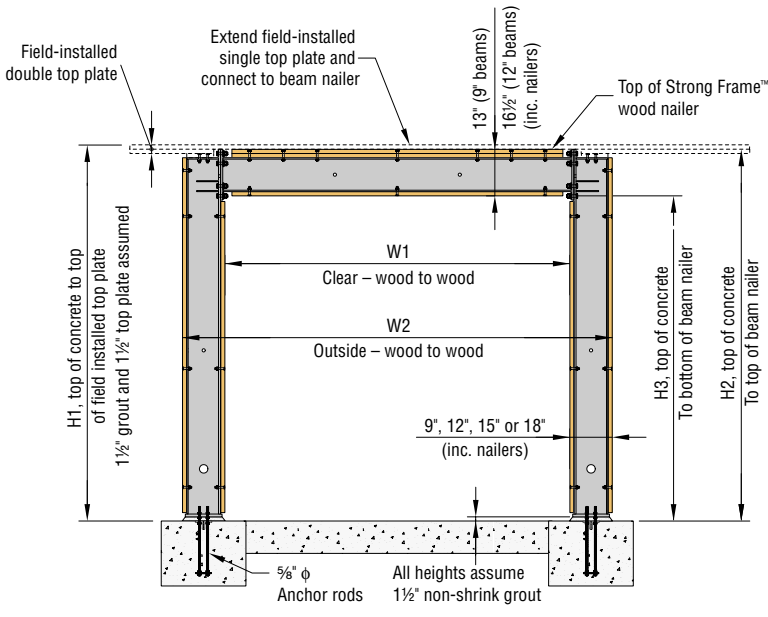


# 19 ft. Nominal Heights: Allowable Loads



Assembly Elevation

Nominal Height	H1	H2	Bottom Nailer Height, H3	
			with 9" Beam	with 12" Beam
8'	8'-0 3/4"	7'-11 1/4"	6'-10 1/4"	6'-6 3/4"
9'	9'-0 3/4"	8'-11 1/4"	7'-10 1/4"	7'-6 3/4"
10'	10'-0 3/4"	9'-11 1/4"	8'-10 1/4"	8'-6 3/4"
12'	12'-0 3/4"	11'-11 1/4"	10'-10 1/4"	10'-6 3/4"
14'	14'-0 3/4"	13'-11 1/4"	12'-10 1/4"	12'-6 3/4"
16'	16'-0 3/4"	15'-11 1/4"	14'-10 1/4"	14'-6 3/4"
18'	18'-2 3/4"	18'-1 1/4"	17'-0 1/4"	16'-8 3/4"
19'	19'-2 3/4"	19'-1 1/4"	18'-0 1/4"	17'-8 3/4"

All heights assume 1-1/2" non-shrink grout below the column.  
H1 assumes a single 2x6 on top of the pre-installed beam nailers.

Nominal Width	W1	Outside Frame Width, W2			
		C6	C9	C12	C15
8'	8'-2"	9'-8"	10'-2"	10'-8"	11'-2"
10'	10'-2"	11'-8"	12'-2"	12'-8"	13'-2"
12'	12'-4"	13'-10"	14'-4"	14'-10"	15'-4"
14'	14'-4"	15'-10"	16'-4"	16'-10"	17'-4"
16'	16'-4"	17'-10"	18'-4"	18'-10"	19'-4"
18'	18'-4"	19'-10"	20'-4"	20'-10"	21'-4"
20'	20'-4"	21'-10"	22'-4"	22'-10"	23'-4"

All widths assume single 2x6 nailer on each column flange

## Strong Frame™ Ordinary Moment Frame – 19 ft. Nominal Heights

Model	Allowable ASD Shear Load V (lbs) <sup>1,8</sup>		Maximum Total Gravity Load, W <sub>max</sub> <sup>3,9</sup> (lbs)	Drift at Allow Shear Load V <sup>7</sup> (in.)	Shear Reaction Factor, X <sup>4</sup>	Maximum Column Reactions (lbs) <sup>10</sup>					Top Plate to Nailer Connection <sup>5</sup>		Approx. Total Frame Weight (lbs)
	Maximum Shear <sup>2,12</sup>	Minimum Shear <sup>3,12</sup>				Tension <sup>5</sup>	Shear for Wind & Seismic with R ≤ 3.0 <sup>13</sup>		Shear for Seismic with R = 3.5 <sup>14,15</sup>		16d Option	1/4"x3 1/2" SDS Screw Option	
							Due to w+V <sup>4</sup>	Due to W <sub>max</sub> +V <sup>4</sup>	Ω <sub>0</sub> =2.5	Ω <sub>0</sub> =3.0			
Height = 19'-2 3/4", Drift limit = 1.35 <sup>16</sup>													
OMF69-8x19	900	635	31,000	1.34	0.018	1,515	550	965	1,325	1,480	9	9	1,635
OMF612-8x19	995	670	34,000	1.34	0.010	1,705	555	735	1,255	1,495	9	9	1,665
OMF99-8x19	1,905	1,605	38,000	1.35	0.033	3,515	1,135	2,210	3,165	3,555	9	9	1,655
OMF912-8x19	2,295	1,965	40,000	1.35	0.021	4,300	1,265	1,945	3,205	3,680	11	9	1,685
OMF129-8x19	2,910	2,595	38,500	1.35	0.044	5,375	1,705	3,220	4,825	5,455	13	9	1,795
OMF1212-8x19	3,855	3,600	34,000	1.35	0.032	7,245	2,110	3,050	5,430	6,300	18	9	1,830
OMF1512-8x19	5,270	5,140	22,500	1.35	0.041	9,785	2,880	3,630	7,130	8,190	24	10	1,855
OMF69-10x19	860	670	28,500	1.34	0.026	1,085	600	1,175	1,535	1,700	11	11	1,690
OMF612-10x19	965	695	34,000	1.34	0.015	1,260	580	920	1,330	1,505	11	11	1,730
OMF99-10x19	1,800	1,580	32,000	1.35	0.043	2,625	1,195	2,370	3,300	3,685	11	11	1,710
OMF912-10x19	2,225	1,915	40,000	1.35	0.029	3,330	1,310	2,290	3,480	3,950	11	11	1,750
OMF129-10x19	2,690	2,455	34,500	1.35	0.056	3,985	1,735	3,435	4,940	5,540	12	11	1,855
OMF1212-10x19	3,695	3,465	33,000	1.35	0.043	5,625	2,145	3,345	5,630	6,475	17	11	1,895
OMF1512-10x19	4,990	4,855	24,000	1.35	0.053	7,570	2,875	3,885	7,175	8,190	23	11	1,920
OMF69-12x19	810	700	23,500	1.34	0.035	755	750	1,280	1,650	1,820	13	13	1,755
OMF612-12x19	935	790	25,500	1.34	0.020	925	630	990	1,475	1,670	13	13	1,800
OMF99-12x19	1,685	1,535	27,500	1.35	0.056	1,960	1,365	2,510	3,400	3,775	13	13	1,775
OMF912-12x19	2,145	1,970	29,000	1.35	0.039	2,595	1,385	2,265	3,525	4,005	13	13	1,820
OMF129-12x19	2,475	2,305	30,000	1.35	0.070	2,970	1,870	3,545	4,920	5,485	13	13	1,920
OMF1212-12x19	3,520	3,320	32,000	1.35	0.055	4,400	2,215	3,665	5,810	6,620	16	13	1,965
OMF1512-12x19	4,685	4,570	24,500	1.35	0.067	5,885	2,905	4,145	7,195	8,190	21	13	1,990
OMF69-14x19	775	730	18,500	1.35	0.043	550	940	1,280	1,685	1,865	15	15	1,800
OMF612-14x19	905	860	18,500	1.35	0.026	700	730	985	1,525	1,735	15	15	1,850
OMF99-14x19	1,585	1,505	22,500	1.35	0.067	1,520	1,615	2,480	3,355	3,720	15	15	1,820
OMF912-14x19	2,070	2,000	21,000	1.35	0.048	2,100	1,505	2,155	3,465	3,955	15	15	1,870
OMF129-14x19	2,295	2,185	25,500	1.35	0.083	2,310	2,135	3,500	4,795	5,330	15	15	1,960
OMF1212-14x19	3,355	3,255	24,500	1.35	0.067	3,570	2,310	3,490	5,600	6,400	15	15	2,010
OMF1512-14x19	4,415	4,320	24,000	1.35	0.079	4,755	2,970	4,330	7,210	8,190	20	15	2,040

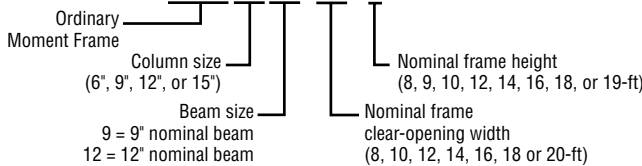
See footnotes on next page

# 19 ft. Nominal Heights: Allowable Loads

## Strong Frame™ Ordinary Moment Frame – 19 ft. Nominal Heights

Model	Allowable ASD Shear Load V (lbs) <sup>1, 8</sup>		Maximum Total Gravity Load, W <sub>max</sub> <sup>3, 9</sup> (lbs)	Drift at Allow Shear Load V <sup>7</sup> (in.)	Shear Reaction Factor, X <sup>4</sup>	Maximum Column Reactions (lbs) <sup>10</sup>				Top Plate to Nailer Connection <sup>6</sup>		Approx. Total Frame Weight (lbs)		
	Maximum Shear <sup>2, 12</sup>	Minimum Shear <sup>3, 12</sup>				Tension <sup>5</sup>		Shear for Wind & Seismic with R ≤ 3.0 <sup>13</sup>		Shear for Seismic with R = 3.5 <sup>14, 15</sup>			16d Option	¼"x3½" SDS Screw Option
						Due to w+V <sup>4</sup>	Due to W <sub>max</sub> +V <sup>4</sup>	Ω <sub>0</sub> =2.5	Ω <sub>0</sub> =3.0					
Height = 19'-2¾", Drift limit = 1.35" <sup>16</sup>														
OMF69-16x19	730	730	14,500	1.34	0.053	370	1,165	1,235	1,650	1,830	17	17	1,875	
OMF612-16x19	870	870	14,000	1.35	0.033	510	880	955	1,515	1,730	17	17	1,935	
OMF99-16x19	1,495	1,475	17,500	1.35	0.079	1,180	1,920	2,320	3,200	3,565	17	17	1,895	
OMF912-16x19	2,000	1,995	16,000	1.35	0.058	1,710	1,745	2,060	3,385	3,875	17	17	1,955	
OMF129-16x19	2,130	2,095	20,000	1.35	0.096	1,800	2,465	3,230	4,480	4,995	17	17	2,035	
OMF1212-16x19	3,200	3,180	18,500	1.35	0.079	2,925	2,565	3,245	5,365	6,145	17	17	2,095	
OMF1512-16x19	4,170	4,170	16,500	1.35	0.092	3,890	3,190	3,815	6,645	7,670	19	17	2,125	
<b>NEW</b> OMF69-18x19	— <sup>11</sup>	755	11,500	1.34	0.063	300	— <sup>11</sup>	1,195	1,650	1,835	19	19	1,915	
<b>NEW</b> OMF612-18x19	— <sup>11</sup>	910	11,000	1.34	0.039	440	— <sup>11</sup>	950	1,545	1,770	19	19	1,980	
<b>NEW</b> OMF99-18x19	1,405	1,405	14,000	1.35	0.092	915	2,280	2,165	3,080	3,370	19	19	1,940	
<b>NEW</b> OMF912-18x19	1,925	1,925	13,000	1.34	0.068	1,405	2,030	1,975	3,245	3,720	19	19	2,000	
<b>NEW</b> OMF129-18x19	1,980	1,980	15,500	1.34	0.109	1,415	2,855	2,915	4,115	4,605	19	19	2,080	
<b>NEW</b> OMF1212-18x19	3,055	3,055	14,000	1.35	0.091	2,430	2,905	2,975	5,030	5,780	19	19	2,140	
<b>NEW</b> OMF1512-18x19	3,940	3,940	11,500	1.34	0.105	3,220	3,535	3,345	6,150	7,120	19	19	2,170	
<b>NEW</b> OMF612-20x19	— <sup>11</sup>	920	9,000	1.34	0.047	345	— <sup>11</sup>	940	1,545	1,770	21	21	2,045	
<b>NEW</b> OMF912-20x19	— <sup>11</sup>	1,955	10,500	1.35	0.079	1,240	— <sup>11</sup>	1,925	3,235	3,720	21	21	2,065	
<b>NEW</b> OMF1212-20x19	— <sup>11</sup>	3,020	10,000	1.35	0.103	2,115	— <sup>11</sup>	2,685	4,745	5,485	21	21	2,205	
<b>NEW</b> OMF1512-20x19	— <sup>11</sup>	3,855	8,000	1.35	0.118	2,795	— <sup>11</sup>	3,005	5,680	6,630	21	21	2,235	

### OMF1212-16x8



### Naming Scheme

- Allowable shear loads assume a pinned base and are applicable to seismic designs utilizing R = 3.5 and wind designs. For seismic designs with R=6.5, multiply design loads by 6.5/3.5.
- Maximum Shear is allowable horizontal shear force, V, applied in combination with the following allowable stress design uniform gravity loads: w = 800-plf dead load, 400-plf floor live load, and 400-plf roof live load. Seismic load combinations assume S<sub>DS</sub>=1.0 to determine E<sub>v</sub>. Where S<sub>DS</sub>>1.0, check that (1.0 + 0.14S<sub>DS</sub>)D is less than 800 plf. Where gravity loads exceed any of these values, use Minimum Shear loads (see Note 3).
- Minimum Shear is allowable horizontal shear force, V, applied in combination with the maximum total vertical load, W<sub>max</sub>, which may be applied as a single point load at mid-span, P=W<sub>max</sub>, as multiple point loads applied symmetrically about mid-span of the beam, P<sub>1</sub>+P<sub>2</sub>+...+P<sub>n</sub>=W<sub>max</sub>, or as a uniform distributed load, w<sub>max</sub> = W<sub>max</sub>/L<sub>beam</sub>. W<sub>max</sub> shall be determined based on the governing load combination of the applicable building code, and shall include E<sub>v</sub> for seismic loads.
- Horizontal column shear reactions can be solved by the equations below. Maximum horizontal shear reactions occur at the compression column. Designer to determine governing load combinations based on the applicable building code.
 

Compression Column:  
 $R_H = V/2 + X(P)$  V = Design Frame Shear (lbs)  
 or  
 $R_H = V/2 + X(\% wL)$  P = Midspan Point Load (lbs), based on governing load combination  
 w = Uniform Load (lbs/ft), based on governing load combination

Tension Column  
 $R_H = V/2$  L = Column Centerline Dimension, W1 + 3' + Column Depth (ft)  
 X = Frame Shear Reaction Factor (no units)
- Tension reactions are for Maximum Shear with a resisting vertical load equal to (0.6 - 0.14S<sub>DS</sub>) times the frame weight, based on an assumed S<sub>DS</sub>=1.0. Where Maximum Shear is not listed, tension reactions consider Minimum Shear. Reduced ASD tension forces may be calculated by the Designer by statics. See Example #2 for calculation of reduced tension with applied lateral shear and resisting vertical loads.
 

$T = (Vh - M_R)/L$   
 V = Design frame shear (lbs)  
 h = Steel column height, H1-6" (ft)  
 M<sub>R</sub> = Resisting ASD factored moment due to dead load (ft-lbs)  
 L = Column centerline dimension, W1 + 3' + column depth (ft)

- Fastening is minimum nailing or Simpson Strong-Tie® Strong-Drive® screws (SDS) to achieve the full allowable shear load. For seismic designs (SDC C through F, except 1 and 2 family dwellings in SDC C), Designer shall evaluate if top plate to nailer connection is required to be designed for overstrength force levels and increase fastening as required for E<sub>m</sub> level loading. Top plate splice design, as required, shall be by Designer.
- Drift at allowable shear is applicable to both Maximum Shear with uniform load, w, and Minimum Shear with maximum total load, W<sub>max</sub>. Drift may be linearly reduced for shear loads less than allowable shear, and for wind drift checks as suggested by ASCE 7-05 Section CC.1.2. Allowable shear may be linearly reduced for more restrictive drift limits.
- Allowable loads consider LRFD load combinations for uplift of 0.1D + 1.4E and 0.1D + 1.6W.
- Vertical beam deflections due to unfactored ASD gravity loads do not exceed the following:
 

Dead load	L/360
Floor live load	L/360
Dead load + floor live load	L/240
W <sub>MAX</sub> (Point Load)	L/300
- See pages 39 to 44 for anchorage solutions.
- Allowable stress design uniform gravity loads per footnote 2 must be reduced. See Minimum Shear and footnote 3 for maximum gravity loads.
- Alternate combinations of lateral load and gravity load are possible for some frames. Use alternate loading worksheet on page 66 or use *Strong Frame™ Selector* software.
- Where noted in table, reactions applicable to designs based on wind and seismic design using R ≤ 3.0.
- Where noted in table, shear reactions for use in design of column base anchorage in accordance with AISC 341-05, Section 8.5b, for designs with R = 3.5.
- Where noted in table, minimum of the shear calculated for the compression column from ASCE 7-05 load combinations with overstrength factor, and the shear associated with yielding of the frame. Reduced shear may be calculated by the Designer using footnote 4 by substituting Ω<sub>0</sub>\*V for V.
- Drift limit is based on the allowable story drift for ASD seismic loads, and is equal to 0.7 (0.025h/C<sub>d</sub>) = h/171, where h = H1 and C<sub>d</sub> = 3.0.