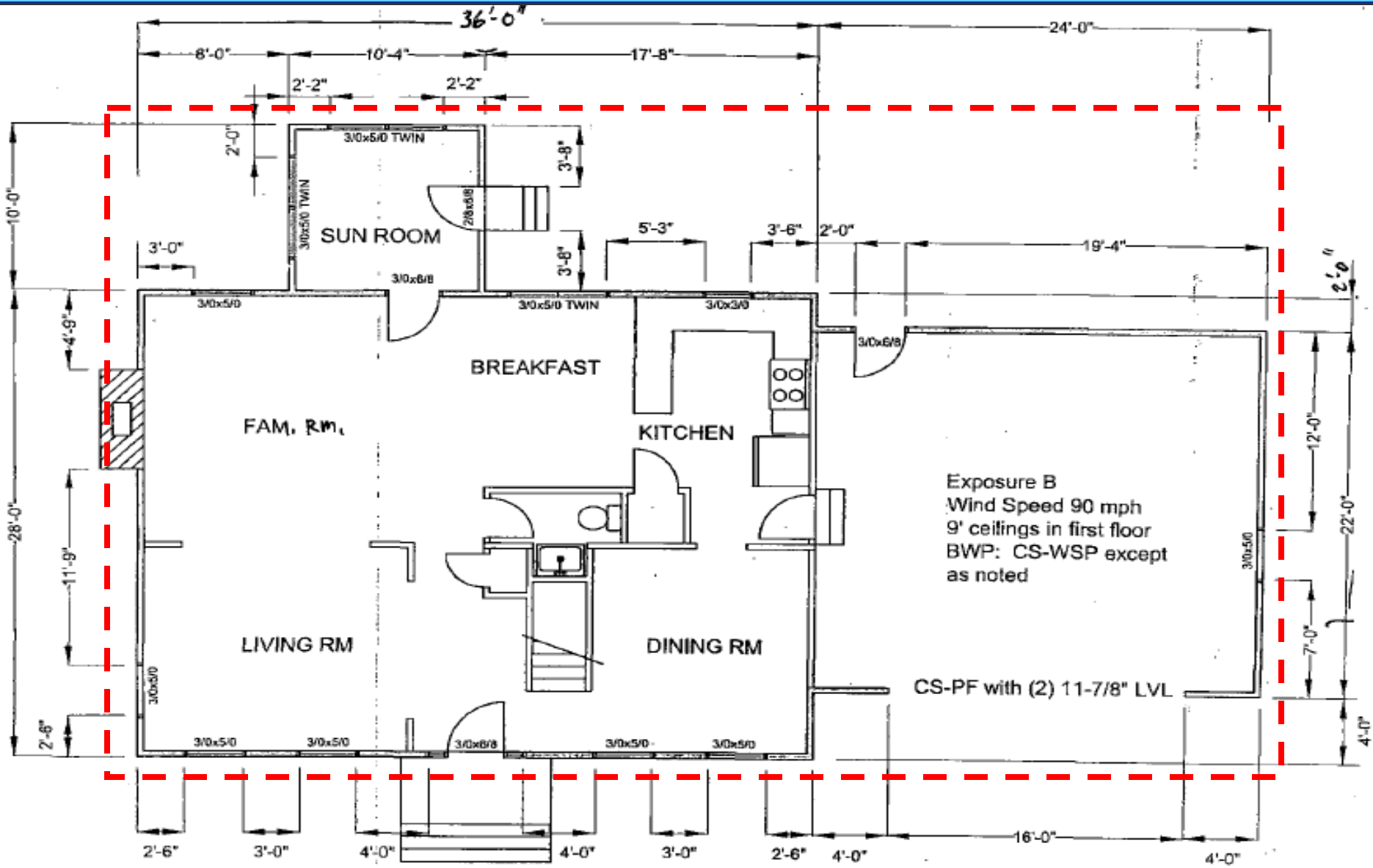
2009 SIMPLIFIED WALL BRACING

BRACING UNIT SUBMITTAL DWG



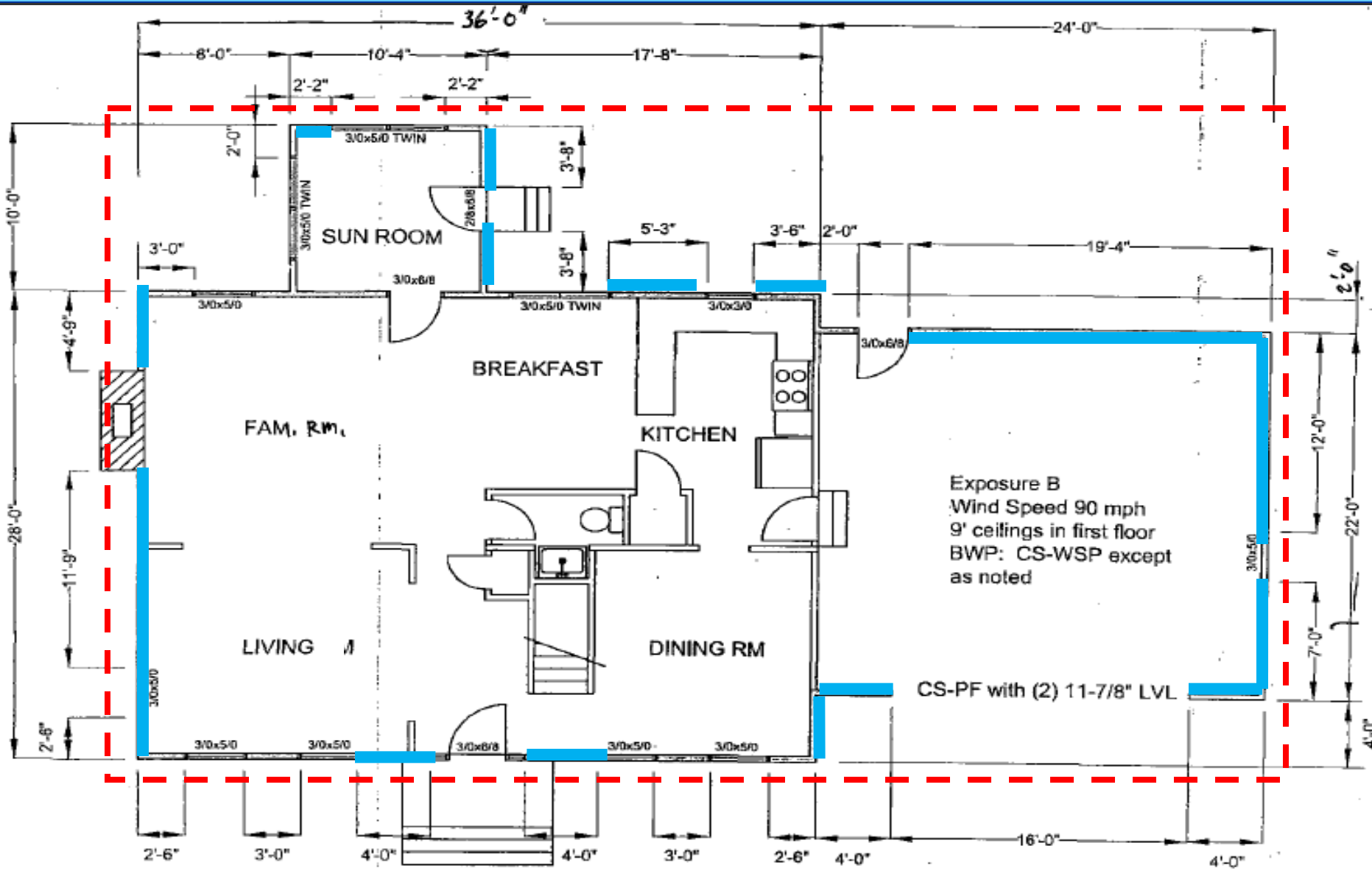
2009 SIMPLIFIED WALL BRACING

BRACING UNIT SUBMITTAL DWG



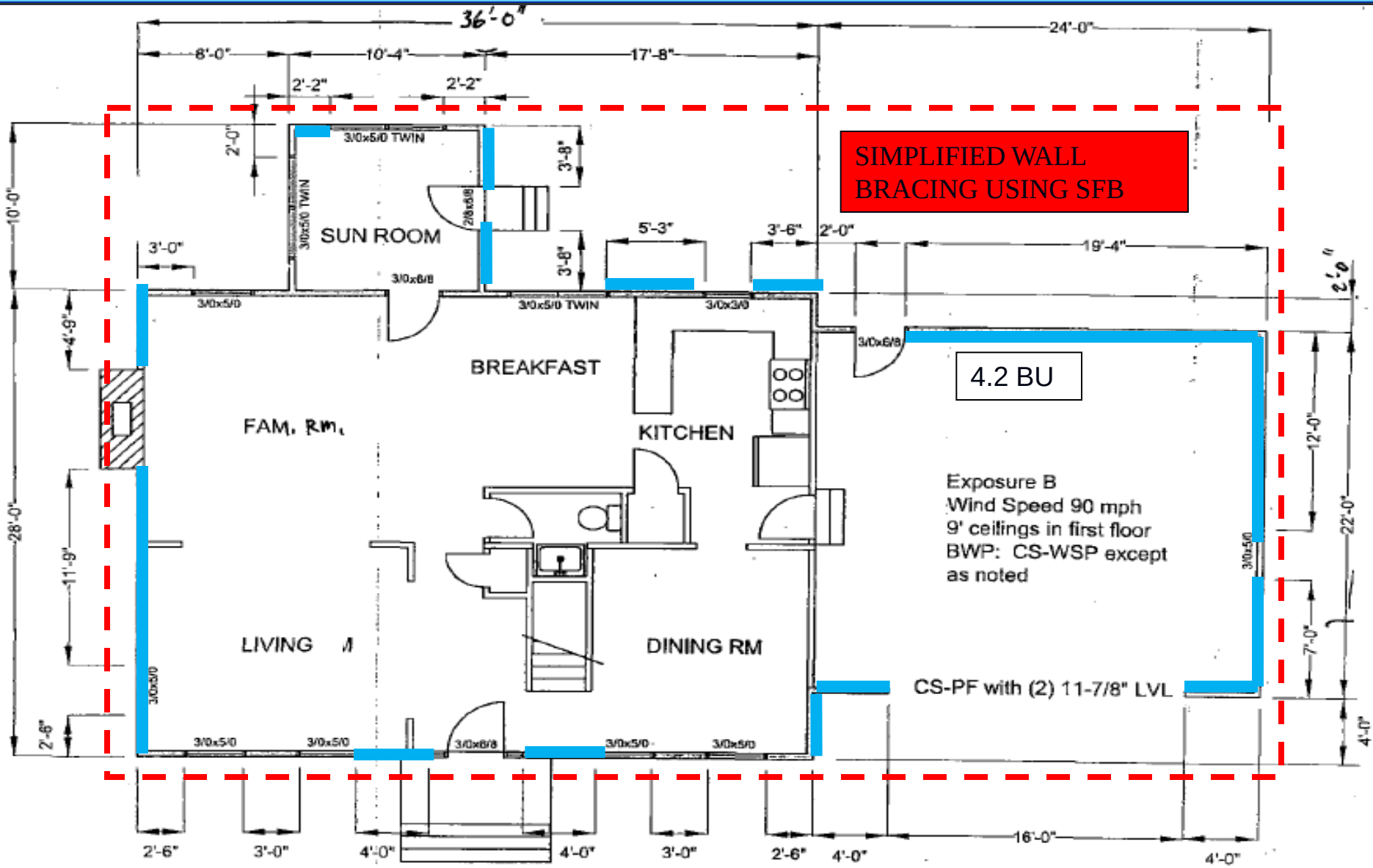
2009 SIMPLIFIED WALL BRACING

BRACING UNIT SUBMITTAL DWG



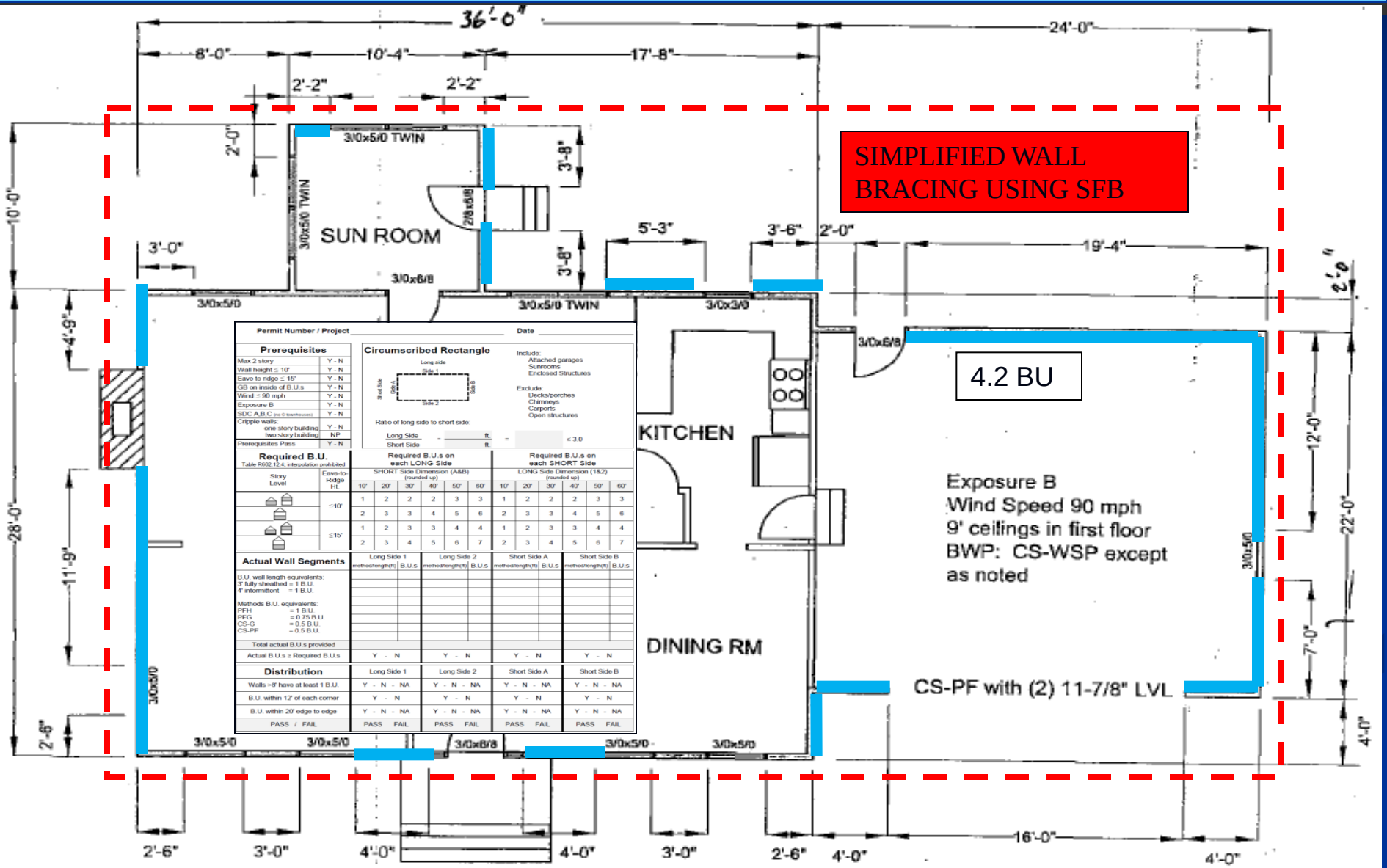
2009 SIMPLIFIED WALL BRACING

BRACING UNIT SUBMITTAL DWG



2009 SIMPLIFIED WALL BRACING

BRACING UNIT SUBMITTAL DWG



THANK YOU

SPOTSYLVANIA COUNTY
BUILDING SAFETY DEPT.
2009 VUSBC WALL BRACING SEMINAR

THE END

IF YOU GET BACK TO THE OFFICE AND HAVE QUESTIONS SEND AN E-MAIL TO
scook@spotsylvania.va.us