

SHEARWALL LOAD DISTRIBUTION - FLEXIBLE DIAPHRAGM ANALYSIS - SITE CLASS E
IBC 2006 SHEAR WALL CRITERIA
2295 FRANCISCO STREET, SAN FRANCISCO - SEISMIC RETROFIT

Wall Location: Gridline D

Loading: EQ
 Loading Direction: W-E

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 | | 10,062 | | | | 8 | 80.00 | 80.00 | | | | | | | | | | | | | | | | |
| 3 | | 10,368 | 0 | 0 | 0.00 | 8 | 80.00 | 80.00 | 3 Level Tied * | 10.00 | 1.00 | 13.00 | 9.50 | 5.00 | 3.50 | 18.00 | 3.50 | 3.50 | 11.00 | 12.00 | 51.50 | 80.00 | 0.00 | |
| 2 | | 6,793 | 0 | 0 | 0.00 | 8 | 80.00 | 80.00 | 2 Level Tied * | 10.00 | 1.00 | 13.00 | 9.50 | 5.00 | 3.50 | 18.00 | 3.50 | 3.50 | 11.00 | 12.00 | 51.50 | 80.00 | 0.00 | |
| 1 | | 3,547 | 0 | 0.00 | 0.00 | 0.00 | 88.00 | 88.00 | 1 Level Tied * | 10.00 | 1.00 | 13.00 | 9.50 | 5.00 | 3.50 | 18.00 | 3.50 | 3.50 | 11.00 | 12.00 | 51.50 | 80.00 | 0.00 | |
| OG | - | | 0 | 88.00 | 88.00 | | - | | OG Level Tied * | 9.00 | 26.50 | 11.50 | 31.00 | 17.00 | | | | | | | 28.50 | 88.00 | 28.50 | |

- *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 | 10,062 | | | | | 80.00 | | 126 | |
| 3 | 10,368 | 10,062 | 0 | 10,062 | 10,062 | 51.50 | 80.00 | 195 | |
| 2 | 6,793 | 20,430 | 0 | 20,430 | 20,430 | 51.50 | 80.00 | 397 | |
| 1 | 3,547 | 27,223 | 0 | 27,223 | 27,223 | 51.50 | 88.00 | 529 | |
| OG | | 30,770 | | 30,770 | 30,770 | 28.50 | 88.00 | 1080 | |
| | | | 30,770 | | 30,770 | | | | |

- 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;

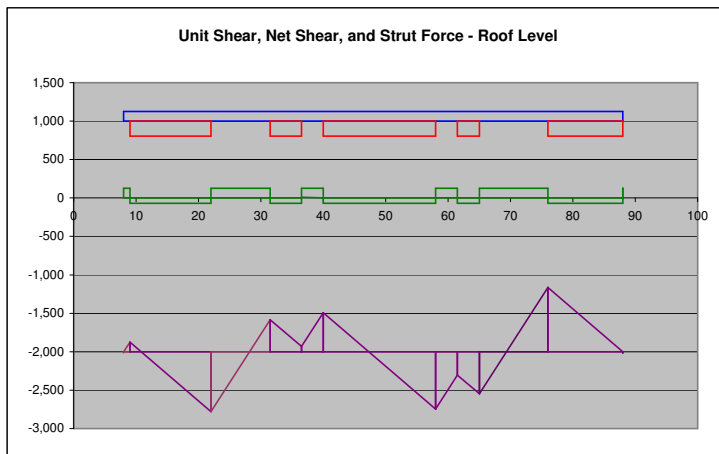


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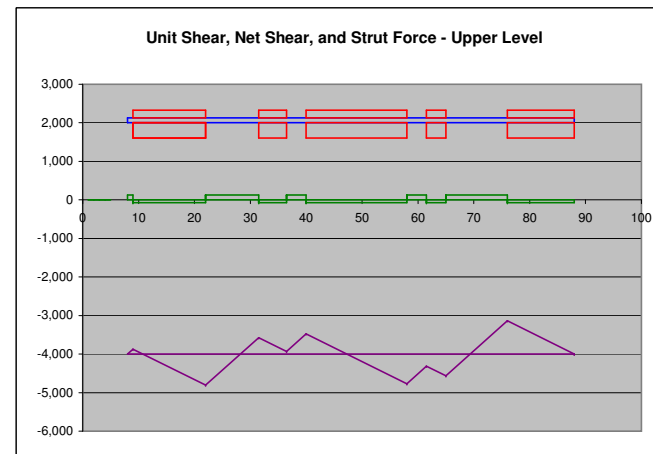
3. Plots of Unit and Net Shears and Strut Force at Wall Levels



R Level Demands:

V_{sw} = 195 lb/ft

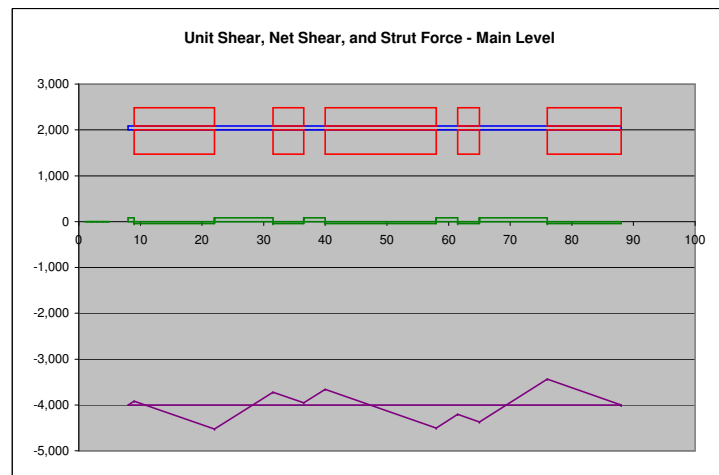
F_{strut} = 835 lbs



3 Level Demands:

V_{sw} = 397 lb/ft

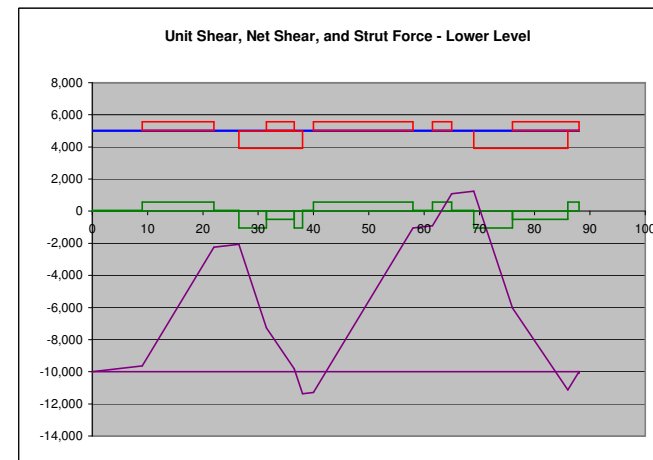
F_{strut} = 861 lbs



2 Level Demands:

V_{sw} = 529 lb/ft

F_{strut} = 564 lbs



1 Level Demands:

V_{sw} = 1080 lb/ft

F_{strut} = 11,245 lbs