



## Structural Calculations

(Revisions to Permit Documents)

Project: **Ostroff-Galiozzo Residence**  
4244 Shoreclub Drive  
Mercer Island, WA 98040

For: **Axiom Design Build**  
5424 Ballard Avenue NW  
Seattle, WA 98107

By: **Année Structural Engineering, LLC**  
1801 18<sup>th</sup> Ave S  
Seattle, WA 98144

Date: **March 10, 2023**



### LATERAL ANALYSIS - SEISMIC WEIGHT:

$$\text{AT ROOF}; W_R = 1,326 \text{ ft}^2 (15 \text{*/ft}^2) + 10 \text{*/ft}^2 \left( \frac{9.61'}{2} \times 114' \right) \\ = 25,457 \text{ *}$$

$$\text{AT 2<sup>ND</sup> FLR}; W_2 = 990 \text{ ft}^2 (12 \text{*/ft}^2) + 7 \text{*/ft}^2 (15+40) \text{*/ft}^2 \\ + 370 \text{ ft}^2 (18 \text{*/ft}^2) + 10 \text{*/ft}^2 \left( \frac{9.61'}{2} \times 114' + \frac{35'}{2} \times 155' \right) \\ = 72,389 \text{ *}$$

$$\text{DESIGN BASE SHEAR}; V = \frac{5,309}{2,569} (9,891 \text{ *}) \text{ (ASD)}$$

$$\text{AT 1<sup>ST</sup> FLR DRPM}; W_1 = 1,797 \text{ ft}^2 (12 \text{*/ft}^2) + 10 \text{*/ft}^2 \left( \frac{9.5'}{2} \times 155' \right) \\ + 10 \text{*/ft}^2 \left( \frac{7.75'}{2} \times 95' \right) = 32,608 \text{ *}$$

$$V_{1st} = 3,296 \text{ *} \Rightarrow \Sigma V = 13,157 \text{ *}$$

### WIND ANALYSIS: PER ASCE-7 § 27.5:

LONGITUDINAL DIR; SW-TO-NE:

$$\text{AT ROOF}; W_{RL} = 208 \text{ ft}^2 (21.3 \text{*/ft}^2) = 4,430 \text{ *}$$

$$\text{AT 2<sup>ND</sup> FLR}; W_{2L} = 431 \text{ ft}^2 (21.3 \text{*/ft}^2) = 9,180 \text{ *}$$

$$\Sigma W_L = 13,610 \text{ *}$$

TRANSVERSE DIR; SE-TO-NW:

$$\text{AT ROOF}; W_{RT} = 238 \text{ ft}^2 (21.3 \text{*/ft}^2) = 5,069 \text{ *}$$

$$\text{AT 2<sup>ND</sup> FLR}; W_{2T} = 622 \text{ ft}^2 (21.3 \text{*/ft}^2) = 13,249 \text{ *}$$

$$\Sigma W_T = 18,318 \text{ *}$$

### LATERAL LOAD DISTRIBUTION; TO 2<sup>ND</sup> FLR WALLS:

$$\text{LINE (D),(E)}; V_{DE} = 42\% (5,309 \text{ *}) = 2,230 \text{ *}$$

$$V_{DE} = 2,230 \text{ *} / 12.8' = 174 \text{ */ft.} \rightarrow \text{Swb}$$

$$\text{LINE (H),(I)}; V_{HI} = 58\% (5,309 \text{ *}) = 3,079 \text{ *}$$

$$V_{HI} = 3,079 \text{ *} / 18.5' = 166 \text{ */ft.} \rightarrow \text{Swb}$$

$$\text{LINE (2),(6)}; V_2 = V_6 = 50\% (5,309 \text{ *}) = 2,655 \text{ *}$$

$$V_2 = 2,655 \text{ *} / 13.1' = 203 \text{ */ft.} \rightarrow \text{Swb}$$

$$V_6 = 2,655 \text{ *} / 15.0' = 177 \text{ */ft.} \rightarrow \text{Swb}$$

TO 1<sup>ST</sup> FLR WALLS:

$$\text{LINE (A),(B)}; V_{AB} = 53\% (9,180 \text{ *}) + 42\% (4,430 \text{ *})$$

$$= 6,726 \text{ *}; V_{AB} = 6,726 \text{ *} / 31.9' = 211 \text{ */ft.} \rightarrow \text{Swb}$$

$$\text{LINE (1)}; V_1 = 41\% (9,180 \text{ *}) + 58\% (4,430 \text{ *})$$

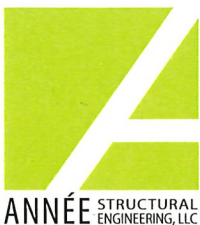
$$= 6,884 \text{ *}; V_1 = 6,884 \text{ *} / 17.2' = 400 \text{ */ft.} \rightarrow \text{Sw4}$$

$$16.5' = 417 \text{ */ft.}$$

$$\leq 1,205 / 2.0 (0.93) \text{ : ok}$$

$$\text{LINE (1),(2)}; V_1 = 41\% (13,249 \text{ *}) + 50\% (5,069 \text{ *})$$

$$= 7,967 \text{ *}; V_1 = 7,967 \text{ *} / 18.05' = 441 \text{ */ft.} \rightarrow \text{Sw3}$$



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LINE ⑥;  $V_b = 47\% (13,249^*) + 50\% (5,069^*)$   
 $= 8,762^*$ ;  $V_b = 8,762^* / 9.1' = 963^*/ft. \rightarrow$  SW20F

LINE ⑦;  $V_7 = 12\% (13,249^*) = 1,590^*$   
 $V_7 = 1,590^* / 35.7' = 45^*/ft. \rightarrow$  Sw6

TO BASEMENT WALLS:

LINES ④, ⑤, ①, ②, ⑥, ⑦  $\rightarrow$  FULL HT. FDN.

LINE ①;  $V_1 = 50\% (3,296^*) + 47\% (2,569^*)$   
 $+ 58\% (5,209^*) = 5,935^*$  (SEIS.)  
 or  $6,851^*$  (WIND)

$V_1 = 6,881^* / 16.9' = 407^*/ft. \rightarrow$  SW4

CHECK NON-DIAGONAL WALL ④E - ②.3A

$V_L = \frac{12.0'}{21.9'} (6,726^*)$ ;  $V_r = \frac{10.4'}{18.05'} (7,967^*)$   
 $= 2,530^*$   $V_r = 4,479^*$

$V = \sqrt{V_L^2 + V_r^2} = \sqrt{(2,530^*)^2 + (4,479^*)^2}$   
 $= 5,144^* / 15.8' = 326^*/ft. \therefore$  USE  $441^*/ft.$

From  $V_{12} \rightarrow$  Sw3

OVERTURNING FROM 2<sup>ND</sup> FLR WALLS:

LINE ①;  $T_{12} = 166^*/ft. (11.1') - \frac{17.3'}{2} (0.6 \times 11^*/ft.)$   
 $= 1,267^* \rightarrow$  CS16

LINE ②;  $T_{22} = 203^*/ft. (9.65') - \frac{7.4'}{2} (0.6 \times 9.65^*/ft.)$   
 $= 1,745^* \rightarrow$  CS16

LINE ④, ⑤, ①, ②, ⑥ SIM.  $\rightarrow$  CS16

FROM 1<sup>ST</sup> FLR. WALLS:

LINE ④, ⑤;  $T_{AB,1} = 211^*/ft. (10.5') - \frac{9.5'}{2} (0.6 \times 9.5)$   
 $= 1,945^* \rightarrow$  HDU2

LINE ①;  $T_{1,1} = 400^*/ft. (10.5') - \frac{10.4'}{2} (0.6 \times 10.6)$   
 $= 3,713^* \rightarrow$  MSTC52  
 $3,852 \leq 3,975^* \therefore$  MSTC43B3 OK

LINE ①, ②;  $T_{12,1} = 441^*/ft. (10.5') - \frac{15.6'}{2} (0.6 \times 10.3)$   
 $+ 50\% (1,745^*) = 5,021^* \rightarrow$  HDU5

LINE ⑥;  $T_{6,1} = 963^*/ft. (10.5') + 1,423^* - \frac{15.75'}{2} (0.6 \times 318)$   
 $= 10,032^* \rightarrow$  HDU11 DP (WIND)  
 $4,302^*$  (SEISMIC)

LINE ⑦  $\rightarrow$  NO HD BY INSPECTION;  $V = 45^*/ft.$



Project \_\_\_\_\_

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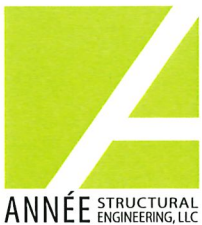
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From BASEMENT WALLS:

$$\begin{aligned} \text{LINE } \textcircled{1}; \quad T_{F_8} &= 407^* (9 \cdot (8.5)) + 3,852^* - \frac{(33)}{2} (0.6 \times 198) \\ &= 6,414^* \rightarrow \text{HDO8} \\ 6,553^* &\leq 7,870^* \therefore \text{OK} \end{aligned}$$



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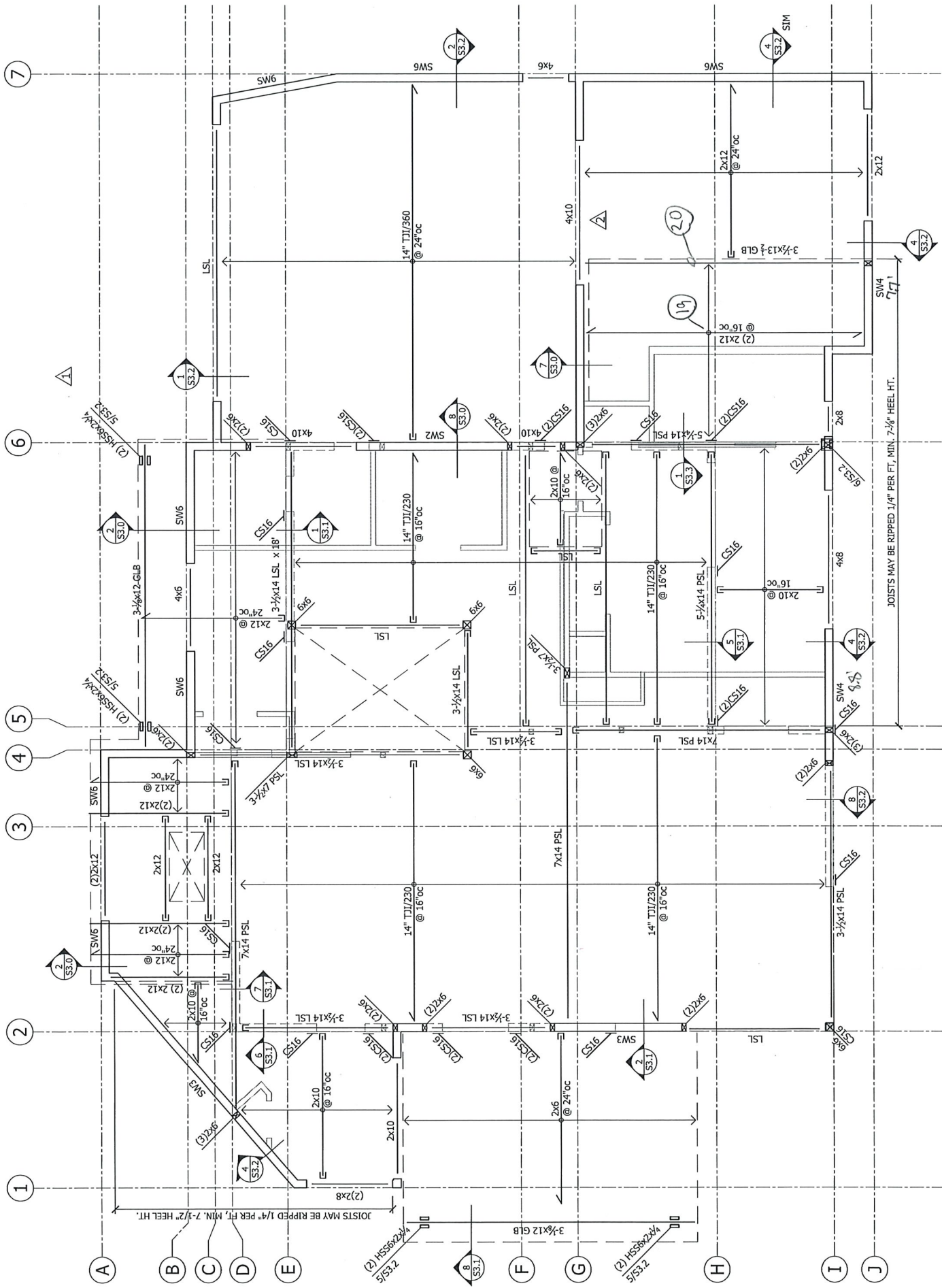
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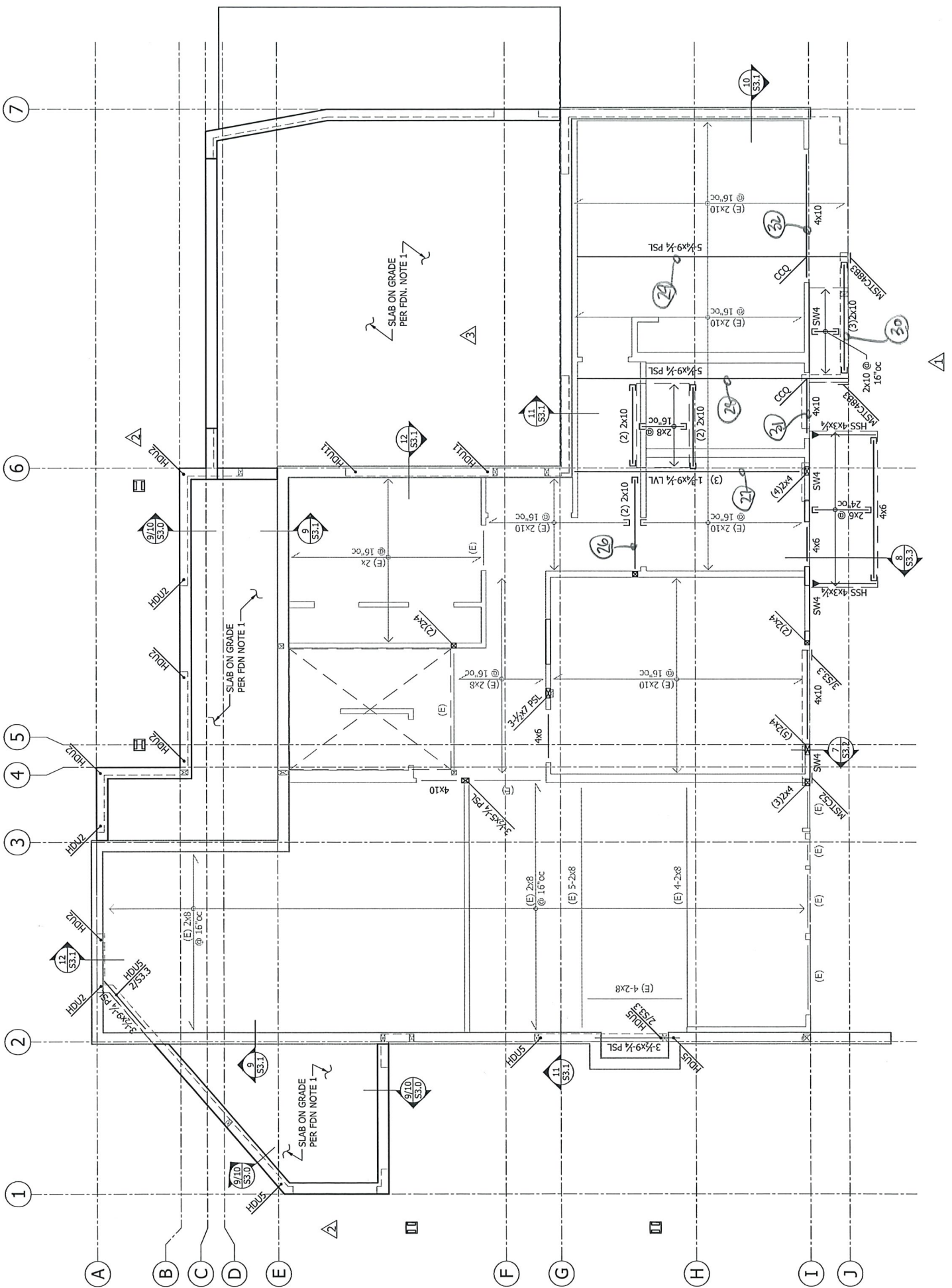
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2nd Floor Framing Plan  
 SCALE: 1/4" = 1'-0"



1st Floor Framing Plan  
 SCALE: 1/4" = 1'-0"



(15) SEE ATTACHED CALC. → 7x14 PSL

(16) SEE ATTACHED CALC. → 5 1/4 x 14 PSL

(17) SEE ATTACHED CALC. → 4x10 DF#2

(18) SEE ATTACHED CALC. → 4x10 DF#2

(19)  $L = 16.4'$ ;  $w = \frac{16''}{12''} (60 + 130) = 104 \text{ #/ft.}$

$$R = V = 853 \text{ #}; M = 3,496 \text{ ft-#}$$

$$f_v = 65 \text{ psi}; f_b = 991 \text{ psi} \leq 850 (1.1) 115$$

$$\Delta_n = 0.67'' = 4/294 \therefore (2) 2 \times 12 \text{ HF#2 @ } 16'' \text{ OC}$$

RIPPED FROM 7.125" to 11.25"

(20)  $L = 16.5'$ ;  $w = \frac{10.75''}{2} (255 + 500) = 468 \text{ #/ft.}$

$$R = V = 3,325 \text{ #}; M = 13,715 \text{ ft-#}$$

$$f_v = 106 \text{ psi}; f_b = 1,548 \text{ psi} \quad \Delta_n = 0.52'' = 4/381$$

$$\therefore 3 \frac{1}{2} \times 13 \frac{1}{2} \text{ GLB}$$

(21) SEE ATTACHED CALC. → 3 1/2 x 14 PSL

(22)  $L = 8.9'$ ;  $w = \frac{24''}{12''} (255 + 160) = 70 \text{ #/ft.}$

$$R = V = 312 \text{ #}; M = 693 \text{ ft-#}$$

$$f_v = 57 \text{ psi}; f_b = 1,100 \text{ psi} \leq 850 (1.3) 115$$

$$\Delta_n = 0.37'' = 4/292 \therefore 2 \times 6 \text{ HF#2 @ } 24'' \text{ OC}$$

(23)  $L = 14.9'$ ;  $w = 5.64' (25 + 110) = 197 \text{ #/ft.}$

$$R = V = 1,468 \text{ #}; M = 5,467 \text{ ft-#}$$

$$f_v = 55 \text{ psi}; f_b = 950 \text{ psi} \therefore 4 \times 12 \text{ DF#2}$$

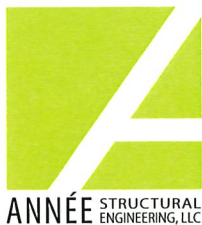
$$\text{or } (\Delta_n = 0.57'' = 4/313) \quad 3 \frac{1}{2} \times 9 \text{ GLB}$$

(24) SEE ATTACHED CALC. → 13/4 x 14 LSL

1<sup>ST</sup> FLOOR FRAMING (30-60, 12-22 DL) #/ft:

(25) SEE ATTACHED CALC. → 4x10 DF#2

V 7.375"  
M 9.2"



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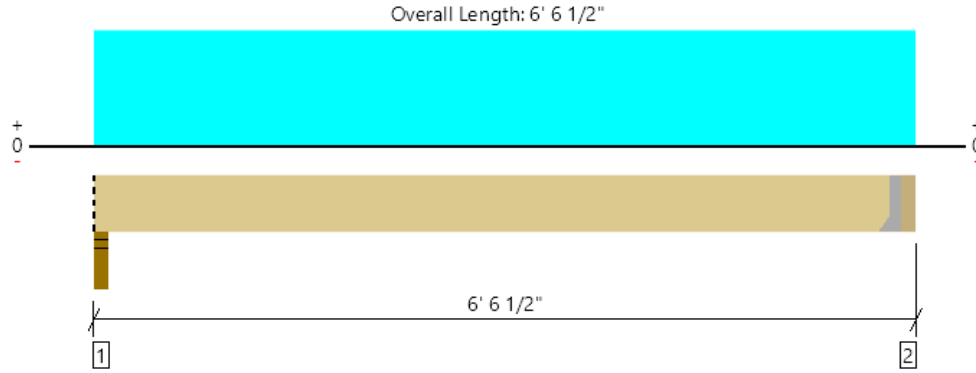
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1st Floor Framing, 26 - Interior Header  
2 piece(s) 2 x 10 HF No.2



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1550 @ 6' 3"	1823 (1.50")	Passed (85%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1157 @ 5' 5 3/4"	2775	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2358 @ 3' 2 1/2"	3333	Passed (71%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.046 @ 3' 2 1/2"	0.152	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.061 @ 3' 2 1/2"	0.304	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor  
Member Type : Flush Beam  
Building Use : Residential  
Building Code : IBC 2018  
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	3.50"	3.50"	1.50"	395	1241	1635	Blocking
2 - Hanger on 9 1/4" LVL beam	3.50"	Hanger <sup>1</sup>	1.50"	408	1289	1697	See note <sup>1</sup>

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- <sup>1</sup> See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 3" o/c	
Bottom Edge (Lu)	6' 3" o/c	

- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie							
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories	
2 - Face Mount Hanger	LUS210-2	2.00"	N/A	8-16d	6-16d		

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 6' 3"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 6' 6 1/2" (Front)	9' 8"	12.0	40.0	Default Load

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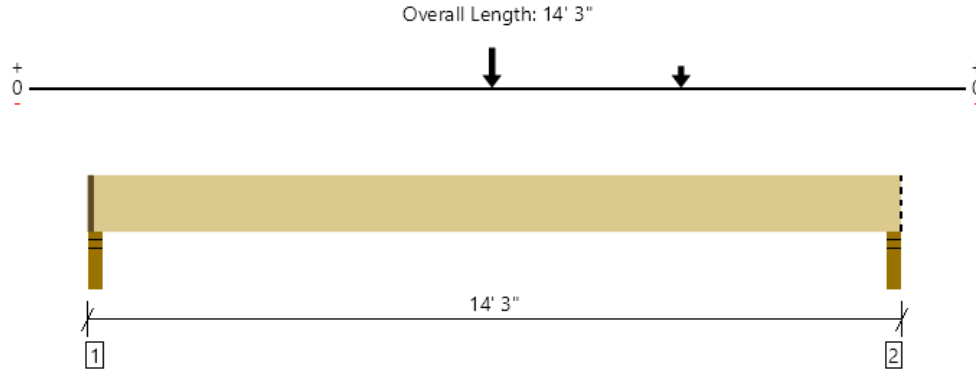
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Mike Annee Annee Structural Engineering LLC (206) 658-5169 mike@anneestructural.com	





1st Floor Framing, 27 - Beam  
3 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1426 @ 2"	4253 (2.00")	Passed (34%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1624 @ 13' 2 1/4"	9227	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	9523 @ 7' 1"	16806	Passed (57%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.309 @ 7' 1"	0.348	Passed (L/541)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.422 @ 7' 1"	0.696	Passed (L/395)	--	1.0 D + 1.0 L (All Spans)

System : Floor  
Member Type : Flush Beam  
Building Use : Residential  
Building Code : IBC 2018  
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - HF	3.50"	2.00"	1.50"	413	1013	1426	1 1/2" Rim Board
2 - Stud wall - HF	3.50"	3.50"	1.50"	464	1175	1639	Blocking

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 2" o/c	
Bottom Edge (Lu)	14' 2" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1 1/2" to 14' 3"	N/A	14.2	--	
1 - Point (lb)	7' 1" (Front)	N/A	408	1289	Default Load
2 - Point (lb)	7' 1" (Front)	N/A	159	531	
3 - Point (lb)	10' 4 3/4" (Front)	N/A	110	368	

**Weyerhaeuser Notes**

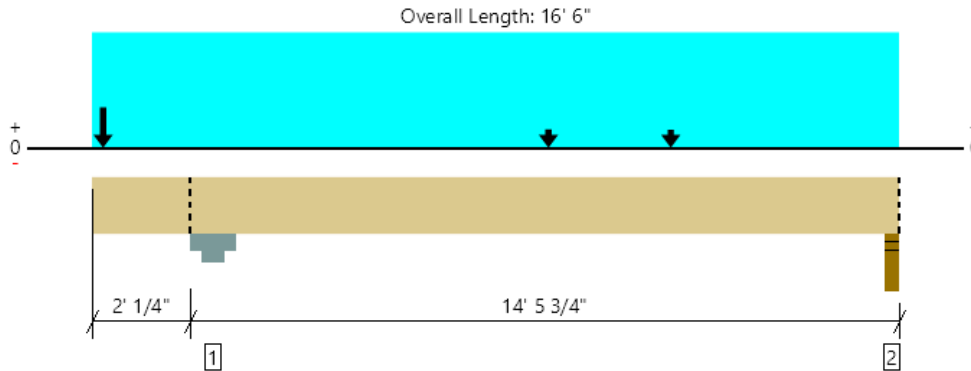
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Mike Annee Annee Structural Engineering LLC (206) 658-5169 mike@anneestructural.com	



1st Floor Framing, 28 - Beam  
1 piece(s) 5 1/4" x 9 1/4" 2.2E Parallam® PSL



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	11624 @ 2' 5 3/4"	36094 (11.00")	Passed (32%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	9586 @ 1' 3"	15022	Passed (64%)	1.60	1.0 D + 0.7 E (All Spans)
Moment (Ft-lbs)	-21574 @ 2' 5 3/4"	29797	Passed (72%)	1.60	1.0 D + 0.7 E (All Spans)
Live Load Defl. (in)	0.582 @ 0	0.200	Failed (2L/102)	--	1.0 D + 0.7 E (All Spans)
Total Load Defl. (in)	0.671 @ 0	0.248	Failed (2L/88)	--	1.0 D + 0.7 E (All Spans)

System : Floor  
Member Type : Flush Beam  
Building Use : Residential  
Building Code : IBC 2018  
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

**Deflection not controlled by seismic over-strength, therefore this member is acceptable as designed.**

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Factored	
1 - Column Cap - steel	11.00"	11.00"	3.54"	2201	2952	365	13210/-13210	11624/-7926	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	52	700/-328	-51	1846/-1846	1344/-1261	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	16' 6" o/c	
Bottom Edge (Lu)	16' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 16' 6"	N/A	15.2	--	--	--	
1 - Uniform (PSF)	0 to 16' 6" (Front)	8"	12.0	40.0	-	-	Default Load
2 - Point (lb)	9' 4" (Front)	N/A	159	531	-	-	
3 - Point (lb)	11' 10" (Front)	N/A	110	368	-	-	
4 - Point (lb)	2 3/4" (Front)	N/A	1602	1985	314	11364	

**Weyerhaeuser Notes**

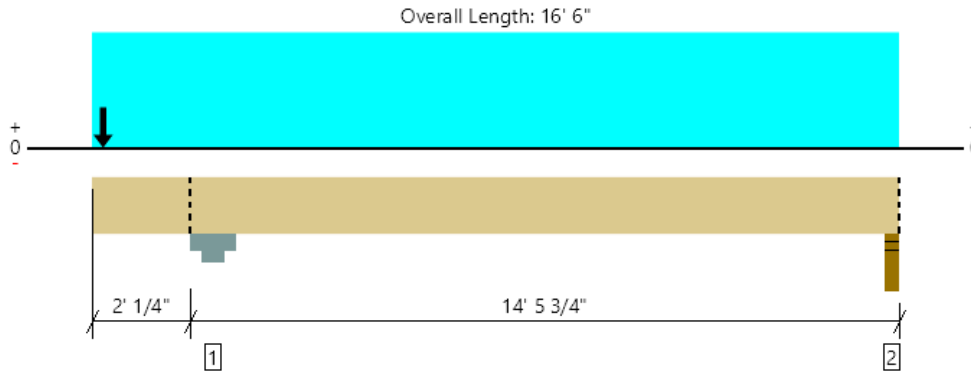
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ForteWEB Software Operator	Job Notes
Mike Annee Annee Structural Engineering LLC (206) 658-5169 mike@anneestructural.com	



1st Floor Framing, 29 - Beam  
1 piece(s) 5 1/4" x 9 1/4" 2.2E Parallam® PSL



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDf	Load: Combination (Pattern)
Member Reaction (lbs)	12204 @ 2' 5 3/4"	36094 (11.00")	Passed (34%)	--	1.0 D + 0.7 E (All Spans)
Shear (lbs)	10280 @ 1' 3"	15022	Passed (68%)	1.60	1.0 D + 0.7 E (All Spans)
Moment (Ft-lbs)	-23138 @ 2' 5 3/4"	29797	Passed (78%)	1.60	1.0 D + 0.7 E (All Spans)
Live Load Defl. (in)	0.582 @ 0	0.200	Failed (2L/102)	--	1.0 D + 0.7 E (All Spans)
Total Load Defl. (in)	0.733 @ 0	0.248	Failed (2L/82)	--	1.0 D + 0.7 E (All Spans)

System : Floor  
Member Type : Flush Beam  
Building Use : Residential  
Building Code : IBC 2018  
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Upward deflection on left cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left cantilever exceeds 0.4".

**Deflection is not controlled by seismic over-strength factor therefore this member is acceptable as designed.**

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Factored	
1 - Column Cap - steel	11.00"	11.00"	3.72"	2957	1754	923	13210/-13210	12204/-7472	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	-157	378/-185	-129	1846/-1846	1198/-1449	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	16' 6" o/c	
Bottom Edge (Lu)	16' 6" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 16' 6"	N/A	15.2	--	--	--	
1 - Uniform (PSF)	0 to 16' 6" (Front)	1' 4"	12.0	40.0	-	-	Default Load
2 - Point (lb)	2 3/4" (Front)	N/A	2286	1067	794	11364	

**Weyerhaeuser Notes**

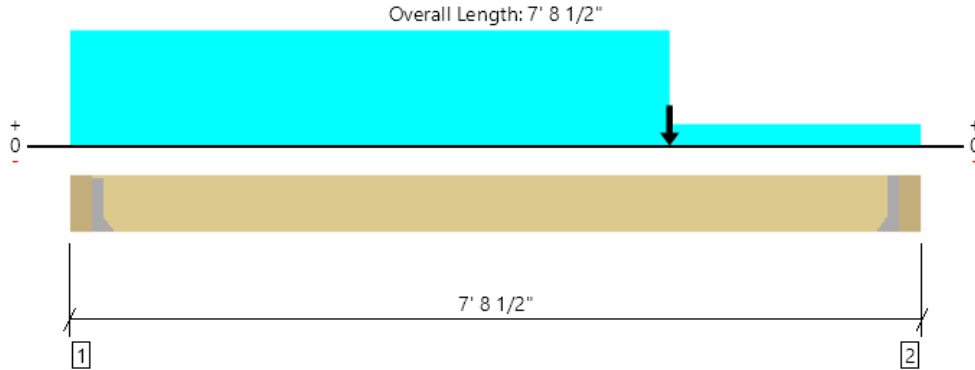
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Mike Annee Annee Structural Engineering LLC (206) 658-5169 mike@annestructural.com	



1st Floor Framing, 30 - Structural Fascia  
2 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3621 @ 7' 3 1/4"	3938 (1.50")	Passed (92%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	3163 @ 6' 6"	6151	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6417 @ 4' 4 7/8"	11204	Passed (57%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.063 @ 3' 10 7/8"	0.171	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.143 @ 3' 11 13/16"	0.342	Passed (L/575)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor  
Member Type : Flush Beam  
Building Use : Residential  
Building Code : IBC 2018  
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 9 1/4" LVL beam	5.25"	Hanger <sup>1</sup>	1.50"	1602	1985	314	3588	See note <sup>1</sup>
2 - Hanger on 9 1/4" LVL beam	5.25"	Hanger <sup>1</sup>	1.50"	2286	1067	794	3682	See note <sup>1</sup>

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- <sup>1</sup> See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 10" o/c	
Bottom Edge (Lu)	6' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HHUS48	3.00"	N/A	22-10d	8-10d	
2 - Face Mount Hanger	HHUS48	3.00"	N/A	22-10d	8-10d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

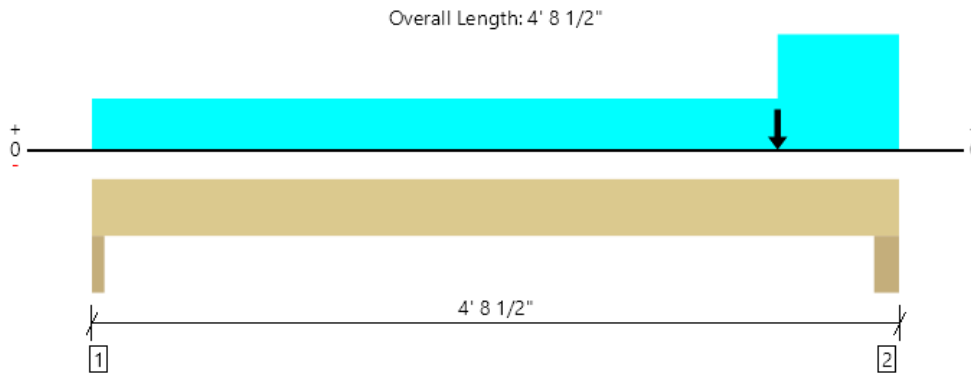
Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/4" to 7' 3 1/4"	N/A	9.4	--	--	
1 - Uniform (PLF)	0 to 7' 8 1/2" (Front)	N/A	104.0	48.0	-	Default Load
2 - Point (lb)	5' 4" (Front)	N/A	2217	-	1108	
3 - Uniform (PLF)	0 to 5' 4" (Front)	N/A	151.0	503.0	-	

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ForteWEB Software Operator	Job Notes
Mike Annee Annee Structural Engineering LLC (206) 658-5169 mike@anneestructural.com	



1st Floor Framing, 31 - Header  
1 piece(s) 4 x 10 DF No.2



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	11244 @ 4' 4"	13125 (6.00')	Passed (86%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2421 @ 3' 5 1/4"	6216	Passed (39%)	1.60	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	3685 @ 4'	7187	Passed (51%)	1.60	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.018 @ 2' 5 5/8"	0.140	Passed (L/999+)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.024 @ 2' 5 7/16"	0.210	Passed (L/999+)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)

System : Wall  
Member Type : Header  
Building Use : Residential  
Building Code : IBC 2018  
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- -511 lbs uplift at support located at 1 1/2". Strapping or other restraint may be required.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	369	476	29	1046/-1046	1297/-511	None
2 - Trimmer - HF	6.00"	6.00"	5.14"	2255	3135	336	12164/-12164	11244/-7162	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 9" o/c	
Bottom Edge (Lu)	4' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 4' 8 1/2"	N/A	8.2	--	--	--	
1 - Uniform (PSF)	0 to 4'	3' 7"	22.0	30.0	-	-	Default Load
2 - Point (lb)	4'	N/A	2201	2952	365	13210	
3 - Uniform (PSF)	4' to 4' 8 1/2"	8' 1"	12.0	40.0	-	-	Default Load

**Weyerhaeuser Notes**

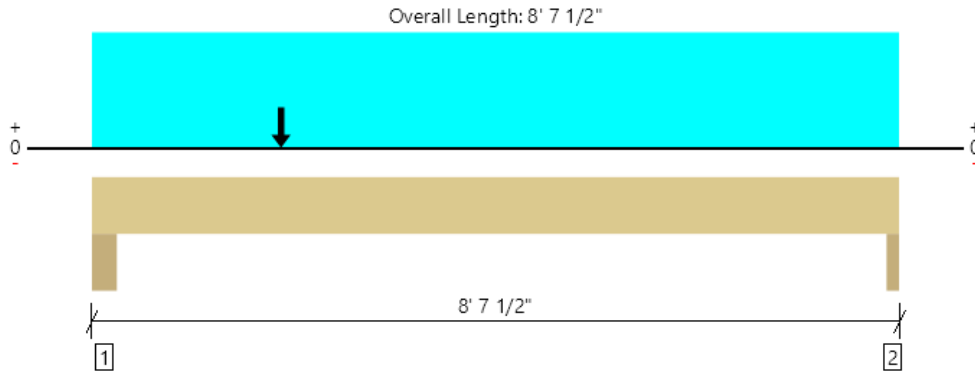
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ForteWEB Software Operator	Job Notes
Mike Annee Annee Structural Engineering LLC (206) 658-5169 mike@anneestructural.com	



1st Floor Framing, 32 - Header  
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	11649 @ 4 1/2"	13650 (6.00")	Passed (85%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	10919 @ 1' 6"	11872	Passed (92%)	1.60	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Pos Moment (Ft-lbs)	18213 @ 2' 1/4"	26880	Passed (68%)	1.60	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Neg Moment (Ft-lbs)	-9158 @ 2' 1/4"	20720	Passed (44%)	1.60	0.6 D - 0.7 E (All Spans)
Live Load Defl. (in)	0.142 @ 4' 13/16"	0.271	Passed (L/688)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.200 @ 4' 1 1/8"	0.406	Passed (L/487)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)

System : Wall  
Member Type : Header  
Building Use : Residential  
Building Code : IBC 2018  
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 8' 1 1/2".
- Critical negative moment adjusted by a volume factor of 1.00 that was calculated using length L = 8' 1 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)					Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Seismic	Factored	
1 - Trimmer - HF	6.00"	6.00"	5.12"	3260	3076	736	10534/-10534	11649/-5418	None
2 - Trimmer - HF	3.00"	3.00"	1.96"	1450	1938	187	2676/-2676	4449/-1003	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 8" o/c	
Bottom Edge (Lu)	8' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 8' 7 1/2"	N/A	10.2	--	--	--	
1 - Uniform (PLF)	0 to 8' 7 1/2"	N/A	193.0	378.0	-	-	Default Load
2 - Point (lb)	2' 1/4"	N/A	2957	1754	923	13210	

ForteWEB Software Operator Mike Annee Annee Structural Engineering LLC (206) 658-5169 mike@anneestructural.com	Job Notes
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