



LONGITUDE
ONE TWENTY°
ENGINEERING & DESIGN

Structural Package for:

Forest Creek Estates Lot 1

5222 Forest Ave SE
Mercer Island, WA 98040

Project No: S240325-1

May 15, 2024



STRUCTURAL ENGINEER
L120 ENGINEERING & DESIGN
13150 91ST PL NE
KIRKLAND, WA 98034
CONTACT: MANS THURFJELL, PE
PHONE: 425-636-3313
MTHURFJELL@L120ENGINEERING.COM

 (425) 636 3313

 L120Engineering.com



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Design Criteria

Project Number: S230531-2	Plan Name: Forest Ave Lot 1	Sheet Number: DC
Engineer: HK	Specifics: Design Criteria	Date: 5/15/2024

Gravity Criteria:

BLUE = Review and update as required - Typical Input

Code: IBC 2021

TYPICAL ROOF SYSTEM			
Live Load:			
Snow	25.0	psf	
Dead Load:			
Composite Roofing	2.0	psf	
19/32" Plywood Sheathing	2.5	psf	
Trusses at 24" o.c.	3.0	psf	
Insulation	1.8	psf	
(2) Layers 5/8" GWB	4.4	psf	
Misc or Tile Roof	1.3	psf	
Total	15.0	psf	

FLOOR SYSTEM			
Live Load:			
Residential	40.0	psf	
Dead Load:			
Flooring	3.0	psf	
3/4" T & G Plywood	2.5	psf	
Floor Joists at 16" o.c.	2.5	psf	
Insulation	0.5	psf	
(1) Layers 5/8" GWB	2.2	psf	
Misc or Tile Flooring	1.3	psf	
Total	12.0	psf	

EXTERIOR WALL SYSTEM			
2x6 at 16" o.c.	1.7	psf	
Insulation	1.0	psf	
1/2" Plywood Sheathing	1.5	psf	
(2) layers 5/8" GWB	4.4	psf	
Misc or Brick Covered Wall	3.4	psf	
Total	12.0	psf	

INTERIOR WALL SYSTEM			
2x4 at 16" o.c.	1.1	psf	
Insulation	0.5	psf	
(2) Layers 5/8" GWB	4.4	psf	
Misc	2.0	psf	
Total	8.0	psf	

SEISMIC PARAMETERS:

Code Reference: ASCE 7-16

R = **6.5** Bearing Wall System, Wood Structural Panel Walls

Mapped Spectral Acceleration, S_s = **1.45**

Mapped Spectral Acceleration, S₁ = **0.503**

Soil Site Class = **D**

WIND PARAMETERS:

Code Reference: ASCE 7-16

Basic Wind Speed (3 second Gust) = **100** mph

Exposure : **C**

K_{zt} = **1.00**

SOIL PARAMETERS:

Soil Bearing Pressure = **2,000** psf competent native soil or structural fill
1/3 increase for short-term wind or seismic loading is acceptable

Frost Depth = **18** in

Lateral Wall Pressures:

Unrestrained Active Pressure = **35** pcf Cantilevered walls

Restrained Active Pressure = **50** pcf Plate Wall Design/Tank Walls

Passive Pressure = **250** pcf

Soil Friction Coeff. = **0.45**

Site Soil Class: D - Stiff Soil

Results:

S_s :	1.451	S_{D1} :	N/A
S_1 :	0.504	T_L :	6
F_a :	1	PGA :	0.622
F_v :	N/A	PGA_M :	0.684
S_{MS} :	1.451	F_{PGA} :	1.1
S_{M1} :	N/A	I_e :	1
S_{DS} :	0.968	C_v :	1.39

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Wed May 01 2024

Date Source: [USGS Seismic Design Maps](#)

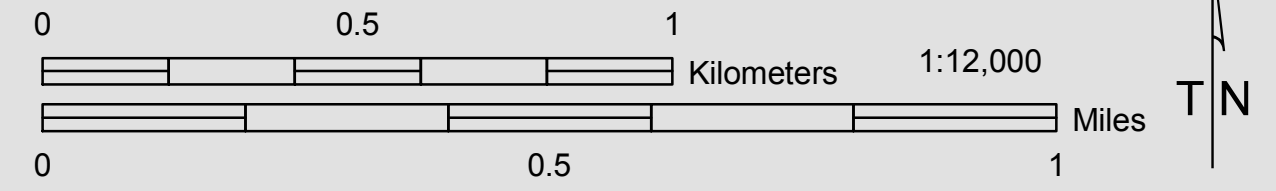
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Mercer Island Wind Exposure and Wind Speed-Up (Topographic Effect)

by Development Services Group (DSG), City of Mercer Island
April 2009



WIND EXPOSURE CATEGORIES & WIND SPEED-UP FACTORS (ICC Section 1609 & ASCE 7-05 Chapter 6)

It is the responsibility of the Owner (or their Design Professional) to review site conditions and determine the K_{zt} factor to be utilized for each specific project. The K_{zt} factors and wind exposure categories indicated on this map are the minimum values accepted by the City of Mercer Island without requiring the design professional to submit additional calculations and supporting topographic documentation (to verify the values utilized in their wind load determination).

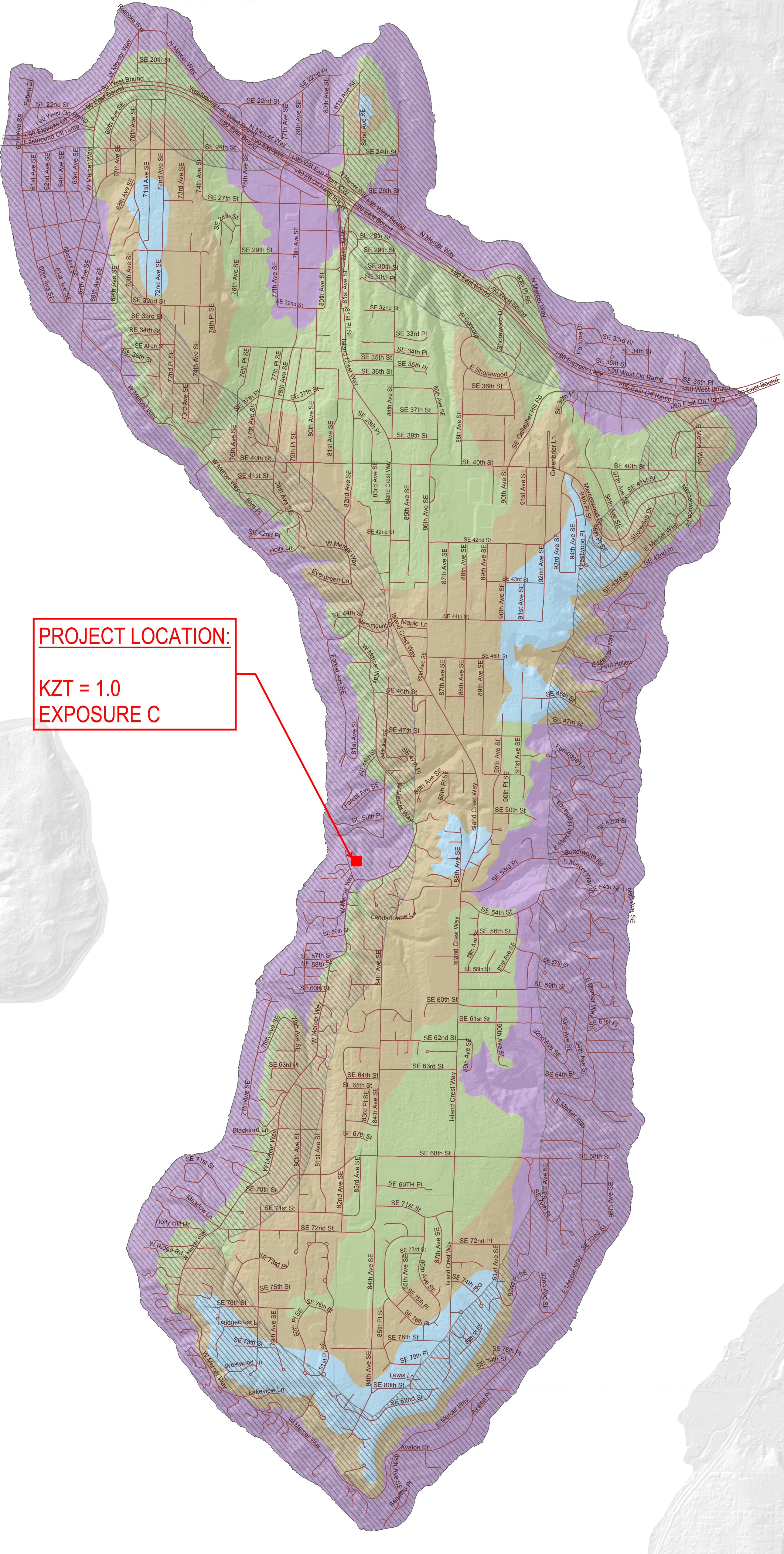
Please note – The K_{zt} values indicated on this map are approximations based upon periodic calculations of representative samplings around Mercer Island. These values are intended for City of Mercer Island's plan review purposes only.

WIND EXPOSURE CATEGORIES:

Wind Exposure Category		Exposure 'C' (1500 feet from Lake)
		Exposure 'B' (all other areas)

WIND SPEED-UP (TOPOGRAPHIC EFFECT) - K_{zt} Factor :

K_{zt} Factor		$K_{zt} = 1.0$
		$K_{zt} = 1.3$
		$K_{zt} = 1.6$
		$K_{zt} = 1.9$



PROJECT LOCATION:
KZT = 1.0
EXPOSURE C

GENERAL NOTES FOR WIND EXPOSURE AND WIND SPEED-UP MAP

This map is the Wind Exposure Category and Wind Speed-up (Topographic Effects) Map for the City of Mercer Island. This map shows the minimum wind exposure category and the minimum wind speed-up, " K_{zt} " factor, which will be accepted without site specific documentation and calculation.

Other wind speed phenomena may occur on Mercer Island that is not specifically identified on this map. It is the responsibility of the Owner (or their Design Professional) to review site conditions and determine the appropriate design wind speed and exposure category for their specific project and location.

This map is for the sole use of the staff of the City of Mercer Island's Development Services Group (DSG) for the purposes of permit application evaluation. This map provides DSG staff a general assessment of Wind Exposure Category and Wind Speed-up (Topographic Effects). All areas have not been specifically evaluated and there may be locations that are not correctly represented on this map. It is the responsibility of individual property owners and map users to evaluate risk associated with their proposed development. No site-specific assessment of risk is implied or otherwise indicated by the City of Mercer Island with this map.

Information about data used for the map, references, and data limitation are all described the associated "Read Me" document. The digital version of this map is accompanied by a meta data file containing pertinent information about map construction. This data map is available on the City of Mercer Island website.

The City of Mercer Island is using guidance provided within ICC Section 1609 & ASCE 7-05 Chapter 6 regarding definitions used when creating this map.

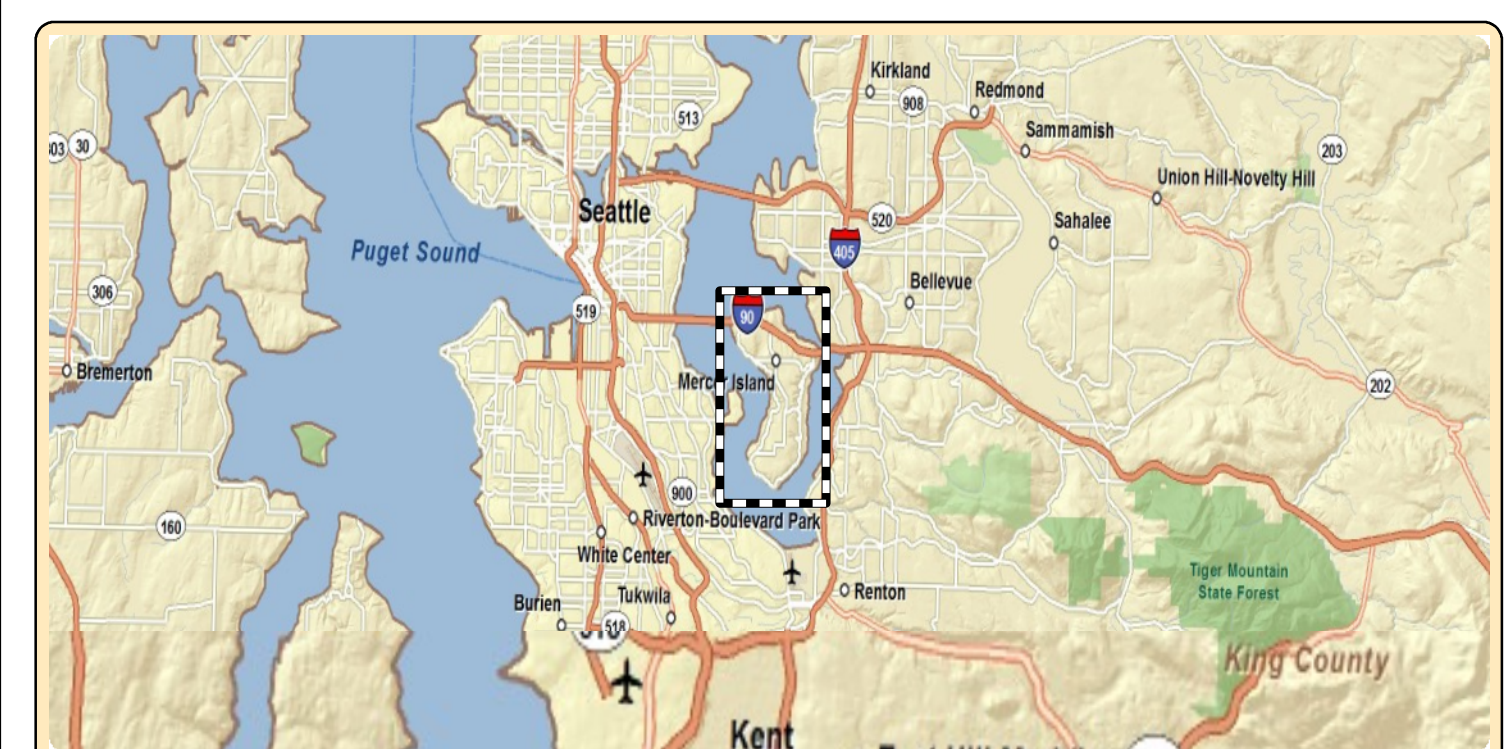
DEFINITIONS:

K_{zt} factor: The topographic effect of wind speed-up at isolated hills, ridges, and escarpments constituting abrupt changes in the general topography, located in any exposure category, that meet all of the conditions noted in ASCE 7-05 Minimum Design Loads for Buildings and Other Structures, Section 6.5.7.

Exposure B: The wind exposure category that applies where the site in question is located a minimum of 1500 feet from the shoreline and the mean roof height is less than or equal to 30 feet per IBC 2006 section 1609.4.3.

Exposure C: The wind exposure category that applies where the site in question is located within 1500 feet from the shoreline per IBC 2006 section 1609.4.3.

Wind Speed: Minimum 85 mph 3-second gust per IRC Figure R301.2(4)





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Framing Calculations

Framing member calculation references are shown on
structural plans for ease of reference



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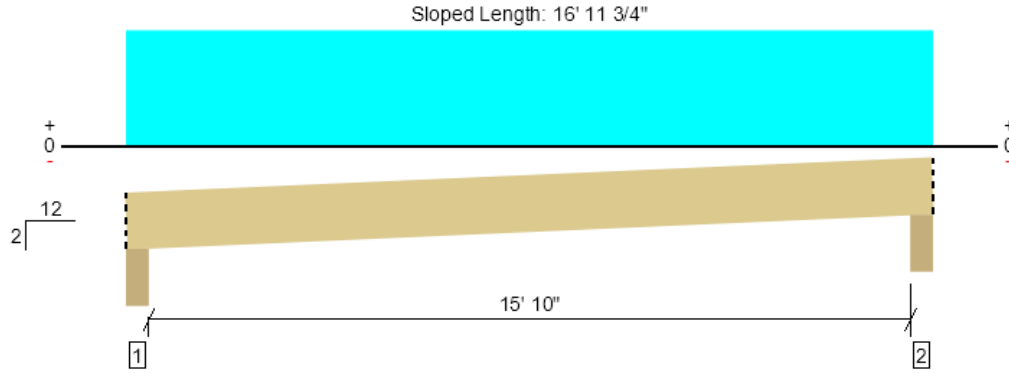
Roof			
Member Name	Results (Max UTIL %)	Current Solution	Comments
RJ-1	Passed (82% M)	1 piece(s) 2 x 12 DF No.2 @ 24" OC	
RJ-2	Passed (54% R)	1 piece(s) 2 x 12 DF No.2 @ 24" OC	
RJ-3	Passed (67% M)	1 piece(s) 2 x 12 DF No.2 @ 16" OC	
RB-1	Passed (46% M)	2 piece(s) 1 3/4" x 11 1/4" 2.0E Microllam® LVL	
RB-2	Passed (42% R)	1 piece(s) 1 3/4" x 11 1/4" 2.0E Microllam® LVL	
RB-3	Passed (58% R)	2 piece(s) 1 3/4" x 11 1/4" 2.0E Microllam® LVL	
2nd Floor			
Member Name	Results (Max UTIL %)	Current Solution	Comments
2H-1	Passed (33% M)	1 piece(s) 4 x 6 DF No.2	
2H-2	Passed (15% R)	2 piece(s) 2 x 8 DF No.2	
2H-3	Passed (32% ΔT)	1 piece(s) 3 1/8" x 7 1/2" 24F-V4 DF Glulam	
2H-4	Passed (6% R)	1 piece(s) 4 x 8 DF No.2	
2J-1	Passed (47% R)	1 piece(s) 18" TJI® 360 @ 24" OC	Web Stiffeners Required
2J-2 (Balcony Joist)	Passed (80% M)	1 piece(s) 2 x 10 DF No.2 @ 16" OC	
2B-1	Passed (63% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-2	Passed (29% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-3	Passed (82% R)	3 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-4	Passed (78% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-5	Passed (100% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-6	Passed (100% R)	3 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-7	Passed (33% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-8	Passed (93% R)	3 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-9	Passed (44% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-10	Passed (45% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-11	Failed (90% ΔL)	1 piece(s) 7" x 18" 2.2E Parallam® PSL	Right cantilever exceeds the maximum braced cantilever length of 7'.
2B-12	Passed (22% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-13	Passed (94% R)	1 piece(s) 7" x 18" 2.2E Parallam® PSL	
2B-14	Passed (100% R)	1 piece(s) 5 1/4" x 18" 2.2E Parallam® PSL	
2B-15	Passed (68% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-16	Passed (56% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-17	Passed (73% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-18	Passed (76% R)	2 piece(s) 1 3/4" x 18" 2.0E Microllam® LVL	
2B-19	Passed (88% M+)	1 piece(s) 3 1/2" x 7 1/2" 24F-V4 DF Glulam	
1st Floor			
Member Name	Results (Max UTIL %)	Current Solution	Comments
1H-1	Passed (82% R)	1 piece(s) 7" x 14" 2.2E Parallam® PSL	
1H-2	Passed (19% ΔT)	1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam	
1H-3	Passed (87% R)	1 piece(s) 3 1/2" x 7 1/2" 24F-V4 DF Glulam	
1H-4 (Garage Header)	Passed (36% R)	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
1J-1	Passed (62% M)	1 piece(s) 2 x 12 DF No.2 @ 16" OC	
1J-2	Passed (61% M)	1 piece(s) 2 x 12 DF No.2 @ 12" OC	
1B-1	Passed (60% M)	1 piece(s) 4 x 10 DF No.2	
1B-2	Passed (59% M)	1 piece(s) 4 x 10 DF No.2	

ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



Roof, RJ-1

1 piece(s) 2 x 12 DF No.2 @ 24" OC



Drawing is Conceptual. 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)	673 @ 4' 1/2"	3341 (5.50")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	562 @ 1' 4 5/8"	2329	Passed (24%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2573 @ 8' 4 1/2"	3138	Passed (82%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.266 @ 8' 4 1/2"	0.811	Passed (L/731)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.428 @ 8' 4 1/2"	1.081	Passed (L/455)	--	1.0 D + 1.0 S (All Spans)

Member Length : 17' 1 5/8"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 2/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	1.50"	255	419	673	Blocking
2 - Beveled Plate - HF	5.50"	5.50"	1.50"	255	419	673	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)	4' 8" o/c	
Bottom Edge (Lu)	17' o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 16' 9"	24"	15.0	25.0	Roof Load

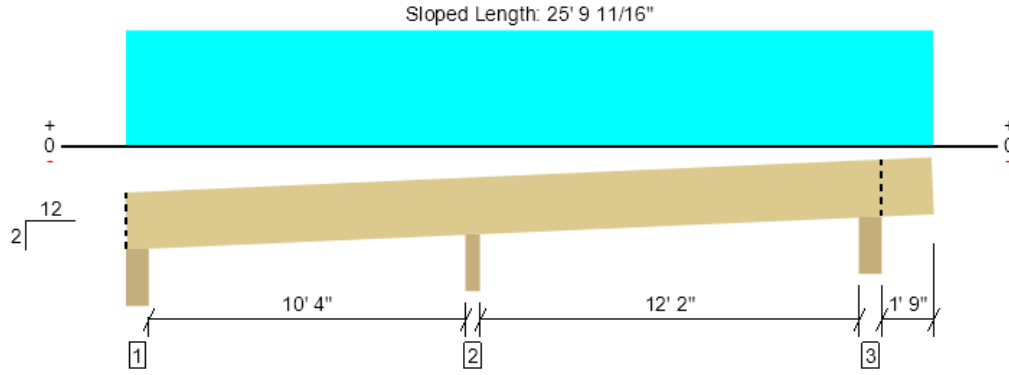
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 The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



Roof, RJ-2

1 piece(s) 2 x 12 DF No.2 @ 24" OC



Drawing is Conceptual. 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)	1154 @ 10' 11 1/4"	2156 (3.50")	Passed (54%)	--	1.0 D + 1.0 S (Adj Spans)
Shear (lbs)	516 @ 12' 1/8"	2329	Passed (22%)	1.15	1.0 D + 1.0 S (Adj Spans)
Moment (Ft-lbs)	-1341 @ 10' 11 1/4"	3138	Passed (43%)	1.15	1.0 D + 1.0 S (Adj Spans)
Live Load Defl. (in)	0.056 @ 17' 8 9/16"	0.636	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.083 @ 17' 9 5/16"	0.848	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 25' 11 9/16"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 2/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	1.50"	124	230	354	Blocking
2 - Beveled Plate - HF	3.50"	3.50"	1.87"	434	720	1154	None
3 - Beveled Plate - HF	5.50"	5.50"	1.50"	216	367	583	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' 7" o/c	
Bottom Edge (Lu)	11' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 25' 5 1/2"	24"	15.0	25.0	Roof Load

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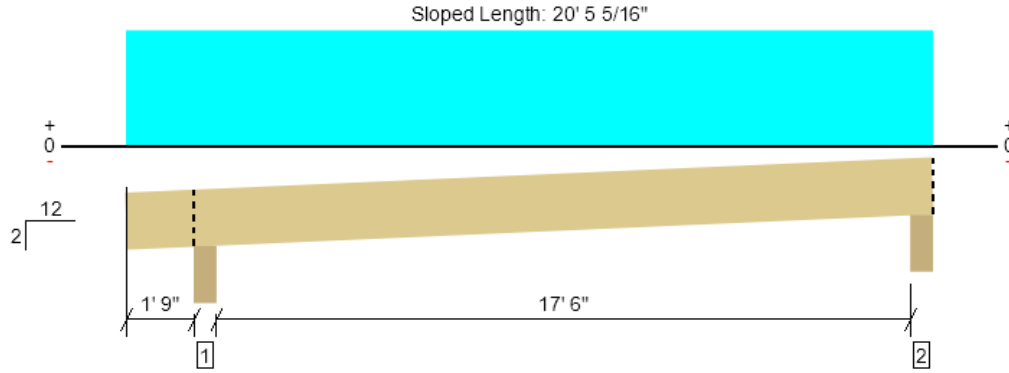
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



Roof, RJ-3

1 piece(s) 2 x 12 DF No.2 @ 16" OC



Drawing is Conceptual. 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)	589 @ 1' 11 3/4"	3387 (5.50")	Passed (17%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	421 @ 3' 1 5/8"	2329	Passed (18%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2090 @ 10' 11 9/16"	3138	Passed (67%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.268 @ 10' 10 7/8"	0.903	Passed (L/807)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.429 @ 10' 10 15/16"	1.204	Passed (L/505)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 20' 7 3/16"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 2/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - HF	5.50"	5.50"	1.50"	223	367	589	Blocking
2 - Beveled Plate - HF	5.50"	5.50"	1.50"	186	308	493	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)	6' 6" o/c	
Bottom Edge (Lu)	20' 5" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 20' 2"	16"	15.0	25.0	Roof Load

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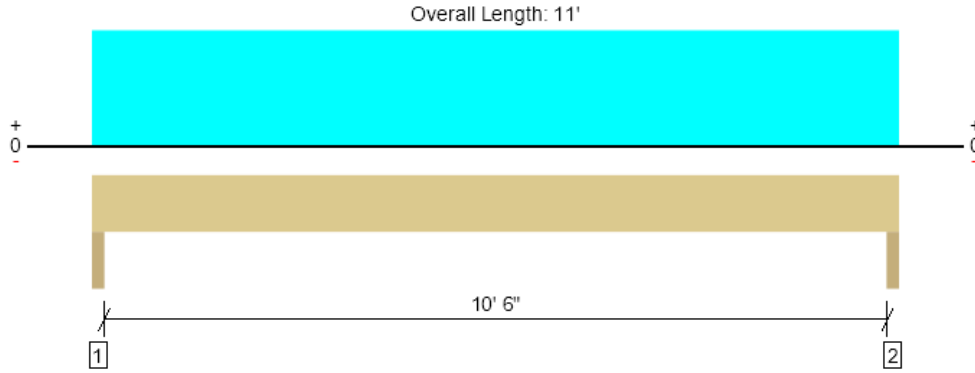
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



Roof, RB-1

2 piece(s) 1 3/4" x 11 1/4" 2.0E Microllam® LVL



Drawing is Conceptual. 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)	2107 @ 1 1/2"	7613 (3.00")	Passed (28%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1652 @ 1' 2 1/4"	8603	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5535 @ 5' 6"	12141	Passed (46%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.101 @ 5' 6"	0.358	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.155 @ 5' 6"	0.538	Passed (L/833)	--	1.0 D + 1.0 S (All Spans)

Member Length : 11'
 System : Floor
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 34.6% decrease in the moment capacity has been added to account for lateral stability.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	732	1375	2107	None
2 - Trimmer - HF	3.00"	3.00"	1.50"	732	1375	2107	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11'	N/A	11.5	--	
1 - Uniform (PSF)	0 to 11' (Top)	10'	12.2	25.0	Roof Load

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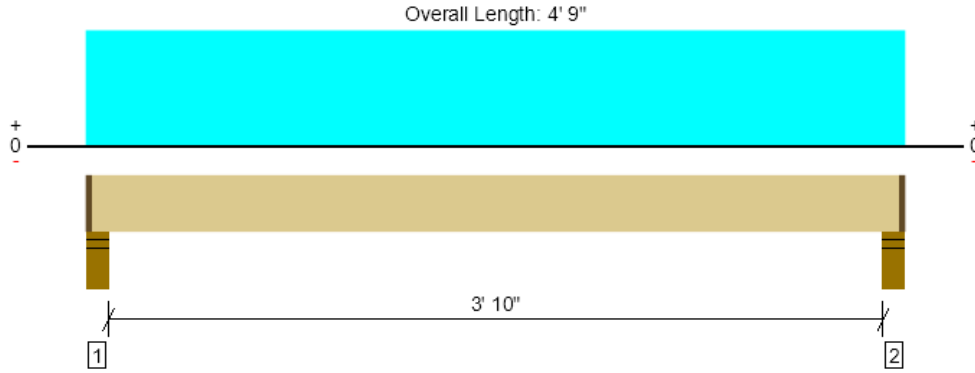
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



Roof, RB-2

1 piece(s) 1 3/4" x 11 1/4" 2.0E MicroIam® LVL



Drawing is Conceptual. 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)	1178 @ 4"	2835 (4.00")	Passed (42%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	513 @ 1' 4 3/4"	4302	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1092 @ 2' 4 1/2"	9279	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.010 @ 2' 4 1/2"	0.102	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.014 @ 2' 4 1/2"	0.204	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 4' 6"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 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	Snow	Factored	
1 - Stud wall - HF	5.50"	4.00"	1.66"	412	831	1243	1 1/2" Rim Board
2 - Stud wall - HF	5.50"	4.00"	1.66"	412	831	1243	1 1/2" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 6" o/c	
Bottom Edge (Lu)	4' 6" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/2" to 4' 7 1/2"	N/A	5.7	--	
1 - Uniform (PSF)	0 to 4' 9" (Front)	14'	12.0	25.0	Roof Load

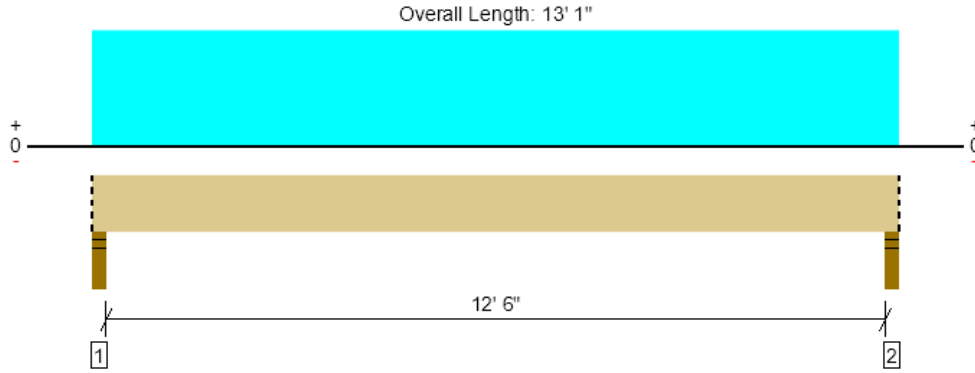
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



Roof, RB-3

2 piece(s) 1 3/4" x 11 1/4" 2.0E MicroIam® LVL



Drawing is Conceptual. 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)	2890 @ 2"	4961 (3.50")	Passed (58%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2347 @ 1' 2 3/4"	8603	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	8977 @ 6' 6 1/2"	18558	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.194 @ 6' 6 1/2"	0.637	Passed (L/789)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.343 @ 6' 6 1/2"	0.850	Passed (L/447)	--	1.0 D + 1.0 S (All Spans)

Member Length : 13' 1"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD
 Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - HF	3.50"	3.50"	2.04"	1254	1635	2890	Blocking
2 - Stud wall - HF	3.50"	3.50"	2.04"	1254	1635	2890	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)	13' 1" o/c	
Bottom Edge (Lu)	13' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13' 1"	N/A	11.5	--	
1 - Uniform (PSF)	0 to 13' 1" (Front)	10'	18.0	25.0	Roof Load

Weyerhaeuser Notes

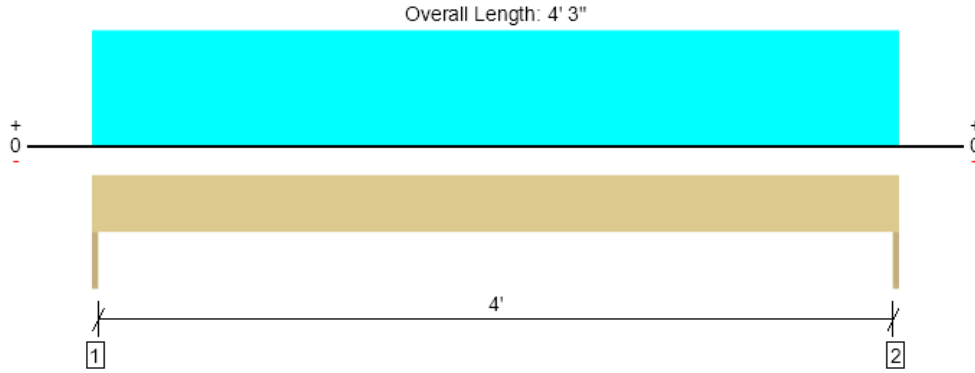
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2H-1
1 piece(s) 4 x 6 DF No.2



Drawing is Conceptual. 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)	603 @ 0	3281 (1.50")	Passed (18%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	437 @ 7"	2657	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	640 @ 2' 1 1/2"	1969	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.018 @ 2' 1 1/2"	0.142	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.027 @ 2' 1 1/2"	0.213	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 4' 3"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 0.5% decrease in the moment capacity has been added to account for lateral stability.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	1.50"	1.50"	1.50"	204	398	603	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	204	398	603	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4' 3"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 4' 3"	7' 6"	12.2	25.0	Roof Load

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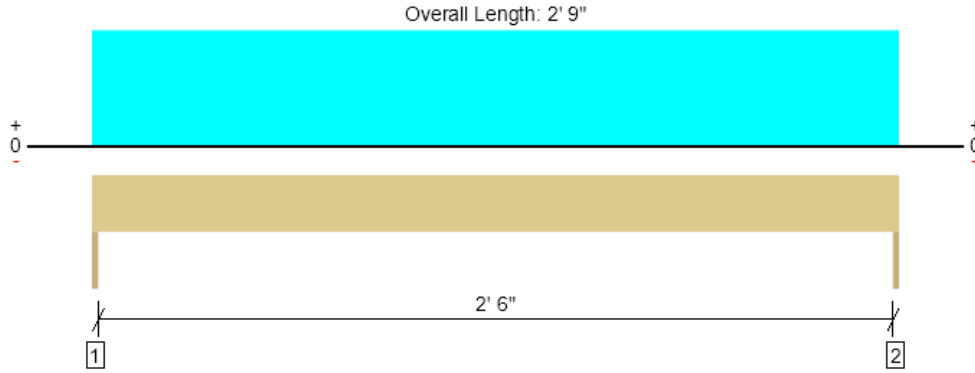
ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



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ForteWEB v3.7, Engine: V8.4.0.40, Data: V8.1.5.0

File Name: Forest Creek Lot 1

2nd Floor, 2H-2
2 piece(s) 2 x 8 DF No.2



Drawing is Conceptual. 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)	416 @ 0	2813 (1.50")	Passed (15%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	196 @ 8 3/4"	3002	Passed (7%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	286 @ 1' 4 1/2"	2677	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.002 @ 1' 4 1/2"	0.092	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.003 @ 1' 4 1/2"	0.138	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 2' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 1.6% decrease in the moment capacity has been added to account for lateral stability.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	1.50"	1.50"	1.50"	141	275	416	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	141	275	416	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 2' 9"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 2' 9"	8'	12.2	25.0	Roof Load

Weyerhaeuser Notes

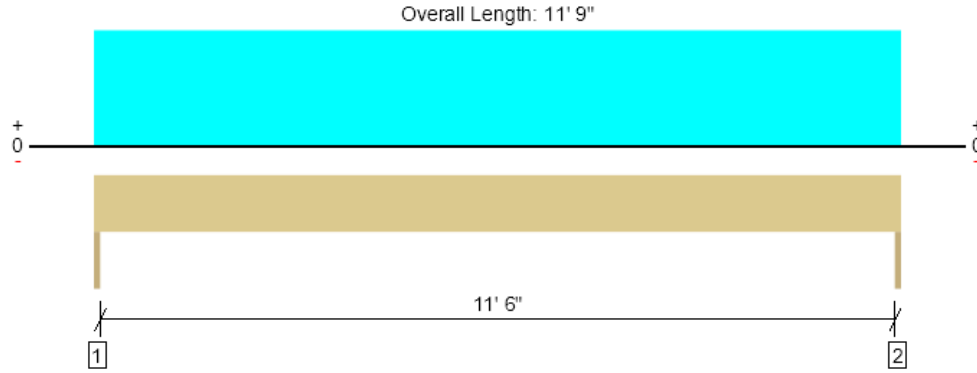
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2H-3
1 piece(s) 3 1/8" x 7 1/2" 24F-V4 DF Glulam



Drawing is Conceptual. 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)	506 @ 0	3047 (1.50")	Passed (17%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	441 @ 9"	4762	Passed (9%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	1486 @ 5' 10 1/2"	6460	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.108 @ 5' 10 1/2"	0.392	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.187 @ 5' 10 1/2"	0.587	Passed (L/755)	--	1.0 D + 1.0 S (All Spans)

Member Length : 11' 9"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 4.1% decrease in the moment capacity has been added to account for lateral stability.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 11' 9".
- 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	Snow	Factored	
1 - Trimmer - HF	1.50"	1.50"	1.50"	212	294	506	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	212	294	506	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11' 9"	N/A	5.7	--	
1 - Uniform (PSF)	0 to 11' 9"	2'	15.2	25.0	Floor Load

Weyerhaeuser Notes

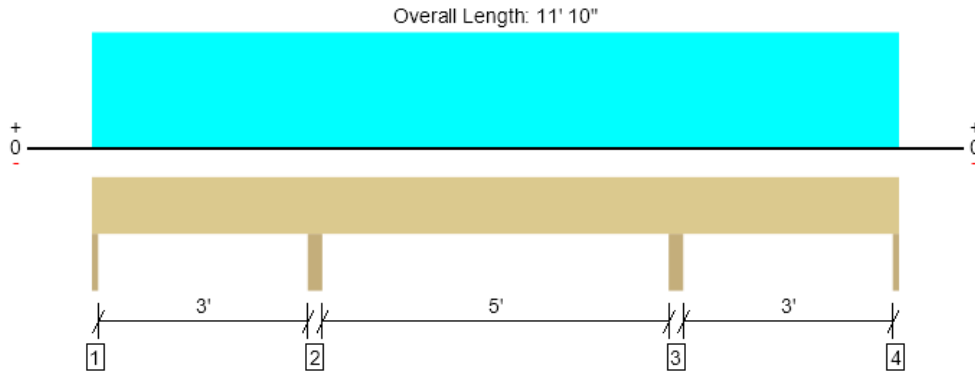
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2H-4
1 piece(s) 4 x 8 DF No.2



Drawing is Conceptual. 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)	431 @ 3' 3 1/4"	7656 (3.50")	Passed (6%)	--	1.0 D + 1.0 S (Adj Spans)
Shear (lbs)	168 @ 4' 1/4"	3502	Passed (5%)	1.15	1.0 D + 1.0 S (Adj Spans)
Moment (Ft-lbs)	-182 @ 8' 6 3/4"	3368	Passed (5%)	1.15	1.0 D + 1.0 S (Adj Spans)
Live Load Defl. (in)	0.002 @ 5' 11"	0.176	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.003 @ 5' 11"	0.265	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 11' 10"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 2% decrease in the moment capacity has been added to account for lateral stability.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - HF	1.50"	1.50"	1.50"	37	63	100	None
2 - Trimmer - HF	3.50"	3.50"	1.50"	181	250	431	None
3 - Trimmer - HF	3.50"	3.50"	1.50"	181	250	431	None
4 - Trimmer - HF	1.50"	1.50"	1.50"	37	63	100	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11' 10"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 11' 10"	2'	15.2	25.0	Floor Load

Weyerhaeuser Notes

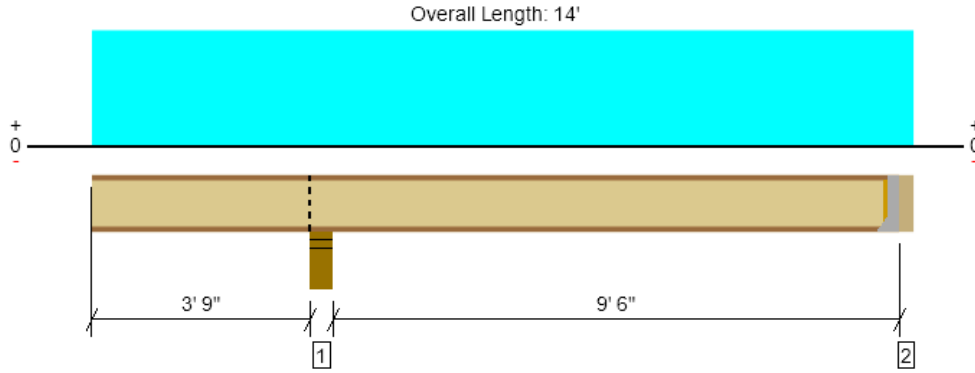
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2J-1
1 piece(s) 18" TJI® 360 @ 24" OC



Drawing is Conceptual. 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)	511 @ 13' 8 1/2"	1080 (1.75")	Passed (47%)	1.00	1.0 D + 1.0 L (Alt Spans)
Shear (lbs)	599 @ 4' 2 1/2"	2425	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1185 @ 9' 13/16"	9465	Passed (13%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.021 @ 0	0.200	Passed (2L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.030 @ 8' 11 1/8"	0.486	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	63	40	Passed	--	--

Member Length : 13' 8 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	5.50"	5.50"	3.50"	290	773	1062	Blocking
2 - Hanger on 18" DF beam	3.50"	Hanger ¹	1.75" / - ²	130	413/-42	543	See note ¹

- 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
- ¹ See Connector grid below for additional information and/or requirements.
- ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 7" o/c	
Bottom Edge (Lu)	9' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- 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	IUS2.37/11.88	2.00"	N/A	10-10dx1.5	2-10dx1.5	Web Stiffeners

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

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 14'	24"	15.0	40.0	Floor Load

ForTEWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



Weyerhaeuser Notes

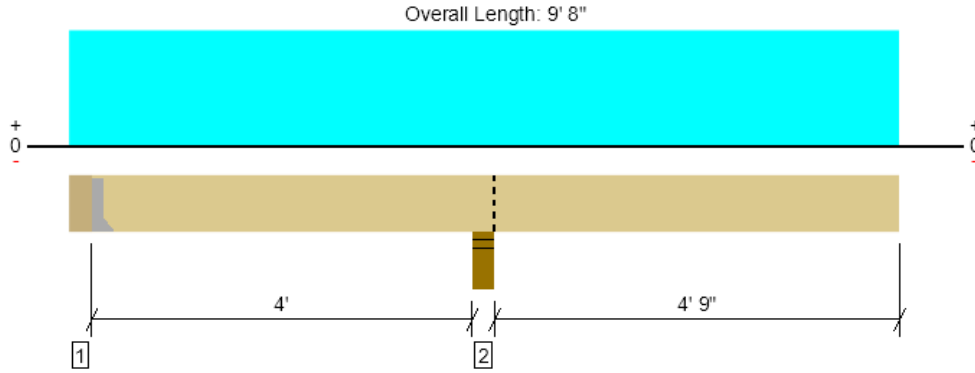
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2J-2 (Balcony Joist)
1 piece(s) 2 x 10 DF No.2 @ 16" OC



Drawing is Conceptual. 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)	1253 @ 4' 8 1/4"	5156 (5.50")	Passed (24%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	485 @ 3' 8 1/4"	1665	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-1488 @ 4' 8 1/4"	1861	Passed (80%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.150 @ 9' 8"	0.249	Passed (2L/798)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.215 @ 9' 8"	0.498	Passed (2L/556)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 9' 2 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Right cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- A 8.3% decrease in the moment capacity has been added to account for lateral stability.
- -212 lbs uplift at support located at 5 1/2". Strapping or other restraint may be required.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Hanger on 9 1/4" DF beam	5.50"	Hanger ¹	1.50"	-14	206/-198	37/-47	192/-212	See note ¹
2 - Stud wall - DF	5.50"	5.50"	1.50"	401	802	334	1253	Blocking

- 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
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	End Bearing Points	

Connector: Simpson Strong-Tie

Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LU28	1.50"	N/A	8-10dx1.5	6-10dx1.5	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 9' 8"	16"	30.0	60.0	25.0	Balcony load

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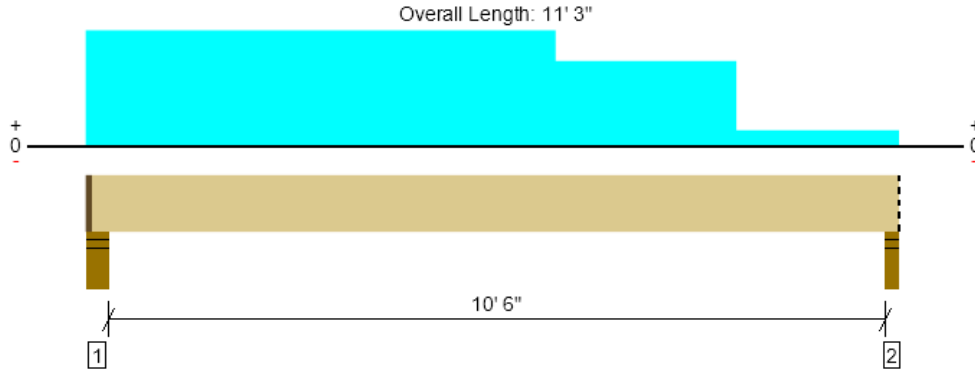
ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



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ForteWEB v3.7, Engine: V8.4.0.40, Data: V8.1.5.0

File Name: Forest Creek Lot 1

2nd Floor, 2B-1
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	3547 @ 4"	5670 (4.00")	Passed (63%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2301 @ 1' 11 1/2"	13766	Passed (17%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	8535 @ 5' 4 1/8"	44566	Passed (19%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.035 @ 5' 7 3/16"	0.269	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.067 @ 5' 7 3/8"	0.538	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 11' 1 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 - Stud wall - HF	5.50"	4.00"	2.50"	1687	1214	1377	3630	1 1/2" Rim Board
2 - Stud wall - HF	3.50"	3.50"	1.62"	1094	726	873	2294	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)	11' 2" o/c	
Bottom Edge (Lu)	11' 2" 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)	Comments
0 - Self Weight (PLF)	1 1/2" to 11' 3"	N/A	18.4	--	--	
1 - Uniform (PSF)	0 to 6' 6" (Front)	6'	12.0	40.0	-	Floor Load
2 - Uniform (PSF)	6' 6" to 11' 3" (Front)	2'	12.0	40.0	-	Floor Load
3 - Uniform (PLF)	0 to 9' (Top)	N/A	100.0	-	-	Wall Load Above
4 - Uniform (PSF)	0 to 9' (Top)	10'	12.2	-	25.0	Roof Load

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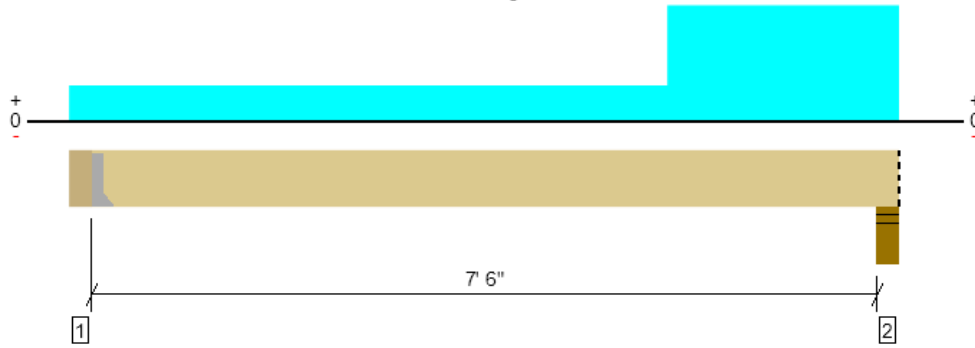
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-2
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL

Overall Length: 8' 5"



Drawing is Conceptual. 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) [Group]
Member Reaction (lbs)	1134 @ 5 1/2"	3938 (1.50")	Passed (29%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	699 @ 1' 11 1/2"	11970	Passed (6%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	2217 @ 4' 3 7/16"	38753	Passed (6%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.007 @ 4' 3 3/16"	0.191	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.011 @ 4' 3 1/2"	0.381	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]

Member Length : 7' 11 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 - Hanger on 18" HF beam	5.50"	Hanger ¹	1.50"	376	882/-90	1258	See note ¹
2 - Stud wall - HF	5.50"	5.50"	1.50"	559	856/-87	1415	Blocking

- 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
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' o/c	
Bottom Edge (Lu)	8' 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	IUS3.56/11.88	2.00"	N/A	12-10d	2-10dx1.5	

- 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)	5 1/2" to 8' 5"	N/A	18.4	--	
1 - Uniform (PLF)	6' to 8' 5" (Top)	N/A	100.0	-	Wall load above
2 - Uniform (PLF)	0 to 8' 5" (Back)	N/A	65.0	206.5/-21.0	Linked from: 2J-1, Support 2

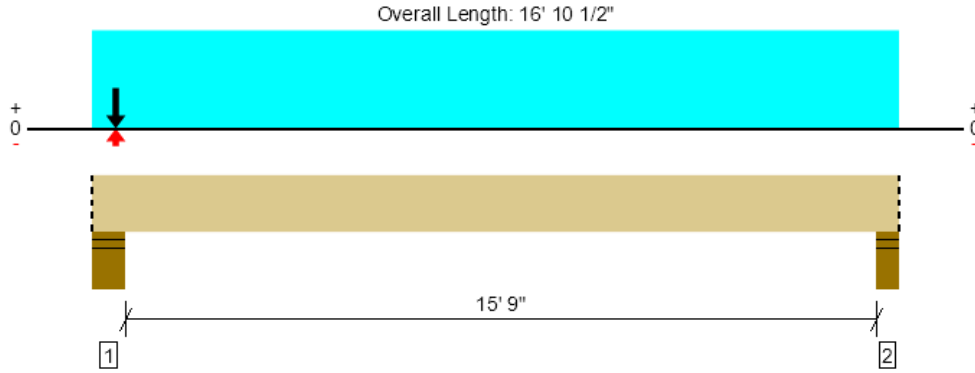
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-3

3 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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) [Group]
Member Reaction (lbs)	13950 @ 6 1/2"	17010 (8.00")	Passed (82%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	4754 @ 2' 2"	20648	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Moment (Ft-lbs)	23861 @ 8' 6 1/2"	66849	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Live Load Defl. (in)	0.123 @ 8' 6 1/2"	0.400	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans) [1]
Total Load Defl. (in)	0.245 @ 8' 6 1/2"	0.800	Passed (L/785)	--	1.0 D + 1.0 S (All Spans) [1]

Member Length : 16' 10 1/2"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 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 - Stud wall - HF	8.00"	8.00"	6.56"	7014	4696	4552	13950	Blocking
2 - Stud wall - HF	5.50"	5.50"	2.92"	3089	417	3125	6214	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' 11" o/c	
Bottom Edge (Lu)	16' 11" 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)	Comments
0 - Self Weight (PLF)	0 to 16' 10 1/2"	N/A	27.6	--	--	
1 - Uniform (PSF)	0 to 16' 10 1/2" (Front)	1' 3"	12.0	40.0	-	Floor Load
2 - Uniform (PLF)	0 to 16' 10 1/2" (Top)	N/A	100.0	-	-	Wall load above
3 - Uniform (PSF)	0 to 16' 10 1/2" (Top)	15'	15.2	-	25.0	Roof Load
4 - Point (lb)	6" (Back)	N/A	376	882/-90	-	Linked from: 2B-2, Support 1
5 - Point (lb)	6" (Front)	N/A	3472	3387	1349	Linked from: 2B-5, Support 2

Weyerhaeuser Notes

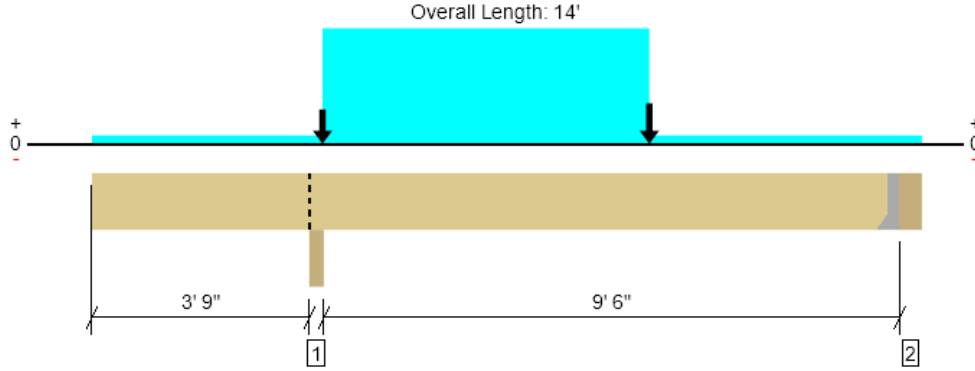
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Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-4
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	6231 @ 3' 10 3/4"	7963 (3.50")	Passed (78%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2824 @ 5' 6 1/2"	13766	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	10684 @ 9' 3 5/16"	44566	Passed (24%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.039 @ 8' 8 5/16"	0.241	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.069 @ 8' 8 3/16"	0.482	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 13' 6 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/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 - Beam - GLB	3.50"	3.50"	2.74"	2726	380	3504	6231	Blocking
2 - Hanger on 18" LVL beam	5.50"	Hanger ¹	1.50"	1211	211/-13	1502	2713	See note ¹

- 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
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 7" o/c	
Bottom Edge (Lu)	13' 7" 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	THA422	1.75"	N/A	22-16d	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13' 6 1/2"	N/A	18.4	--	--	
1 - Uniform (PSF)	0 to 14' (Front)	1'	15.0	40.0	-	Floor Load
2 - Uniform (PLF)	4' to 9' 6" (Top)	N/A	100.0	-	-	Wall load above
3 - Uniform (PSF)	4' to 9' 6" (Top)	15' 6"	15.2	-	25.0	Roof Load
4 - Point (lb)	4' (Top)	N/A	732	-	1375	Linked from: RB-1, Support 2
5 - Point (lb)	9' 6" (Top)	N/A	900	-	1500	DL= 15psf * 15ft * 4 ft SL= 25psf * 15ft * 4 ft

ForteWEB Software Operator	Job Notes
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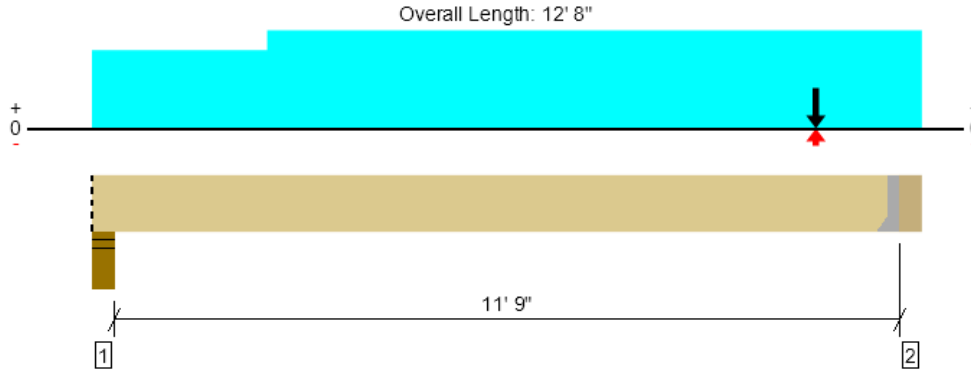
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Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-5
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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) [Group]
Member Reaction (lbs)	6687 @ 12' 2 1/2"	6687 (2.55")	Passed (100%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	4895 @ 10' 8 1/2"	11970	Passed (41%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	16151 @ 6' 5 13/16"	38753	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.083 @ 6' 3 7/16"	0.297	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.151 @ 6' 4 1/16"	0.594	Passed (L/945)	--	1.0 D + 1.0 L (All Spans) [1]

Member Length : 12' 2 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 - Stud wall - HF	5.50"	5.50"	3.69"	2073	3157	153	5230	Blocking
2 - Hanger on 18" LVL beam	5.50"	Hanger ¹	2.55"	3472	3387	1349	7025	See note ¹

- 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
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 3" o/c	
Bottom Edge (Lu)	12' 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	HGUS414	4.00"	N/A	66-10d	22-10d	

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

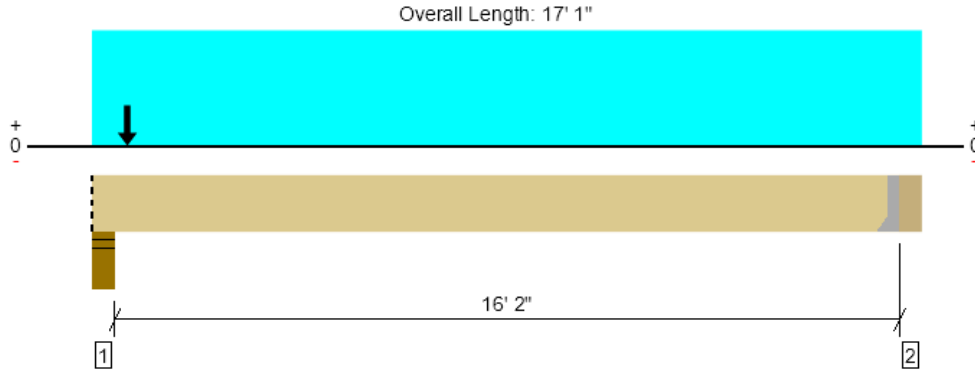
Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 2 1/2"	N/A	18.4	--	--	
1 - Uniform (PSF)	0 to 12' 8" (Front)	12' 6"	15.0	40.0	-	Floor Load
2 - Uniform (PLF)	2' 9" to 12' 8" (Top)	N/A	100.0	-	-	wall load above
3 - Uniform (PSF)	2' 9" to 12' 8" (Top)	5'	15.0	-	-	attic space
4 - Point (lb)	11' (Front)	N/A	1211	211/-13	1502	Linked from: 2B-4, Support 2

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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
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-6
3 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	7063 @ 16' 7 1/2"	7063 (1.79")	Passed (100%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	5894 @ 1' 11 1/2"	20648	Passed (29%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	28914 @ 8' 5 1/4"	66849	Passed (43%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.143 @ 8' 5 11/16"	0.407	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.306 @ 8' 5 5/8"	0.815	Passed (L/638)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 16' 7 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 - Stud wall - HF	5.50"	5.50"	4.09"	4842	2325	2816	8698	Blocking
2 - Hanger on 18" HF beam	5.50"	Hanger ¹	1.79"	3950	2073	2588	7445	See note ¹

- 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
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 8" o/c	
Bottom Edge (Lu)	16' 8" 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	HGUS5.50/14	4.00"	N/A	66-10d	22-10d	

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

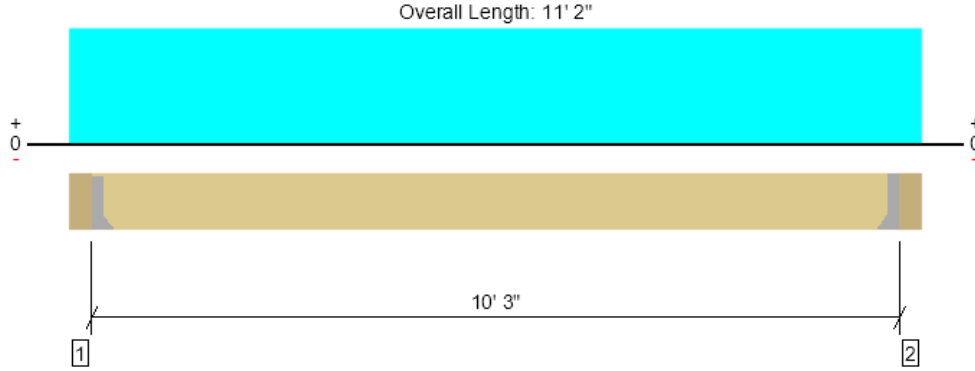
Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 7 1/2"	N/A	27.6	--	--	
1 - Uniform (PSF)	0 to 17' 1" (Front)	6'	15.0	40.0	-	Floor Load
2 - Uniform (PLF)	0 to 17' 1" (Top)	N/A	100.0	-	-	wall load above
3 - Uniform (PSF)	0 to 17' 1" (Top)	12'	20.0	-	25.0	roof and attic load
4 - Point (lb)	9" (Front)	N/A	988	298	279	Linked from: 2B-7, Support 1

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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-7
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	1311 @ 5 1/2"	3938 (1.50")	Passed (33%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	840 @ 1' 11 1/2"	11970	Passed (7%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3043 @ 5' 7"	38753	Passed (8%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.008 @ 5' 7"	0.256	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.025 @ 5' 7"	0.512	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 10' 3"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 18" LVL beam	5.50"	Hanger ¹	1.50"	988	298	279	1420	See note ¹
2 - Hanger on 18" LVL beam	5.50"	Hanger ¹	1.50"	988	298	279	1420	See note ¹

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 3" o/c	
Bottom Edge (Lu)	10' 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
1 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10d	2-10dx1.5	
2 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10d	2-10dx1.5	

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

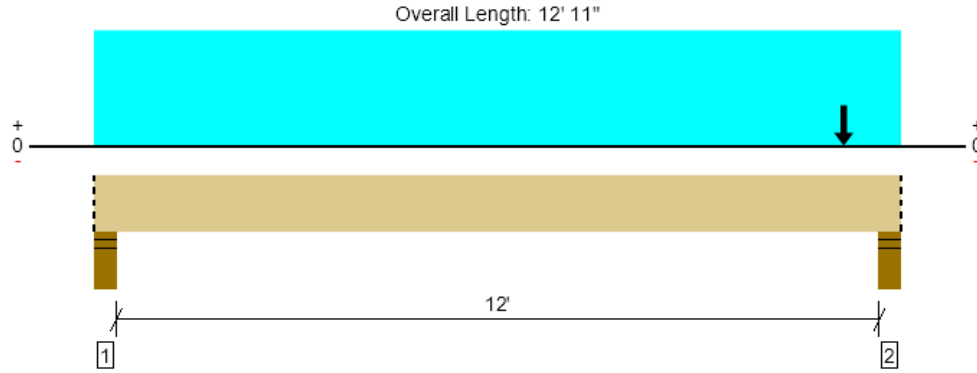
Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 10' 8 1/2"	N/A	18.4	--	--	
1 - Uniform (PSF)	0 to 11' 2" (Front)	1' 4"	15.0	40.0	-	Floor Load
2 - Uniform (PLF)	0 to 11' 2" (Top)	N/A	100.0	-	-	wall load above
3 - Uniform (PSF)	0 to 11' 2" (Top)	2'	20.0	-	25.0	roof and attic load

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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-8
3 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	10870 @ 12' 7"	11694 (5.50")	Passed (93%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4577 @ 10' 11 1/2"	17955	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	13594 @ 6' 11"	58130	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.044 @ 6' 6 9/16"	0.306	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.090 @ 6' 7"	0.613	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 12' 11"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 - Stud wall - HF	5.50"	5.50"	2.04"	2174	2165	446	4340	Blocking
2 - Stud wall - HF	5.50"	5.50"	5.11"	5748	4041	2788	10870	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)	12' 11" o/c	
Bottom Edge (Lu)	12' 11" 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)	Comments
0 - Self Weight (PLF)	0 to 12' 11"	N/A	27.6	--	--	
1 - Uniform (PSF)	0 to 12' 11" (Front)	8'	15.0	40.0	-	Floor Load
2 - Uniform (PLF)	0 to 12' 11" (Top)	N/A	120.0	-	-	wall load above
3 - Uniform (PSF)	0 to 12' 11" (Top)	2'	20.0	-	25.0	roof + attic load above
4 - Point (lb)	12' (Front)	N/A	3950	2073	2588	Linked from: 2B-6, Support 2

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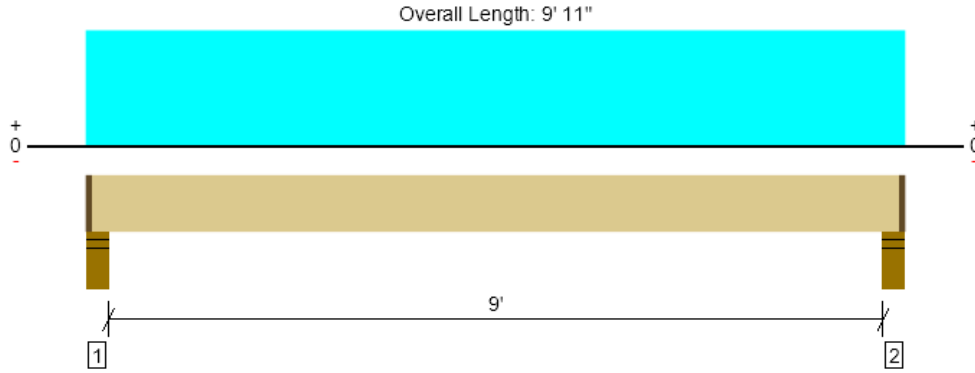
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-9
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	2477 @ 4"	5670 (4.00")	Passed (44%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1421 @ 1' 11 1/2"	11970	Passed (12%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5067 @ 4' 11 1/2"	38753	Passed (13%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.018 @ 4' 11 1/2"	0.231	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.035 @ 4' 11 1/2"	0.463	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 9' 8"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 - Stud wall - HF	5.50"	4.00"	1.75"	1256	1091	620	2539	1 1/2" Rim Board
2 - Stud wall - HF	5.50"	4.00"	1.75"	1256	1091	620	2539	1 1/2" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 8" o/c	
Bottom Edge (Lu)	9' 8" 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)	Comments
0 - Self Weight (PLF)	1 1/2" to 9' 9 1/2"	N/A	18.4	--	--	
1 - Uniform (PSF)	0 to 9' 11" (Front)	1'	15.0	40.0	-	Floor Load
2 - Uniform (PSF)	0 to 9' 11" (Back)	3'	30.0	60.0	25.0	Balcony load
3 - Uniform (PLF)	0 to 9' 11" (Top)	N/A	100.0	-	-	wall load above
4 - Uniform (PSF)	0 to 9' 11" (Top)	2'	15.2	-	25.0	roof load above

Weyerhaeuser Notes

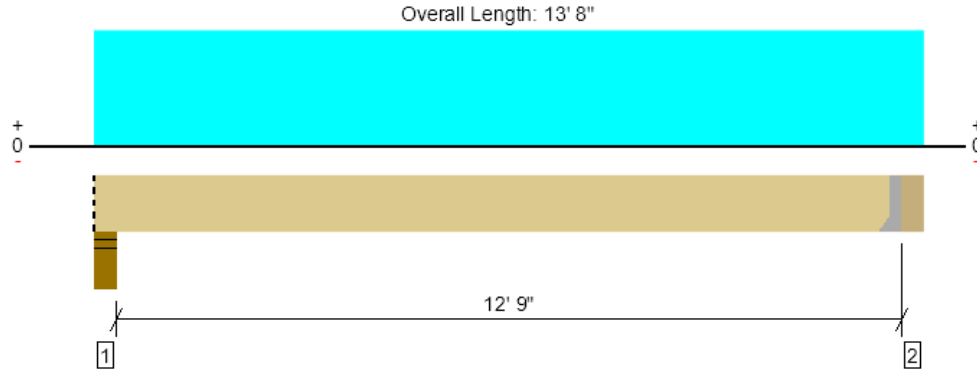
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-10
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	1776 @ 13' 2 1/2"	3938 (1.50")	Passed (45%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1276 @ 11' 8 1/2"	11970	Passed (11%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5354 @ 6' 9 1/4"	38753	Passed (14%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.021 @ 6' 9 1/4"	0.322	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.061 @ 6' 9 1/4"	0.644	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 13' 2 1/2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 - Stud wall - HF	5.50"	5.50"	1.50"	1208	542	339	1868	Blocking
2 - Hanger on 18" HF beam	5.50"	Hanger ¹	1.50"	1222	552	345	1894	See note ¹

- 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
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 3" o/c	
Bottom Edge (Lu)	13' 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	THA413	1.75"	N/A	14-10d	4-10d	

- 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)	0 to 13' 2 1/2"	N/A	18.4	--	--	
1 - Uniform (PSF)	0 to 13' 8" (Front)	2'	15.0	40.0	-	Floor Load
2 - Uniform (PLF)	0 to 13' 8" (Top)	N/A	100.0	-	-	wall load above
3 - Uniform (PSF)	0 to 13' 8" (Top)	2'	15.0	-	25.0	roof load above

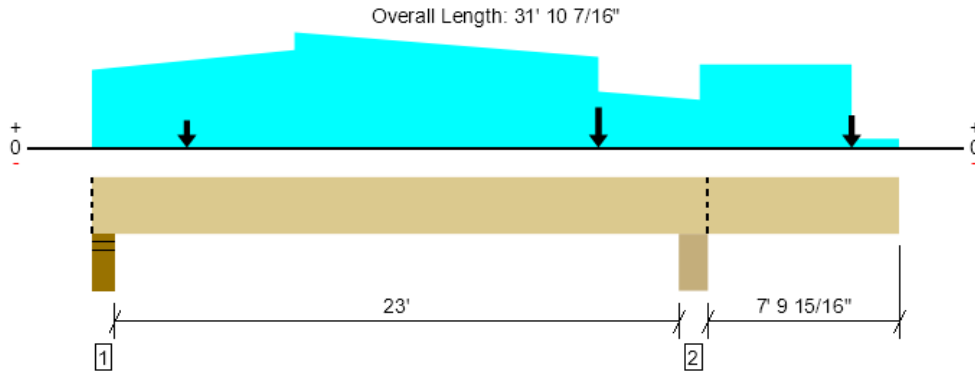
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-11
1 piece(s) 7" x 18" 2.2E Parallam® PSL

Right cantilever exceeds the maximum braced cantilever length of 7'.



Drawing is Conceptual. 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)	11758 @ 4"	15593 (5.50")	Passed (75%)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Shear (lbs)	12458 @ 21' 11 1/2"	28014	Passed (44%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	63448 @ 11' 3 1/4"	100429	Passed (63%)	1.15	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Live Load Defl. (in)	0.528 @ 12' 3/16"	0.585	Passed (L/532)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.875 @ 11' 9 1/4"	1.171	Passed (L/321)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

Member Length : 31' 10 7/16"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/480) and TL (2L/240).
- Upward deflection on right cantilever exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on right cantilever exceeds 0.4".
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - HF	5.50"	5.50"	4.15"	5367	4436/-464	4084	11758	Blocking
2 - Beam - PSL	7.00"	7.00"	4.69"	10281	7849	5789	20509	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)	31' 10" o/c	
Bottom Edge (Lu)	31' 10" 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)	Comments
0 - Self Weight (PLF)	0 to 31' 10 7/16"	N/A	39.4	--	--	
1 - Tapered (PSF)	0 to 8' (Front)	0 to 4'	15.0	40.0	-	Floor Load
2 - Tapered (PSF)	8' to 24' (Front)	7' 6" to 1'	15.0	40.0	-	Floor Load
3 - Uniform (PSF)	24' to 30' (Front)	8'	15.0	40.0	-	Floor Load
4 - Uniform (PSF)	0 to 20' (Back)	5'	15.0	40.0	-	Floor Load
5 - Uniform (PSF)	20' to 30' (Back)	1'	30.0	60.0	25.0	balcony load
6 - Uniform (PLF)	0 to 31' 10 7/16" (Top)	N/A	100.0	-	-	wall load above
7 - Uniform (PSF)	0 to 20' (Top)	13'	12.0	-	25.0	roof load above
8 - Uniform (PSF)	20' to 30' (Top)	7'	12.0	-	25.0	roof load above
9 - Point (lb)	3' 9" (Back)	N/A	988	298	279	Linked from: 2B-7, Support 1
10 - Point (lb)	20' (Back)	N/A	1256	1091	620	Linked from: 2B-9, Support 1
11 - Point (lb)	30' (Front)	N/A	1222	552	345	Linked from: 2B-10, Support 2

Forteweb Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



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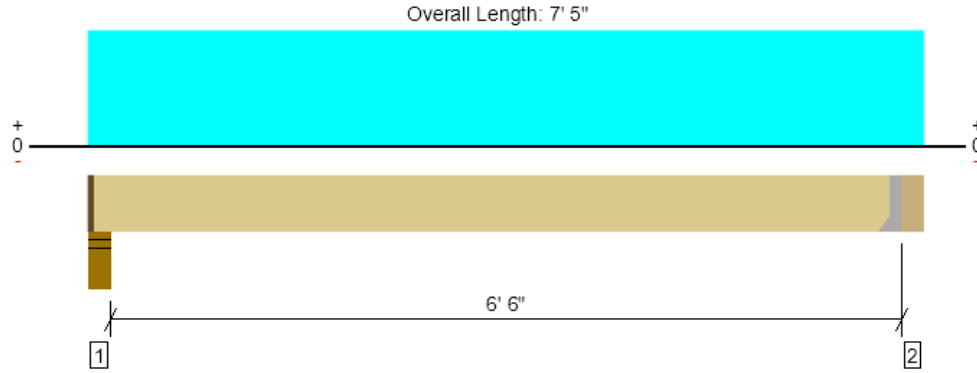
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-12
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	867 @ 6' 11 1/2"	3938 (1.50")	Passed (22%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	474 @ 5' 5 1/2"	13766	Passed (3%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	1435 @ 3' 7 3/4"	44566	Passed (3%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.002 @ 3' 7 3/4"	0.166	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.006 @ 3' 7 3/4"	0.331	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 6' 10"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 - Stud wall - HF	5.50"	4.00"	1.50"	637	146	273	952	1 1/2" Rim Board
2 - Hanger on 18" PSL beam	5.50"	Hanger ¹	1.50"	653	151	283	978	See note ¹

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ 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
2 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10dx1.5	2-10dx1.5	

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

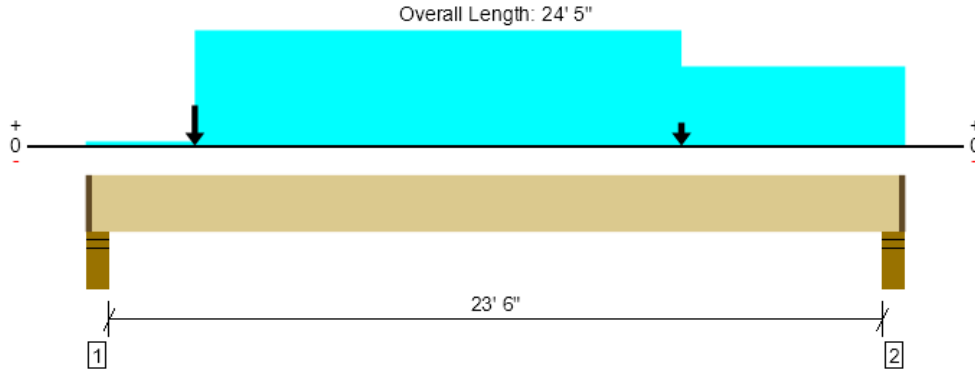
Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/2" to 6' 11 1/2"	N/A	18.4	--	--	
1 - Uniform (PSF)	0 to 7' 5" (Front)	1'	15.0	40.0	-	Floor Load
2 - Uniform (PSF)	0 to 7' 5" (Back)	1'	12.0	-	25.0	low roof load
3 - Uniform (PLF)	0 to 7' 5" (Top)	N/A	100.0	-	-	wall load above
4 - Uniform (PSF)	0 to 7' 5" (Top)	2'	15.0	-	25.0	roof load above

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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
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-13
1 piece(s) 7" x 18" 2.2E Parallam® PSL



Drawing is Conceptual. 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)	10691 @ 4"	11340 (4.00")	Passed (94%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	9489 @ 1' 11 1/2"	24360	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	57732 @ 12' 1 15/16"	87330	Passed (66%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.477 @ 12' 2 1/16"	0.594	Passed (L/598)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.916 @ 12' 1 1/2"	1.188	Passed (L/311)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 24' 2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Member should be side-loaded from both sides of the member or braced to prevent rotation.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - HF	5.50"	4.00"	3.77"	5481	4104	2847	10695	1 1/2" Rim Board
2 - Stud wall - HF	5.50"	4.00"	3.42"	4419	5291	1851	9776	1 1/2" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	24' 2" o/c	
Bottom Edge (Lu)	24' 2" 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)	Comments
0 - Self Weight (PLF)	1 1/2" to 24' 3 1/2"	N/A	39.4	--	--	
1 - Uniform (PSF)	3' 3" to 24' 5" (Back)	9'	15.0	40.0	-	Floor Load
2 - Uniform (PSF)	0 to 17' 9" (Front)	1'	12.0	-	25.0	low roof load
3 - Point (lb)	17' 9" (Front)	N/A	653	151	283	Linked from: 2B-12, Support 2
4 - Uniform (PSF)	17' 9" to 24' 5" (Front)	3' 3"	12.0	40.0	-	floor load
5 - Uniform (PLF)	3' 3" to 17' 9" (Top)	N/A	100.0	-	-	wall load above
6 - Uniform (PSF)	3' 3" to 17' 9" (Top)	9'	12.2	-	25.0	roof load above
7 - Point (lb)	3' 3" (Back)	N/A	1928	757	709	Linked from: 2B-17, Support 1

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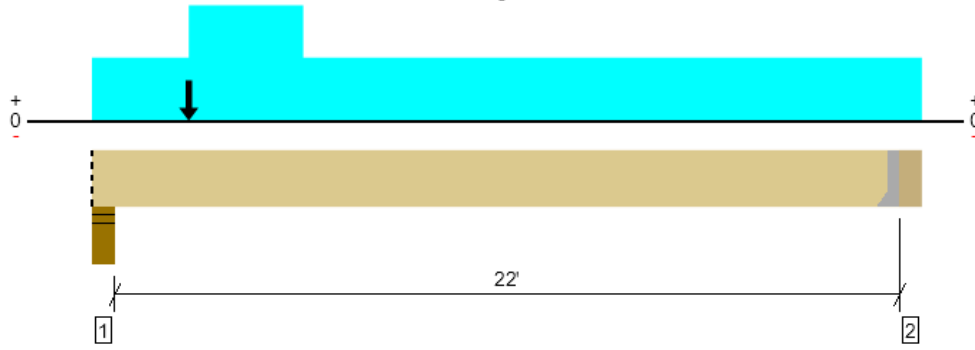
ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-14

1 piece(s) 5 1/4" x 18" 2.2E Parallam® PSL

Overall Length: 22' 11"



Drawing is Conceptual. 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)	6524 @ 22' 5 1/2"	6524 (1.99%)	Passed (100%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	8154 @ 1' 11 1/2"	18270	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	38546 @ 10' 7 11/16"	65497	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.409 @ 11' 3 15/16"	0.553	Passed (L/650)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.658 @ 11' 2 5/16"	1.106	Passed (L/404)	--	1.0 D + 1.0 L (All Spans)

Member Length : 22' 5 1/2"
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 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 - Stud wall - HF	5.50"	5.50"	4.34"	4230	5005	1229	9235	Blocking
2 - Hanger on 18" LVL beam	5.50"	Hanger ¹	1.99"	2302	4461	211	6763	See note ¹

- 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
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	22' 6" o/c	
Bottom Edge (Lu)	22' 6" 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	HGUS5.50/14	4.00"	N/A	66-10d	22-10d	

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

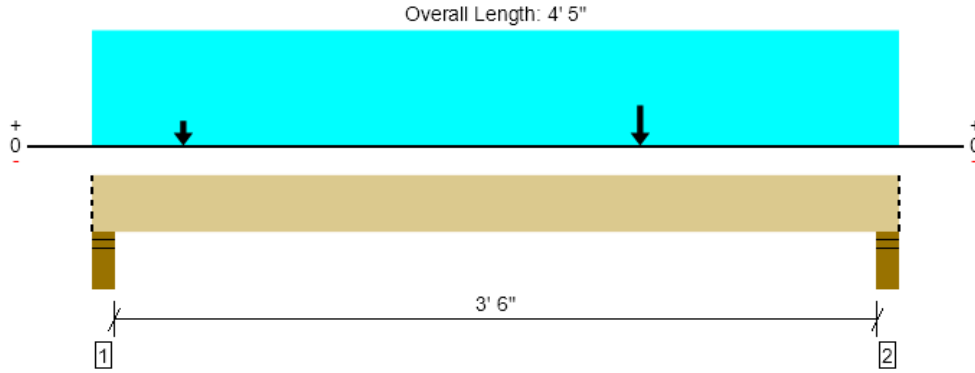
Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 22' 5 1/2"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 22' 11" (Front)	9' 6"	15.0	40.0	-	Floor Load
2 - Uniform (PLF)	2' 9" to 6' (Top)	N/A	100.0	-	-	wall load above
3 - Uniform (PSF)	2' 9" to 6' (Top)	9'	12.0	-	25.0	roof load above
4 - Point (lb)	2' 9" (Front)	N/A	1928	757	709	Linked from: 2B-17, Support 2

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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-15
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	5281 @ 4' 1"	7796 (5.50")	Passed (68%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3186 @ 2' 5 1/2"	11970	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5548 @ 3'	38753	Passed (14%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.008 @ 3'	0.094	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.013 @ 3'	0.188	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 4' 5"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 - Stud wall - HF	5.50"	5.50"	3.05"	1943	1861	1304	4317	Blocking
2 - Stud wall - HF	5.50"	5.50"	3.73"	1830	3452	208	5281	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)	4' 5" o/c	
Bottom Edge (Lu)	4' 5" 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)	Comments
0 - Self Weight (PLF)	0 to 4' 5"	N/A	18.4	--	--	
1 - Uniform (PSF)	0 to 4' 5" (Front)	3'	15.0	40.0	-	Floor Load
2 - Point (lb)	6" (Back)	N/A	1191	322	1301	Linked from: 2B-16, Support 1
3 - Point (lb)	3' (Front)	N/A	2302	4461	211	Linked from: 2B-14, Support 2

Weyerhaeuser Notes

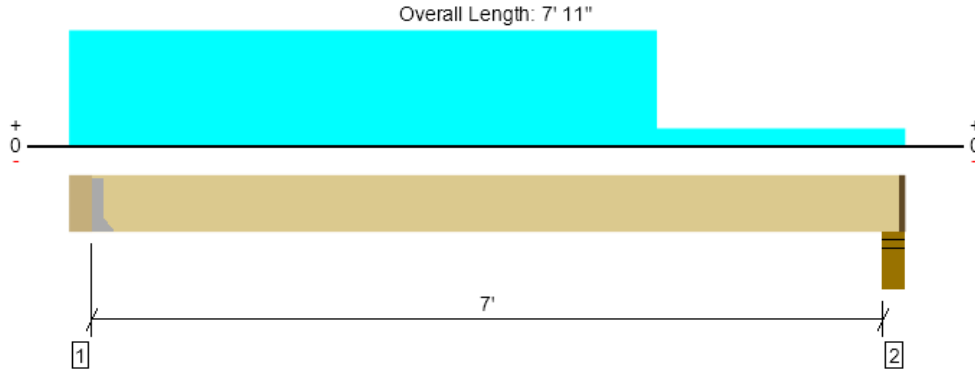
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-16
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	2193 @ 5 1/2"	3938 (1.50")	Passed (56%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1200 @ 5' 11 1/2"	13766	Passed (9%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3597 @ 3' 8 7/8"	44566	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.008 @ 3' 11 1/16"	0.178	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.016 @ 3' 11 1/8"	0.356	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 7' 4"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 18" HF beam	5.50"	Hanger ¹	1.50"	1191	322	1301	2491	See note ¹
2 - Stud wall - HF	5.50"	4.00"	1.50"	668	312	624	1370	1 1/2" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 4" o/c	
Bottom Edge (Lu)	7' 4" 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	THA422	1.75"	N/A	22-16d	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 7' 9 1/2"	N/A	18.4	--	--	
1 - Uniform (PSF)	0 to 7' 11" (Front)	2'	15.0	40.0	-	Floor Load
2 - Uniform (PLF)	0 to 5' 6" (Top)	N/A	100.0	-	-	wall load above
3 - Uniform (PSF)	0 to 5' 6" (Top)	14'	12.2	-	25.0	roof load above

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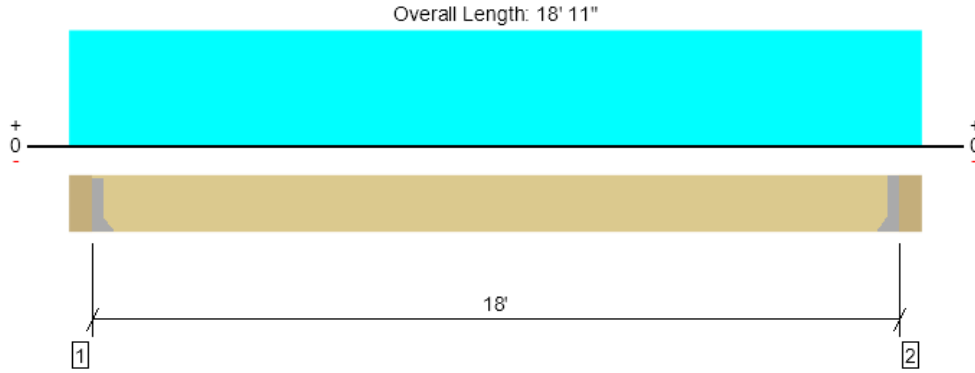
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-17

2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL



Drawing is Conceptual. 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)	2889 @ 5 1/2"	3938 (1.50")	Passed (73%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2135 @ 1' 11 1/2"	11970	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	11531 @ 9' 5 1/2"	38753	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.089 @ 9' 5 1/2"	0.450	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.247 @ 9' 5 1/2"	0.900	Passed (L/876)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 18'
 System : Floor
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2021
 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 18" PSL beam	5.50"	Hanger ¹	1.50"	1928	757	709	3027	See note ¹
2 - Hanger on 18" PSL beam	5.50"	Hanger ¹	1.50"	1928	757	709	3027	See note ¹

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	16' 2" o/c	
Bottom Edge (Lu)	18' 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	THA422	1.75"	N/A	22-16d	6-16d	
2 - Face Mount Hanger	THA422	1.75"	N/A	22-16d	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	5 1/2" to 18' 5 1/2"	N/A	18.4	--	--	
1 - Uniform (PSF)	0 to 18' 11" (Front)	2'	15.0	40.0	-	Floor Load
2 - Uniform (PLF)	0 to 18' 11" (Top)	N/A	120.0	-	-	wall load above
3 - Uniform (PSF)	0 to 18' 11" (Top)	2'	12.2	-	25.0	roof load above
4 - Uniform (PSF)	0 to 18' 11" (Front)	1'	12.0	-	25.0	low roof load

Weyerhaeuser Notes

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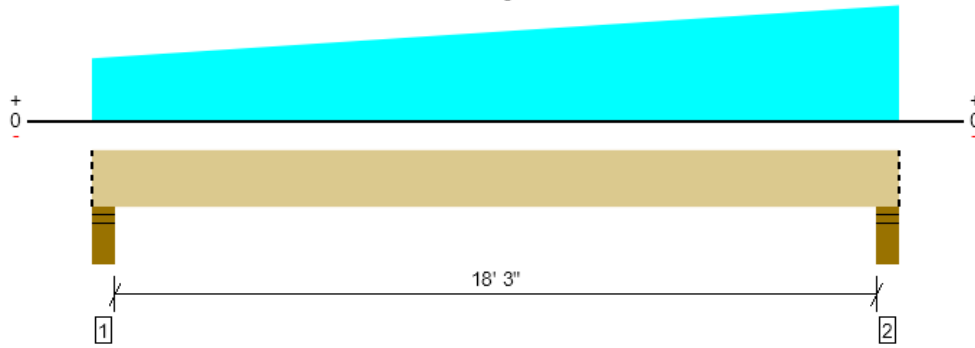
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-18
2 piece(s) 1 3/4" x 18" 2.OE Microllam® LVL

Overall Length: 19' 2"



Drawing is Conceptual. 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)	5953 @ 18' 10"	7796 (5.50")	Passed (76%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4566 @ 17' 2 1/2"	13766	Passed (33%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	24302 @ 9' 11 15/16"	44566	Passed (55%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.243 @ 9' 8 9/16"	0.463	Passed (L/913)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.484 @ 9' 8 3/16"	0.925	Passed (L/459)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 19' 2"
System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2021
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 - Stud wall - HF	5.50"	5.50"	3.47"	2528	1263	1917	4913	Blocking
2 - Stud wall - HF	5.50"	5.50"	4.20"	2875	2188	1917	5953	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)	7' 9" o/c	
Bottom Edge (Lu)	19' 2" 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)	Comments
0 - Self Weight (PLF)	0 to 19' 2"	N/A	18.4	--	--	
1 - Tapered (PSF)	0 to 19' 2" (Front)	1' to 8'	15.0	40.0	-	Floor Load
2 - Uniform (PLF)	0 to 19' 2" (Top)	N/A	100.0	-	-	wall load above
3 - Uniform (PSF)	0 to 19' 2" (Top)	8'	12.0	-	25.0	roof load above

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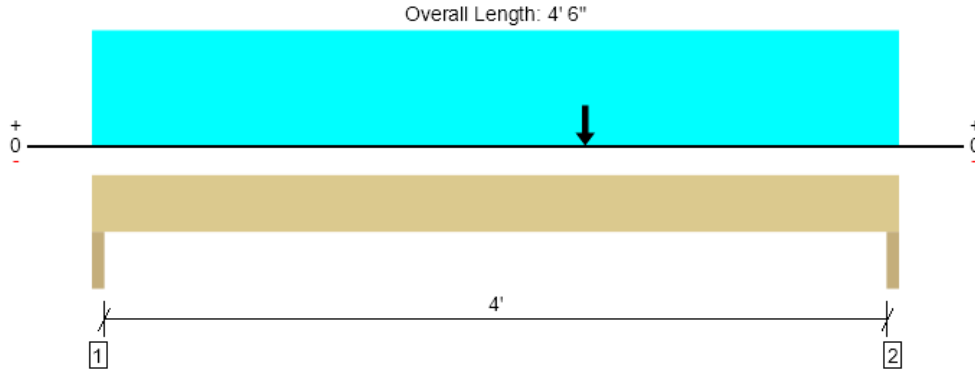
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



2nd Floor, 2B-19
 1 piece(s) 3 1/2" x 7 1/2" 24F-V4 DF Glulam



Drawing is Conceptual. 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)	4476 @ 4' 4 1/2"	6825 (3.00")	Passed (66%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4090 @ 3' 7 1/2"	5333	Passed (77%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Pos Moment (Ft-lbs)	6601 @ 2' 9"	7479	Passed (88%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.043 @ 2' 3 1/2"	0.142	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.080 @ 2' 3 1/2"	0.213	Passed (L/639)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 4' 6"
 System : Floor
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2021
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 0.9% decrease in the moment capacity has been added to account for lateral stability.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 4' 3".
- 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	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	1383	1015	1340	3149	None
2 - Trimmer - HF	3.00"	3.00"	1.97"	2024	1104	2164	4476	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4' 6"	N/A	6.4	--	--	
1 - Uniform (PLF)	0 to 4' 6" (Top)	N/A	145.0	386.5	-	Linked from: 2J-1, Support 1
2 - Point (lb)	2' 9" (Top)	N/A	2726	380	3504	Linked from: 2B-4, Support 1

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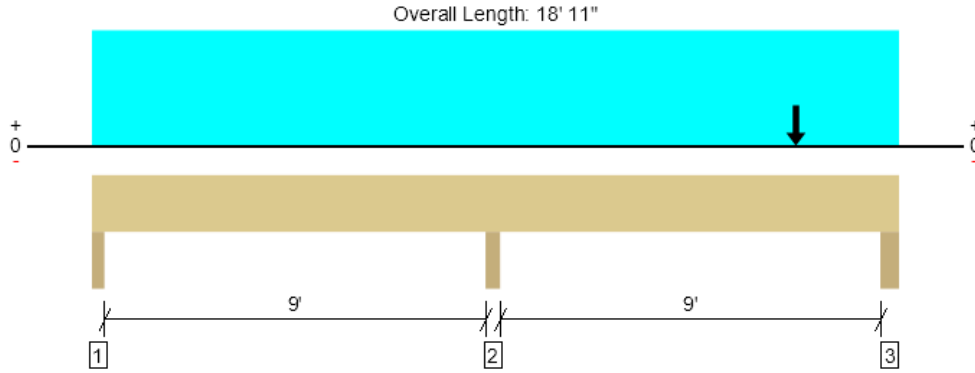
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



1st Floor, 1H-1
1 piece(s) 7" x 14" 2.2E Parallam® PSL



Drawing is Conceptual. 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)	16178 @ 18' 8"	19688 (4.50")	Passed (82%)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Shear (lbs)	14105 @ 17' 4 1/2"	18947	Passed (74%)	1.00	1.0 D + 1.0 L (Alt Spans)
Moment (Ft-lbs)	30774 @ 16' 6"	54324	Passed (57%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.067 @ 14' 9 7/16"	0.309	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.128 @ 14' 9 15/16"	0.464	Passed (L/870)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

Member Length : 18' 11"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 1.6% decrease in the moment capacity has been added to account for lateral stability.
- -644 lbs uplift at support located at 1 1/2". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	-25	1338/-619	-320	1313/-729	None
2 - Trimmer - HF	3.50"	3.50"	2.67"	5284	6410	1992	11694	None
3 - Trimmer - HF	4.50"	4.50"	3.70"	7872	6959/-185	4116	16178	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 18' 11"	N/A	30.6	--	--	
1 - Uniform (PSF)	0 to 18' 11"	8'	15.0	40.0	-	Floor Load
2 - Point (lb)	16' 6"	N/A	10281	7849	5789	Linked from: 2B-11, Support 2

Weyerhaeuser Notes

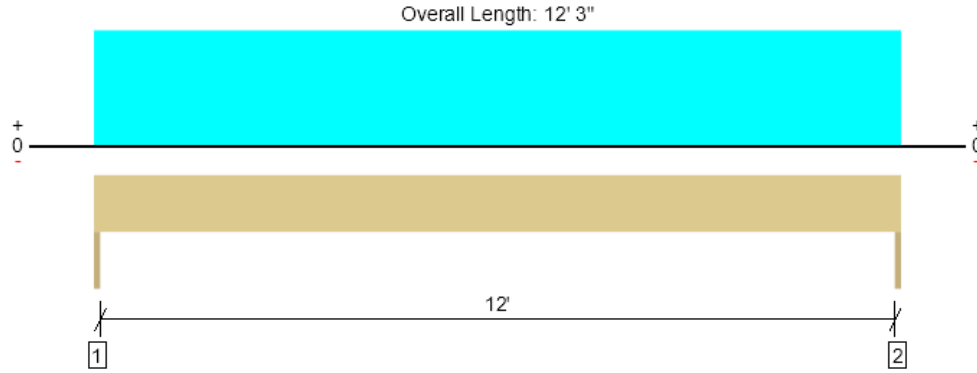
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



1st Floor, 1H-2
1 piece(s) 3 1/2" x 9" 24F-V4 DF Glulam



Drawing is Conceptual. 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)	537 @ 0	3413 (1.50")	Passed (16%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	460 @ 10 1/2"	5565	Passed (8%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	1644 @ 6' 1 1/2"	9139	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.066 @ 6' 1 1/2"	0.408	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.116 @ 6' 1 1/2"	0.613	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 12' 3"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 3.3% decrease in the moment capacity has been added to account for lateral stability.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 12' 3".
- 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	Factored	
1 - Trimmer - HF	1.50"	1.50"	1.50"	231	306	537	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	231	306	537	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 12' 3"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 12' 3"	2'	15.0	25.0	low roof load

Weyerhaeuser Notes

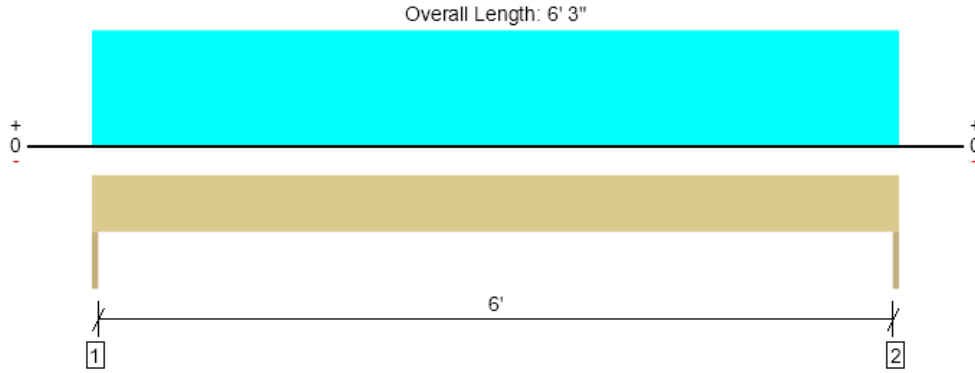
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



1st Floor, 1H-3
1 piece(s) 3 1/2" x 7 1/2" 24F-V4 DF Glulam



Drawing is Conceptual. 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)	2957 @ 0	3413 (1.50")	Passed (87%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2158 @ 9"	4638	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	4437 @ 3' 1 1/2"	6489	Passed (68%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.099 @ 3' 1 1/2"	0.208	Passed (L/757)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.147 @ 3' 1 1/2"	0.313	Passed (L/511)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 6' 3"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 1.1% decrease in the moment capacity has been added to account for lateral stability.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 6' 3".
- 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	Factored	
1 - Trimmer - HF	1.50"	1.50"	1.50"	960	1880	783	2957	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	960	1880	783	2957	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 3"	N/A	6.4	--	--	
1 - Uniform (PLF)	0 to 6' 3"	N/A	300.8	601.5	250.5	Linked from: 2J-2 (Balcony Joist), Support 2

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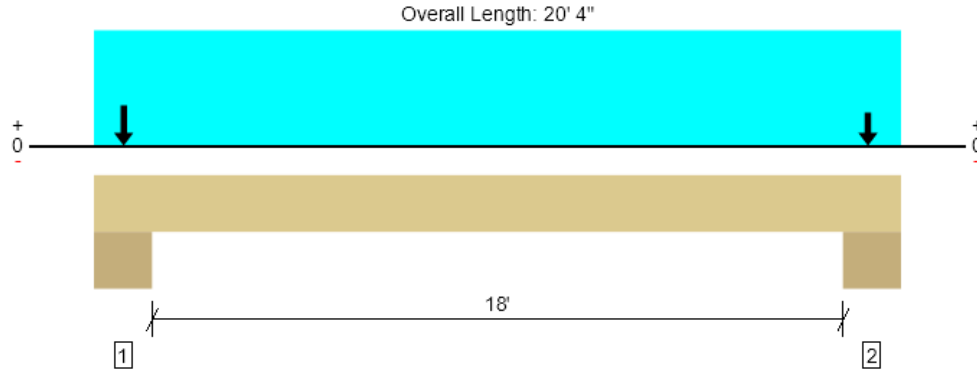
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



1st Floor, 1H-4 (Garage Header)
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



Drawing is Conceptual. 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)	11200 @ 1' 1/2"	31185 (14.00')	Passed (36%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	448 @ 2' 2"	13409	Passed (3%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	2333 @ 10' 2"	29473	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.044 @ 10' 2"	0.608	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.098 @ 10' 2"	0.913	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 20' 4"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 2.9% decrease in the moment capacity has been added to account for lateral stability.
- Critical positive moment adjusted by a volume/size factor of 1.00 that was calculated using length L = 18' 3".
- 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	Factored	
1 - Plate - HF	14.00"	14.00"	5.03"	5797	4104	3101	11200	None
2 - Plate - HF	14.00"	14.00"	4.29"	4546	5005	1483	9551	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 20' 4"	N/A	16.0	--	--	
1 - Uniform (PSF)	0 to 20' 4"	1'	15.0	-	25.0	low roof load
2 - Point (lb)	9"	N/A	5481	4104	2847	Linked from: 2B-13, Support 1
3 - Point (lb)	19' 6"	N/A	4230	5005	1229	Linked from: 2B-14, Support 1

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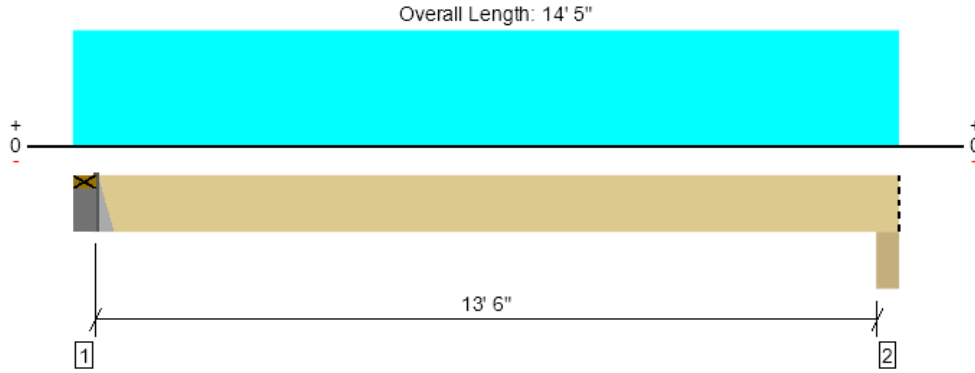
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



1st Floor, 1J-1
1 piece(s) 2 x 12 DF No.2 @ 16" OC



Drawing is Conceptual. 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)	498 @ 5 1/2"	1406 (1.50")	Passed (35%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	429 @ 1' 4 3/4"	2025	Passed (21%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1691 @ 7' 3"	2729	Passed (62%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.143 @ 7' 3"	0.340	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.197 @ 7' 3"	0.679	Passed (L/826)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 13' 11 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on Single 2X DF plate	5.50"	Hanger ¹	1.50"	145	387	532	See note ¹
2 - Beam - DF	5.50"	5.50"	1.50"	143	382	526	Blocking

- 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
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	End Bearing Points	

Connector: Simpson Strong-Tie							
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories	
1 - Top Mount Hanger	JB212A	2.00"	4-10dx1.5	2-10dx1.5	2-10dx1.5		

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 14' 5"	16"	15.0	40.0	Floor Load

Weyerhaeuser Notes

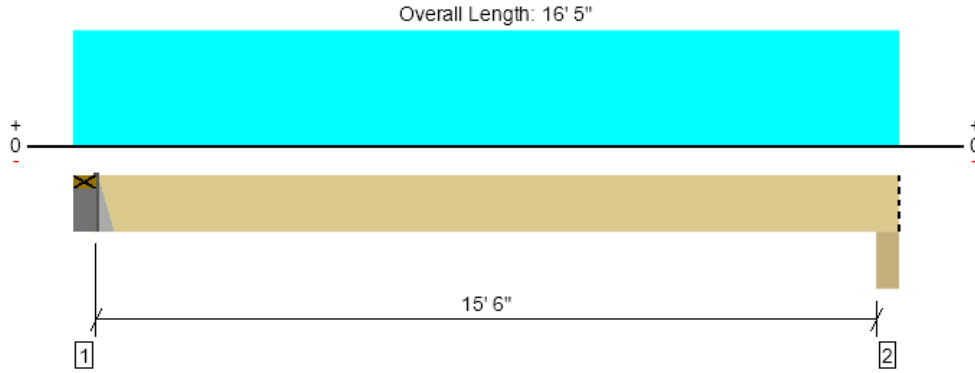
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



1st Floor, 1J-2
1 piece(s) 2 x 12 DF No.2 @ 12" OC



Drawing is Conceptual. 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)	429 @ 5 1/2"	1406 (1.50")	Passed (30%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	377 @ 1' 4 3/4"	2025	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1670 @ 8' 3"	2729	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.186 @ 8' 3"	0.390	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.256 @ 8' 3"	0.779	Passed (L/730)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 15' 11 1/2"
System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on Single 2X DF plate	5.50"	Hanger ¹	1.50"	124	330	454	See note ¹
2 - Beam - DF	5.50"	5.50"	1.50"	123	327	449	Blocking

- 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
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	Continuous	
Bottom Edge (Lu)	End Bearing Points	

Connector: Simpson Strong-Tie

Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Top Mount Hanger	JB212A	2.00"	4-10dx1.5	2-10dx1.5	2-10dx1.5	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 16' 5"	12"	15.0	40.0	Floor Load

Weyerhaeuser Notes

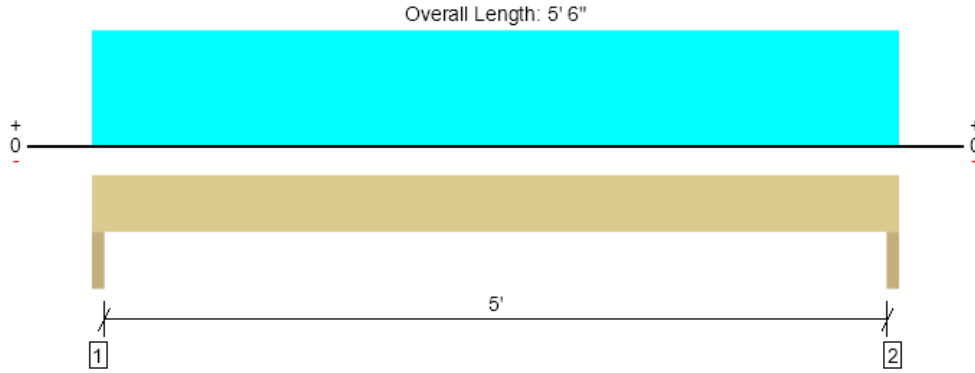
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ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



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



Drawing is Conceptual. 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)	2140 @ 1' 1/2"	6563 (3.00")	Passed (33%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1346 @ 1' 1/4"	3885	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2681 @ 2' 9"	4453	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.026 @ 2' 9"	0.175	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.036 @ 2' 9"	0.262	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 5' 6"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 0.9% decrease in the moment capacity has been added to account for lateral stability.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	600	1540	2140	None
2 - Trimmer - HF	3.00"	3.00"	1.50"	600	1540	2140	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 5' 6"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 5' 6" (Front)	14'	15.0	40.0	Default Load

Weyerhaeuser Notes

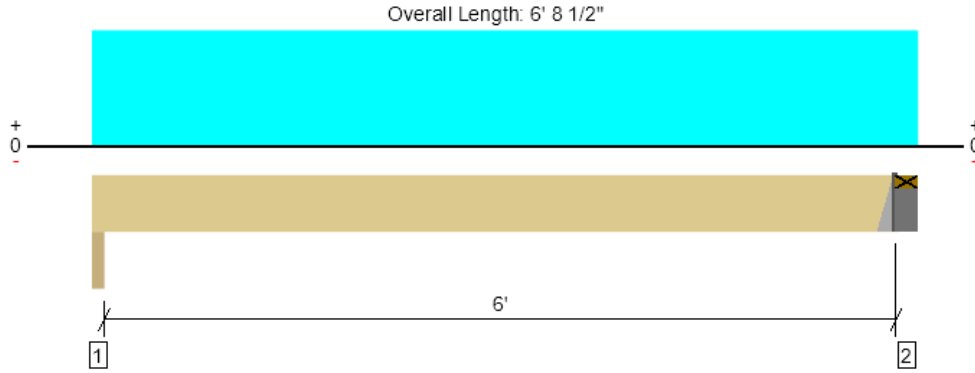
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	



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



Drawing is Conceptual. 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)	1709 @ 6' 3"	3281 (1.50")	Passed (52%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1279 @ 5' 5 3/4"	3885	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2618 @ 3' 2 1/4"	4446	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.034 @ 3' 2 1/4"	0.204	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.048 @ 3' 2 1/4"	0.306	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

Member Length : 6' 3"
System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- A 1% decrease in the moment capacity has been added to account for lateral stability.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Trimmer - HF	3.00"	3.00"	1.50"	504	1275	1779	None
2 - Hanger on Single 2X HF plate	5.50"	Hanger ¹	1.50"	553	1408	1962	See note ¹

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Connector: Simpson Strong-Tie							
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories	
2 - Top Mount Hanger	BA3.56/9.25	3.00"	6-10dx1.5	4-10dx1.5	2-10dx1.5		

- 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	8.2	--	
1 - Uniform (PSF)	0 to 6' 8 1/2" (Front)	10'	15.0	40.0	Default Load

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Harrison Kliegl L120 Engineering (425) 636-3313 hkliegl@l120engineering.com	





LONGITUDE
ONE TWENTY°
ENGINEERING & DESIGN

Lateral Design

Lateral-force design element calculation references are shown on structural plans for ease of reference

Project Number: S230531-2	Plan Name: Forest Ave Lot 1	Sheet Number: DC
Engineer: HK	Specifics: Design Criteria	Date: 5/15/2024

Gravity Criteria:

BLUE = Review and update as required - Typical Input

Code: IBC 2021

TYPICAL ROOF SYSTEM			
Live Load:			
Snow	25.0	psf	
Dead Load:			
Composite Roofing	2.0	psf	
19/32" Plywood Sheathing	2.5	psf	
Trusses at 24" o.c.	3.0	psf	
Insulation	1.8	psf	
(2) Layers 5/8" GWB	4.4	psf	
Misc or Tile Roof	1.3	psf	
Total	15.0	psf	

FLOOR SYSTEM			
Live Load:			
Residential	40.0	psf	
Dead Load:			
Flooring	3.0	psf	
3/4" T & G Plywood	2.5	psf	
Floor Joists at 16" o.c.	2.5	psf	
Insulation	0.5	psf	
(1) Layers 5/8" GWB	2.2	psf	
Misc or Tile Flooring	1.3	psf	
Total	12.0	psf	

EXTERIOR WALL SYSTEM			
2x6 at 16" o.c.	1.7	psf	
Insulation	1.0	psf	
1/2" Plywood Sheathing	1.5	psf	
(2) layers 5/8" GWB	4.4	psf	
Misc or Brick Covered Wall	3.4	psf	
Total	12.0	psf	

INTERIOR WALL SYSTEM			
2x4 at 16" o.c.	1.1	psf	
Insulation	0.5	psf	
(2) Layers 5/8" GWB	4.4	psf	
Misc	2.0	psf	
Total	8.0	psf	

SEISMIC PARAMETERS:

Code Reference: ASCE 7-16

R = **6.5** Bearing Wall System, Wood Structural Panel Walls

Mapped Spectral Acceleration, S_s = **1.45**

Mapped Spectral Acceleration, S₁ = **0.503**

Soil Site Class = **D**

WIND PARAMETERS:

Code Reference: ASCE 7-16

Basic Wind Speed (3 second Gust) = **100** mph

Exposure : **C**

K_{zt} = **1.00**

SOIL PARAMETERS:

Soil Bearing Pressure = **2,000** psf competent native soil or structural fill
1/3 increase for short-term wind or seismic loading is acceptable

Frost Depth = **18** in

Lateral Wall Pressures:

Unrestrained Active Pressure = **35** pcf Cantilevered walls

Restrained Active Pressure = **50** pcf Plate Wall Design/Tank Walls

Passive Pressure = **250** pcf

Soil Friction Coeff. = **0.45**

Project Number: S230531-2	Plan: Forest Ave Lot 1	Sheet Number: L1
Engineer: HK	Specifics: WIND FORCES	Date: 5/15/2024

IBC 2021 Section 1609 → ASCE 7-16 Section 28.6 - Simplified Procedure → Main Wind-Force Resisting System

WIND DESIGN CRITERIA:

Basic Wind Speed, $V_s = 100$ mph (ASCE 7-16, Section 26.5)
 Exposure = **C** (ASCE 7-16, Section 26.7)

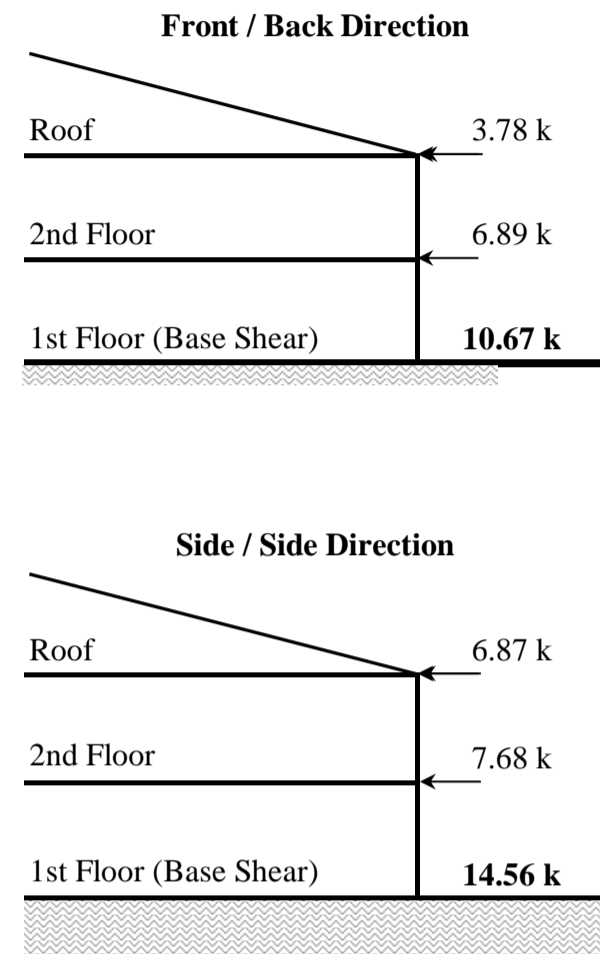
BUILDING DIMENSIONS:

Roof Slope = **2.00** :12 = 9.46 degrees
 Loads From Front/Back - Width (ft) = **55.00** ft Roof: **Hip**
 Loads From Side - Width (ft) = **59.00** ft Roof: **Gable**
 Average Eave Height = **22.00** ft
 Mean Roof Ht. , $h = 23.00$ ft (ASCE 7-16, Figure 27.6-2)
 Edge Strip Width, $a = 5.5$ ft (ASCE 7-16, Figure 28.6-1)
 End Zone Width, $2a = 11.00$ ft (ASCE 7-16, Figure 28.6-1)

TOPOGRAPHIC DESIGN CONSIDERATIONS:

Topographic Factor , $K_{zt} = 1.00$ (ASCE 7-16, Section 26.8)
 Adjustment Factor, $\lambda = 1.35$ (ASCE 7-16, Figure 28.6-1)

WIND LOAD SUMMARY:

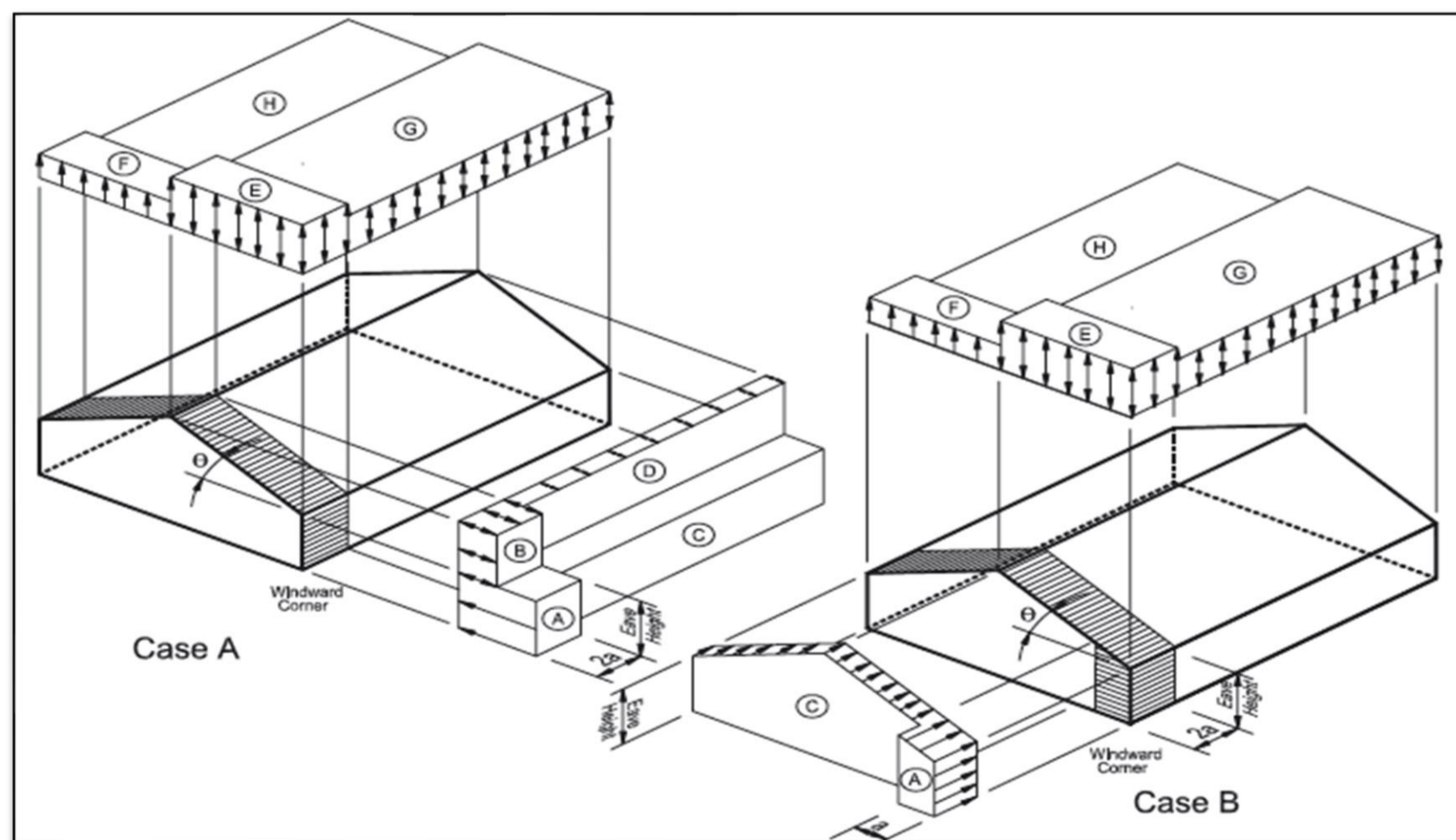


SIMPLIFIED DESIGN WIND PRESSURE, P_{S30} (psf)

(Exposure B at $h = 30$ ft.)

Basic Wind Speed, V_s (mph)	Roof Angle (Degrees)	Load Case	ZONES*									
			Horizontal Pressure				Vertical Pressure				Overhang	
			A	B	C	D	E	F	G	H	E_{OH}	G_{OH}
100	9.46	A	17.90	-7.40	11.90	-4.30	-19.10	-11.60	-13.30	-8.90	-26.70	-20.90

* Values Interpolated from Figure 28.6-1 ASCE 7 - 16



Project Number: S230531-2	Plan: Forest Ave Lot 1	Sheet Number: L1
Engineer: HK	Specifics: WIND FORCES	Date: 5/15/2024

IBC 2021 Section 1609 → ASCE 7-16 Section 28.6 - Simplified Procedure → Main Wind-Force Resisting System

HORIZONTAL LOADS (psf)				MIN. LOADS (psf)	
$p_s = \lambda * K_z t * P_s 30$				Per ASCE 7-16, 28.6.3	
End zone		Interior zone		Roof	Wall
A (Wall)	B (Roof)	C (Wall)	D (Roof)		
24.17	-9.99	16.07	-5.81	8.0	16.0

ASD WIND FORCES: FRONT / BACK LOADING DIRECTION										
Location	Width (ft)	Height (ft)	Plane	End Zone		Interior zone		Force 0.6 ω*W (kips)	Min Force 0.6 ω*W (kips)	
				Length (ft)	Pressure (W) (psf)	Length (ft)	Pressure (W) (psf)			
ROOF	"Height" of Roof to Plate (see note)	55.0	2.00	(roof)	11.0	-9.99	44.0	-5.81	0.00	0.69
	Plate to Mid 2nd LVL	55.0	4.50	(wall)	11.0	24.17	44.0	16.07	3.41	3.09
									Σ =	3.41
2nd FLOOR	Mid 2nd LVL to Floor	55.0	4.50	(wall)	11.0	24.17	44.0	16.07	3.41	3.09
	"Height" Low-Roof to Plate	0.0	0.00	(roof)	11.0	-9.99	-11.0	-5.81	0.00	0.00
	Floor to Mid 1st LVL	50.0	5.00	(wall)	11.0	24.17	39.0	16.07	3.48	3.12
									Σ =	6.89
Total Wind Base Shear (kips)								10.31	9.98	

ASD WIND FORCES: SIDE / SIDE LOADING DIRECTION										
Location	Width (ft)	Height (ft)	Plane	End Zone		Interior zone		Force 0.6 ω*W (kips)	Min Force 0.6 ω*W (kips)	
				Length (ft)	Pressure (W) (psf)	Length (ft)	Pressure (W) (psf)			
ROOF	"Height" of Roof to Plate (see note)	59.0	4.00	(roof)	11.0	24.17	48.0	16.07	3.24	1.47
	Plate to Mid 2nd LVL	59.0	4.50	(wall)	11.0	24.17	48.0	16.07	3.64	3.31
									Σ =	6.87
2nd FLOOR	Mid 2nd LVL to Floor	59.0	4.50	(wall)	11.0	24.17	48.0	16.07	3.64	3.31
	"Height" Low-Roof to Plate	0.0	0.00	(roof)	11.0	24.17	-11.0	16.07	0.00	0.00
	Floor to Mid 1st LVL	59.0	5.00	(wall)	11.0	24.17	48.0	16.07	4.04	3.68
									Σ =	7.68
Total Wind Base Shear (kips)								14.56	11.78	

Project Number: S230531-2	Plan Name: Forest Ave Lot 1	Sheet Number: L2
Engineer: HK	Specifics: SEISMIC WEIGHTS	Date: 5/15/2024

Unit Weights (psf)

Roof:	15	psf
Floor:	12	psf
Exterior Wall:	12	psf
Interior Wall:	8	psf

Seismic Weights include: (REF §12.7)

25% of storage Live loads
 Actual partition weight or 10 psf min if applicable
 Operating weight of permanent equipment
 20% of uniform design snow loads for areas where Pf > 30 psf

LEVEL	ITEM	AREA / LENGTH	HEIGHT (ft)	UNIT WEIGHT (psf)		Item Total Weight. (lbs)	Level	
							Sub- Total (kips)	Average Pressure (psf)
ROOF								
	Roof	2,975	1.03	15	=	46,183		
	Ext. Wall Below	240	5.00	12	=	14,400		
	Interior Wall Below	180	5.00	8	=	7,200		
							68	23
2nd FLOOR								
	Floor	2,160	1.00	12	=	25,920		
	Low Roof	420	1.03	12	=	5,216		
	Ext. Wall Above	240	5.00	12	=	14,400		
	Interior Wall Above	180	5.00	8	=	7,200		
	Ext. Wall Below	240	5.00	12	=	14,400		
	Interior Wall Below	100	5.00	8	=	4,000		
							71	28
1st FLOOR								
	Ext. Wall Above	240	5.00	12	=	14,400		
	Interior Wall Above	100	5.00	8	=	4,000		
							18	

STRUCTURE WEIGHT FOR SEISMIC BASE SHEAR: 139 kips

TOTAL WEIGHT OF STRUCTURE: 157 kips
 (Includes Basement Dead Load)

Project Number: S230531-2	Plan Name: Forest Ave Lot 1	Sheet Number: L3
Engineer: HK	Specifics: SEISMIC FORCES	Date: 5/15/2024

Equivalent Lateral Force Analysis per IBC 2021 1613.1 → ASCE 7-16 Table 12.6-1 → Sec 12.8

Data generated by: [Seismic Design Values for Buildings](#) "Java Ground Motion Parameter Calculation"

$S_1 = 0.503$ Maps
 $S_{DS} = 0.968$ (ASCE 7 EQ 11.4.-3)
 $S_{D1} = 0.611$ (ASCE 7 EQ 11.4.-4)
 Seismic Importance Factor = **1.00** (ASCE 7 Table 11.5-1)
 Seismic Design Category = **D** (ASCE 7 Table 11.6-1 & 11.6.2)
 Response Modification Factor, R = **6.5** (ASCE 7 Table 12.2-1)
 Seismic Force-Resisting System Description = **A.13 - light framed walls**

Building Height, $h_n = 23.0$ ft
 Building Period Coefficient, $C_T = 0.020$ (ASCE 7 Table 12.8.-2)
 Approx. Fundamental Period, $T_a = 0.210$ ($C_T \cdot (h_n^{0.75})$) (ASCE 7 EQ 12.8.-7)
 Approx. Fundamental Period, $T_L = 6.0$ sec (ASCE 7 11.4.5)

Seismic Response Coefficient

$C_s = S_{DS}/(R/I)$ $C_s = 0.149$ (ASCE 7 EQ 12.8.-2)

Seismic Response Coefficient, Maximum

$C_{s,MAX} = S_{D1}/(T \cdot R/I)$ $C_{s,MAX} = 0.447$ $T \leq T_L$ (ASCE 7 EQ 12.8.-3)

$C_{s,MAX} = S_{D1} T_L / (T^2 \cdot R/I)$ $C_{s,MAX} = NA$ $T > T_L$ (ASCE 7 EQ 12.8.-4)

Seismic Response Coefficient, Minimum

$C_{s,MIN} = 0.01$ $C_{s,MIN} = 0.010$ (ASCE 7 EQ 12.8.-5)

$C_{s,MIN} = 0.5 S_1 / (R/I)$ $C_{s,MIN} = NA$ if $S_1 > 0.6$ (ASCE 7 EQ 12.8.-6)

$C_s = 0.149$

Dead Load W = 139 kips

$V = C_s W = 20.7$ kips (ASCE 7 EQ 12.8.-1)

$Q_E = V = 20.7$ kips (ASCE 7 EQ 12.4-3)

$\rho = 1.0$ (ASCE 7 12.3.4.2)

$E_H = \rho Q_E = 20.7$ kips (ASCE 7 EQ 12.4-3)

$E_v = .2 S_{DS} D = 0.19$ x D kips

Factor for Alternate Basic Load combinations - 2021 IBC

$E_H/1.4 = 14.8$ kips IBC 2021 1605 (Eq 16-6)

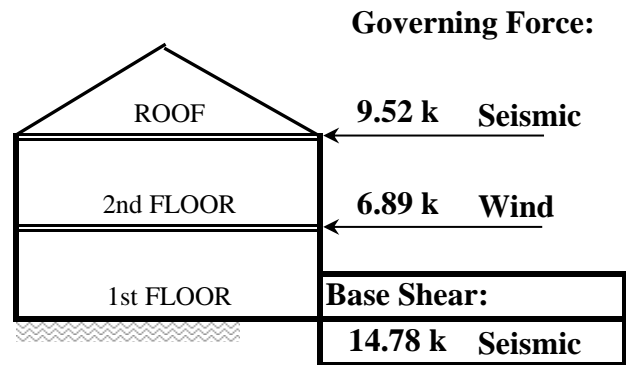
$k = 1$ (ASCE 7 12.8.3)

VERTICAL DISTRIBUTION (Per ASCE 7 - 12.8.3)								
Floor	Area (ft ²)	Story Height H (ft)	Total Height h_x (ft)	Story Weight w_x (kips)	$w_x h_x^k$ (k-ft)	Vert Dist Factor C_{vx}	Story Force F _x (kips)	Factored Story Force (ASD) $F_x \rho/1.4 = E_H/1.4$ (kips)
Roof	2,975	9.00	19.00	68	1,288	0.64	13.3	9.5
2nd	2,160	10.00	10.00	71	711	0.36	7.4	5.3
				Sum =	1,999	1.000	20.7	14.8

Project Number: S230531-2	Plan Name: Forest Ave Lot 1	Sheet Number: L4
Engineer: HK	Specifics: DESIGN LOADS	Date: 5/15/2024

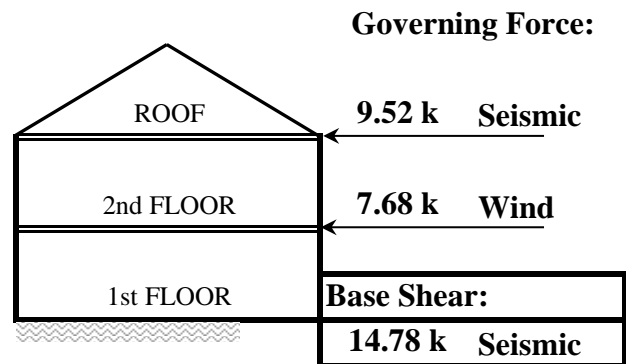
FRONT / BACK APPLIED FORCES

Wind Force <i>0.6 ω * W_s (kips)</i>		Seismic Force <i>E/1.4 (kips)</i>	
Per Level	Sum	Per Level	Sum
3.78		9.52	
	3.78		9.52
6.89		5.26	
	10.67		14.78



SIDE / SIDE APPLIED FORCES

Wind Force <i>0.6 ω * W_s (kips)</i>		Seismic Force <i>E/1.4 (kips)</i>	
Per Level	Sum	Per Level	Sum
6.87		9.52	
	6.87		9.52
7.68		5.26	
	14.56		14.78



Project Number: S230531-2	Plan Name: Forest Ave Lot 1	Sheet Number: L5
Engineer: HK	Specifies: Shear walls	Date: 5/15/2024

Notes:
 * All walls designed with Force-Transfer should meet a minimum height to width ratio of 2:1 at Pier (SDPWS 2021, Table 4.3.3)
 * Maximum allowed height to width ratio 3.5:1 for walls w/o openings (increased shear design values per SDPWS 2021, Table 4.3.3)
 * Shear panel height is height to underside of roof or floor framing.

RED = Update Formula as required - Important
BLUE = Review and update as required - Typical Input

2nd Story Walls (Front - Back Direction)

Stud Species = **HF**
 "Adjusted" Story shear(kips) = **9.52**
 Story height (ft) = **10.00**
 Shear Panel height (ft) = **9.00**
 Total Diaphragm Area (sq ft) = **2975.00**
 100% story shear **YES**
 Governing Force (F/B Direction) = **Seismic**
 Dead load factor (F/B Direction) = **0.90**
 Shear panel capacity (Wind or Seismic) = **Seismic**
 load balance check = **OK**

IBC 2021 Equation 16-6

Story	Wall Mark	Wall L(ft)	Opening Width (ft)	Opening Height (ft)	Opening (max) to Edge (ft)	Plate to Opening (ft)	Effective Length (ft)	Trib. Area (sq ft)	Percent Sharing (%)	Effective Trib. Area	Story V(kips)	Sum V(kips)	Panel Shear (plf)	Height/Width Reduction (%) R = 2*L/H	Design Panel Shear (plf)	Wall Type	Floor DL Trib(ft)	Story DL(klf)	Sum DL(klf)	OTM (k-ft)	RM (k-ft)	Resultant HD(kips)	HD TYPE	HD/Strap to DF or HF?	HD location Edge/Interior?	Resultant HD	Force at Window (Kips)	Window Strap
2	1.1	12.83	6.00	5.00	4.00	1.00	6.83	735.00	0.49	362.98	1.16	1.16	170	1.00	170	SW6	2.00	0.14	0.14	11.6	10.2	0.11	fr-beam	HF	Edge	No HD	2.38	CS14
2	1.2	18.50	11.50	6.00	3.00	1.00	7.00	735.00	0.51	372.02	1.19	1.19	170	1.00	170	SW6	2.00	0.14	0.14	11.9	21.3	-0.52	fr-beam	HF	Interior	No HD	2.04	CS14
2	3.1	13.00					13.00	1385.00	0.42	580.81	1.86	1.86	143	1.00	143	SW6	3.00	0.15	0.15	18.6	11.6	0.56	fr-beam	HF	Interior	MSTC48B3	0.00	No strap
2	3.2	9.00					9.00	1385.00	0.29	402.10	1.29	1.29	143	1.00	143	SW6	4.00	0.17	0.17	12.9	6.1	0.79	fr-beam	HF	Interior	MSTC48B3	0.00	No strap
2	3.3	9.00					9.00	1385.00	0.29	402.10	1.29	1.29	143	1.00	143	SW6	5.00	0.18	0.18	12.9	6.7	0.73	fr-beam	HF	Interior	MSTC48B3	0.00	No strap
2	4.1	23.00	10.00	7.50	3.00	1.50	13.00	855.00	1.00	855.00	2.74	2.74	210	1.00	210	SW6	6.00	0.20	0.20	27.4	47.1	-0.88	fr-beam	HF	Interior	No HD	2.21	CS14

2nd Story Walls (Front - Back Direction)
Hold downs and window straps

S = 85.33	Total OSB wall length = (feet) = 57.83	S = 2975.00	9.52	9.52	OK	Total OSB Capacity (kips) = 9.52
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1st Story Walls (Front - Back Direction)

Shear panel capacity (Wind or Seismic) = **Wind**

"Adjusted" Story shear(kips) = **6.89**
 Story height (ft) = **10.00**
 Shear Panel height (ft) = **10.00**
 Total Diaphragm Area (sq ft) = **2580.00**
 Accumulated Shear = **16.41**
 load balance check = **OK**

1st Story Walls (Front - Back Direction)
Hold downs and window straps

Story	Wall Mark	Wall L(ft)	Opening Width (ft)	Opening Height (ft)	Opening (max) to Edge (ft)	Plate to Opening (ft)	Effective Length (ft)	Trib. Area (sq ft)	Percent Sharing (%)	Effective Trib. Area	Story V(kips)	Sum V(kips)	Panel Shear (plf)	Height/Width Reduction (%) R = 2*L/H	Design Panel Shear (plf)	Wall Type	Floor DL Trib(ft)	Story DL(klf)	Walls/DL Stacks?	Sum DL(klf)	OTM (k-ft)	RM (k-ft)	Resultant HD(kips)	HD TYPE	HD/Strap to DF or HF?	HD location Edge/Interior?	Resultant HD	Force at Window (Kips)	Window Strap
1	1.1	12.83	6.00	5.00	4.00	1.00	6.83	720.00	0.53	383.29	1.02	2.19	320	1.00	320	SW4	6.00	0.19	NO	0.19	21.9	14.2	0.62	fr-conc	HF	Edge	HDU2	4.48	CMSTC16
1	1.2	3.00					3.00	720.00	0.23	168.36	0.45	1.05	348	0.60	581	SW2	7.00	0.20	NO	0.20	10.5	0.8	3.85	fr-conc	HF	Edge	HDU5	0.00	No strap
1	1.3	3.00					3.00	720.00	0.23	168.36	0.45	1.05	348	0.60	581	SW2	8.00	0.22	NO	0.22	10.5	0.9	3.83	fr-conc	HF	Edge	HDU5	0.00	No strap
1	2.1	7.50					7.50	590.00	0.22	131.11	0.35	0.35	47	1.00	47	SW6	6.00	0.19	NO	0.19	3.5	4.9	-0.19	fr-conc	HF	Edge	No HD	0.00	No strap
1	2.2	8.00					8.00	590.00	0.24	139.85	0.37	0.37	47	1.00	47	SW6	6.00	0.19	NO	0.19	3.7	5.5	-0.24	fr-conc	HF	Interior	No HD	0.00	No strap
1	2.3	9.25					9.25	590.00	0.27	161.70	0.43	0.43	47	1.00	47	SW6	7.00	0.20	NO	0.20	4.3	7.9	-0.40	fr-conc	HF	Interior	No HD	0.00	No strap
1	2.4	9.00					9.00	590.00	0.27	157.33	0.42	0.42	47	1.00	47	SW6	8.00	0.22	NO	0.22	4.2	7.9	-0.43	fr-conc	HF	Interior	No HD	0.00	No strap
1	3.1	11.00					11.00	690.00	0.52	361.43	0.97	3.29	299	1.00	299	SW4	9.00	0.23	NO	0.23	32.9	12.4	1.95	fr-conc	HF	Interior	HDU2	0.00	No strap
1	3.2	10.00					10.00	690.00	0.48	328.57	0.88	2.99	299	1.00	299	SW4	10.00	0.24	NO	0.24	29.9	10.8	2.01	fr-conc	HF	Interior	HDU2	0.00	No strap
1	X1	7.33					7.33	430.00	1.00	430.00	1.15	1.15	157	1.00	157	SW6	11.00	0.25	NO	0.25	11.5	6.1	0.79	fr-conc	HF	Interior	HDU2	0.00	No strap
1	4.0	3.75					3.75	150.00	1.00	150.00	0.40	3.14	836	0.75	1115	2W2	10.00	0.24	NO	0.24	31.4	1.5	9.18	fr-conc	HF	Interior	HDU14	0.00	No strap

S = 84.66	Total OSB wall length = (feet) = 78.66	S = 2580.00	6.89	16.41	OK	Total OSB Capacity (kips) = 6.89
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Project Number: S230531-2	Plan Name: Forest Ave Lot 1	Sheet Number: L6
Engineer: HK	Specifics: Shear walls	Date: 5/15/2024

Notes:
 * All walls designed with Force-Transfer should meet a minimum height to width ratio of 2:1 at Pier (SDPWS 2021, Table 4.3.3)
 * Maximum allowed height to width ratio 3.5:1 for walls w/o openings (increased shear design values per SDPWS 2021, Table 4.3.3)
 * Shear panel height is height to underside of roof or floor framing.

RED = Update Formula as required - Important
BLUE = Review and update as required - Typical Input

2nd Story Walls (Side / Side Direction)

Stud Species HF

"Adjusted" Story shear(kips) = **9.52**
 Story height (ft) = **10.00**
 Shear Panel height (ft) = **9.00**
 Total Diaphragm Area (sq ft) = **2975.00**

Governing Force (F/B Direction) = **Seismic**
 Dead load factor (F/B Direction) = **0.90**
 Shear panel capacity (Wind or Seismic) = **Seismic**
 load balance check = **OK**

IBC 2021 Equation 16-6



2nd Story Walls (Side / Side Direction)

Hold downs and window straps

Story	Wall Mark	Wall L(ft)	Opening Width (ft)	Opening Height (ft)	Opening (max) to Edge (ft)	Plate to Opening (ft)	Effective Length (ft)	Trib. Area (sq ft)	Percent Sharing (%)	Effective Trib. Area	Story V(kips)	Sum V(kips)	Panel Shear (plf)	Height/Width Reduction (%) R = 2*L/H	Design Panel Shear (plf)	Wall Type	Floor DL Trib(ft)	Story DL(klf)	Sum DL(klf)	OTM (k-ft)	RM (k-ft)	Resultant HD(kips)	HD TYPE	HD/Strap to DF or HF?	HD location Edge/Interior?	Resultant HD	Force at Window (Kips)	Window Strap
2	A1	24.00	5.00	4.25	3.00	1.00	19.00	880.00	1.00	880.00	2.82	2.82	148	1.00	148	SW6	5.00	0.18	0.18	28.2	47.4	-0.82	flr-beam	HF	Edge	No HD	1.39	CS16
2	B1	19.00					19.00	635.00	1.00	635.00	2.03	2.03	107	1.00	107	SW6	5.00	0.18	0.18	20.3	29.7	-0.51	flr-beam	HF	Edge	No HD	0.00	No strap
2	C1	14.00					14.00	675.00	1.00	675.00	2.16	2.16	154	1.00	154	SW6	5.00	0.18	0.18	21.6	16.1	0.40	flr-beam	HF	Edge	No HD	0.00	No strap
2	D1	20.00					20.00	785.00	1.00	785.00	2.51	2.51	126	1.00	126	SW6	5.00	0.18	0.18	25.1	32.9	-0.40	flr-beam	HF	Edge	No HD	0.00	No strap

S = 77.00

Total OSB wall length = 72.00 (feet)

S = 2975.00 9.52 **9.52 OK**

Total OSB Capacity (kips) 9.52

1st Story Walls (Side / Side Direction)

Shear panel capacity (Wind or Seismic) = **Wind**

"Adjusted" Story shear(kips) = **7.68**
 Story height (ft) = **10.00**
 Shear Panel height (ft) = **10.00**
 Total Diaphragm Area (sq ft) = **2580.00**

Accumulated Shear = **17.20**
 load balance check = **OK**

1st Story Walls (Side / Side Direction)

Hold downs and window straps

Story	Wall Mark	Wall L(ft)	Opening Width (ft)	Opening Height (ft)	Opening (max) to Edge (ft)	Plate to Opening (ft)	Effective Length (ft)	Trib. Area (sq ft)	Percent Sharing (%)	Effective Trib. Area	Story V(kips)	Sum V(kips)	Panel Shear (plf)	Height/Width Reduction (%) R = 2*L/H	Design Panel Shear (plf)	Wall Type	Floor DL Trib(ft)	Story DL(klf)	Sum DL(klf)	OTM (k-ft)	RM (k-ft)	Resultant HD(kips)	HD TYPE	HD/Strap to DF or HF?	HD location Edge/Interior?	Resultant HD	Force at Window (Kips)	Window Strap
1	A1	24.00	5.00	4.25	3.00	1.00	19.00	280.00	1.00	280.00	0.83	3.65	192	1.00	192	SW6	2.00	0.12	0.30	36.5	77.6	-1.75	flr-conc	HF	Edge	No HD	1.80	CS14
1	B1	13.75					13.75	550.00	1.00	550.00	1.64	3.67	267	1.00	267	SW4	2.00	0.12	0.12	36.7	9.9	2.02	flr-conc	HF	Edge	HDU5	0.00	No strap
1	C1	19.75					19.75	750.00	1.00	750.00	2.23	4.39	222	1.00	222	SW6	5.00	0.15	0.15	43.9	26.7	0.89	flr-conc	HF	Edge	HDU2	0.00	No strap
1	D1	21.00					21.00	570.00	0.85	483.64	1.44	3.57	170	1.00	170	SW6	5.00	0.15	0.15	35.7	30.2	0.27	flr-conc	HF	Edge	No HD	0.00	No strap
1	D2	3.75					3.75	570.00	0.15	86.36	0.26	0.64	170	0.75	227	SW6	3.00	0.13	0.13	6.4	0.8	1.71	flr-conc	HF	Edge	HDU2	0.00	No strap
1	X1	7.33					7.33	430.00	1.00	430.00	1.28	1.28	175	1.00	175	SW6	4.00	0.14	0.14	12.8	3.4	1.38	flr-conc	HF	Edge	HDU2	0.00	No strap

S = 89.58

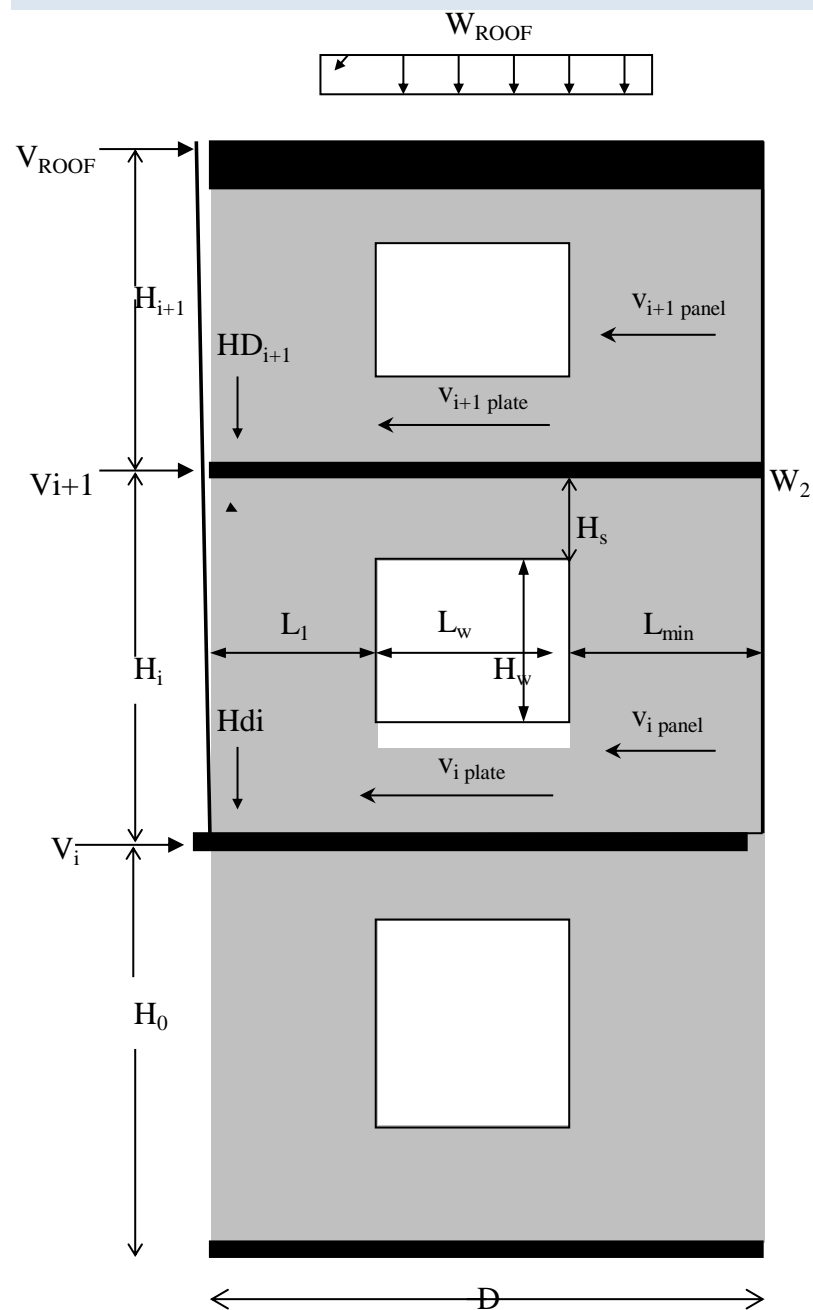
Total OSB wall length = 84.58 (feet)

S = 2580.00 7.68 **17.20 OK**

Total OSB Capacity (kips) 7.68

Project	Forest Ave Lot 1	sheet number:	L7
Subject	SHEAR WALL EQUATION DIAGRAM	Date	5/15/2024

SHEAR WALL WITH WINDOW BASED ON SHEAR TRANSFER:



Where:

- V_i = Story Shear
- W_i = Story Dead Load
- HD_i = Story Holddown
- M_{OTi} = Story Over Turning Moment
- M_{Ri} = Story Resisting Moment

$$M_{OT ROOF} = V_{ROOF} \times H_{i+1}$$

$$M_{R ROOF} = 0.6 \times W_{ROOF} \times D^2/2$$

$$HD_{i+1} = (M_{OT ROOF} - M_{R ROOF}) / (D - 6")$$

$$V_{i+1 \text{ panel}} = V_{ROOF} / (L_1 + L_{\max})$$

$$V_{i+1 \text{ plate}} = V_{ROOF} / D$$

$$M_{OTi} = [(V_{i+1} + V_{ROOF}) \times H_i] + M_{OT ROOF}$$

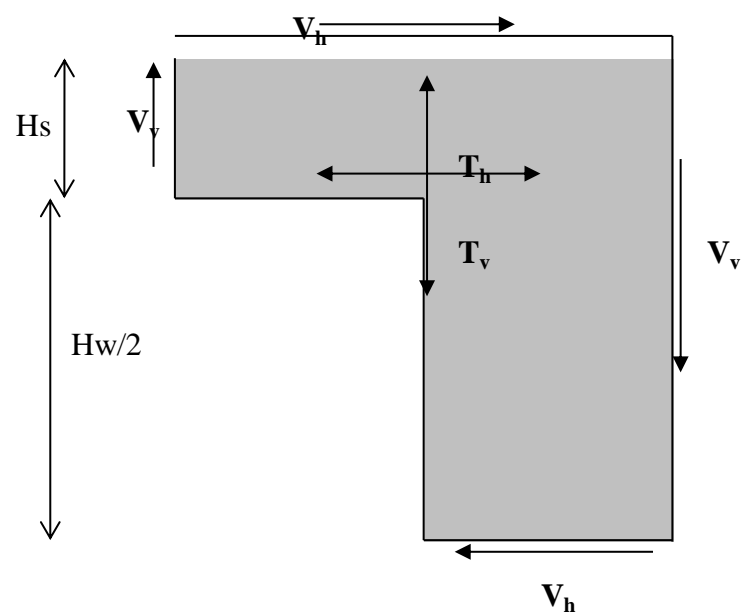
$$M_{Ri} = 0.6 \times (W_{i+1} + W_{ROOF}) \times D^2/2$$

$$HD_i = (M_{OTi} - M_{Ri}) / (D - 6")$$

$$V_{i \text{ panel}} = (V_{ROOF} + V_{i+1}) / (L_1 + L_{\max})$$

$$V_{i \text{ plate}} = (V_{ROOF} + V_{i+1}) / D$$

FORCE TRANSFER AROUND WINDOW CALCULATION (CANTILEVER PIER METHOD)



$$V_h = v_{i \text{ panel}} \times L_{\max}$$

$$V_v = HD_i$$

$$T_h = V_h (H_w / 2 + H_s) / H_s$$

T_v = Is resisted by the continuous stud adjacent to the window.



LONGITUDE
ONE TWENTY°
ENGINEERING & DESIGN

Foundation Design



Calculations Contents:

Load Maps:

Vertical Loading

Footing Checks (3000 psf soil bearing):

Point Load Check on 1'-4" x 10" Continuous Footing

Distributed Load Check on 1'-4" x 10" Continuous Footing

2'-0" Square Footing Check

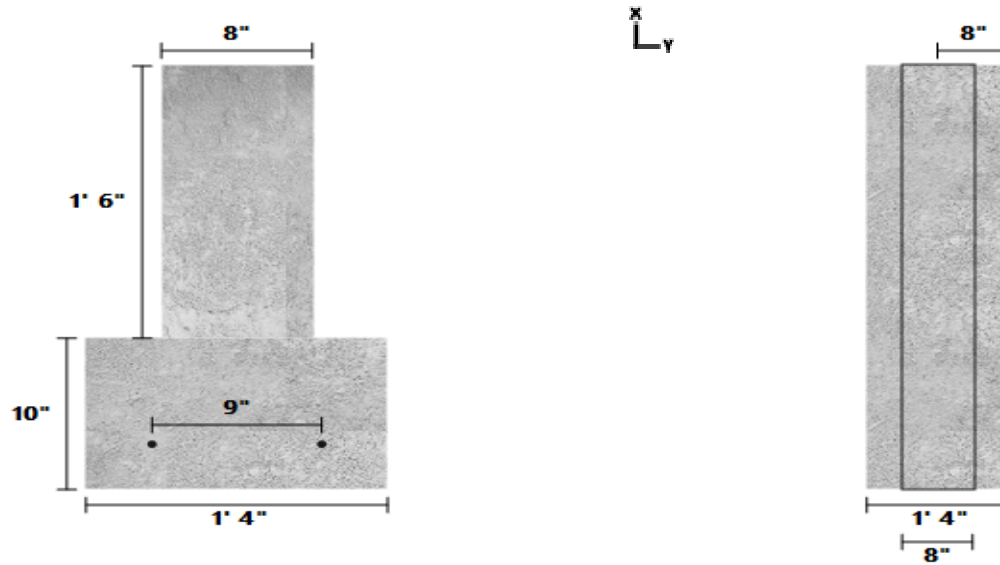
2'-6" Square Footing Check

3'-0" Square Footing Check



DATE:	2/20/2023	COMPANY:	L120 Engineering & Design, LLC
STRUCALC BUILD:	StruCalc Plus	DESIGNED BY:	Mans Thurfjell
CUSTOMER:		REVIEWED BY:	Mans Thurfjell
PROJ. ADDRESS:	--	PROJECT NAME:	2021 foundation 2000psf
	--		
LEVEL:	Basement	LOADING:	
MEMBER NAME:	16in cont footing	CODE:	2021 International Building Code
MEMBER TYPE:	CONTINUOUS FOOTING	ACI:	ACI 318-19
MATERIAL:	Concrete		
1.3334 (ft) Wide X 10 (in) Deep		Soil Depth TOF: 0 (ft)	
		Longit: (2) #4 Bars	

16in cont footing DIAGRAMS



MATERIAL PROPERTIES

FOOTING					
fc' (psi)	Ec (psi)	Density (lb/ft ³)	Width (ft)	Depth (in)	
2500	2880952	145	1.3334	10	
STEM WALL					
Width (in)	Height (in)	Material	Offset (in)		
8	18	Concrete	0		
SOIL					
Bearing Strength (lb/ft ²)	Density (lb/ft ³)	Cohesion	Friction Angle	Depth (ft)	Rankine Coefficient (Kp)
2000	140	0	30	0	0
REBAR					
Bar Size #	Transv. Spacing (in)	# Longit. Bars	fy (psi)	Es (psi)	
4	None	2	40000	2.9E+07	

PASS-FAIL

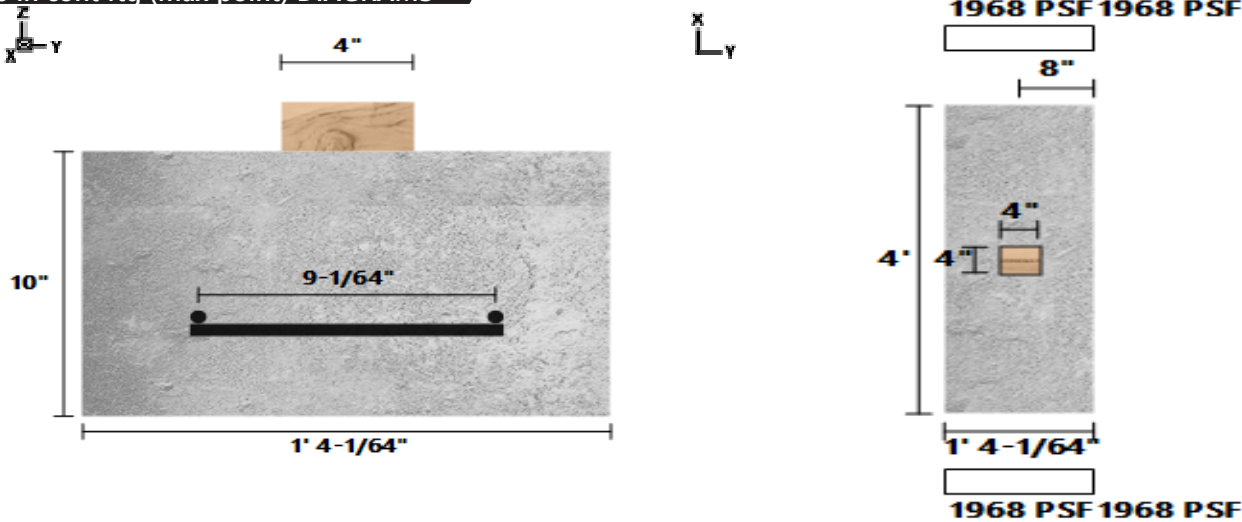
	PASS/FAIL	MAGNITUDE	STRENGTH	LOAD COMBO
Soil Bearing Pressure (lb/ft ²)	PASS (0.8%)	1983.7	2000.0	D+L
One-Way Shear Y (lb/ft)	PASS (89.1%)	350.1	3202.8	1.2D+1.6L+0.5Lr
Moment Y (lb/ft)	PASS (61.1%)	622.4	1600.0	1.2D+1.6L+0.5Lr

LOAD LIST

Type	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	1100	1100	0	1	Dead	Z
Uniform (lb/ft)	1400	1400	0	1	Live	Z
Stemwall Weight (lb/ft)	145	145	0	1	Dead	Z

DATE:	2/20/2023	COMPANY:	L120 Engineering & Design, LLC
STRUCALC BUILD:	StruCalc Plus	DESIGNED BY:	Mans Thurfjell
CUSTOMER:		REVIEWED BY:	Mans Thurfjell
PROJ. ADDRESS:	--	PROJECT NAME:	2021 foundation 2000psf
LEVEL:	Basement	LOADING:	
MEMBER NAME:	16 in cont ftg (max point)	CODE:	2021 International Building Code
MEMBER TYPE:	ISOLATED FOOTING CONTINUOUS FOOTING	ACI:	ACI 318-19
MATERIAL:	Concrete		
1.334 (ft) X 4 (ft) X 10 (in)		Soil Depth TOF: 0 (ft)	(2) #4 Long, (6) #4 Short

16 in cont ftg (max point) DIAGRAMS



MATERIAL PROPERTIES

FOOTING						
fc' (psi)	Ec (psi)	Density (lbf/ft ³)	Width (ft)	Length (ft)	Depth (in)	Volume (ft ³)
2500	2733229	140	1.334	4	10	4.45
CALCULATION VARIABLES						
Bo (in)	Φ-X	Φ-Y				
42	0	0				
COLUMN						
Width (in)	Length (in)	Material	Offset (in)			
4	4	Wood	0			
SOIL						
Bearing Strength (lbf/ft ²)	Density (lbf/ft ³)	Cohesion	Friction Angle	Depth (ft)	Rankine Coefficient (Kp)	
2000	0	0	0	0	1	
REBAR						
Bar Size #	# Bars Long	# Bars Short	fy (psi)	Es (psi)		
4	2	6	40000	2.9E+07		

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOAD COMBO
Soil Bearing Pressure (lbf/ft ²)	PASS (1.6%)	1967.8	2000.0	D+L
Two-Way Shear (Punching) (lbf)	PASS (63.4%)	15000.0	40950.0	1.2D+1.6L+0.5Lr
One-Way Shear X (lbf)	PASS (37.9%)	4843.8	7803.9	1.2D+1.6L+0.5Lr
Moment X (lbf-ft)	PASS (16.2%)	6302.1	7517.8	1.2D+1.6L+0.5Lr
Moment Y (lbf-ft)	PASS (78.0%)	1407.4	6400.0	1.2D+1.6L+0.5Lr
Crushing (psi)	PASS (32.1%)	937.5	1381.3	1.2D+1.6L+0.5Lr

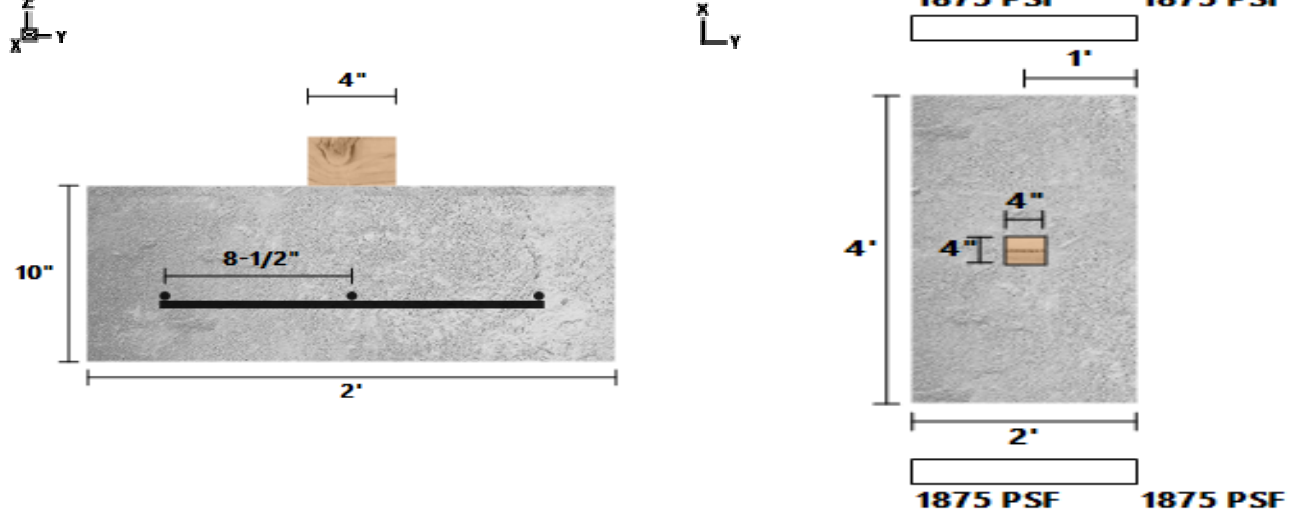
LOAD LIST

Type	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Point (lbf)	4500	-	0	-	Dead	Z
Point (lbf)	6000	-	0	-	Live	Z

PASS

DATE:	2/20/2023	COMPANY:	L120 Engineering & Design, LLC
STRUCALC BUILD:	StruCalc Plus	DESIGNED BY:	Mans Thurfjell
CUSTOMER:		REVIEWED BY:	Mans Thurfjell
PROJ. ADDRESS:	--	PROJECT NAME:	2021 foundation 2000psf
LEVEL:	Basement	LOADING:	
MEMBER NAME:	24 in cont footing (max point)	CODE:	2021 International Building Code
MEMBER TYPE:	ISOLATED FOOTING CONTINUOUS FOOTING	ACI:	ACI 318-19
MATERIAL:	Concrete		
2 (ft) X 4 (ft) X 10 (in)		Soil Depth TOF: 0 (ft)	(3) #4 Long, (7) #4 Short

24 in cont footing (max point) DIAGRAMS



MATERIAL PROPERTIES

FOOTING						
fc' (psi)	Ec (psi)	Density (lb/ft ³)	Width (ft)	Length (ft)	Depth (in)	Volume (ft ³)
2500	2733229	140	2	4	10	6.67
CALCULATION VARIABLES						
Bo (in)	Φ-X	Φ-Y				
42	0	0				
COLUMN						
Width (in)	Length (in)	Material	Offset (in)			
4	4	Wood	0			
SOIL						
Bearing Strength (lb/ft ²)	Density (lb/ft ³)	Cohesion	Friction Angle	Depth (ft)	Rankine Coefficient (Kp)	
2000	140	0	30	0	3	
REBAR						
Bar Size #	# Bars Long	# Bars Short	fy (psi)	Es (psi)		
4	3	7	40000	2.9E+07		

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOAD COMBO
Soil Bearing Pressure (lb/ft ²)	PASS (6.3%)	1875.0	2000.0	D+L
Two-Way Shear (Punching) (lb)	PASS (47.7%)	21400.0	40950.0	1.2D+1.6L+0.5Lr
One-Way Shear X (lb)	PASS (40.9%)	6910.4	11700.0	1.2D+1.6L+0.5Lr
Moment X (lb-ft)	PASS (20.3%)	8991.0	11276.5	1.2D+1.6L+0.5Lr
One-Way Shear Y (lb)	PASS (86.7%)	3120.8	23400.0	1.2D+1.6L+0.5Lr
Moment Y (lb-ft)	PASS (41.9%)	3715.3	6400.0	1.2D+1.6L+0.5Lr
Crushing (psi)	PASS (3.2%)	1337.5	1381.3	1.2D+1.6L+0.5Lr

LOAD LIST

Type	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Point (lb)	6500	-	0	-	Dead	Z
Point (lb)	8500	-	0	-	Live	Z

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Exterior Footing (2000 psf): 2'-0" SQ X 10" DP

Code References

Calculations per ACI 318-19, IBC 2021, ASCE 7-16

Load Combinations Used : IBC 2021

General Information

Material Properties

f _c : Concrete 28 day strength	=	2.50 ksi
f _y : Rebar Yield	=	60.0 ksi
E _c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing depth

Footing base depth below soil surface	=	1.50 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
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Analysis Settings

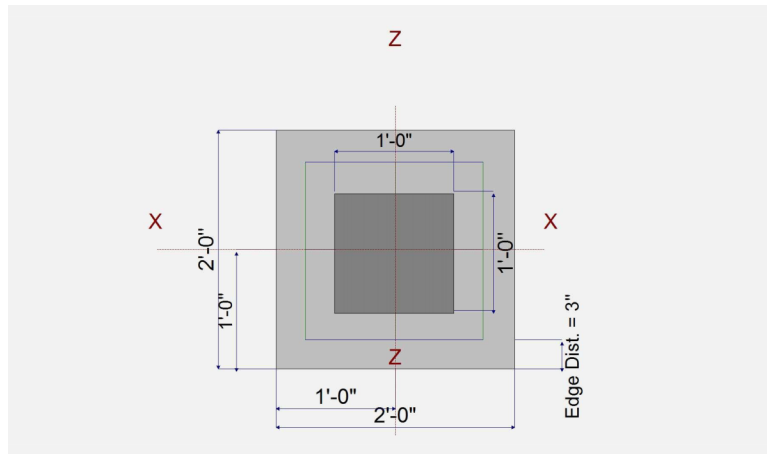
Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Dimensions

Width parallel to X-X Axis	=	2.0 ft
Length parallel to Z-Z Axis	=	2.0 ft
Footing Thickness	=	10.0 in

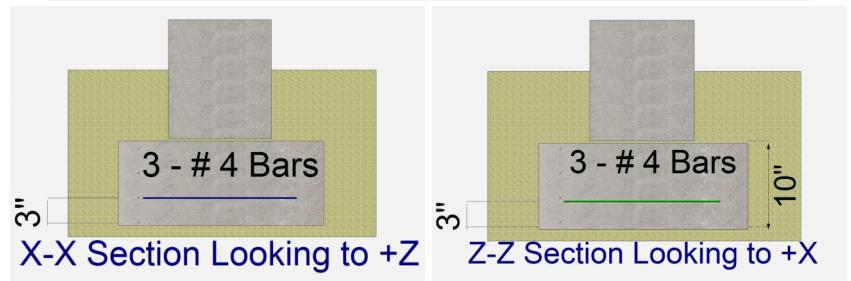
Pedestal dimensions...

px : parallel to X-X Axis	"	12.0 in
pz : parallel to Z-Z Axis	"	12.0 in
Height	"	14.0 in
Rebar Centerline to Edge of Concrete... at Bottom of footing	"	3.0 in



Reinforcing

Bars parallel to X-X Axis	=	
Number of Bars	=	3.0
Reinforcing Bar Size	=	# 4
Bars parallel to Z-Z Axis	=	
Number of Bars	=	3.0
Reinforcing Bar Size	=	# 4
Bandwidth Distribution Check (ACI 15.4.4.2)		
Direction Requiring Closer Separation		
# Bars required within zone	n/a	
# Bars required on each side of zone	n/a	



Applied Loads

	D	L _r	L	S	W	E	H
P : Column Load	=	3.0		4.0			k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=						k

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Exterior Footing (2000 psf): 2-0" SQ X 10" DP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9840	Soil Bearing	1.968 ksf	2.0 ksf	+D+L about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.03523	Z Flexure (+X)	0.3161 k-ft/ft	8.974 k-ft/ft	+1.20D+1.60L
PASS	0.03523	Z Flexure (-X)	0.3161 k-ft/ft	8.974 k-ft/ft	+1.20D+1.60L
PASS	0.03523	X Flexure (+Z)	0.3161 k-ft/ft	8.974 k-ft/ft	+1.20D+1.60L
PASS	0.03523	X Flexure (-Z)	0.3161 k-ft/ft	8.974 k-ft/ft	+1.20D+1.60L
PASS	n/a	1-way Shear (+X)	0.0 psi	45.857 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a
PASS	n/a	1-way Shear (+Z)	0.0 psi	45.857 psi	n/a
PASS	n/a	1-way Shear (-Z)	0.0 psi	45.857 psi	n/a
PASS	n/a	2-way Punching	6.845 psi	45.857 psi	+1.20D+1.60L

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
		Zecc (in)		Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.0	n/a	0.0	0.9681	0.9681	n/a	n/a	0.484
X-X, +D+L	2.0	n/a	0.0	1.968	1.968	n/a	n/a	0.984
X-X, +D+0.750L	2.0	n/a	0.0	1.718	1.718	n/a	n/a	0.859
X-X, +0.60D	2.0	n/a	0.0	0.5809	0.5809	n/a	n/a	0.291
Z-Z, D Only	2.0	0.0	n/a	n/a	n/a	0.9681	0.9681	0.484
Z-Z, +D+L	2.0	0.0	n/a	n/a	n/a	1.968	1.968	0.984
Z-Z, +D+0.750L	2.0	0.0	n/a	n/a	n/a	1.718	1.718	0.859
Z-Z, +0.60D	2.0	0.0	n/a	n/a	n/a	0.5809	0.5809	0.291

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.1354	+Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.40D	0.1354	-Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D+1.60L	0.3161	+Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D+1.60L	0.3161	-Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D+0.50L	0.1786	+Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D+0.50L	0.1786	-Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D	0.1161	+Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D	0.1161	-Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +0.90D	0.08707	+Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +0.90D	0.08707	-Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.40D	0.1354	-X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.40D	0.1354	+X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D+1.60L	0.3161	-X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D+1.60L	0.3161	+X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D+0.50L	0.1786	-X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D+0.50L	0.1786	+X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D	0.1161	-X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D	0.1161	+X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +0.90D	0.08707	-X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +0.90D	0.08707	+X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Exterior Footing (2000 psf): 2-0" SQ X 10" DP

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.00 psi	0.00 psi	0.00 psi	45.86 psi	0.00	OK
+1.20D+1.60L	0.00 psi	0.00 psi	0.00 psi	45.86 psi	0.00	OK
+1.20D+0.50L	0.00 psi	0.00 psi	0.00 psi	45.86 psi	0.00	OK
+1.20D	0.00 psi	0.00 psi	0.00 psi	45.86 psi	0.00	OK
+0.90D	0.00 psi	0.00 psi	0.00 psi	45.86 psi	0.00	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.00 psi	0.00 psi	0.00 psi	45.86 psi	0.00	OK
+1.20D+1.60L	0.00 psi	0.00 psi	0.00 psi	45.86 psi	0.00	OK
+1.20D+0.50L	0.00 psi	0.00 psi	0.00 psi	45.86 psi	0.00	OK
+1.20D	0.00 psi	0.00 psi	0.00 psi	45.86 psi	0.00	OK
+0.90D	0.00 psi	0.00 psi	0.00 psi	45.86 psi	0.00	OK

Two-Way "Punching" Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	2.93 psi	150.00psi	0.01955	OK
+1.20D+1.60L	6.85 psi	150.00psi	0.04563	OK
+1.20D+0.50L	3.87 psi	150.00psi	0.02578	OK
+1.20D	2.51 psi	150.00psi	0.01676	OK
+0.90D	1.89 psi	150.00psi	0.01257	OK

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 2'-0" SQ X 10" DP

Code References

Calculations per ACI 318-19, IBC 2021, ASCE 7-16

Load Combinations Used : IBC 2021

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Increases based on footing depth

Footing base depth below soil surface	=	0.750 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

Increases based on footing plan dimension

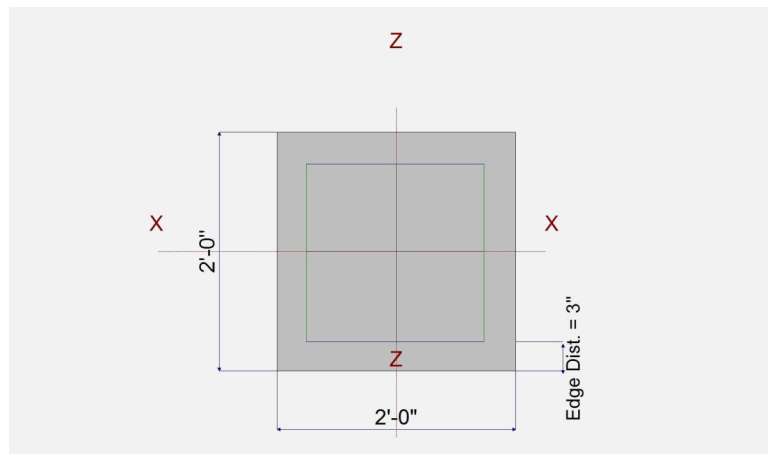
Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
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Dimensions

Width parallel to X-X Axis	=	2.0 ft
Length parallel to Z-Z Axis	=	2.0 ft
Footing Thickness	=	10.0 in

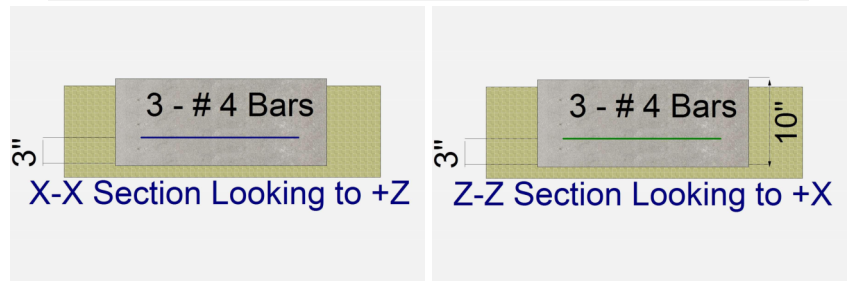
Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



Reinforcing

Bars parallel to X-X Axis	=	
Number of Bars	=	3.0
Reinforcing Bar Size	=	# 4
Bars parallel to Z-Z Axis	=	
Number of Bars	=	3.0
Reinforcing Bar Size	=	# 4
Bandwidth Distribution Check (ACI 15.4.4.2)		
Direction Requiring Closer Separation		n/a
# Bars required within zone		n/a
# Bars required on each side of zone		n/a



Applied Loads

	D	Lr	L	S	W	E	H
P : Column Load	=	3.0	4.50				k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=						k

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 2-0" SQ X 10" DP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9980	Soil Bearing	1.996 ksf	2.0 ksf	+D+L about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1504	Z Flexure (+X)	1.350 k-ft/ft	8.974 k-ft/ft	+1.20D+1.60L
PASS	0.1504	Z Flexure (-X)	1.350 k-ft/ft	8.974 k-ft/ft	+1.20D+1.60L
PASS	0.1504	X Flexure (+Z)	1.350 k-ft/ft	8.974 k-ft/ft	+1.20D+1.60L
PASS	0.1504	X Flexure (-Z)	1.350 k-ft/ft	8.974 k-ft/ft	+1.20D+1.60L
PASS	0.2944	1-way Shear (+X)	13.50 psi	45.857 psi	+1.20D+1.60L
PASS	0.2944	1-way Shear (-X)	13.50 psi	45.857 psi	+1.20D+1.60L
PASS	0.2944	1-way Shear (+Z)	13.50 psi	45.857 psi	+1.20D+1.60L
PASS	0.2944	1-way Shear (-Z)	13.50 psi	45.857 psi	+1.20D+1.60L
PASS	0.3343	2-way Punching	50.143 psi	150.0 psi	+1.20D+1.60L

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
		Zecc (in)		Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.0	n/a	0.0	0.8708	0.8708	n/a	n/a	0.435
X-X, +D+L	2.0	n/a	0.0	1.996	1.996	n/a	n/a	0.998
X-X, +D+0.750L	2.0	n/a	0.0	1.715	1.715	n/a	n/a	0.858
X-X, +0.60D	2.0	n/a	0.0	0.5225	0.5225	n/a	n/a	0.261
Z-Z, D Only	2.0	0.0	n/a	n/a	n/a	0.8708	0.8708	0.435
Z-Z, +D+L	2.0	0.0	n/a	n/a	n/a	1.996	1.996	0.998
Z-Z, +D+0.750L	2.0	0.0	n/a	n/a	n/a	1.715	1.715	0.858
Z-Z, +0.60D	2.0	0.0	n/a	n/a	n/a	0.5225	0.5225	0.261

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.5250	+Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.40D	0.5250	-Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D+1.60L	1.350	+Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D+1.60L	1.350	-Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D+0.50L	0.7313	+Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D+0.50L	0.7313	-Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D	0.450	+Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +1.20D	0.450	-Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +0.90D	0.3375	+Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
X-X, +0.90D	0.3375	-Z	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.40D	0.5250	-X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.40D	0.5250	+X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D+1.60L	1.350	-X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D+1.60L	1.350	+X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D+0.50L	0.7313	-X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D+0.50L	0.7313	+X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D	0.450	-X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +1.20D	0.450	+X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +0.90D	0.3375	-X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK
Z-Z, +0.90D	0.3375	+X	Bottom	0.2160	ACI 7.6.1.1	0.30	8.974	OK

Project Title: Foundation Calculations (1500 psf)
 Engineer: L120 Engineering & Design
 Project ID:
 Project Descr:

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 2'-0" SQ X 10" DP

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	5.25 psi	5.25 psi	5.25 psi	45.86 psi	0.11	OK
+1.20D+1.60L	13.50 psi	13.50 psi	13.50 psi	45.86 psi	0.29	OK
+1.20D+0.50L	7.31 psi	7.31 psi	7.31 psi	45.86 psi	0.16	OK
+1.20D	4.50 psi	4.50 psi	4.50 psi	45.86 psi	0.10	OK
+0.90D	3.38 psi	3.38 psi	3.38 psi	45.86 psi	0.07	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	5.25 psi	5.25 psi	5.25 psi	45.86 psi	0.11	OK
+1.20D+1.60L	13.50 psi	13.50 psi	13.50 psi	45.86 psi	0.29	OK
+1.20D+0.50L	7.31 psi	7.31 psi	7.31 psi	45.86 psi	0.16	OK
+1.20D	4.50 psi	4.50 psi	4.50 psi	45.86 psi	0.10	OK
+0.90D	3.38 psi	3.38 psi	3.38 psi	45.86 psi	0.07	OK

Two-Way "Punching" Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	19.50 psi	150.00psi	0.13	OK
+1.20D+1.60L	50.14 psi	150.00psi	0.3343	OK
+1.20D+0.50L	27.16 psi	150.00psi	0.1811	OK
+1.20D	16.71 psi	150.00psi	0.1114	OK
+0.90D	12.54 psi	150.00psi	0.08357	OK

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 2-6" SQ X 10" DP

Code References

Calculations per ACI 318-19, IBC 2021, ASCE 7-16

Load Combinations Used : IBC 2021

General Information

Material Properties

f _c : Concrete 28 day strength	=	2.50 ksi
f _y : Rebar Yield	=	60.0 ksi
E _c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Increases based on footing depth

Footing base depth below soil surface	=	0.750 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

Increases based on footing plan dimension

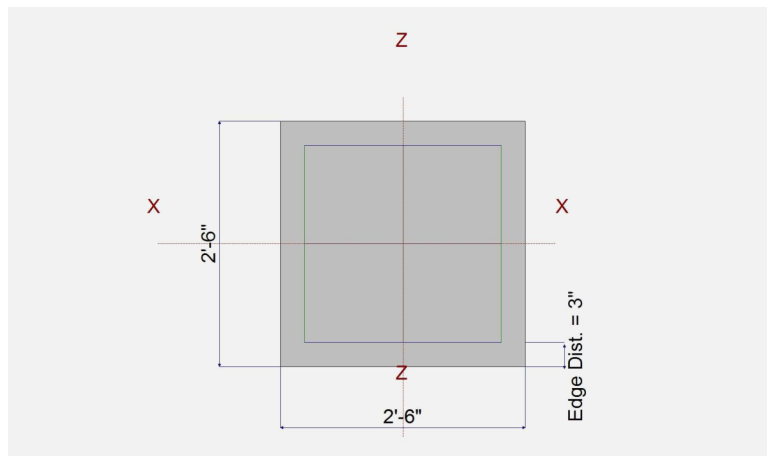
Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
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Dimensions

Width parallel to X-X Axis	=	2.50 ft
Length parallel to Z-Z Axis	=	2.50 ft
Footing Thickness	=	10.0 in

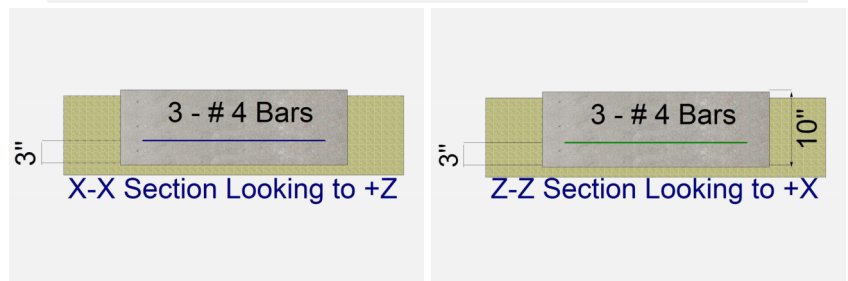
Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



Reinforcing

Bars parallel to X-X Axis	=	
Number of Bars	=	3.0
Reinforcing Bar Size	=	# 4
Bars parallel to Z-Z Axis	=	
Number of Bars	=	3.0
Reinforcing Bar Size	=	# 4
Bandwidth Distribution Check (ACI 15.4.4.2)		
Direction Requiring Closer Separation		n/a
# Bars required within zone		n/a
# Bars required on each side of zone		n/a



Applied Loads

	D	L _r	L	S	W	E	H
P : Column Load	=	4.90		6.80			k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=						k

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 2-6" SQ X 10" DP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9965	Soil Bearing	1.993 ksf	2.0 ksf	+D+L about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.2888	Z Flexure (+X)	2.095 k-ft/ft	7.255 k-ft/ft	+1.20D+1.60L
PASS	0.2888	Z Flexure (-X)	2.095 k-ft/ft	7.255 k-ft/ft	+1.20D+1.60L
PASS	0.2888	X Flexure (+Z)	2.095 k-ft/ft	7.255 k-ft/ft	+1.20D+1.60L
PASS	0.2888	X Flexure (-Z)	2.095 k-ft/ft	7.255 k-ft/ft	+1.20D+1.60L
PASS	0.5062	1-way Shear (+X)	21.549 psi	42.570 psi	+1.20D+1.60L
PASS	0.5062	1-way Shear (-X)	21.549 psi	42.570 psi	+1.20D+1.60L
PASS	0.5062	1-way Shear (+Z)	21.549 psi	42.570 psi	+1.20D+1.60L
PASS	0.5062	1-way Shear (-Z)	21.549 psi	42.570 psi	+1.20D+1.60L
PASS	0.5372	2-way Punching	80.585 psi	150.0 psi	+1.20D+1.60L

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc (in)	Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
				Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.0	n/a	0.0	0.9048	0.9048	n/a	n/a	0.452
X-X, +D+L	2.0	n/a	0.0	1.993	1.993	n/a	n/a	0.997
X-X, +D+0.750L	2.0	n/a	0.0	1.721	1.721	n/a	n/a	0.861
X-X, +0.60D	2.0	n/a	0.0	0.5429	0.5429	n/a	n/a	0.272
Z-Z, D Only	2.0	0.0	n/a	n/a	n/a	0.9048	0.9048	0.452
Z-Z, +D+L	2.0	0.0	n/a	n/a	n/a	1.993	1.993	0.997
Z-Z, +D+0.750L	2.0	0.0	n/a	n/a	n/a	1.721	1.721	0.861
Z-Z, +0.60D	2.0	0.0	n/a	n/a	n/a	0.5429	0.5429	0.272

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.8575	+Z	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
X-X, +1.40D	0.8575	-Z	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
X-X, +1.20D+1.60L	2.095	+Z	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
X-X, +1.20D+1.60L	2.095	-Z	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
X-X, +1.20D+0.50L	1.160	+Z	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
X-X, +1.20D+0.50L	1.160	-Z	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
X-X, +1.20D	0.7350	+Z	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
X-X, +1.20D	0.7350	-Z	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
X-X, +0.90D	0.5513	+Z	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
X-X, +0.90D	0.5513	-Z	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
Z-Z, +1.40D	0.8575	-X	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
Z-Z, +1.40D	0.8575	+X	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
Z-Z, +1.20D+1.60L	2.095	-X	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
Z-Z, +1.20D+1.60L	2.095	+X	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
Z-Z, +1.20D+0.50L	1.160	-X	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
Z-Z, +1.20D+0.50L	1.160	+X	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
Z-Z, +1.20D	0.7350	-X	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
Z-Z, +1.20D	0.7350	+X	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
Z-Z, +0.90D	0.5513	-X	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK
Z-Z, +0.90D	0.5513	+X	Bottom	0.2160	ACI 7.6.1.1	0.240	7.255	OK

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 2-6" SQ X 10" DP

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	8.82 psi	8.82 psi	8.82 psi	42.57 psi	0.21	OK
+1.20D+1.60L	21.55 psi	21.55 psi	21.55 psi	42.57 psi	0.51	OK
+1.20D+0.50L	11.93 psi	11.93 psi	11.93 psi	42.57 psi	0.28	OK
+1.20D	7.56 psi	7.56 psi	7.56 psi	42.57 psi	0.18	OK
+0.90D	5.67 psi	5.67 psi	5.67 psi	42.57 psi	0.13	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	8.82 psi	8.82 psi	8.82 psi	42.57 psi	0.21	OK
+1.20D+1.60L	21.55 psi	21.55 psi	21.55 psi	42.57 psi	0.51	OK
+1.20D+0.50L	11.93 psi	11.93 psi	11.93 psi	42.57 psi	0.28	OK
+1.20D	7.56 psi	7.56 psi	7.56 psi	42.57 psi	0.18	OK
+0.90D	5.67 psi	5.67 psi	5.67 psi	42.57 psi	0.13	OK

All units k

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	32.98 psi	150.00psi	0.2199	OK
+1.20D+1.60L	80.59 psi	150.00psi	0.5372	OK
+1.20D+0.50L	44.62 psi	150.00psi	0.2975	OK
+1.20D	28.27 psi	150.00psi	0.1885	OK
+0.90D	21.20 psi	150.00psi	0.1414	OK

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 3'-0" SQ X 10" DP

Code References

Calculations per ACI 318-19, IBC 2021, ASCE 7-16

Load Combinations Used : IBC 2021

General Information

Material Properties

f'_c : Concrete 28 day strength	=	2.50 ksi
f_y : Rebar Yield	=	60.0 ksi
E_c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
ϕ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing depth

Footing base depth below soil surface	=	0.750 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
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Analysis Settings

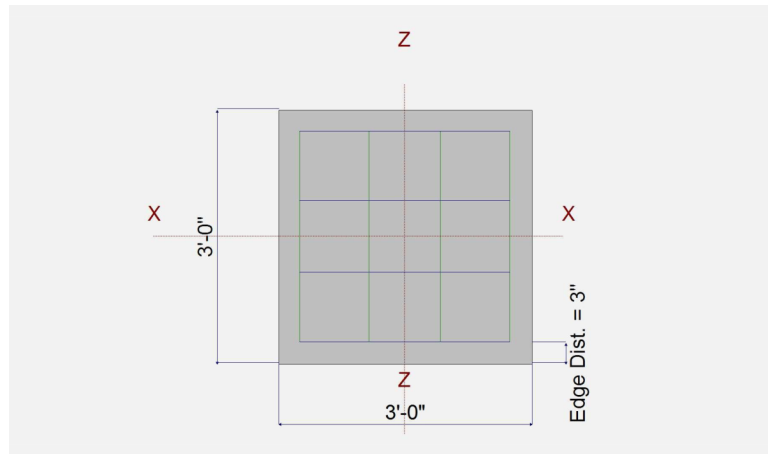
Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Dimensions

Width parallel to X-X Axis	=	3.0 ft
Length parallel to Z-Z Axis	=	3.0 ft
Footing Thickness	=	10.0 in

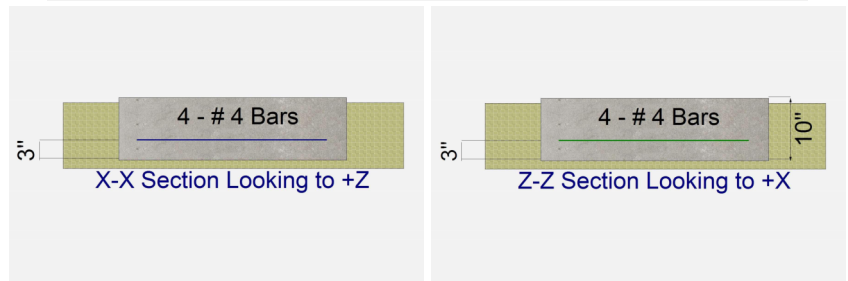
Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



Reinforcing

Bars parallel to X-X Axis	=	
Number of Bars	=	4
Reinforcing Bar Size	=	# 4
Bars parallel to Z-Z Axis	=	
Number of Bars	=	4
Reinforcing Bar Size	=	# 4
Bandwidth Distribution Check (ACI 15.4.4.2)		
Direction Requiring Closer Separation		n/a
# Bars required within zone		n/a
# Bars required on each side of zone		n/a



Applied Loads

	D	Lr	L	S	W	E	H
P : Column Load	=	7.0	9.80				k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=						k

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 3-0" SQ X 10" DP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9940	Soil Bearing	1.988 ksf	2.0 ksf	+D+L about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.3751	Z Flexure (+X)	3.010 k-ft/ft	8.024 k-ft/ft	+1.20D+1.60L
PASS	0.3751	Z Flexure (-X)	3.010 k-ft/ft	8.024 k-ft/ft	+1.20D+1.60L
PASS	0.3751	X Flexure (+Z)	3.010 k-ft/ft	8.024 k-ft/ft	+1.20D+1.60L
PASS	0.3751	X Flexure (-Z)	3.010 k-ft/ft	8.024 k-ft/ft	+1.20D+1.60L
PASS	0.6718	1-way Shear (+X)	29.622 psi	44.091 psi	+1.20D+1.60L
PASS	0.6718	1-way Shear (-X)	29.622 psi	44.091 psi	+1.20D+1.60L
PASS	0.6718	1-way Shear (+Z)	29.622 psi	44.091 psi	+1.20D+1.60L
PASS	0.6718	1-way Shear (-Z)	29.622 psi	44.091 psi	+1.20D+1.60L
PASS	0.7863	2-way Punching	117.943 psi	150.0 psi	+1.20D+1.60L

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
		Zecc (in)		Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.0	n/a	0.0	0.8986	0.8986	n/a	n/a	0.449
X-X, +D+L	2.0	n/a	0.0	1.988	1.988	n/a	n/a	0.994
X-X, +D+0.750L	2.0	n/a	0.0	1.715	1.715	n/a	n/a	0.858
X-X, +0.60D	2.0	n/a	0.0	0.5392	0.5392	n/a	n/a	0.270
Z-Z, D Only	2.0	0.0	n/a	n/a	n/a	0.8986	0.8986	0.449
Z-Z, +D+L	2.0	0.0	n/a	n/a	n/a	1.988	1.988	0.994
Z-Z, +D+0.750L	2.0	0.0	n/a	n/a	n/a	1.715	1.715	0.858
Z-Z, +0.60D	2.0	0.0	n/a	n/a	n/a	0.5392	0.5392	0.270

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	1.225	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
X-X, +1.40D	1.225	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
X-X, +1.20D+1.60L	3.010	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
X-X, +1.20D+1.60L	3.010	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
X-X, +1.20D+0.50L	1.663	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
X-X, +1.20D+0.50L	1.663	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
X-X, +1.20D	1.050	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
X-X, +1.20D	1.050	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
X-X, +0.90D	0.7875	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
X-X, +0.90D	0.7875	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
Z-Z, +1.40D	1.225	-X	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
Z-Z, +1.40D	1.225	+X	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
Z-Z, +1.20D+1.60L	3.010	-X	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
Z-Z, +1.20D+1.60L	3.010	+X	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
Z-Z, +1.20D+0.50L	1.663	-X	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
Z-Z, +1.20D+0.50L	1.663	+X	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
Z-Z, +1.20D	1.050	-X	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
Z-Z, +1.20D	1.050	+X	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
Z-Z, +0.90D	0.7875	-X	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK
Z-Z, +0.90D	0.7875	+X	Bottom	0.2160	ACI 7.6.1.1	0.2667	8.024	OK

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 3-0" SQ X 10" DP

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	12.06 psi	12.06 psi	12.06 psi	44.09 psi	0.27	OK
+1.20D+1.60L	29.62 psi	29.62 psi	29.62 psi	44.09 psi	0.67	OK
+1.20D+0.50L	16.36 psi	16.36 psi	16.36 psi	44.09 psi	0.37	OK
+1.20D	10.33 psi	10.33 psi	10.33 psi	44.09 psi	0.23	OK
+0.90D	7.75 psi	7.75 psi	7.75 psi	44.09 psi	0.18	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	12.06 psi	12.06 psi	12.06 psi	44.09 psi	0.27	OK
+1.20D+1.60L	29.62 psi	29.62 psi	29.62 psi	44.09 psi	0.67	OK
+1.20D+0.50L	16.36 psi	16.36 psi	16.36 psi	44.09 psi	0.37	OK
+1.20D	10.33 psi	10.33 psi	10.33 psi	44.09 psi	0.23	OK
+0.90D	7.75 psi	7.75 psi	7.75 psi	44.09 psi	0.18	OK

All units k

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	48.00 psi	150.00psi	0.32	OK
+1.20D+1.60L	117.94 psi	150.00psi	0.7863	OK
+1.20D+0.50L	65.14 psi	150.00psi	0.4343	OK
+1.20D	41.14 psi	150.00psi	0.2743	OK
+0.90D	30.86 psi	150.00psi	0.2057	OK

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 3-6" SQ X 10" DP

Code References

Calculations per ACI 318-19, IBC 2021, ASCE 7-16

Load Combinations Used : IBC 2021

General Information

Material Properties

f'_c : Concrete 28 day strength	=	2.50 ksi
f_y : Rebar Yield	=	60.0 ksi
E_c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
ϕ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing depth

Footing base depth below soil surface	=	0.750 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
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Analysis Settings

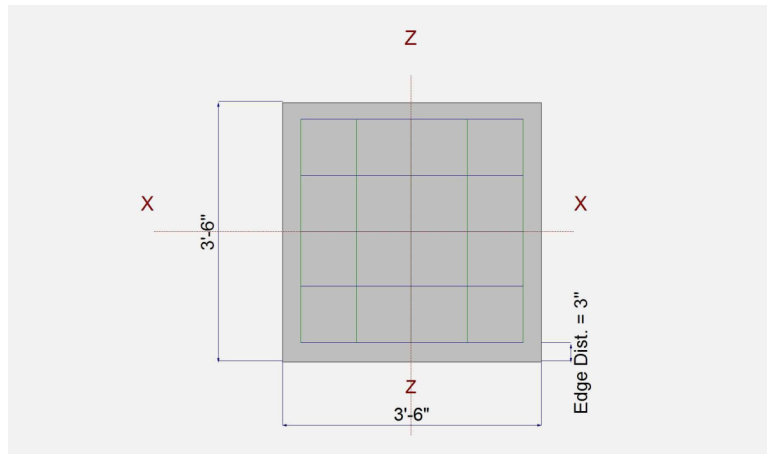
Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Dimensions

Width parallel to X-X Axis	=	3.50 ft
Length parallel to Z-Z Axis	=	3.50 ft
Footing Thickness	=	10.0 in

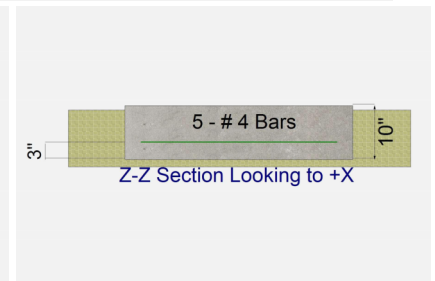
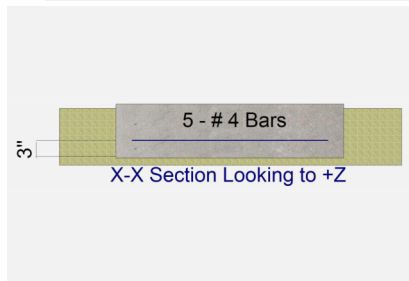
Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



Reinforcing

Bars parallel to X-X Axis	=	
Number of Bars	=	5
Reinforcing Bar Size	=	# 4
Bars parallel to Z-Z Axis	=	
Number of Bars	=	5
Reinforcing Bar Size	=	# 4
Bandwidth Distribution Check (ACI 15.4.4.2)		
Direction Requiring Closer Separation		n/a
# Bars required within zone		n/a
# Bars required on each side of zone		n/a



Applied Loads

	D	Lr	L	S	W	E	H
P : Column Load	=	9.250		11.250			k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=						k

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 3-6" SQ X 10" DP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.8970	Soil Bearing	1.794 ksf	2.0 ksf	+D+L about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.4246	Z Flexure (+X)	3.638 k-ft/ft	8.568 k-ft/ft	+1.20D+1.60L
PASS	0.4246	Z Flexure (-X)	3.638 k-ft/ft	8.568 k-ft/ft	+1.20D+1.60L
PASS	0.4246	X Flexure (+Z)	3.638 k-ft/ft	8.568 k-ft/ft	+1.20D+1.60L
PASS	0.4246	X Flexure (-Z)	3.638 k-ft/ft	8.568 k-ft/ft	+1.20D+1.60L
PASS	0.7240	1-way Shear (+X)	32.663 psi	45.117 psi	+1.20D+1.60L
PASS	0.7240	1-way Shear (-X)	32.663 psi	45.117 psi	+1.20D+1.60L
PASS	0.7240	1-way Shear (+Z)	32.663 psi	45.117 psi	+1.20D+1.60L
PASS	0.7240	1-way Shear (-Z)	32.663 psi	45.117 psi	+1.20D+1.60L
PASS	0.9645	2-way Punching	144.669 psi	150.0 psi	+1.20D+1.60L

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
		Zecc (in)		Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.0	n/a	0.0	0.8759	0.8759	n/a	n/a	0.438
X-X, +D+L	2.0	n/a	0.0	1.794	1.794	n/a	n/a	0.897
X-X, +D+0.750L	2.0	n/a	0.0	1.565	1.565	n/a	n/a	0.783
X-X, +0.60D	2.0	n/a	0.0	0.5256	0.5256	n/a	n/a	0.263
Z-Z, D Only	2.0	0.0	n/a	n/a	n/a	0.8759	0.8759	0.438
Z-Z, +D+L	2.0	0.0	n/a	n/a	n/a	1.794	1.794	0.897
Z-Z, +D+0.750L	2.0	0.0	n/a	n/a	n/a	1.565	1.565	0.783
Z-Z, +0.60D	2.0	0.0	n/a	n/a	n/a	0.5256	0.5256	0.263

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	1.619	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
X-X, +1.40D	1.619	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
X-X, +1.20D+1.60L	3.638	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
X-X, +1.20D+1.60L	3.638	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
X-X, +1.20D+0.50L	2.091	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
X-X, +1.20D+0.50L	2.091	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
X-X, +1.20D	1.388	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
X-X, +1.20D	1.388	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
X-X, +0.90D	1.041	+Z	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
X-X, +0.90D	1.041	-Z	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
Z-Z, +1.40D	1.619	-X	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
Z-Z, +1.40D	1.619	+X	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
Z-Z, +1.20D+1.60L	3.638	-X	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
Z-Z, +1.20D+1.60L	3.638	+X	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
Z-Z, +1.20D+0.50L	2.091	-X	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
Z-Z, +1.20D+0.50L	2.091	+X	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
Z-Z, +1.20D	1.388	-X	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
Z-Z, +1.20D	1.388	+X	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
Z-Z, +0.90D	1.041	-X	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK
Z-Z, +0.90D	1.041	+X	Bottom	0.2160	ACI 7.6.1.1	0.2857	8.568	OK

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Isolated Interior Footing (2000 psf): 3-6" SQ X 10" DP

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	14.54 psi	14.54 psi	14.54 psi	45.12 psi	0.32	OK
+1.20D+1.60L	32.66 psi	32.66 psi	32.66 psi	45.12 psi	0.72	OK
+1.20D+0.50L	18.77 psi	18.77 psi	18.77 psi	45.12 psi	0.42	OK
+1.20D	12.46 psi	12.46 psi	12.46 psi	45.12 psi	0.28	OK
+0.90D	9.34 psi	9.34 psi	9.34 psi	45.12 psi	0.21	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	14.54 psi	14.54 psi	14.54 psi	45.12 psi	0.32	OK
+1.20D+1.60L	32.66 psi	32.66 psi	32.66 psi	45.12 psi	0.72	OK
+1.20D+0.50L	18.77 psi	18.77 psi	18.77 psi	45.12 psi	0.42	OK
+1.20D	12.46 psi	12.46 psi	12.46 psi	45.12 psi	0.28	OK
+0.90D	9.34 psi	9.34 psi	9.34 psi	45.12 psi	0.21	OK

All units k

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	64.38 psi	150.00psi	0.4292	OK
+1.20D+1.60L	144.67 psi	150.00psi	0.9645	OK
+1.20D+0.50L	83.15 psi	150.00psi	0.5543	OK
+1.20D	55.18 psi	150.00psi	0.3679	OK
+0.90D	41.39 psi	150.00psi	0.2759	OK

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Continuous Stemwall & Footing (2000 psf) - 1'-4"W x 8"DP

Code References

Calculations per ACI 318-19, IBC 2021, ASCE 7-16

Load Combinations Used : IBC 2021

General Information

Material Properties

f _c : Concrete 28 day strength	=	2.50 ksi
f _y : Rebar Yield	=	60.0 ksi
E _c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing depth

Footing base depth below soil surface	=	1.50 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
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Analysis Settings

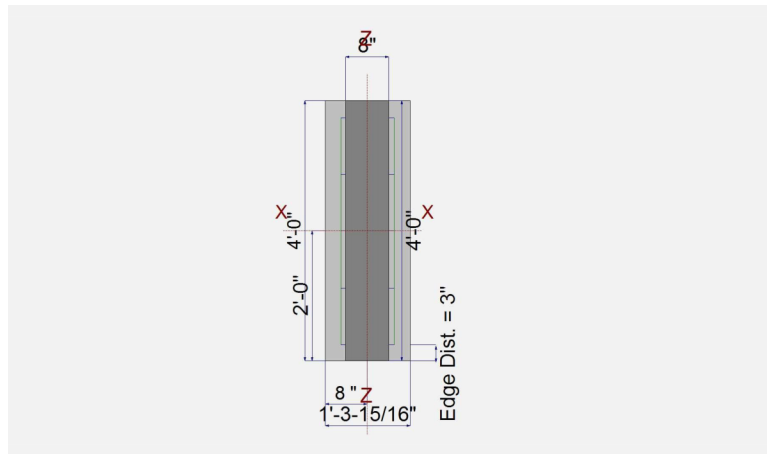
Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	No

Dimensions

Width parallel to X-X Axis	=	1.330 ft
Length parallel to Z-Z Axis	=	4.0 ft
Footing Thickness	=	8.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	8.0 in
pz : parallel to Z-Z Axis	=	48.0 in
Height	=	18.0 in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



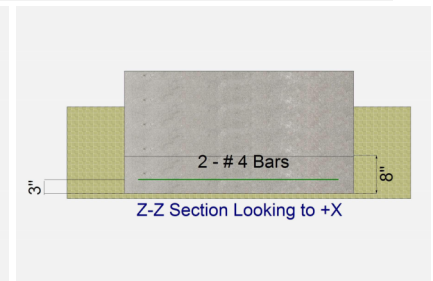
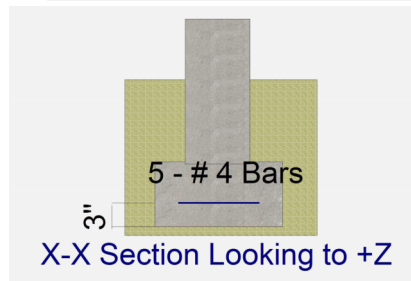
Reinforcing

Bars parallel to X-X Axis	=	
Number of Bars	=	5.0
Reinforcing Bar Size	=	# 4
Bars parallel to Z-Z Axis	=	
Number of Bars	=	2.0
Reinforcing Bar Size	=	# 4

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation

	Bars along X-X Axis	
# Bars required within zone	49.9 %	
# Bars required on each side of zone	50.1 %	



Applied Loads

	D	L _r	L	S	W	E	H
P : Column Load	=	3.750		5.50			k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=						k

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Continuous Stemwall & Footing (2000 psf) - 1'-4"W x 8"DP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9950	Soil Bearing	1.990 ksf	2.0 ksf	+D+L about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.02676	Z Flexure (+X)	0.1417 k-ft/ft	5.294 k-ft/ft	+1.20D+1.60L
PASS	0.02676	Z Flexure (-X)	0.1417 k-ft/ft	5.294 k-ft/ft	+1.20D+1.60L
PASS	0.0	X Flexure (+Z)	0.0 k-ft/ft	0.0 k-ft/ft	No Moment
PASS	0.0	X Flexure (-Z)	0.0 k-ft/ft	0.0 k-ft/ft	No Moment
PASS	n/a	1-way Shear (+X)	0.0 psi	35.569 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a
PASS	n/a	1-way Shear (+Z)	0.0 psi	69.682 psi	n/a
PASS	n/a	1-way Shear (-Z)	0.0 psi	69.682 psi	n/a
PASS	n/a	2-way Punching	0.1491 psi	35.569 psi	+1.40D



Top reinforcing mat required (see 'Bending' tab).

Hand check required for anchor pullout.

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xeccc	Zeccc (in)	Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
				Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.0	n/a	0.0	0.9563	0.9563	n/a	n/a	0.478
X-X, +D+L	2.0	n/a	0.0	1.990	1.990	n/a	n/a	0.995
X-X, +D+0.750L	2.0	n/a	0.0	1.732	1.732	n/a	n/a	0.866
X-X, +0.60D	2.0	n/a	0.0	0.5738	0.5738	n/a	n/a	0.287
Z-Z, D Only	2.0	0.0	n/a	n/a	n/a	0.9563	0.9563	0.478
Z-Z, +D+L	2.0	0.0	n/a	n/a	n/a	1.990	1.990	0.995
Z-Z, +D+0.750L	2.0	0.0	n/a	n/a	n/a	1.732	1.732	0.866
Z-Z, +0.60D	2.0	0.0	n/a	n/a	n/a	0.5738	0.5738	0.287

Overturing Stability

Rotation Axis & Load Combination...	Overturing Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturing				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvsn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.0	+Z	Top	0.1728	ACI 7.6.1.1	0.3008	6.288	OK
X-X, +1.40D	0.0	-Z	Top	0.1728	ACI 7.6.1.1	0.3008	6.288	OK
X-X, +1.20D+1.60L	0.0	+Z	Top	0.1728	ACI 7.6.1.1	0.3008	6.288	OK
X-X, +1.20D+1.60L	0.0	-Z	Top	0.1728	ACI 7.6.1.1	0.3008	6.288	OK
X-X, +1.20D+0.50L	0.0	+Z	Top	0.1728	ACI 7.6.1.1	0.3008	6.288	OK
X-X, +1.20D+0.50L	0.0	-Z	Top	0.1728	ACI 7.6.1.1	0.3008	6.288	OK
X-X, +1.20D	0.0	+Z	Top	0.1728	ACI 7.6.1.1	0.3008	6.288	OK
X-X, +1.20D	0.0	-Z	Top	0.1728	ACI 7.6.1.1	0.3008	6.288	OK
X-X, +0.90D	0.0	+Z	Top	0.1728	ACI 7.6.1.1	0.3008	6.288	OK
X-X, +0.90D	0.0	-Z	Top	0.1728	ACI 7.6.1.1	0.3008	6.288	OK
Z-Z, +1.40D	0.05913	-X	Bottom	0.1728	ACI 7.6.1.1	0.250	5.294	OK
Z-Z, +1.40D	0.05913	+X	Bottom	0.1728	ACI 7.6.1.1	0.250	5.294	OK
Z-Z, +1.20D+1.60L	0.1417	-X	Bottom	0.1728	ACI 7.6.1.1	0.250	5.294	OK
Z-Z, +1.20D+1.60L	0.1417	+X	Bottom	0.1728	ACI 7.6.1.1	0.250	5.294	OK
Z-Z, +1.20D+0.50L	0.07912	-X	Bottom	0.1728	ACI 7.6.1.1	0.250	5.294	OK
Z-Z, +1.20D+0.50L	0.07912	+X	Bottom	0.1728	ACI 7.6.1.1	0.250	5.294	OK
Z-Z, +1.20D	0.05069	-X	Bottom	0.1728	ACI 7.6.1.1	0.250	5.294	OK
Z-Z, +1.20D	0.05069	+X	Bottom	0.1728	ACI 7.6.1.1	0.250	5.294	OK
Z-Z, +0.90D	0.03802	-X	Bottom	0.1728	ACI 7.6.1.1	0.250	5.294	OK

General Footing

LIC# : KW-06011993, Build:20.24.03.01

L120 Engineering and Design

(c) ENERCALC INC 1983-2023

DESCRIPTION: Continuous Stemwall & Footing (2000 psf) - 1'-4"W x 8"DP

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in ²	Gvrn. As in ²	Actual As in ²	Phi*Mn k-ft	Status
Z-Z, +0.90D	0.03802	+X	Bottom	0.1728	ACI 7.6.1.1	0.250	5.294	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.00 psi	0.00 psi	0.00 psi	35.57 psi	0.00	OK
+1.20D+1.60L	0.00 psi	0.00 psi	0.00 psi	35.57 psi	0.00	OK
+1.20D+0.50L	0.00 psi	0.00 psi	0.00 psi	35.57 psi	0.00	OK
+1.20D	0.00 psi	0.00 psi	0.00 psi	35.57 psi	0.00	OK
+0.90D	0.00 psi	0.00 psi	0.00 psi	35.57 psi	0.00	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.00 psi	0.00 psi	0.00 psi	69.68 psi	0.00	OK
+1.20D+1.60L	0.00 psi	0.00 psi	0.00 psi	69.68 psi	0.00	OK
+1.20D+0.50L	0.00 psi	0.00 psi	0.00 psi	69.68 psi	0.00	OK
+1.20D	0.00 psi	0.00 psi	0.00 psi	69.68 psi	0.00	OK
+0.90D	0.00 psi	0.00 psi	0.00 psi	69.68 psi	0.00	OK

Two-Way "Punching" Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	0.15 psi	100.00psi	0.001491	OK
+1.20D+1.60L	0.15 psi	100.00psi	0.001491	OK
+1.20D+0.50L	0.15 psi	100.00psi	0.001491	OK
+1.20D	0.15 psi	100.00psi	0.001491	OK
+0.90D	0.15 psi	100.00psi	0.001491	OK