

SHEARWALL LOAD DISTRIBUTION - FLEXIBLE DIAPHRAGM ANALYSIS
 IBC 2009 SHEAR WALL CRITERIA
 587 BURNETT AVENUE, S.F. - SOFT STORY RETROFIT

Wall Location: F
Loading: EQ
Loading Direction: W-E

1. Diaphragm and Shear Wall Dimensions along Plane of Assembled Walls

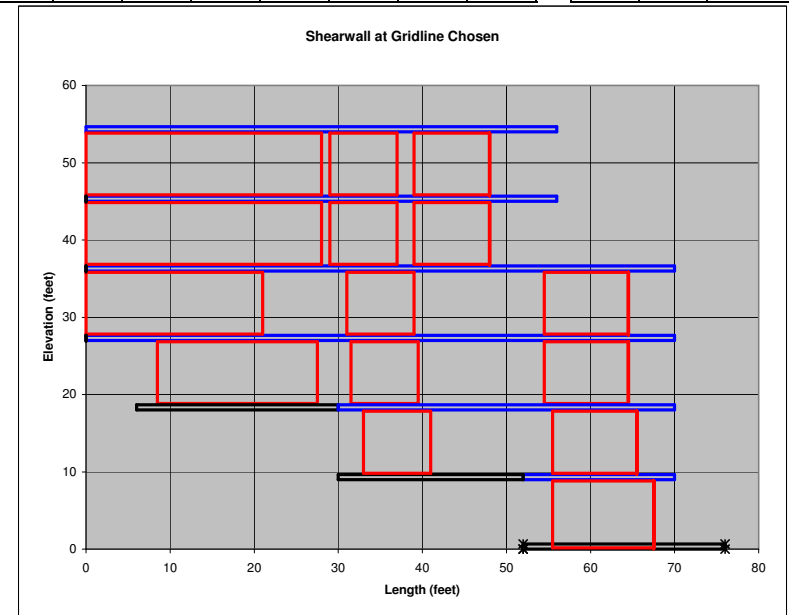
Level	Strength Load (lbs)	Service Load (lbs)	Foundation			Diaphragm			Wall Segments												Summation of Segments														
			Offset (feet)	Length (feet)	Edge (feet)	Offset (feet)	Length (feet)	Edge (feet)	Wall 1	Wall 2	Wall 3	Wall 4	Wall 5	Wall Length (feet)	Floor Length (feet)	Tied to Foundation (feet)*																			
6 + R		3,152				0.00	56.00	56.00																											
5		1,932	0	0	0.00	0.00	56.00	56.00	9.00	0.00	28.00	1.00	8.00	2.00	9.00															45.00	56.00	0.00			
4		2,452	0	0	0.00	0.00	70.00	70.00	9.00	0.00	28.00	1.00	8.00	2.00	9.00																	45.00	56.00	0.00	
3		4,146	0	0.00	0.00	0.00	70.00	70.00	9.00	0.00	21.00	10.00	8.00	15.50	10.00																		39.00	70.00	0.00
2		1,795	6	24.00	30.00	30.00	40.00	70.00	9.00	8.50	19.00	4.00	8.00	15.00	10.00																		37.00	70.00	19.00
1		653	30.00	22.00	52.00	52.00	18.00	70.00	9.00	3.00	8.00	x	14.50	10.00																			18.00	40.00	8.00
0			52	24.00	76.00			0.00	9.00	3.50	12.00	x																					12.00	18.00	12.00

* Notes : 1. Wall segment offset defined from edge of diaphragm (Diaphragm offset).
 2. Marked automatically with an X if Wall segment is tied to foundation.
 3. After all data is complete , run macro w/ Ctrl - w to update spreadsheet.

2. Vertical Wall Distribution and Shear Wall Loads

Level	Story Force (lbs)	Total Shear (lbs)	Story Shear			Wall Length (feet)	Diaphragm Length (feet)	Wall Shear (lbs/ft)	Diaphragm Shear (lbs/ft)
			To Foundation (lbs)	To Walls (lbs)	Total Shear (lbs)				
6 + R	3,152	3,152				45.00	56.00	70	56
5	1,932	5,084	0	3,152	3,152	45.00	56.00	113	35
4	2,452	7,536	0	5,084	5,084	39.00	70.00	193	35
3	4,146	11,682	0	7,536	7,536	37.00	70.00	316	59
2	1,795	13,477	5,999	11,682	11,682	18.00	40.00	415	45
1	653	14,130	3,324	7,478	13,477	12.00	18.00	401	36
0				4,808		0.00	0.00		

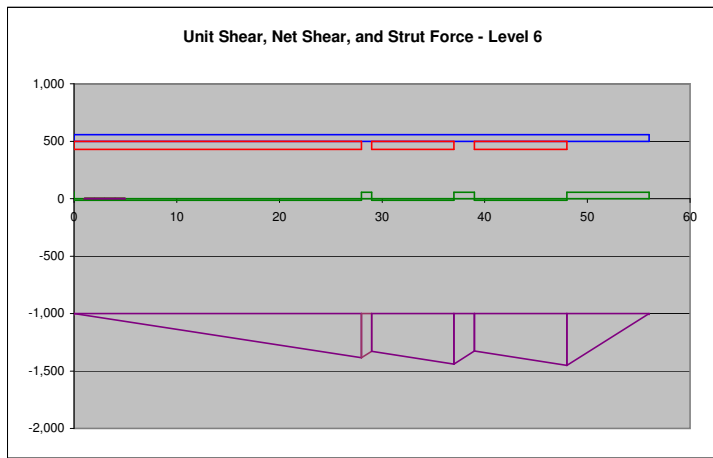
Notes: 1. Diaphragm connected to foundation transfers all load to shear walls; diaphragm connection to wall calculated separately (conservative).
 2. Load transferred to floor below is proportional to wall length over diaphragm/total wall length;



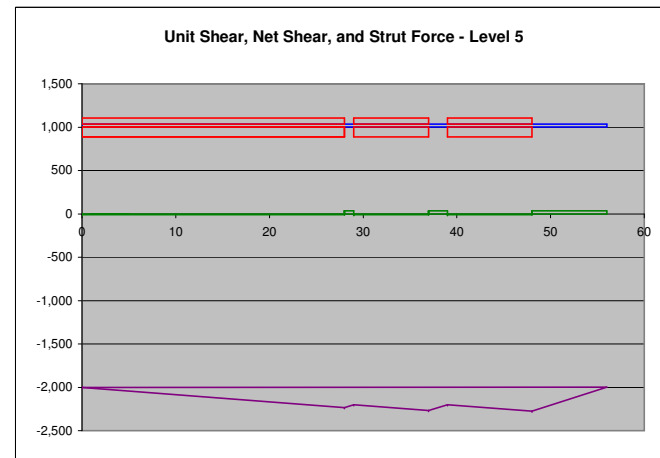
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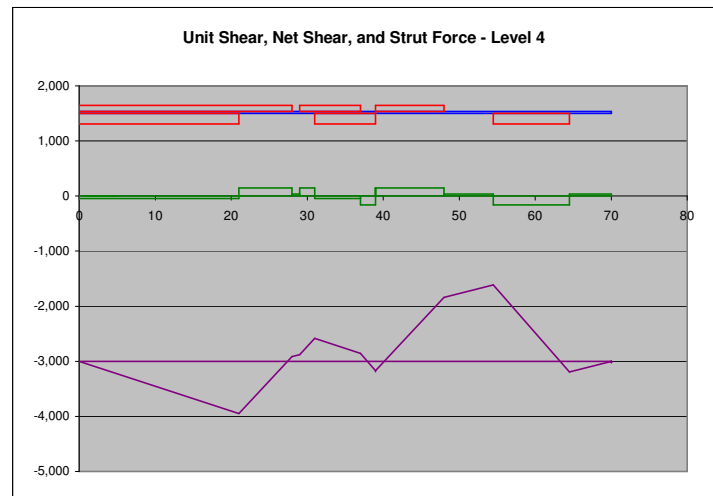
3. Plots of Unit and Net Shears and Strut Force at Wall Levels



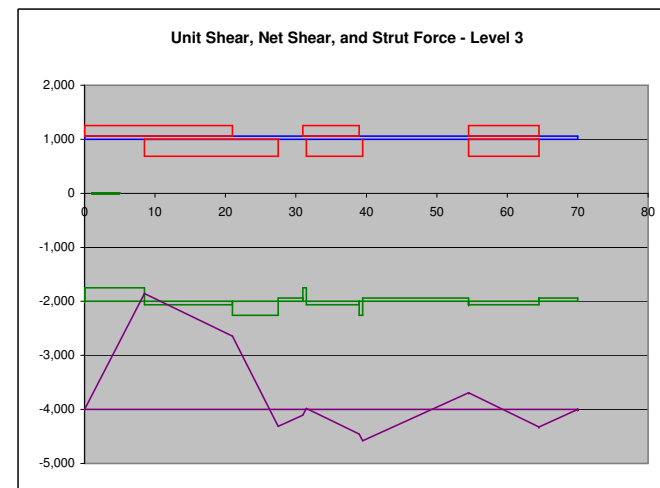
Level 6 + R Demands:
 $V_{sw} = 70 \text{ lb/ft}$
 $F_{strut} = 450 \text{ lbs}$



Level 5 Demands:
 $V_{sw} = 113 \text{ lb/ft}$
 $F_{strut} = 276 \text{ lbs}$



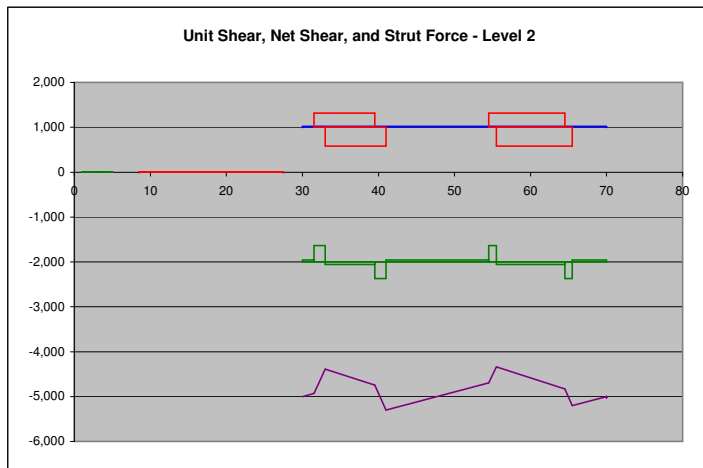
Level 4 Demands:
 $V_{sw} = 193 \text{ lb/ft}$
 $F_{strut} = 1,389 \text{ lbs}$



Level 3 Demands:
 $V_{sw} = 316 \text{ lb/ft}$
 $F_{strut} = 2,146 \text{ lbs}$

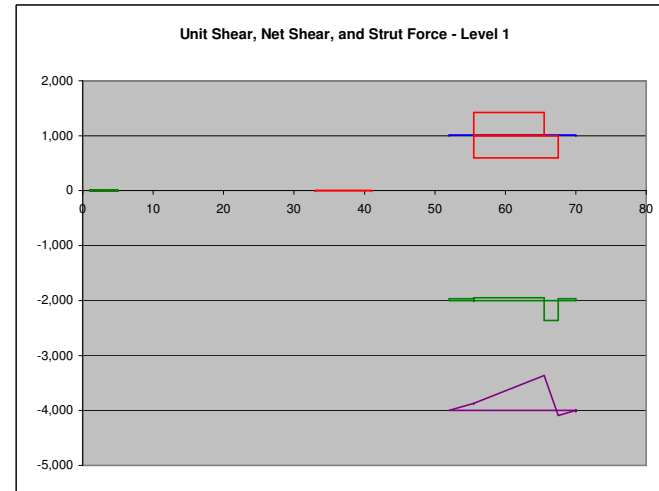
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Level 2 Demands:

V_{sw} = 415 lb/ft
 F_{strut} = 662 lbs



Level 1 Demands:

V_{sw} = 401 lb/ft
 F_{strut} = 638 lbs