

SHEARWALL LOAD DISTRIBUTION - FLEXIBLE DIAPHRAGM ANALYSIS
IBC 2012 SHEAR WALL CRITERIA
1740 POLK STREET, SAN FRANCISCO - SEISMIC RETROFIT

Wall Location: Gridline 4

Loading: EQ
 Loading Direction: N-S

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

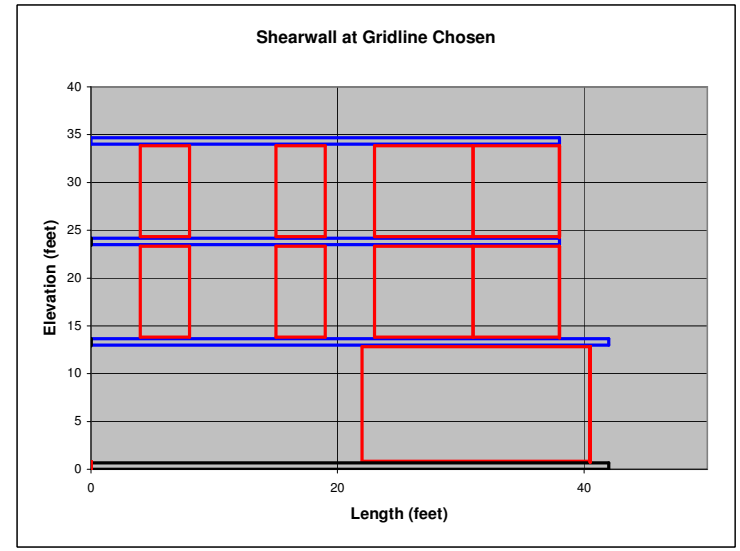
Level	Story Forces		Foundation			Diaphragm			Wall Segments												Summation of Segments		
	Strength Load (lbs)	Service Load (lbs)	Offset (feet)	Length (feet)	Edge (feet)	Offset (feet)	Length (feet)	Edge (feet)	Wall Levels	Wall Height (feet)	Wall 1 Offset* (feet)	Wall 1 Length (feet)	Wall 2 Offset (feet)	Wall 2 Length (feet)	Wall 3 Offset (feet)	Wall 3 Length (feet)	Wall 4 Offset (feet)	Wall 4 Length (feet)	Wall 5 Offset (feet)	Wall 5 Length (feet)	Wall Length (feet)	Floor Length (feet)	Tied to Foundation (feet)*
R		4,924				0	38.00	38.00	2 Level Tied *	10.50	4.00	4.00	7.00	4.00	4.00	8.00	0.00	7.00			23.00	38.00	0.00
2		5,162	0	0	0.00	0	38.00	38.00	1 Level Tied *	10.50	4.00	4.00	7.00	4.00	4.00	8.00	0.00	7.00			23.00	38.00	0.00
1		3,093	0	0	0.00	0	42.00	42.00	Tied *	13.00	22.00	18.50									18.50	42.00	18.50
			0	42.00	42.00	0.00		42.00	Tied *												0.00	0.00	0.00

* 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)				
R	4,924	4,924				38.00		130	
2	5,162	10,086	0	4,924	4,924	23.00	38.00	214	
1	3,093	13,179	0	10,086	10,086	23.00	42.00	439	
				13,179	13,179	18.50		712	

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;

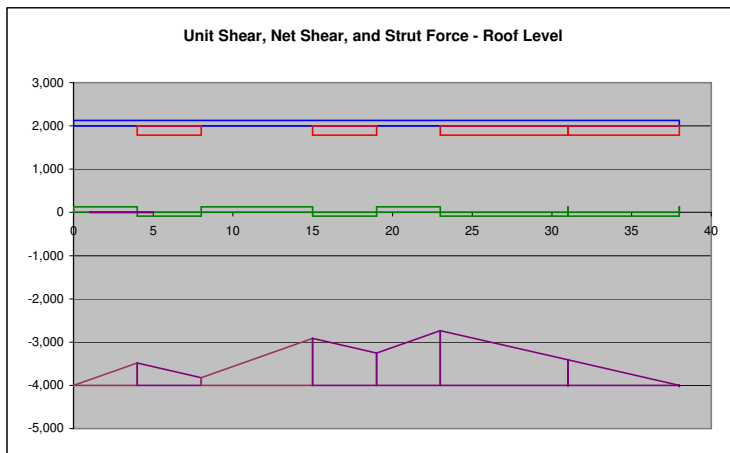


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3. Plots of Unit and Net Shears and Strut Force at Wall Levels



R Level Demands:

$V_{sw} = 214 \text{ lb/ft}$

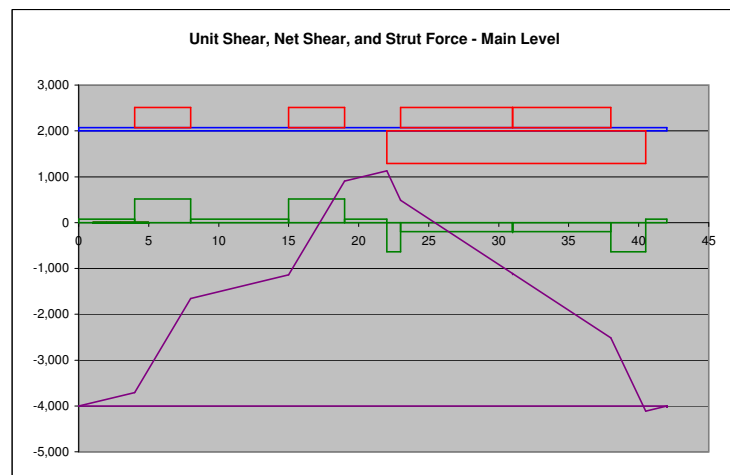
$F_{strut} = 1,268 \text{ lbs}$



2 Level Demands:

$V_{sw} = 439 \text{ lb/ft}$

$F_{strut} = 1,329 \text{ lbs}$



1 Level Demands:

$V_{sw} = 712 \text{ lb/ft}$

$F_{strut} = 5,128 \text{ lbs}$