

**SHEARWALL DESIGN SUMMARY - FLEXIBLE DIAPHRAGM ASSUMPTIONS
 2007 CBC SHEAR WALL CRITERIA
 1740 POLK STREET, SAN FRANCISCO - SEISMIC RETROFIT**

Table 4.3.4 Maximum Shear Wall Aspect Ratios

Shear Wall Sheathing Type	Maximum h/b, Ratio
Wood structural panels, all edges nailed	3-1/2:1
Particleboard, all edges nailed	2:1
Diagonal sheathing, conventional	2:1
Gypsum wallboard	2:1 ²
Portland cement plaster	2:1 ²
Fiberboard	1-1/2:1

1. For design to resist seismic forces, the shear wall aspect ratio shall not exceed 2:1 unless the nominal unit shear capacity is multiplied by 2b_v/h.
 2. Walls having aspect ratios exceeding 1-1/2:1 shall be blocked.

**** Note:** Value reduced by 2w/h for EQ loads for walls with 2.0 <= h/b <= 3.5 per NDS SDPWS-2005 Table 4.3.4.

Connector Capacities:

Z = 174 lbs (nail shear capacity)

A34 = 412 lbs (Framing angle capacity - Reduced by 1.25 per ASCE 7-05 12.3.3.4)

SDS Screw = 340 lbs (SDS 1/4 x 3 1/2 Screw)

Fanchor = 1,516 lbs (Foundation Anchor capacity)

Assumed for (N) design, modified for (E) conditions later.

Note: Collector Loads in areas of discontinuities will be amplified by 1.25 as per ASCE 7-05 12.3.3.4 (in Blue), if applicable.

Sources: 2012 California Building Code, Table 2306.4.1, Page 324. Simpson Catalog C-2014.

Loading Direction	Gridline Wall Location	Normal Gridline	F _{Max} (kips)	Wall Dimensions		Service Load (lb/ft)	Collector Force (lbs)	Shearwall Chord Force (lbs)
				Height (feet)	Width (feet)			
N-S	1	D - G	10.53	12.00	15.00	702	6,681	8,424
	4	D - G	12.82	12.00	18.00	712	6,410	8,544
	6	D.5 - G	12.10	12.00	12.00	1,008	10,079	12,096
	10	D - G	8.73	12.00	18.00	485	5,520	5,820
W-E	A	11 - 1.5	3.09	12.00	8.50	364	2,696	4,368
		2 - 4	7.28	12.00	20.00	364	2,696	4,368
		6 - 10	11.28	12.00	31.00	364	2,696	4,368
	G	1 - 4	12.41	12.00	29.00	428	4,823	5,136
		7 - 10	10.06	12.00	23.50	428	4,823	5,136

Panel Data		Nail Data			Allowable Wall Shear		
No. Panels	Thickness (inches)	Size	Edge (inches)	Field (inches)	Tabular Value (lb/ft)	Modified** (lb/ft)	Check
Simpson 1-Bay FB SMRF 1							
Simpson 1-Bay FB SMRF 2							
Simpson 1-Bay FB SMRF 3							
Simpson 1-Bay FB SMRF 4							
1	0.47	10d	4	12	530	530	ok
1	0.47	10d	4	12	530	530	ok
1	0.47	10d	4	12	530	530	ok
1	0.47	10d	4	12	530	530	ok
1	0.47	10d	4	12	530	530	ok

Required Hardware								
Shear Walls				Shearwall to Floor			Mudsill Anchors	
Shearwall Chords	Holddown	Anchor Diameter	Required Coiled Strap Perpendicular to Framing	No. Framing Angles/ Wall	Framing Angle Spacing (inches)	SDS Screw Spacing (inches)	No. Anchors	Anchor Spacing (inches)
-	-	-	Use CMST12 Strap w/ 16d	-	-	-	-	-
-	-	-	Use CMST14 Strap w/ 16d	-	-	-	-	-
-	-	-	Use 2 CMSTC16 Straps w/ 16d	-	-	-	-	-
-	-	-	Use CMST14 Strap w/ 16d	-	-	-	-	-
3 - 2x6	HDU8 w/ 2-2x	5/8" w/ 10.00" Embed	Use CMSTC16 Strap w/ 16d	8 - A34" Angle	11.33	9.27	4 - 5/8" Bolts	32
3 - 2x6	HDU8 w/ 2-2x	5/8" w/ 10.00" Embed	Use CMSTC16 Strap w/ 16d	18 - A34" Angle	12.63	10.43	8 - 5/8" Bolts	32
3 - 2x6	HDU8 w/ 2-2x	5/8" w/ 10.00" Embed	Use CMSTC16 Strap w/ 16d	28 - A34" Angle	12.83	10.63	12 - 5/8" Bolts	32
3 - 2x6	HDU8 w/ 3-2x	5/8" w/ 10.00" Embed	Use CMST14 Strap w/ 16d	31 - A34" Angle	10.88	9.16	11 - 5/8" Bolts	32
3 - 2x6	HDU8 w/ 3-2x	5/8" w/ 10.00" Embed	Use CMST14 Strap w/ 16d	25 - A34" Angle	10.85	9.10	9 - 5/8" Bolts	32