LONGITUDE
ONE TWENTY°
ENGINEERING & DESIGN

Calculation Package for

Forest Ave Lot 3

Project no: S201120

May 12, 2021

(206) 790 9502
L120Engineering.com

Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 3**	**DC**
Engineer:	Specifics:	Date:
xxx	**Design Criteria**	**5/12/2021**

GRAVITY DESIGN:

BLUE = Review and update as required - Typical Input

Code Reference: IBC 2015

ROOF ASSEMBLY		
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 ASSEMBLY		
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 ASSEMBLY		
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 ASSEMBLY		
2x4 at 8" o.c. Staggered	1.1	psf
Insulation	0.5	psf
(2) Layers 5/8" GWB	4.4	psf
Misc	2.0	psf
Total	**8.0**	**psf**

SEISMIC DESIGN:

Code Reference: ASCE 7-10

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

Mapped Spectral Acceleration, Ss = **1.444**

Mapped Spectral Acceleration, S1 = **0.554**

Soil Site Class = **D**

WIND DESIGN:

Code Reference: ASCE 7-10

Basic Wind Speed (3 second Gust) = **110** mph

Exposure : **C**

Kzt = **1.00**

SOIL PROPERTIES:

Soil Bearing Pressure = **1,500** 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 for cantilevered retaining wall design

Restrained Active Pressure = **50** pcf for tank wall design

Passive Pressure = **250** pcf

Soil Friction Coeff. = **0.35**

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FRAMING CALCULATIONS

BEAM REFERENCE PER PLAN

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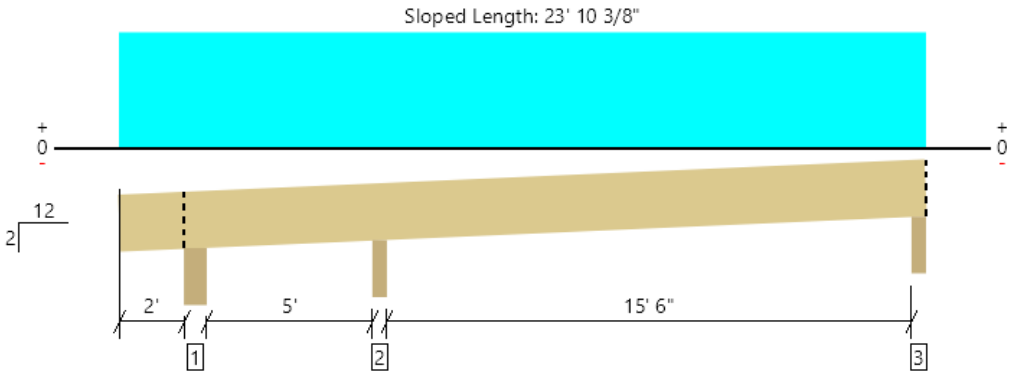
Roof, RJ-1

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



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

Member Length : 24' 1/4"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 2/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1300 @ 7' 7 1/4"	2156 (3.50")	Passed (60%)	--	1.0 D + 1.0 S (Adj Spans)
Shear (lbs)	668 @ 8' 8 1/8"	1941	Passed (34%)	1.15	1.0 D + 1.0 S (Adj Spans)
Moment (Ft-lbs)	-1910 @ 7' 7 1/4"	2964	Passed (64%)	1.15	1.0 D + 1.0 S (Adj Spans)
Live Load Defl. (in)	0.171 @ 16' 2 3/4"	0.797	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.273 @ 16' 2 7/8"	1.063	Passed (L/702)	--	1.0 D + 1.0 S (Alt Spans)

- 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	Total	
1 - Beveled Plate - SPF	5.50"	5.50"	1.50"	30	156/-20	186/-20	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	2.11"	486	813	1299	None
3 - Beveled Plate - SPF	3.50"	3.50"	1.50"	200	330	530	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' o/c	
Bottom Edge (Lu)	5' 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 23' 6 1/2"	24"	15.0	25.0	ROOF

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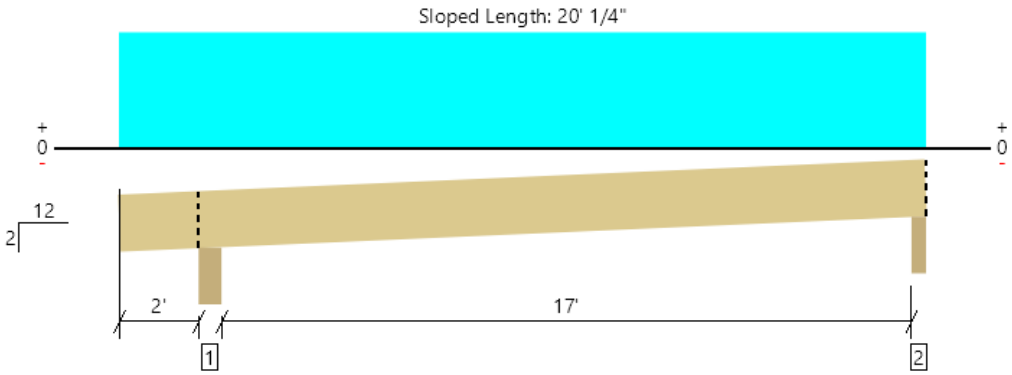
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

Roof, RJ-2

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



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

Member Length : 20' 2 1/8"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 2/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	705 @ 19' 6 1/2"	2126 (3.50")	Passed (33%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	615 @ 3' 4 5/8"	1941	Passed (32%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2944 @ 10' 11 13/16"	2964	Passed (99%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.440 @ 10' 10 15/16"	0.878	Passed (L/479)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.702 @ 10' 11 1/16"	1.170	Passed (L/300)	--	1.0 D + 1.0 S (Alt Spans)

- 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	Total	
1 - Beveled Plate - SPF	5.50"	5.50"	1.50"	335	551	886	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	1.50"	265	440	705	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" o/c	
Bottom Edge (Lu)	20' 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 19' 9"	24"	15.0	25.0	ROOF

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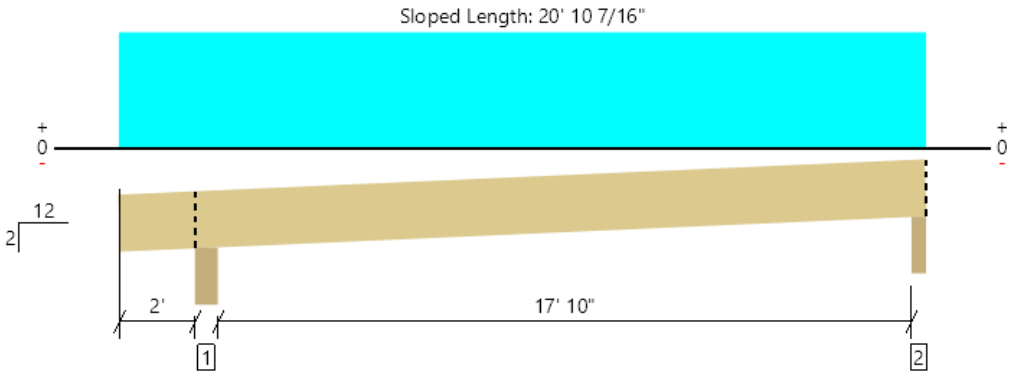
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

Roof, RJ-3

1 piece(s) 2 x 12 HF No.2 @ 19.2" OC



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

Member Length : 21' 5/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 2/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	591 @ 20' 4 1/2"	2126 (3.50")	Passed (28%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	518 @ 3' 4 5/8"	1941	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2593 @ 11' 4 3/4"	2964	Passed (87%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.426 @ 11' 3 15/16"	0.920	Passed (L/519)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.680 @ 11' 4"	1.226	Passed (L/325)	--	1.0 D + 1.0 S (Alt Spans)

- 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	Total	
1 - Beveled Plate - SPF	5.50"	5.50"	1.50"	278	458	736	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	1.50"	222	369	591	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)	3' 5" o/c	
Bottom Edge (Lu)	20' 10" 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' 7"	19.2"	15.0	25.0	ROOF

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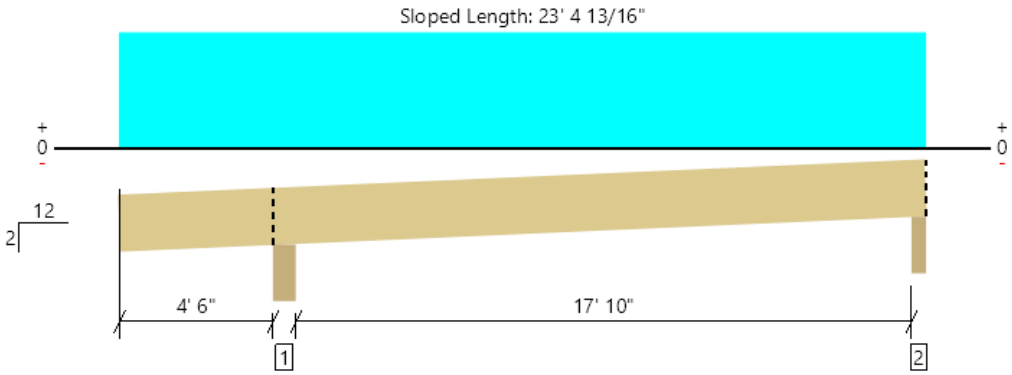
Roof, RJ-4

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



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

Member Length : 23' 6 11/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 2/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1159 @ 4' 8 3/4"	3387 (5.50")	Passed (34%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	686 @ 5' 10 5/8"	1941	Passed (35%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3007 @ 14' 2 3/4"	2964	Passed (101%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.498 @ 13' 10 15/16"	0.920	Passed (L/444)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.774 @ 13' 11 1/2"	1.226	Passed (L/285)	--	1.0 D + 1.0 S (Alt Spans)

- 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.
- Upward deflection on left cantilever exceeds 0.4".
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - SPF	5.50"	5.50"	1.88"	439	721	1160	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	1.50"	264	449	713	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" o/c	
Bottom Edge (Lu)	14' 8" 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 23' 1"	24"	15.0	25.0	ROOF

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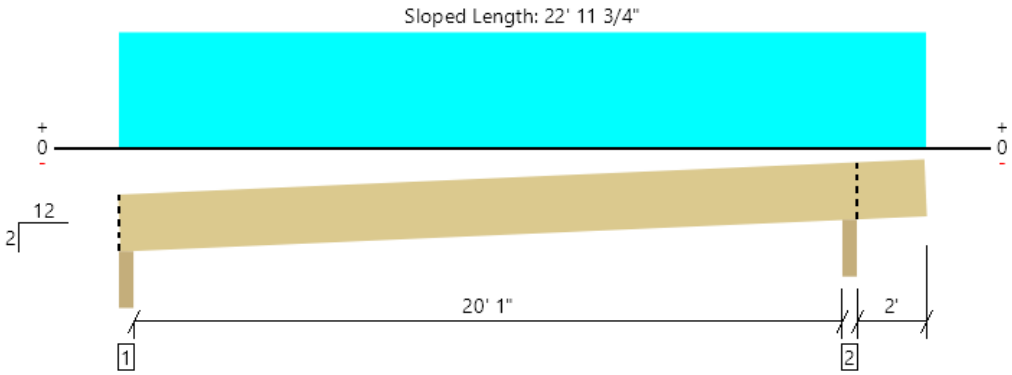
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

Roof, RJ-5

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



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

Member Length : 23' 1 5/8"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 2/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	998 @ 20' 6 1/4"	4311 (3.50")	Passed (23%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	740 @ 19' 5 3/8"	3881	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4084 @ 10' 3 7/16"	5928	Passed (69%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.420 @ 10' 4 1/8"	1.030	Passed (L/589)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.671 @ 10' 4 1/16"	1.373	Passed (L/368)	--	1.0 D + 1.0 S (Alt Spans)

- 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	Total	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	312	515	827	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	1.50"	378	621	999	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)	8' 11" o/c	
Bottom Edge (Lu)	23' 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 22' 8"	24"	15.0	25.0	ROOF

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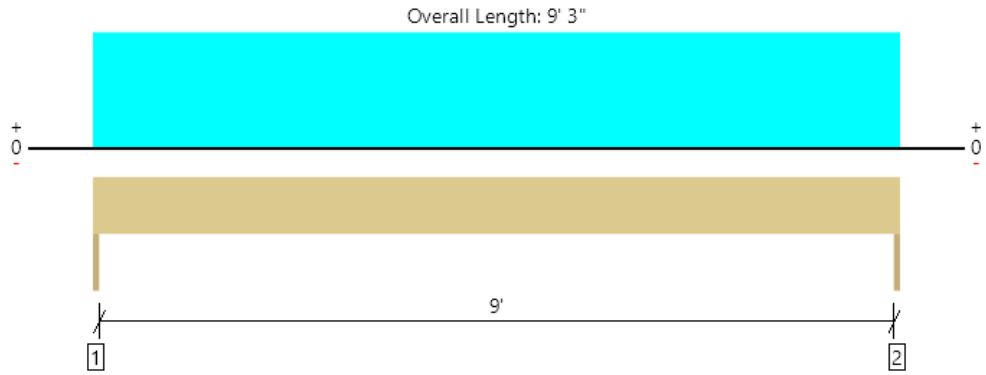
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-1

1 piece(s) 4 x 8 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	402 @ 0	3281 (1.50")	Passed (12%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	338 @ 8 3/4"	3502	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	929 @ 4' 7 1/2"	3438	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.046 @ 4' 7 1/2"	0.308	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.080 @ 4' 7 1/2"	0.313	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/5/16").
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	170	231	401	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	170	231	401	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 3" o/c	
Bottom Edge (Lu)	9' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 3"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 9' 3"	2'	15.2	25.0	Roof

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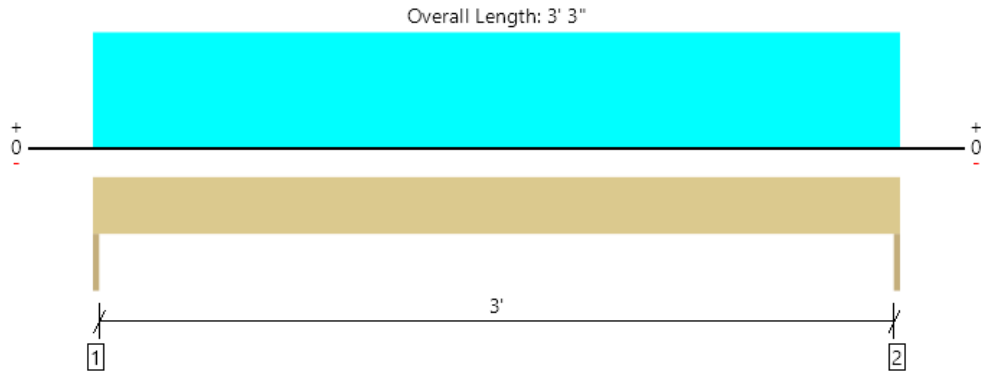
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-2

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	555 @ 0	3281 (1.50")	Passed (17%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	356 @ 7"	2657	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	451 @ 1' 7 1/2"	1979	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.006 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.011 @ 1' 7 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	250	57	305	612	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	250	57	305	612	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	4.9	--	--	
1 - Uniform (PSF)	0 to 3' 3"	7' 6"	15.2	-	25.0	Roof
2 - Uniform (PSF)	0 to 3' 3"	3' 6"	10.0	10.0	-	clg

Weyerhaeuser Notes

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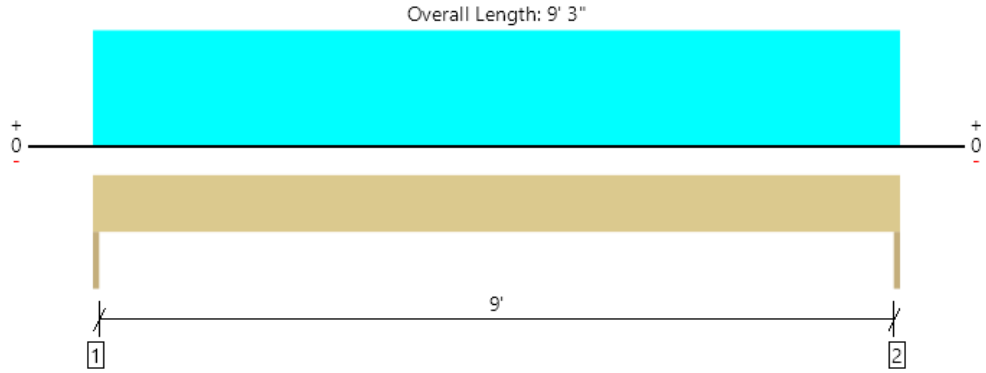
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-3
1 piece(s) 4 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1433 @ 0	3281 (1.50")	Passed (44%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1155 @ 10 3/4"	4468	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3313 @ 4' 7 1/2"	5166	Passed (64%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.084 @ 4' 7 1/2"	0.308	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.138 @ 4' 7 1/2"	0.463	Passed (L/804)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	565	867	1432	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	565	867	1432	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 3" o/c	
Bottom Edge (Lu)	9' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 3"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 9' 3"	7' 6"	15.2	25.0	Roof

Weyerhaeuser Notes

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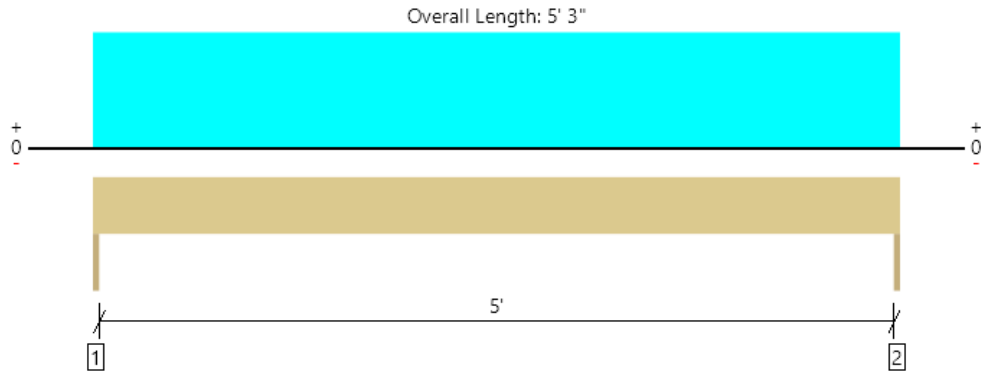
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-4

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	884 @ 0	3281 (1.50")	Passed (27%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	687 @ 7"	2657	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1160 @ 2' 7 1/2"	1979	Passed (59%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.045 @ 2' 7 1/2"	0.175	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.074 @ 2' 7 1/2"	0.262	Passed (L/850)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	342	541	883	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	342	541	883	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 3" o/c	
Bottom Edge (Lu)	5' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 5' 3"	8' 3"	15.2	25.0	Roof

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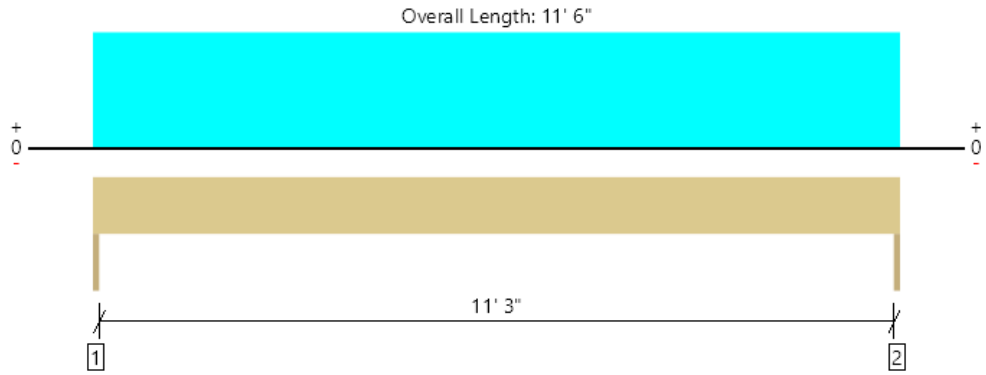
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-5
1 piece(s) 4 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	741 @ 0	3281 (1.50")	Passed (23%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	625 @ 10 3/4"	4468	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2130 @ 5' 9"	5166	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.080 @ 5' 9"	0.383	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.137 @ 5' 9"	0.575	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	309	431	740	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	309	431	740	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	11' 6" o/c	
Bottom Edge (Lu)	11' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11' 6"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 11' 6"	3'	15.2	25.0	Roof

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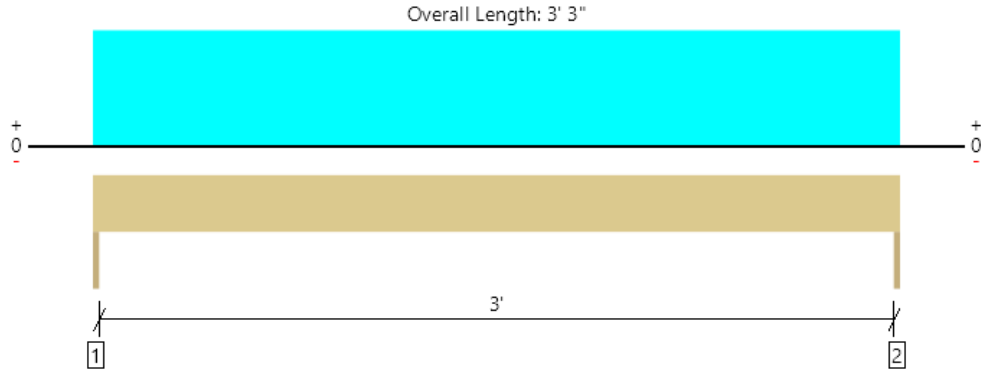
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-6

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	792 @ 0	3281 (1.50")	Passed (24%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	508 @ 7"	2657	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	643 @ 1' 7 1/2"	1979	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.010 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.016 @ 1' 7 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	304	488	792	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	304	488	792	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 3' 3"	12'	15.2	25.0	Roof

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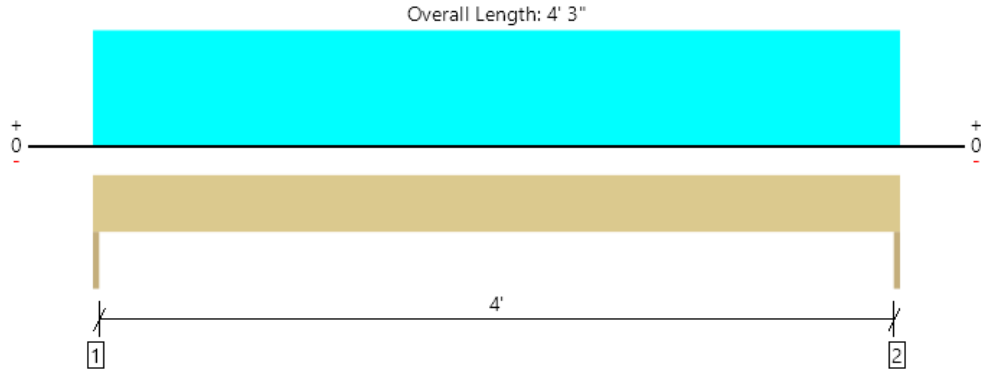
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-7

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	181 @ 0	3281 (1.50")	Passed (6%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	131 @ 7"	2657	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	193 @ 2' 1 1/2"	1979	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.005 @ 2' 1 1/2"	0.142	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.008 @ 2' 1 1/2"	0.213	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	75	106	181	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	75	106	181	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 3" o/c	
Bottom Edge (Lu)	4' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

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"	2'	15.2	25.0	Roof

Weyerhaeuser Notes

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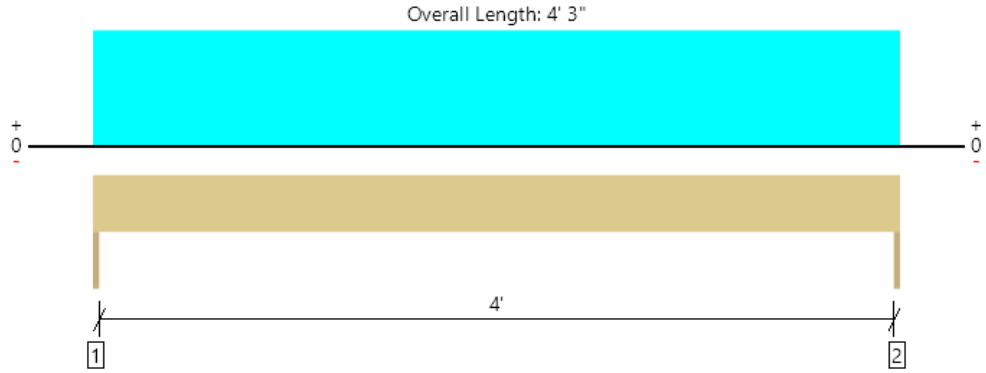
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-8

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	779 @ 0	3281 (1.50")	Passed (24%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	565 @ 7"	2657	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	828 @ 2' 1 1/2"	1979	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.021 @ 2' 1 1/2"	0.142	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.035 @ 2' 1 1/2"	0.213	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	301	478	779	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	301	478	779	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 3" o/c	
Bottom Edge (Lu)	4' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

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"	9'	15.2	25.0	Roof

Weyerhaeuser Notes

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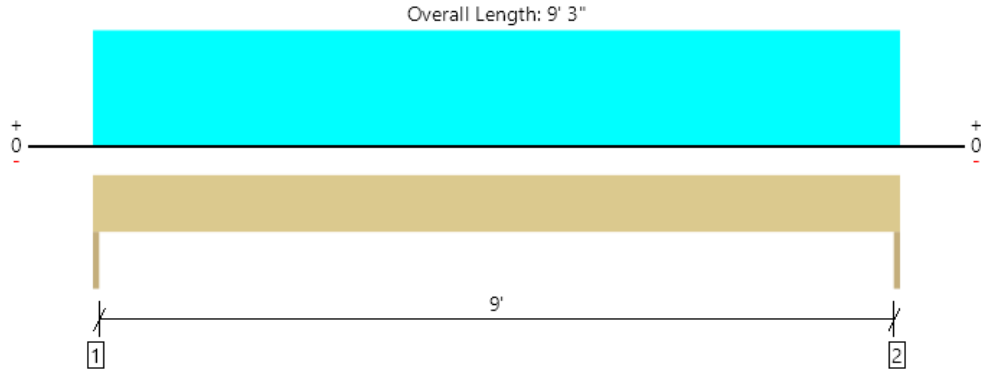
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-9

1 piece(s) 4 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1712 @ 0	3281 (1.50")	Passed (52%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1380 @ 10 3/4"	4468	Passed (31%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3958 @ 4' 7 1/2"	5166	Passed (77%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.100 @ 4' 7 1/2"	0.308	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.165 @ 4' 7 1/2"	0.463	Passed (L/673)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	671	1041	1712	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	671	1041	1712	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 3" o/c	
Bottom Edge (Lu)	9' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 3"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 9' 3"	9'	15.2	25.0	Roof

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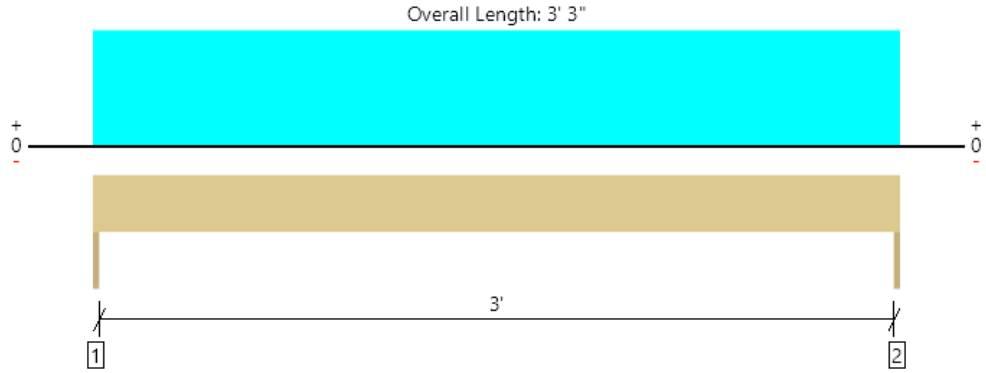
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-10

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	139 @ 0	3281 (1.50")	Passed (4%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	89 @ 7"	2657	Passed (3%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	113 @ 1' 7 1/2"	1979	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.002 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.003 @ 1' 7 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	57	81	138	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	57	81	138	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 3' 3"	2'	15.2	25.0	Roof

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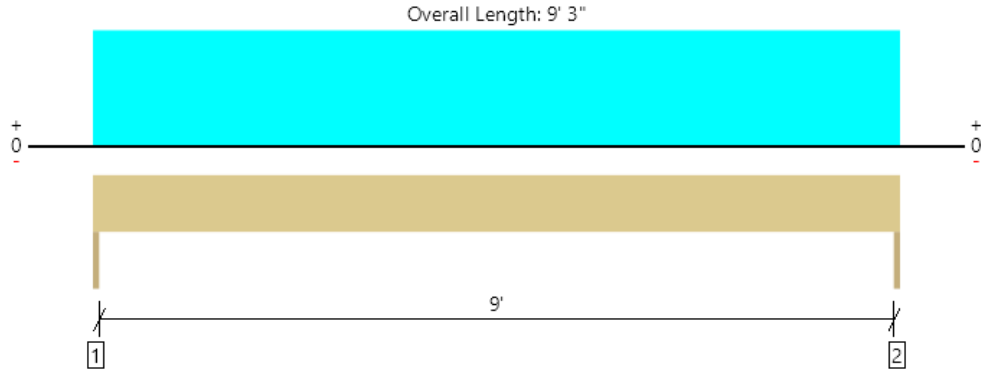
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-11

1 piece(s) 4 x 8 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	402 @ 0	3281 (1.50")	Passed (12%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	338 @ 8 3/4"	3502	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	929 @ 4' 7 1/2"	3438	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.046 @ 4' 7 1/2"	0.308	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.080 @ 4' 7 1/2"	0.313	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/5/16").
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	170	231	401	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	170	231	401	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 3" o/c	
Bottom Edge (Lu)	9' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 3"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 9' 3"	2'	15.2	25.0	Roof

Weyerhaeuser Notes

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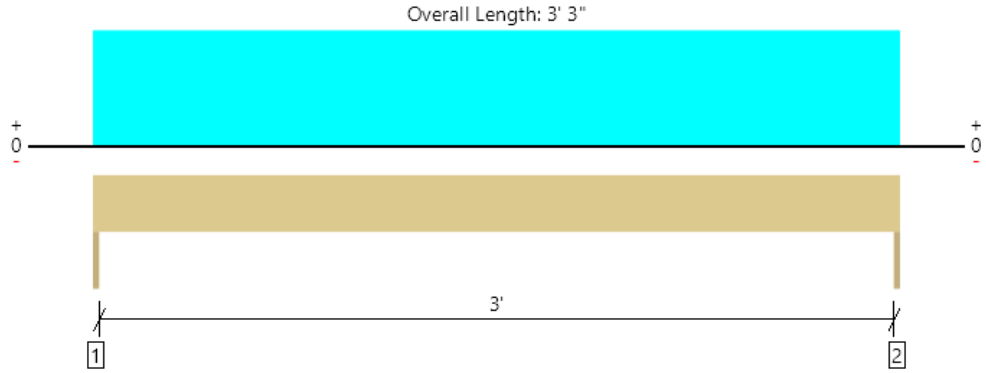
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-12

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	139 @ 0	3281 (1.50")	Passed (4%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	89 @ 7"	2657	Passed (3%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	113 @ 1' 7 1/2"	1979	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.002 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.003 @ 1' 7 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	57	81	138	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	57	81	138	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 3' 3"	2'	15.2	25.0	Roof

Weyerhaeuser Notes

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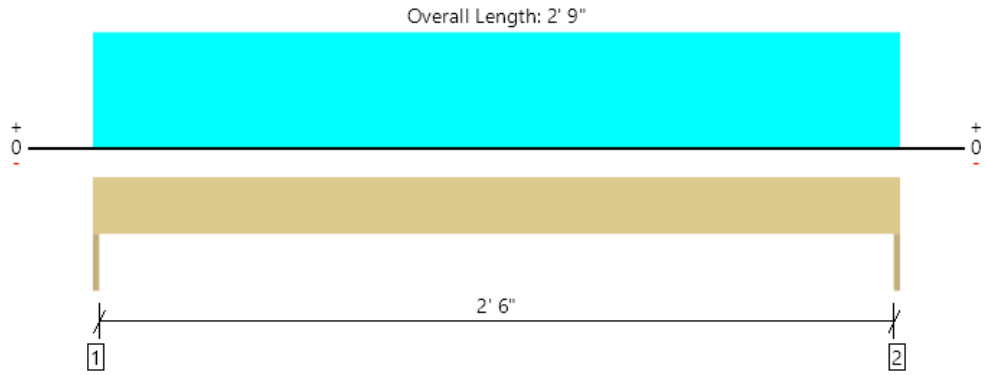
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-13

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	213 @ 0	3281 (1.50")	Passed (6%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	123 @ 7"	2310	Passed (5%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	146 @ 1' 4 1/2"	1720	Passed (9%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.001 @ 1' 4 1/2"	0.092	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.003 @ 1' 4 1/2"	0.138	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	110	103	213	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	110	103	213	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 9" o/c	
Bottom Edge (Lu)	2' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 2' 9"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 2' 9"	7' 6"	10.0	10.0	clg

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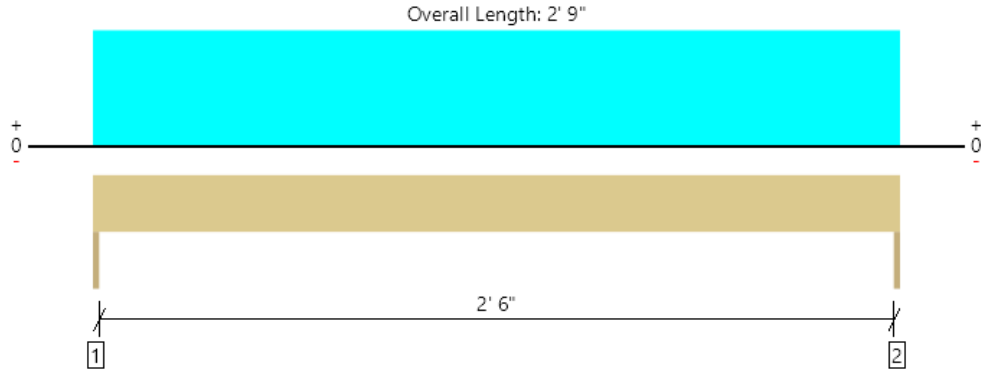
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-14

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	725 @ 0	3281 (1.50")	Passed (22%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	418 @ 7"	2657	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	499 @ 1' 4 1/2"	1979	Passed (25%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.005 @ 1' 4 1/2"	0.092	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.009 @ 1' 4 1/2"	0.138	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	279	447	726	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	279	447	726	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 9" o/c	
Bottom Edge (Lu)	2' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 2' 9"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 2' 9"	13'	15.2	25.0	Roof

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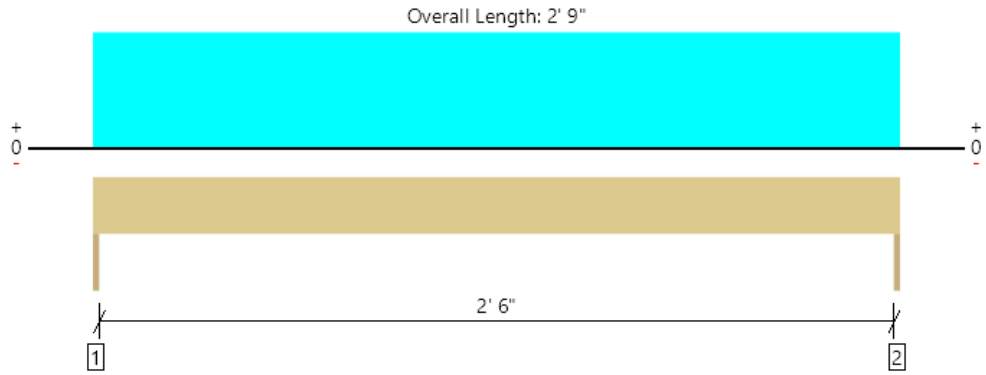
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-15

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1056 @ 0	3281 (1.50")	Passed (32%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	608 @ 7"	2657	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	726 @ 1' 4 1/2"	1979	Passed (37%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.007 @ 1' 4 1/2"	0.092	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.013 @ 1' 4 1/2"	0.138	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	489	138	567	1194	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	489	138	567	1194	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 9" o/c	
Bottom Edge (Lu)	2' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 2' 9"	N/A	4.9	--	--	
1 - Uniform (PSF)	0 to 2' 9"	16' 6"	15.2	-	25.0	Roof
2 - Uniform (PSF)	0 to 2' 9"	10'	10.0	10.0	-	CLG

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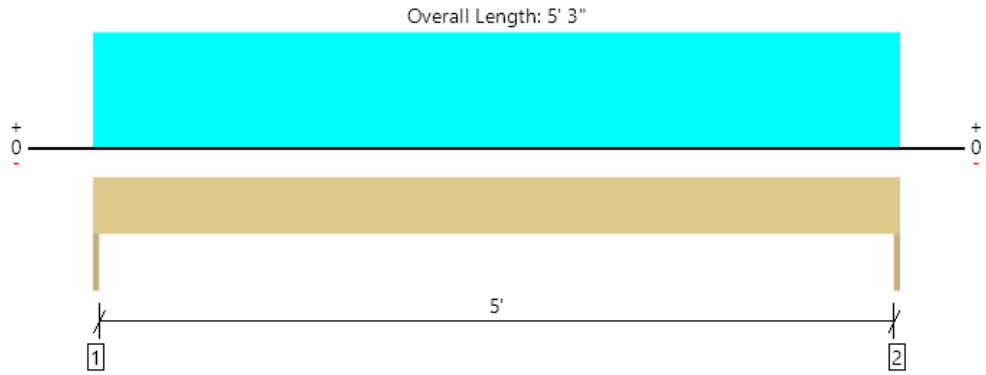
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-16

1 piece(s) 4 x 8 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2022 @ 0	3281 (1.50")	Passed (62%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1460 @ 8 3/4"	3502	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2653 @ 2' 7 1/2"	3438	Passed (77%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.043 @ 2' 7 1/2"	0.175	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.074 @ 2' 7 1/2"	0.262	Passed (L/851)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	840	105	1181	2126	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	840	105	1181	2126	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 3" o/c	
Bottom Edge (Lu)	5' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	6.4	--	--	
1 - Uniform (PSF)	0 to 5' 3"	18'	15.2	-	25.0	Roof
2 - Uniform (PSF)	0 to 5' 3"	4'	10.0	10.0	-	CLG

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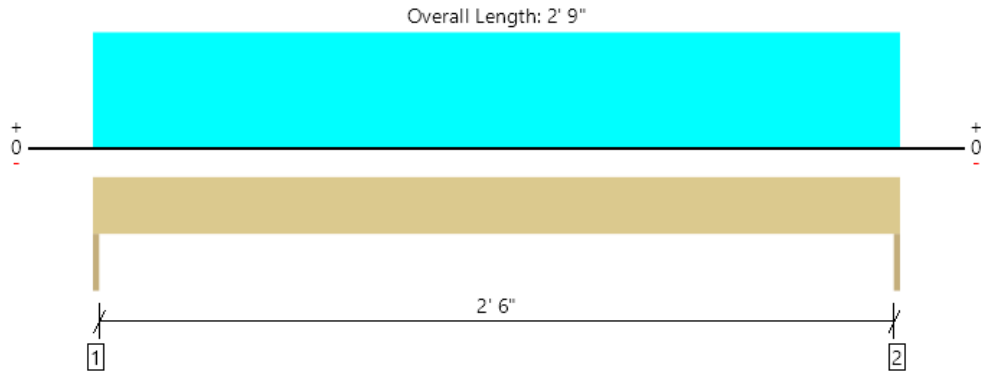
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-17

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	649 @ 0	3281 (1.50")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	374 @ 7"	2657	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	446 @ 1' 4 1/2"	1979	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.005 @ 1' 4 1/2"	0.092	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.008 @ 1' 4 1/2"	0.138	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	271	34	378	683	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	271	34	378	683	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 9" o/c	
Bottom Edge (Lu)	2' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 2' 9"	N/A	4.9	--	--	
1 - Uniform (PSF)	0 to 2' 9"	11'	15.2	-	25.0	Roof
2 - Uniform (PSF)	0 to 2' 9"	2' 6"	10.0	10.0	-	CLG

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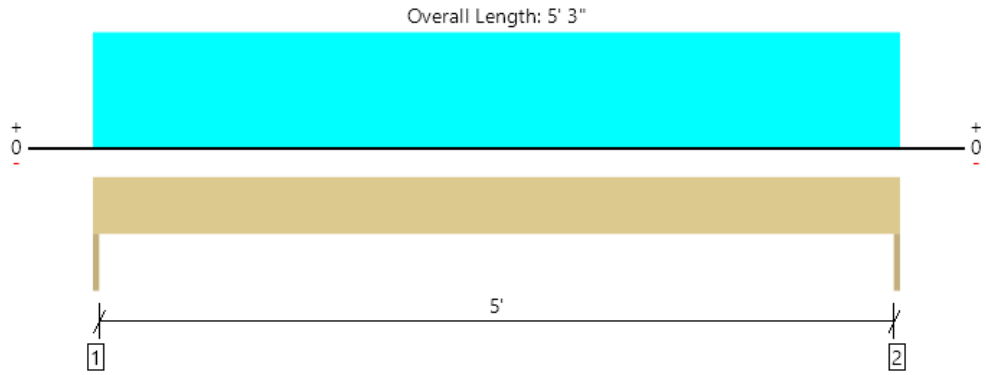
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-18

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1227 @ 0	3281 (1.50")	Passed (37%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	954 @ 7"	2657	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1610 @ 2' 7 1/2"	1979	Passed (81%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.063 @ 2' 7 1/2"	0.175	Passed (L/995)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.103 @ 2' 7 1/2"	0.262	Passed (L/612)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	472	755	1227	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	472	755	1227	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 3" o/c	
Bottom Edge (Lu)	5' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 5' 3"	11' 6"	15.2	25.0	Roof

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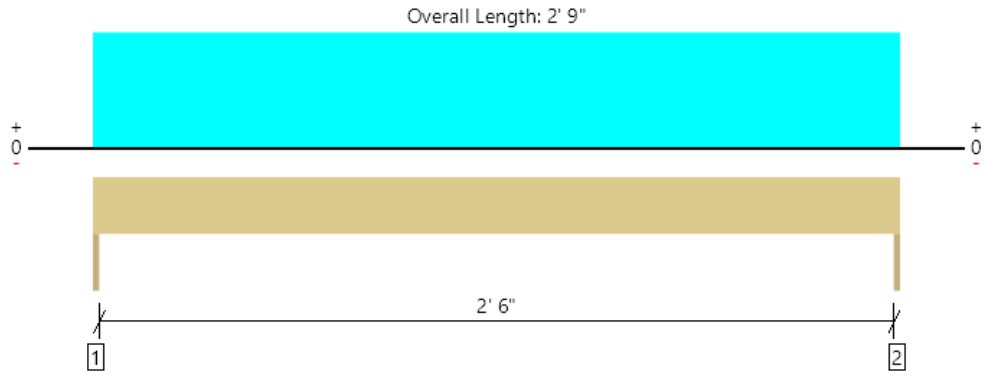
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-19

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	394 @ 0	3281 (1.50")	Passed (12%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	227 @ 7"	2657	Passed (9%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	271 @ 1' 4 1/2"	1979	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.003 @ 1' 4 1/2"	0.092	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.005 @ 1' 4 1/2"	0.138	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	153	241	394	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	153	241	394	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 9" o/c	
Bottom Edge (Lu)	2' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 2' 9"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 2' 9"	7'	15.2	25.0	Roof

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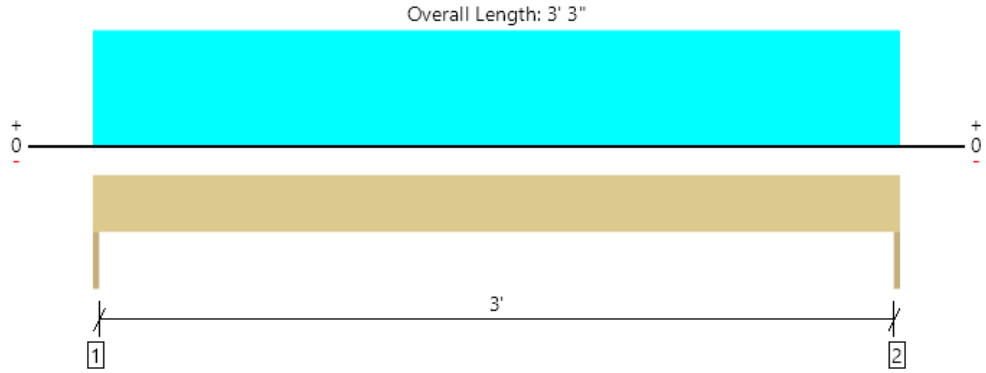
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-20

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	531 @ 0	3281 (1.50")	Passed (16%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	340 @ 7"	2657	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	431 @ 1' 7 1/2"	1979	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.006 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.011 @ 1' 7 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	206	325	531	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	206	325	531	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 3' 3"	8'	15.2	25.0	Roof

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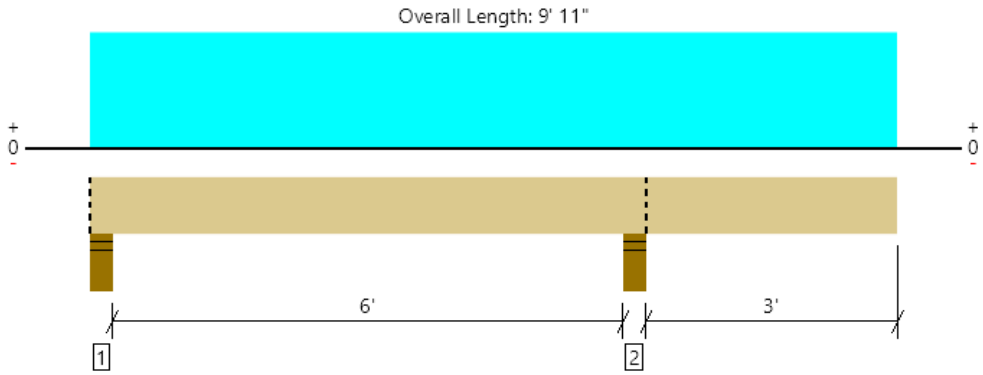
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

TH, TH-21

1 piece(s) 4 x 8 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2648 @ 6' 8 1/4"	8181 (5.50")	Passed (32%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1159 @ 5' 10 1/4"	3502	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1910 @ 6' 8 1/4"	3438	Passed (56%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.070 @ 9' 11"	0.200	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.090 @ 9' 11"	0.323	Passed (2L/860)	--	1.0 D + 1.0 S (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - SPF	5.50"	5.50"	1.50"	380	698	1078	Blocking
2 - Stud wall - SPF	5.50"	5.50"	1.78"	1022	1626	2648	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)	9' 11" o/c	
Bottom Edge (Lu)	9' 11" 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 9' 11"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 9' 11" (Front)	9'	15.0	25.0	ROOF

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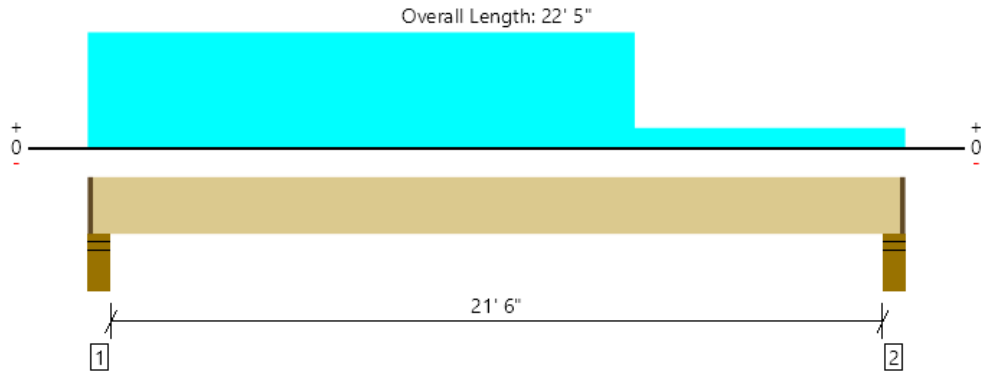
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

THIRD FLOOR, TB-1

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7618 @ 4"	9483 (4.25")	Passed (80%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	6225 @ 1' 11 1/2"	21011	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	36889 @ 10' 2 7/8"	75322	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.269 @ 10' 10 3/4"	0.544	Passed (L/969)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.582 @ 10' 10 13/16"	1.087	Passed (L/449)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	4.25"	3.41"	4117	448	3577	8142	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	2.00"	2431	448	2044	4923	1 1/4" 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)	22' 3" o/c	
Bottom Edge (Lu)	22' 3" 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 1/4" to 22' 3 3/4"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 22' 5" (Front)	1'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 22' 5" (Front)	2'	15.0	-	25.0	Default Load
3 - Uniform (PSF)	0 to 15' (Front)	12'	15.0	-	25.0	ROOF
4 - Uniform (PSF)	0 to 15' (Front)	10'	15.0	-	-	Ext Wall

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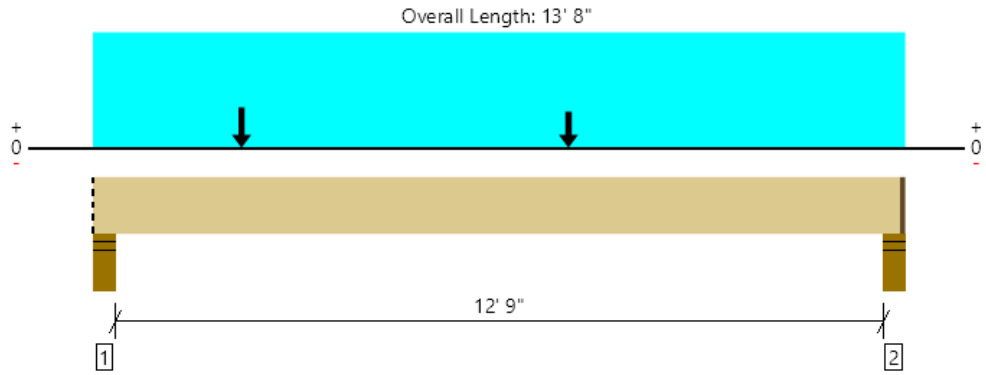
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-2

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7949 @ 13' 4"	9483 (4.25")	Passed (84%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	7762 @ 1' 11 1/2"	18270	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	29150 @ 7' 7 1/2"	65497	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.113 @ 6' 9 7/8"	0.325	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.194 @ 6' 9 5/8"	0.650	Passed (L/802)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	4.47"	4335	5115	2390	11840	Blocking
2 - Stud wall - SPF	5.50"	4.25"	3.56"	3059	4977	1328	9364	1 1/4" Rim Board

- 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)	13' 7" o/c	
Bottom Edge (Lu)	13' 7" 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 13' 6 3/4"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 13' 8" (Front)	16'	12.0	40.0	-	Default Load
2 - Point (lb)	2' 6" (Front)	N/A	2431	448	2044	Linked from: TB-1, Support 2
3 - Point (lb)	8' (Front)	N/A	1938	897	1674	Linked from: TB-6, Support 2

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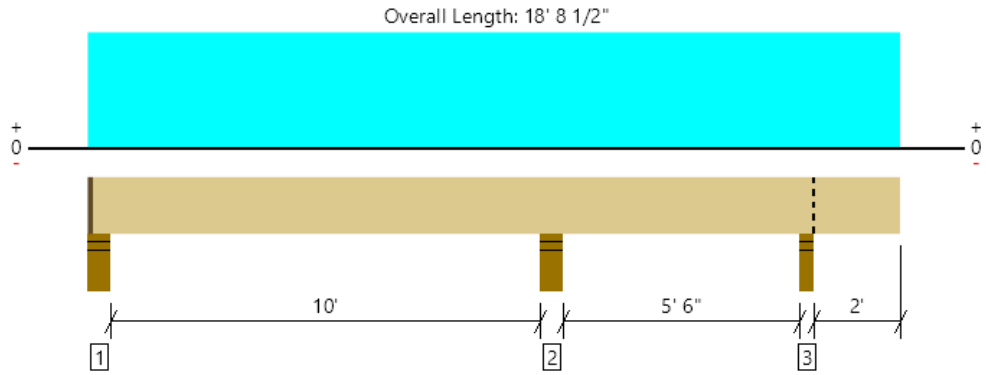
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

THIRD FLOOR, TB-3

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5765 @ 10' 8 1/4"	8181 (5.50")	Passed (70%)	--	1.0 D + 1.0 L (Adj Spans)
Shear (lbs)	2382 @ 8' 11 1/2"	12180	Passed (20%)	1.00	1.0 D + 1.0 L (Adj Spans)
Moment (Ft-lbs)	-5399 @ 10' 8 1/4"	43665	Passed (12%)	1.00	1.0 D + 1.0 L (Adj Spans)
Live Load Defl. (in)	0.027 @ 5' 1 11/16"	0.259	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.035 @ 5' 1 3/8"	0.518	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - HF	5.50"	4.25"	1.74"	637	1890/-19	2527/-19	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	5.50"	3.88"	1440	4325	5765	None
3 - Stud wall - SPF	3.50"	3.50"	1.78"	534	2112	2646	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)	18' 7" o/c	
Bottom Edge (Lu)	18' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1 1/4" to 18' 8 1/2"	N/A	19.7	--	
1 - Uniform (PSF)	0 to 18' 8 1/2" (Front)	10'	12.0	40.0	Default Load

Weyerhaeuser Notes

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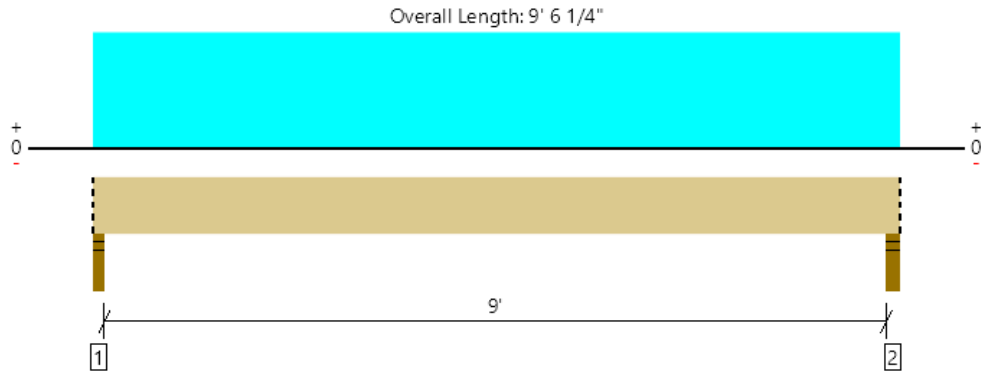
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

THIRD FLOOR, TB-4

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3011 @ 1 1/4"	3898 (2.75")	Passed (77%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1910 @ 1' 8 3/4"	14007	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6810 @ 4' 8 3/4"	50215	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.020 @ 4' 8 3/4"	0.231	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.039 @ 4' 8 3/4"	0.463	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - HF	2.75"	2.75"	2.12"	1474	378	1537	3389	Blocking
2 - Stud wall - HF	3.50"	3.50"	2.15"	1494	383	1557	3434	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)	9' 6" o/c	
Bottom Edge (Lu)	9' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 6 1/4"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 9' 6 1/4" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 9' 6 1/4" (Front)	14'	8.0	-	-	INT WALL
3 - Uniform (PSF)	0 to 9' 6 1/4" (Front)	13'	12.0	-	25.0	ROOF

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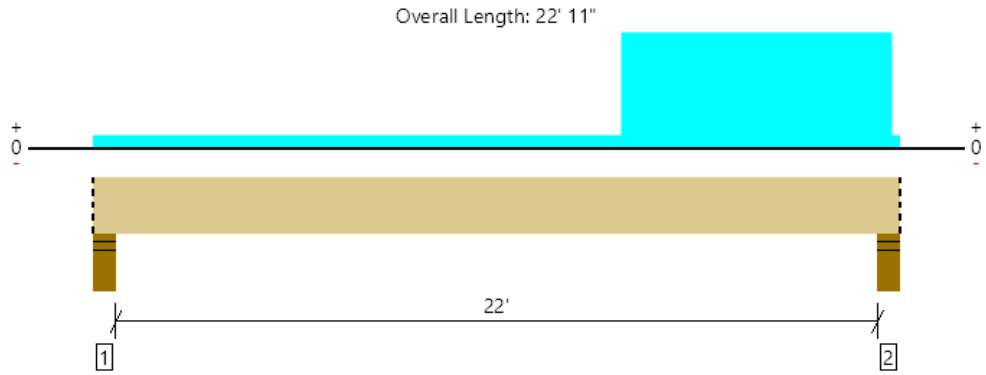
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

THIRD FLOOR, TB-5

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5949 @ 22' 7"	7796 (5.50")	Passed (76%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4390 @ 20' 11 1/2"	14007	Passed (31%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	19743 @ 15' 8 1/4"	50215	Passed (39%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.248 @ 12' 3 3/16"	0.556	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.461 @ 12' 3 5/8"	1.112	Passed (L/580)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - HF	5.50"	5.50"	1.50"	955	917	646	2518	Blocking
2 - Stud wall - HF	5.50"	5.50"	4.20"	2752	917	3198	6867	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)	22' 11" o/c	
Bottom Edge (Lu)	22' 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 22' 11"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 22' 11" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	15' to 22' 8 1/4" (Front)	14'	8.0	-	-	INT WALL
3 - Uniform (PSF)	15' to 22' 8 1/4" (Front)	20'	12.0	-	25.0	ROOF

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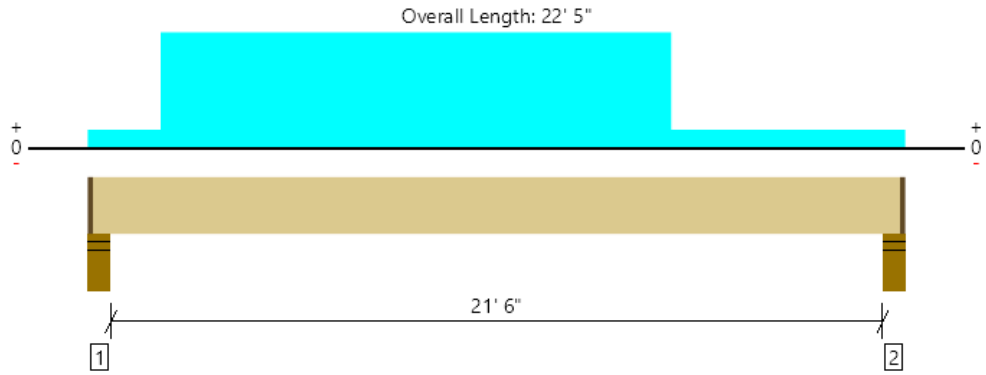
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

THIRD FLOOR, TB-6

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5236 @ 4"	6322 (4.25")	Passed (83%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	5120 @ 1' 11 1/2"	14007	Passed (37%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	30289 @ 10' 5 3/4"	50215	Passed (60%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.351 @ 10' 11 3/8"	0.544	Passed (L/744)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.718 @ 10' 11 11/16"	1.087	Passed (L/363)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	4.25"	3.52"	2677	897	2526	6100	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	2.59"	1938	897	1674	4509	1 1/4" 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)	18' 10" o/c	
Bottom Edge (Lu)	22' 3" 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 1/4" to 22' 3 3/4"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 22' 5" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	2' to 16' (Front)	12'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	2' to 16' (Front)	10'	8.0	-	-	INT Wall

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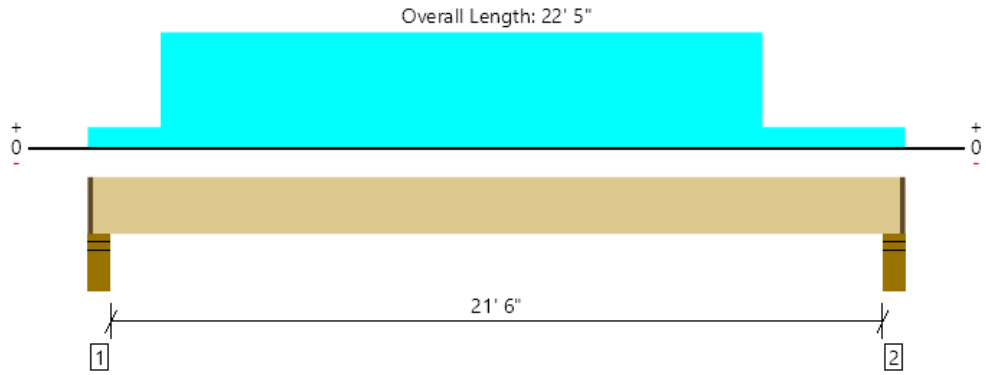
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-7

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4899 @ 4"	6322 (4.25")	Passed (77%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4713 @ 1' 11 1/2"	14007	Passed (34%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	29198 @ 11' 1/4"	50215	Passed (58%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.336 @ 11' 1 13/16"	0.544	Passed (L/776)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.706 @ 11' 1 3/4"	1.087	Passed (L/370)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	4.25"	3.29"	2552	897	2244	5693	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	2.89"	2218	897	1881	4996	1 1/4" 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)	19' 9" o/c	
Bottom Edge (Lu)	22' 3" 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 1/4" to 22' 3 3/4"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 22' 5" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	2' to 18' 6" (Front)	10'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	2' to 18' 6" (Front)	10'	8.0	-	-	INT Wall

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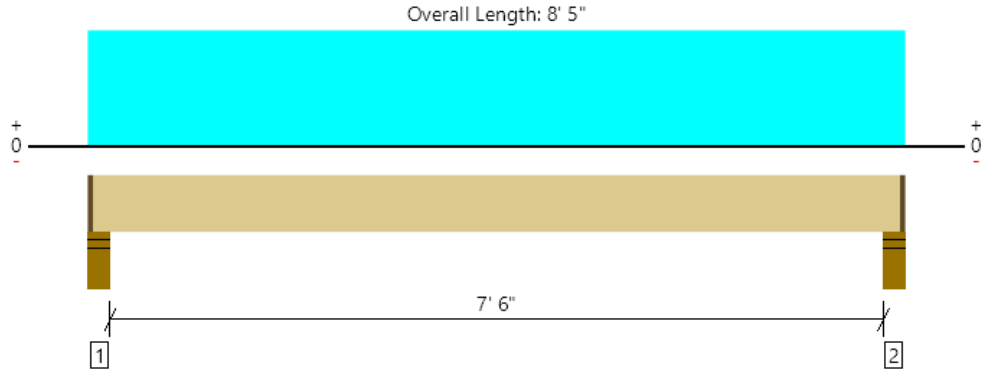
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-8 (REACTION ONLY)

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1723 @ 4"	6322 (4.25")	Passed (27%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	945 @ 1' 11 1/2"	14007	Passed (7%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	3153 @ 4' 2 1/2"	50215	Passed (6%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.007 @ 4' 2 1/2"	0.194	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.014 @ 4' 2 1/2"	0.387	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	4.25"	1.50"	960	337	736	2033	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	1.50"	960	337	736	2033	1 1/4" 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)	8' 3" o/c	
Bottom Edge (Lu)	8' 3" 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 1/4" to 8' 3 3/4"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 8' 5" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 8' 5" (Front)	7'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 8' 5" (Front)	10'	8.0	-	-	INT Wall

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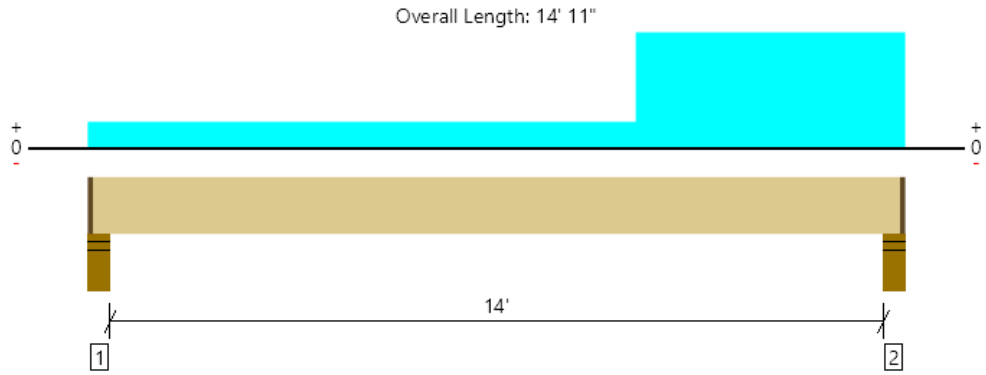
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-9 (REACTION ONLY)

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2051 @ 14' 7"	6322 (4.25")	Passed (32%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1273 @ 12' 11 1/2"	14007	Passed (9%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	4186 @ 8' 6 3/4"	43665	Passed (10%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.026 @ 7' 8 7/8"	0.356	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.051 @ 7' 9 11/16"	0.712	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	4.25"	1.50"	460	597	129	1186	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	1.50"	1097	597	731	2425	1 1/4" 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)	14' 9" o/c	
Bottom Edge (Lu)	14' 9" 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 1/4" to 14' 9 3/4"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 14' 11" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	10' to 14' 11" (Front)	7'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	10' to 14' 11" (Front)	10'	8.0	-	-	INT Wall

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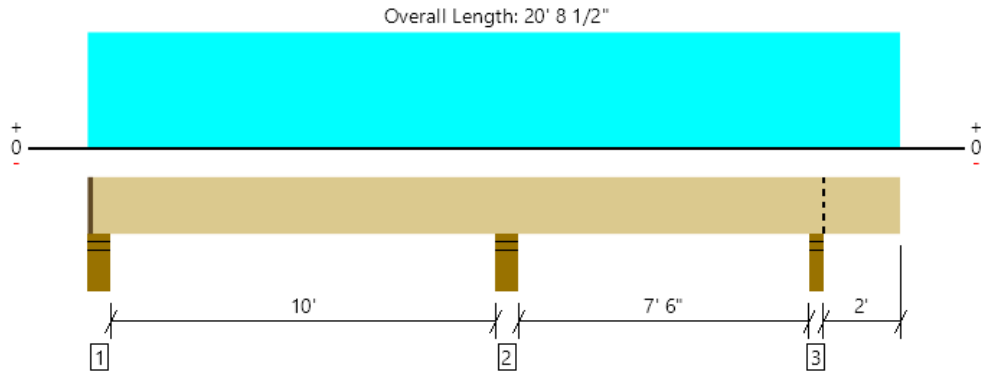
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

THIRD FLOOR, TB-10

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6536 @ 10' 8 1/4"	8181 (5.50")	Passed (80%)	--	1.0 D + 0.75 L + 0.75 S (Adj Spans)
Shear (lbs)	2393 @ 8' 11 1/2"	12180	Passed (20%)	1.00	1.0 D + 1.0 L (Adj Spans)
Moment (Ft-lbs)	-5694 @ 10' 8 1/4"	43665	Passed (13%)	1.00	1.0 D + 1.0 L (Adj Spans)
Live Load Defl. (in)	0.016 @ 5' 2"	0.259	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.036 @ 5' 3/4"	0.518	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - HF	5.50"	4.25"	1.84"	1504	965/-44	583	3052/-44	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	5.50"	4.39"	3736	2313	1420	7469	None
3 - Stud wall - SPF	3.50"	3.50"	2.09"	1689	1203	691	3583	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)	20' 7" o/c	
Bottom Edge (Lu)	20' 7" 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 1/4" to 20' 8 1/2"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 20' 8 1/2" (Front)	5'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 20' 8 1/2" (Front)	2'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 20' 8 1/2" (Front)	12'	15.0	-	-	EXT WALL
4 - Uniform (PSF)	0 to 20' 8 1/2" (Front)	3'	15.0	-	25.0	ROOF

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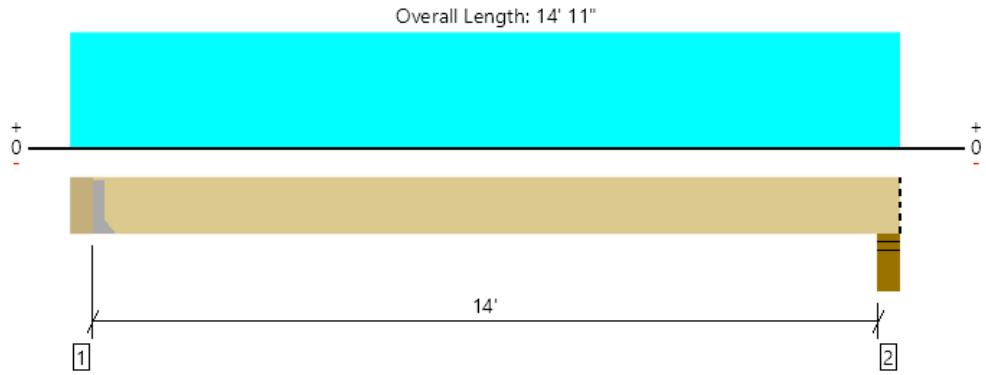
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-11

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5934 @ 5 1/2"	5934 (2.71")	Passed (100%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4674 @ 1' 11 1/2"	14007	Passed (33%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	20954 @ 7' 6 1/4"	50215	Passed (42%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.107 @ 7' 6 1/4"	0.353	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.236 @ 7' 6 1/4"	0.706	Passed (L/718)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Hanger on 18" HF beam	5.50"	Hanger[1]	2.71"	3433	1203	2632	7268	See note [1]
2 - Stud wall - SPF	5.50"	5.50"	4.18"	3385	1183	2589	7157	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)	14' 6" o/c	
Bottom Edge (Lu)	14' 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
1 - Face Mount Hanger	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	

- 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 14' 11"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 14' 11" (Front)	4'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 14' 11" (Front)	14'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 14' 11" (Front)	12'	15.0	-	-	EXT WALL

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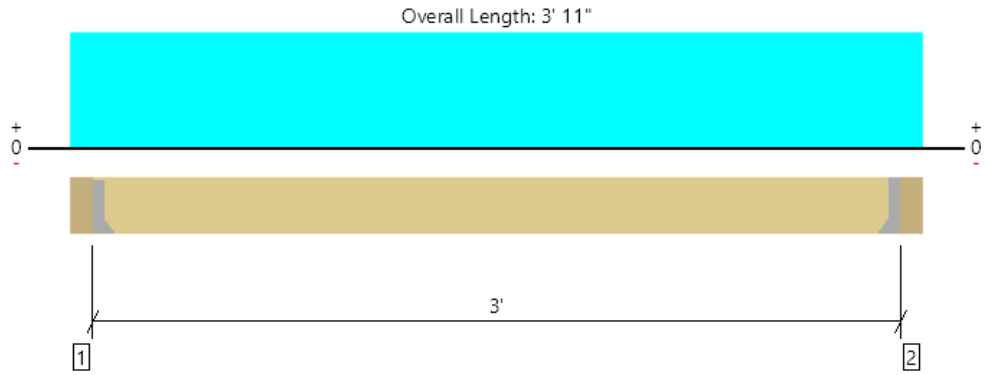
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-12 (REACTION ONLY)
1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	978 @ 5 1/2"	3281 (1.50")	Passed (30%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	0 @ 1' 11 1/2"	14007	Passed (0%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	733 @ 1' 11 1/2"	50215	Passed (1%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.001 @ 1' 11 1/2"	0.075	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.002 @ 1' 11 1/2"	0.150	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Hanger on 18" HF beam	5.50"	Hanger[1]	1.50"	729	78	539	1346	See note [1]
2 - Hanger on 18" SPF beam	5.50"	Hanger[1]	1.50"	729	78	539	1346	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)	3' o/c	
Bottom Edge (Lu)	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	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	
2 - Face Mount Hanger	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	

- 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 3' 5 1/2"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 3' 11" (Front)	1'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 3' 11" (Front)	11'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 3' 11" (Front)	12'	15.0	-	-	EXT WALL

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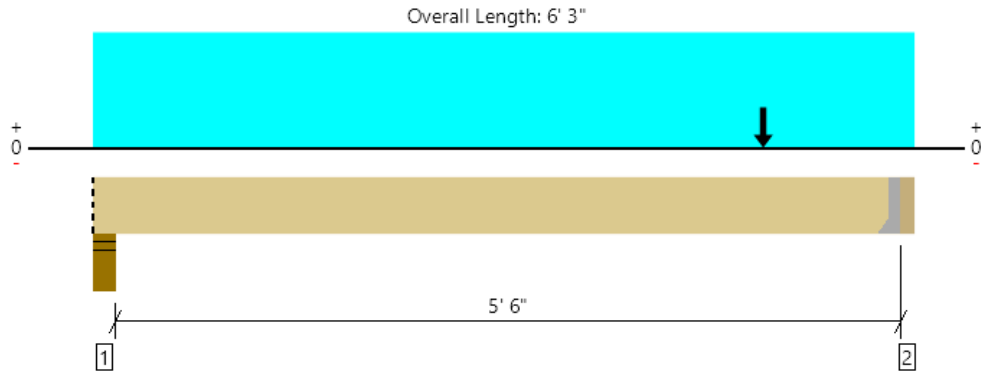
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

Weyerhaeuser

THIRD FLOOR, TB-13

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7333 @ 5' 11 1/2"	7333 (2.23")	Passed (100%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4033 @ 4' 5 1/2"	21011	Passed (19%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	6847 @ 5'	75322	Passed (9%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.005 @ 3' 5 7/16"	0.141	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.012 @ 3' 5 1/16"	0.281	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	1.50"	1585	470	776	2831	Blocking
2 - Hanger on 18" SPF beam	3.50"	Hanger[1]	2.23"	4309	1311	2864	8484	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)	6' o/c	
Bottom Edge (Lu)	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	MGU5.50-SDS H=18	4.50"	N/A	24-SDS25212	16-SDS25212	

- 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 5' 11 1/2"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 6' 3" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 6' 3" (Front)	3'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 6' 3" (Front)	12'	15.0	-	-	EXT WALL
4 - Point (lb)	5' (Front)	N/A	3433	1203	2632	Linked from: TB-11, Support 1
5 - Point (lb)	5' (Front)	N/A	729	78	539	Linked from: TB-12 (REACTION ONLY), Support 2

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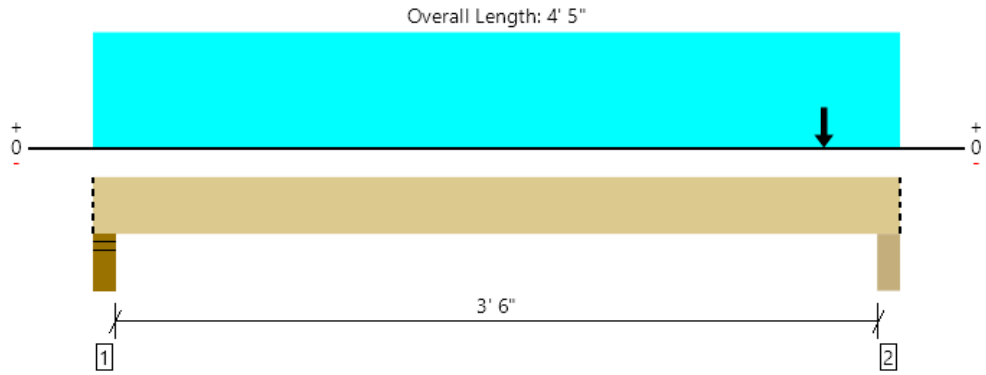
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

THIRD FLOOR, TB-14

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7669 @ 4' 1"	8181 (5.50")	Passed (94%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	31 @ 1' 11 1/2"	12180	Passed (0%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	217 @ 2' 2 1/2"	43665	Passed (0%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.000 @ 0	0.094	Passed (2L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.001 @ 2' 2 1/2"	0.188	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	1.50"	96	177	-	273	Blocking
2 - Beam - SPF	5.50"	5.50"	5.16"	4405	1488	2864	8757	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	19.7	--	--	
1 - Uniform (PSF)	0 to 4' 5" (Front)	2'	12.0	40.0	-	Default Load
2 - Point (lb)	4' (Front)	N/A	4309	1311	2864	Linked from: TB-13, Support 2

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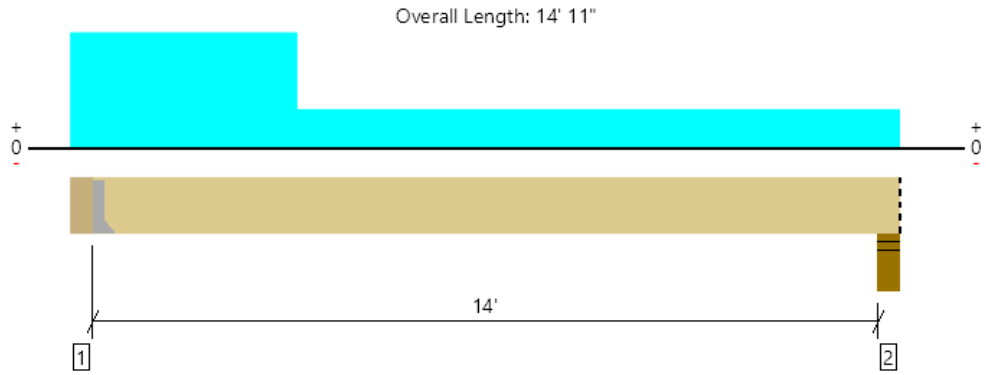
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

THIRD FLOOR, TB-15 (REACTION ONLY)

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1518 @ 5 1/2"	3281 (1.50")	Passed (46%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1020 @ 1' 11 1/2"	12180	Passed (8%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3771 @ 6' 9 5/16"	43665	Passed (9%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.029 @ 7' 3 13/16"	0.353	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.043 @ 7' 4 1/8"	0.706	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Hanger on 18" HF beam	5.50"	Hanger[1]	1.50"	490	1171	1661	See note [1]
2 - Stud wall - SPF	5.50"	5.50"	1.50"	344	663	1007	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)	14' 6" o/c	
Bottom Edge (Lu)	14' 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
1 - Face Mount Hanger	HGU3.63/11-SDS	5.25"	N/A	36-SDS25212	24-SDS25212	

- 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 14' 11"	N/A	19.7	--	
1 - Uniform (PSF)	0 to 14' 11" (Front)	2'	12.0	40.0	Default Load
2 - Uniform (PSF)	0 to 4' (Front)	4'	12.0	40.0	STAIR

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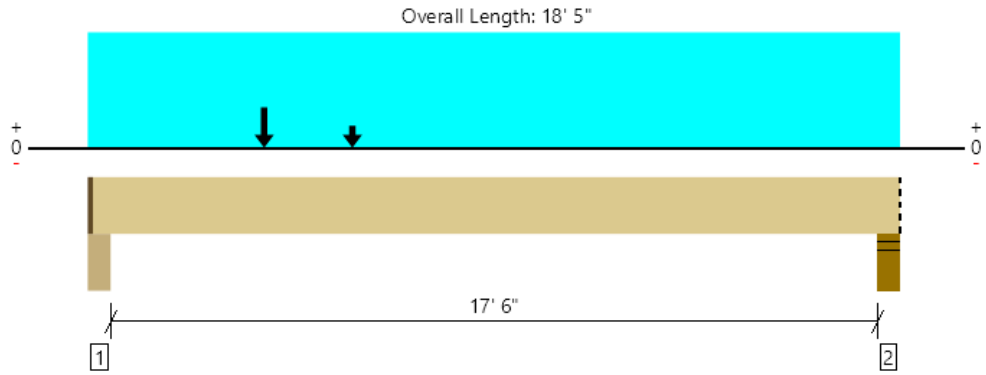
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-16

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5084 @ 4"	6322 (4.25")	Passed (80%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	3789 @ 1' 11 1/2"	12180	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	18427 @ 8' 7 1/16"	43665	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.114 @ 9' 1/16"	0.444	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.342 @ 9' 9/16"	0.887	Passed (L/622)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Beam - SPF	5.50"	4.25"	3.42"	3392	1195	1118	5705	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	5.50"	2.92"	2932	1086	802	4820	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)	18' 4" o/c	
Bottom Edge (Lu)	18' 4" 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 1/4" to 18' 5"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 18' 5" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 18' 5" (Front)	3'	10.0	10.0	-	CEILING
3 - Uniform (PSF)	0 to 18' 5" (Front)	12'	15.0	-	-	EXT WALL
4 - Uniform (PSF)	0 to 18' 5" (Front)	3'	15.0	-	25.0	ROOF
5 - Point (lb)	4' (Front)	N/A	729	78	539	Linked from: TB-12 (REACTION ONLY), Support 1
6 - Point (lb)	6' (Front)	N/A	96	177	-	Linked from: TB-14, Support 1

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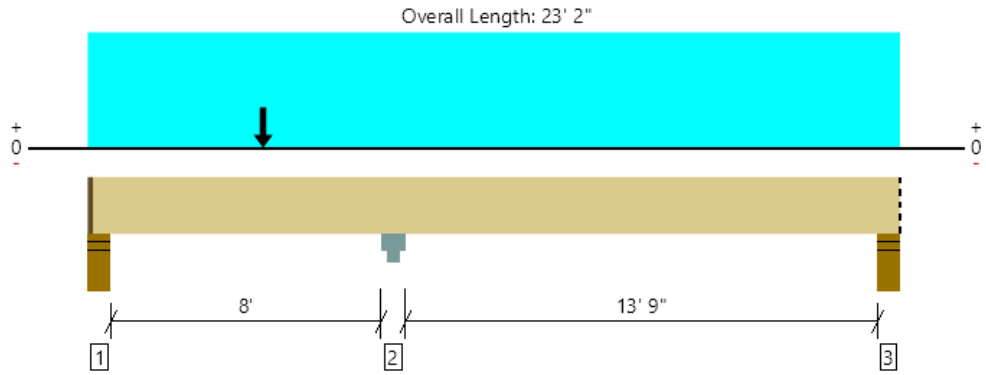
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-17

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	12142 @ 8' 8 1/2"	13125 (6.00")	Passed (93%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	5651 @ 6' 11 1/2"	14007	Passed (40%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	-14357 @ 8' 8 1/2"	50215	Passed (29%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.045 @ 16' 4 11/16"	0.353	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.100 @ 16' 7 3/16"	0.706	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	4.25"	2.18"	1932	734/-141	1097	3763/-141	1 1/4" Rim Board
2 - Column Cap - steel	6.00"	6.00"	5.55"	7516	1917	4250	13683	None
3 - Stud wall - SPF	5.50"	5.50"	2.46"	2139	503/-65	1526	4168/-65	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)	23' 1" o/c	
Bottom Edge (Lu)	23' 1" 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 1/4" to 23' 2"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 23' 2" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 23' 2" (Front)	10'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 23' 2" (Front)	12'	15.0	-	-	EXT WALL
4 - Point (lb)	5' (Front)	N/A	2932	1086	802	Linked from: TB-16, Support 2

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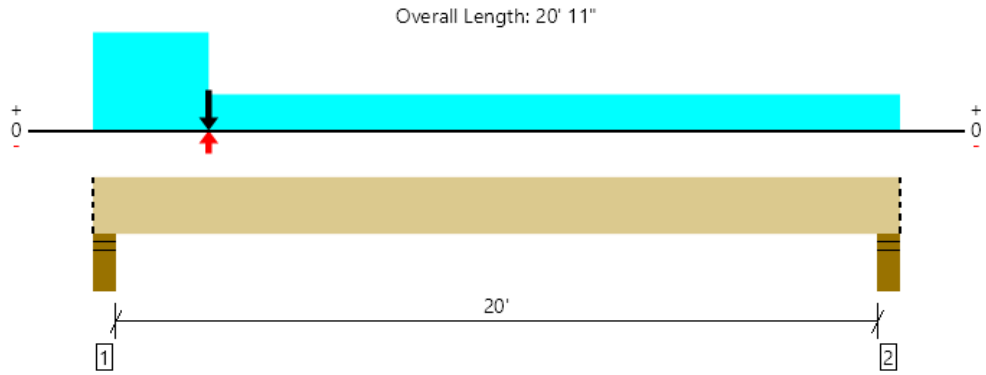
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

THIRD FLOOR, TB-18

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	3285 @ 4"	8181 (5.50")	Passed (40%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	2688 @ 1' 11 1/2"	12180	Passed (22%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	9198 @ 8' 4 5/8"	43665	Passed (21%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.124 @ 10' 5/8"	0.506	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.201 @ 10' 1/16"	1.013	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	2.21"	1502	1781	597/-86	3880/-86	Blocking
2 - Stud wall - SPF	5.50"	5.50"	1.50"	570	980	90/-13	1640/-13	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)	20' 11" o/c	
Bottom Edge (Lu)	20' 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 20' 11"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 20' 11" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 3' (Front)	12'	15.0	-	-	EXT WALL
3 - Point (lb)	3' (Front)	N/A	618	1087/-654	687/-99	Linked from: TB-19, Support 1

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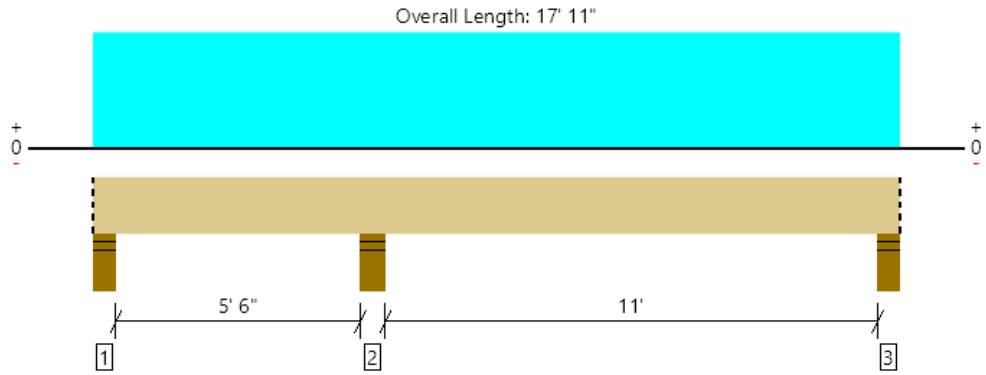
THIRD FLOOR, TB-19

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	12066 @ 6' 2 1/2"	13388 (6.00")	Passed (90%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	5136 @ 7' 11 1/2"	21011	Passed (24%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	-12454 @ 6' 2 1/2"	75322	Passed (17%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.030 @ 12' 4 5/16"	0.284	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.058 @ 12' 4 3/4"	0.569	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	1.50"	618	1087/-654	687/-99	2392/-753	Blocking
2 - Stud wall - SPF	6.00"	6.00"	5.41"	6026	4233	3821	14080	None
3 - Stud wall - SPF	5.50"	5.50"	2.30"	2539	1830/-47	1631	6000/-47	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)	17' 11" o/c	
Bottom Edge (Lu)	17' 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 17' 11"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 17' 11" (Front)	9'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 17' 11" (Front)	13'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 17' 11" (Front)	12'	15.0	-	-	EXT WALL

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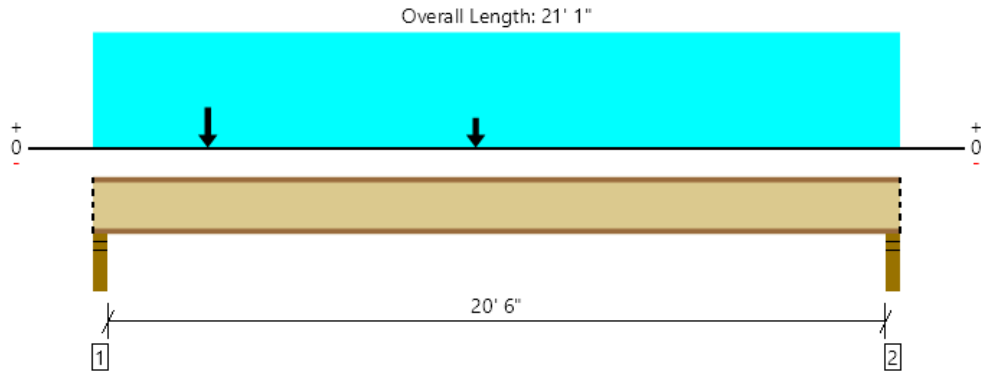
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, tj-1

1 piece(s) 18" TJI® 360 @ 16" OC



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)	1520 @ 2 1/2"	1731 (3.50")	Passed (88%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1504 @ 3 1/2"	2789	Passed (54%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	6932 @ 10'	10885	Passed (64%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.274 @ 10'	0.517	Passed (L/904)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.478 @ 10'	1.033	Passed (L/519)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
TJ-Pro™ Rating	51	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/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	Snow	Total	
1 - Stud wall - SPF	3.50"	3.50"	2.75"	664	562	579	1805	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.75"	366	562	221	1149	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)	21' 1" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 21' 1"	16"	12.0	40.0	-	Default Load
2 - Point (PLF)	10'	16"	150.0	-	250.0	roof
3 - Point (PLF)	10'	16"	80.0	-	-	int wall
4 - Point (PLF)	3'	16"	210.0	-	350.0	roof
5 - Point (PLF)	3'	16"	80.0	-	-	int wall

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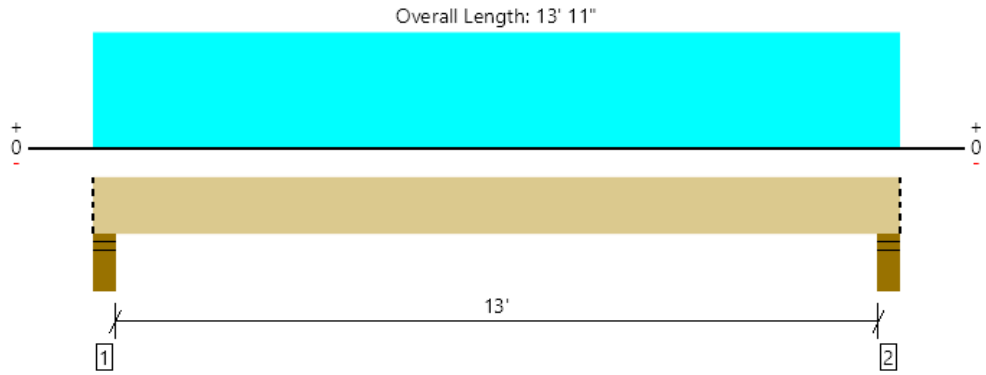
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-20

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1859 @ 4"	8181 (5.50")	Passed (23%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1248 @ 1' 11 1/2"	12180	Passed (10%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5479 @ 6' 11 1/2"	43665	Passed (13%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.022 @ 6' 11 1/2"	0.331	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.059 @ 6' 11 1/2"	0.663	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	1.50"	1181	557	348	2086	Blocking
2 - Stud wall - SPF	5.50"	5.50"	1.50"	1181	557	348	2086	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' 11" o/c	
Bottom Edge (Lu)	13' 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 13' 11"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 13' 11" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 13' 11" (Front)	12'	8.0	-	-	INT WALL
3 - Uniform (PSF)	0 to 13' 11" (Front)	2'	15.0	-	25.0	ROOF

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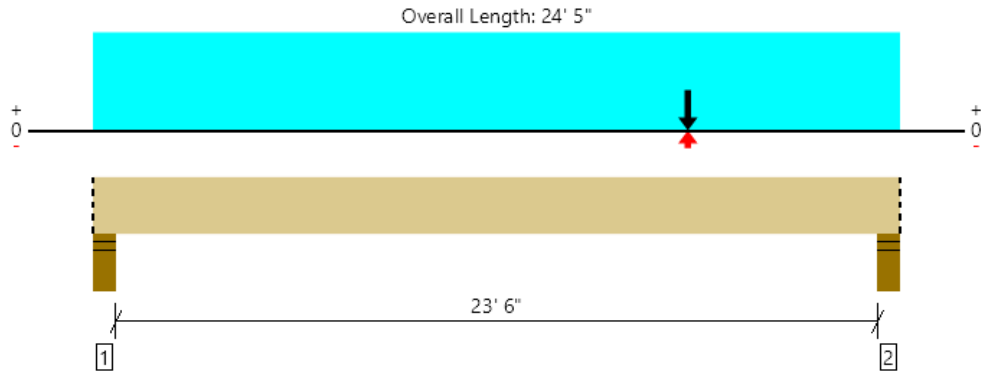
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-21

1 piece(s) 7" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	10230 @ 24' 1"	16363 (5.50")	Passed (63%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	8691 @ 22' 5 1/2"	24360	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	56671 @ 12' 9"	87330	Passed (65%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.485 @ 12' 3 3/4"	0.594	Passed (L/587)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Total Load Defl. (in)	0.831 @ 12' 3 3/4"	1.188	Passed (L/343)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	3.21"	3978	5397	2047	11422	Blocking
2 - Stud wall - SPF	5.50"	5.50"	3.44"	4256	5875	2090	12221	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)	24' 5" o/c	
Bottom Edge (Lu)	24' 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 24' 5"	N/A	39.4	--	--	
1 - Point (lb)	18" (Front)	N/A	570	980	90/-13	Linked from: TB-18, Support 2
2 - Uniform (PLF)	0 to 24' 5" (Front)	N/A	274.5	421.5	165.8	Linked from: tj-1, Support 2

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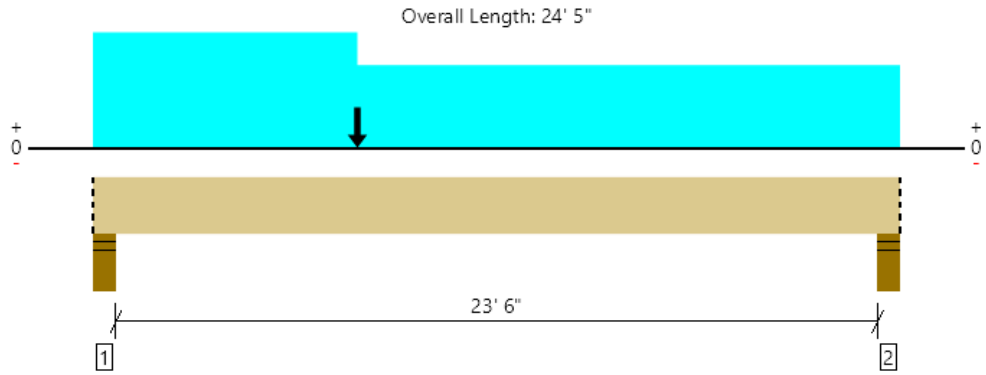
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

THIRD FLOOR, TB-22

1 piece(s) 7" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	13342 @ 4"	16363 (5.50")	Passed (82%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	11147 @ 1' 11 1/2"	28014	Passed (40%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	70312 @ 11' 1/2"	100429	Passed (70%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.492 @ 11' 11 3/4"	0.594	Passed (L/580)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	1.015 @ 12'	1.188	Passed (L/281)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	4.48"	6610	3247	5729	15586	Blocking
2 - Stud wall - SPF	5.50"	5.50"	3.81"	5727	1503	5606	12836	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)	24' 5" o/c	
Bottom Edge (Lu)	24' 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 24' 5"	N/A	39.4	--	--	
1 - Uniform (PSF)	0 to 24' 5" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 24' 5" (Front)	12'	8.0	-	-	INT WALL
3 - Uniform (PSF)	0 to 24' 5" (Front)	18'	15.0	-	25.0	ROOF
4 - Uniform (PSF)	0 to 8' (Front)	7'	12.0	40.0	-	Default Load
5 - Point (lb)	8' (Front)	N/A	1181	557	348	Linked from: TB-20, Support 1

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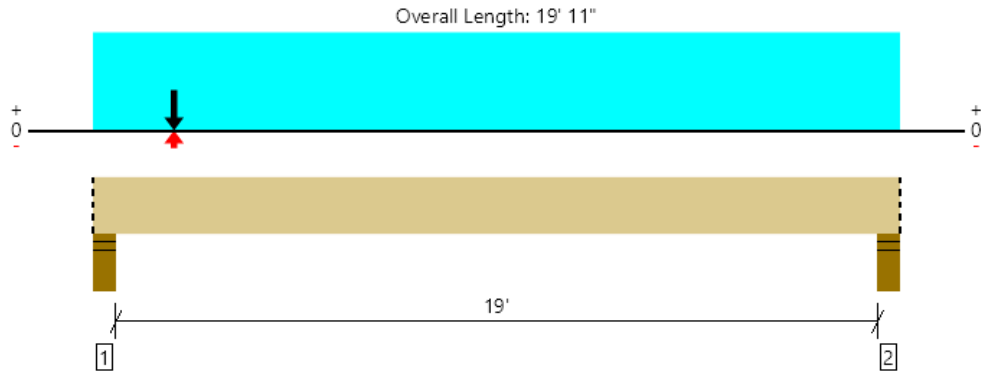
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-23

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	7470 @ 4"	8181 (5.50")	Passed (91%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	6924 @ 1' 11 1/2"	14007	Passed (49%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Moment (Ft-lbs)	15583 @ 8' 5 7/16"	43665	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.111 @ 9' 4 1/16"	0.481	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Total Load Defl. (in)	0.351 @ 9' 7"	0.962	Passed (L/659)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	5.02"	4427	2070	1988	8485	Blocking
2 - Stud wall - SPF	5.50"	5.50"	2.17"	2328	557	639	3524	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)	19' 11" o/c	
Bottom Edge (Lu)	19' 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 19' 11"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 19' 11" (Front)	1'	12.0	40.0	-	FLOOR
2 - Uniform (PSF)	0 to 19' 11" (Front)	10'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	0 to 19' 11" (Front)	2'	15.0	-	25.0	ROOF
4 - Point (lb)	2' (Front)	N/A	2539	1830/-47	1631	Linked from: TB-19, Support 3

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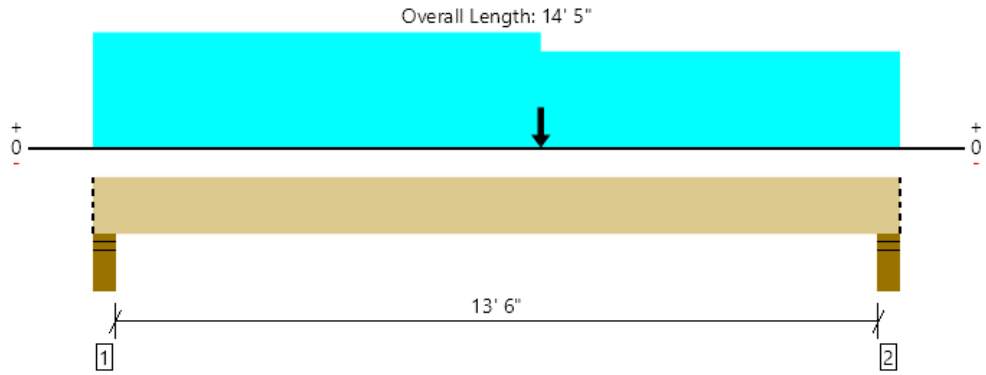
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-24

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5641 @ 4"	8181 (5.50")	Passed (69%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4334 @ 1' 11 1/2"	12180	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	21920 @ 8'	43665	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.085 @ 7' 2 7/16"	0.344	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.235 @ 7' 3 5/16"	0.688	Passed (L/703)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	3.79"	3284	2357	585	6226	Blocking
2 - Stud wall - SPF	5.50"	5.50"	3.76"	3653	1080	1497	6230	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)	14' 5" o/c	
Bottom Edge (Lu)	14' 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 14' 5"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 8' (Front)	9'	12.0	40.0	-	FLOOR
2 - Uniform (PSF)	0 to 14' 5" (Front)	12'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	8' to 14' 5" (Front)	9'	15.0	-	25.0	ROOF
4 - Point (lb)	8' (Front)	N/A	2328	557	639	Linked from: TB-23, Support 2

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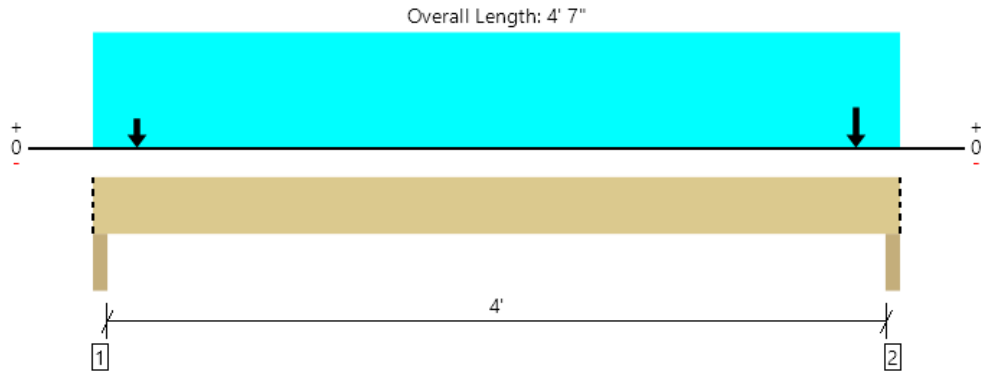
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

THIRD FLOOR, TB-25

1 piece(s) 7" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	13625 @ 4' 5"	15313 (3.50")	Passed (89%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	72 @ 1' 9 1/2"	24360	Passed (0%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	324 @ 2' 3 1/2"	87330	Passed (0%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.000 @ 0	0.106	Passed (2L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.000 @ 2' 3 1/2"	0.213	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Column - SPF	3.50"	3.50"	2.25"	4123	5580	2047	11750	Blocking
2 - Column - SPF	3.50"	3.50"	3.11"	6755	3430	5729	15914	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' 7" o/c	
Bottom Edge (Lu)	4' 7" 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' 7"	N/A	39.4	--	--	
1 - Uniform (PSF)	0 to 4' 7" (Front)	2'	12.0	40.0	-	Default Load
2 - Point (lb)	4' 4" (Front)	N/A	6610	3247	5729	Linked from: TB-22, Support 1
3 - Point (lb)	3" (Front)	N/A	3978	5397	2047	Linked from: TB-21, Support 1

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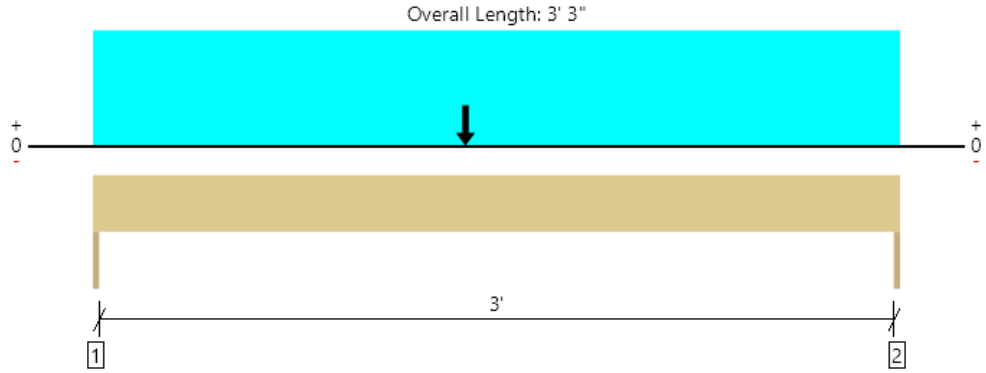
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-1

1 piece(s) 4 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2910 @ 0	3281 (1.50")	Passed (89%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2451 @ 10 3/4"	4468	Passed (55%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	3788 @ 1' 6"	5166	Passed (73%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.008 @ 1' 7 7/16"	0.108	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.016 @ 1' 7 3/8"	0.162	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	1355	1283	790	3428	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	1197	1211	677	3085	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 3' 3"	12'	12.0	40.0	-	Default Load
2 - Point (lb)	1' 6"	N/A	960	337	736	Linked from: TB-8 (REACTION ONLY), Support 1
3 - Point (lb)	1' 6"	N/A	1097	597	731	Linked from: TB-9 (REACTION ONLY), Support 2

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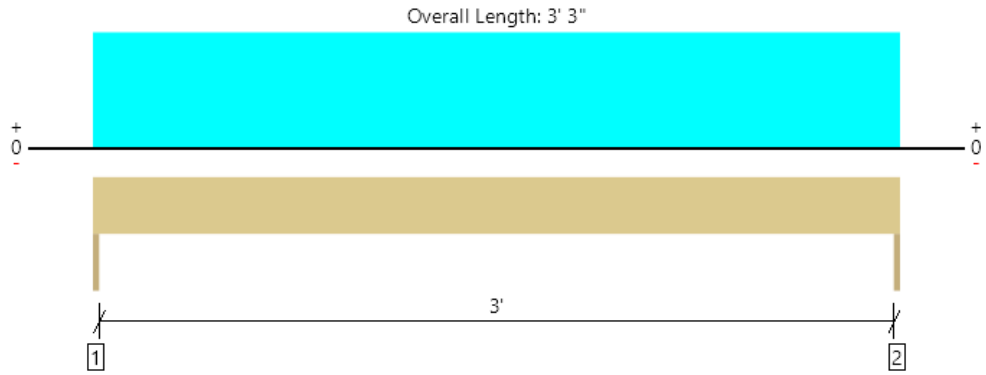
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

sh, SH-2

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1022 @ 0	3281 (1.50")	Passed (31%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	655 @ 7"	2310	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	830 @ 1' 7 1/2"	1720	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.016 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.020 @ 1' 7 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	242	780	1022	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	242	780	1022	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 3' 3"	12'	12.0	40.0	Default Load

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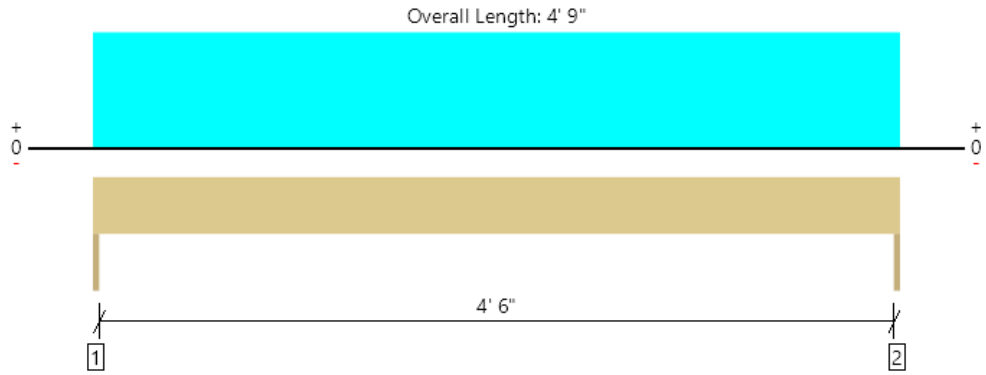
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-3
1 piece(s) 4 x 8 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1303 @ 0	3281 (1.50")	Passed (40%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	903 @ 8 3/4"	3502	Passed (26%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	1547 @ 2' 4 1/2"	3438	Passed (45%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.014 @ 2' 4 1/2"	0.158	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.035 @ 2' 4 1/2"	0.237	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	778	285	416	1479	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	778	285	416	1479	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4' 9"	N/A	6.4	--	--	
1 - Uniform (PSF)	0 to 4' 9"	3'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 4' 9"	7'	15.0	-	25.0	roof
3 - Uniform (PSF)	0 to 4' 9"	12'	15.0	-	-	wall

Weyerhaeuser Notes

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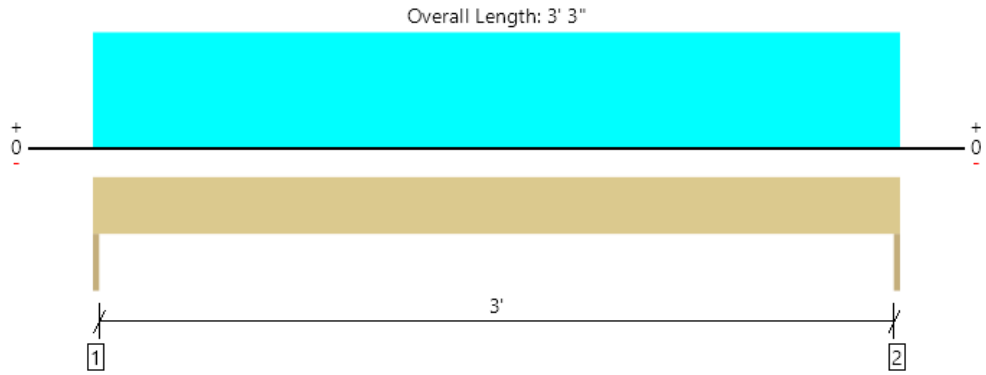
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-4

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1080 @ 0	3281 (1.50")	Passed (33%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	609 @ 7"	2310	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	772 @ 1' 7 1/2"	1720	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.012 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.021 @ 1' 7 1/2"	0.162	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	495	455	325	1275	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	495	455	325	1275	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	4.9	--	--	
1 - Uniform (PSF)	0 to 3' 3"	7'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 3' 3"	8'	15.0	-	25.0	roof
3 - Uniform (PSF)	0 to 3' 3"	12'	8.0	-	-	INT wall

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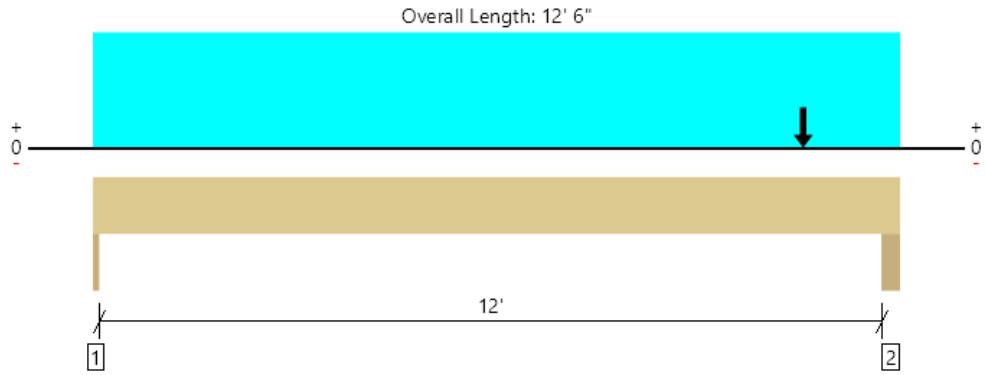
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-5

1 piece(s) 3 1/2" x 15" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	9842 @ 12' 3"	10238 (4.50")	Passed (96%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	8639 @ 10' 10 1/2"	9275	Passed (93%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	12174 @ 11'	26250	Passed (46%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.090 @ 6' 9 1/16"	0.408	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.150 @ 6' 9 7/16"	0.613	Passed (L/982)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 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	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	659	1089	213	1961	None
2 - Trimmer - SPF	4.50"	4.50"	4.33"	4056	5786	1877	11719	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 6" o/c	
Bottom Edge (Lu)	12' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 6"	N/A	12.8	--	--	
1 - Uniform (PSF)	0 to 12' 6"	2'	12.0	40.0	-	Default Load
2 - Point (lb)	11'	N/A	4256	5875	2090	Linked from: TB-21, Support 2

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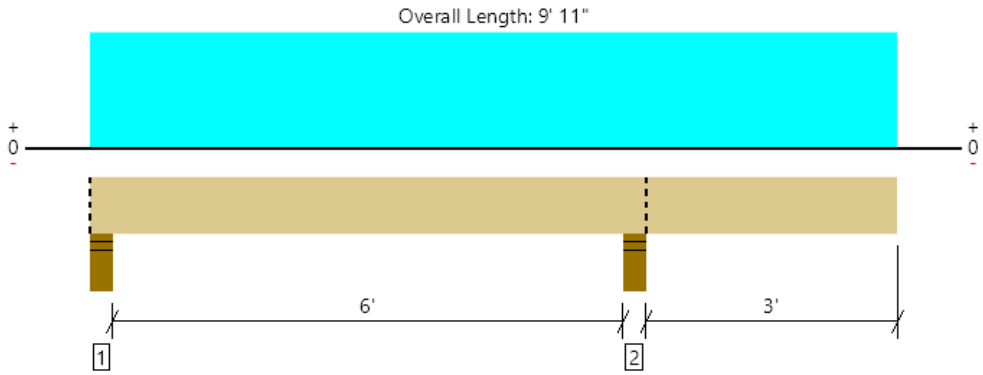
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

sh, SH-6

1 piece(s) 4 x 8 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2648 @ 6' 8 1/4"	8181 (5.50")	Passed (32%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1159 @ 5' 10 1/4"	3502	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1910 @ 6' 8 1/4"	3438	Passed (56%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.070 @ 9' 11"	0.200	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.090 @ 9' 11"	0.323	Passed (2L/860)	--	1.0 D + 1.0 S (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Overhang deflection criteria: LL (2L/0.2") and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - SPF	5.50"	5.50"	1.50"	380	698	1078	Blocking
2 - Stud wall - SPF	5.50"	5.50"	1.78"	1022	1626	2648	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)	9' 11" o/c	
Bottom Edge (Lu)	9' 11" 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 9' 11"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 9' 11" (Front)	9'	15.0	25.0	ROOF

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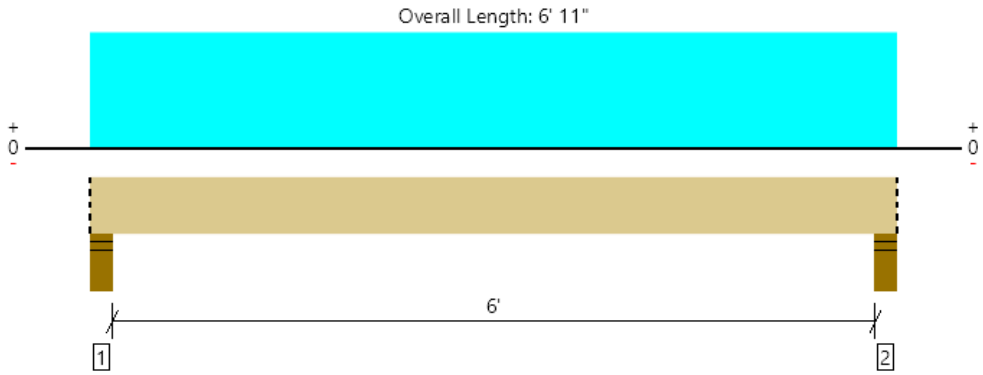
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

sh, SH-7

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	570 @ 4"	8181 (5.50")	Passed (7%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	419 @ 11"	2657	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	805 @ 3' 5 1/2"	1979	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.044 @ 3' 5 1/2"	0.156	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.073 @ 3' 5 1/2"	0.313	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - SPF	5.50"	5.50"	1.50"	224	346	570	Blocking
2 - Stud wall - SPF	5.50"	5.50"	1.50"	224	346	570	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' 11" o/c	
Bottom Edge (Lu)	6' 11" 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 6' 11"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 6' 11" (Front)	4'	15.0	25.0	ROOF

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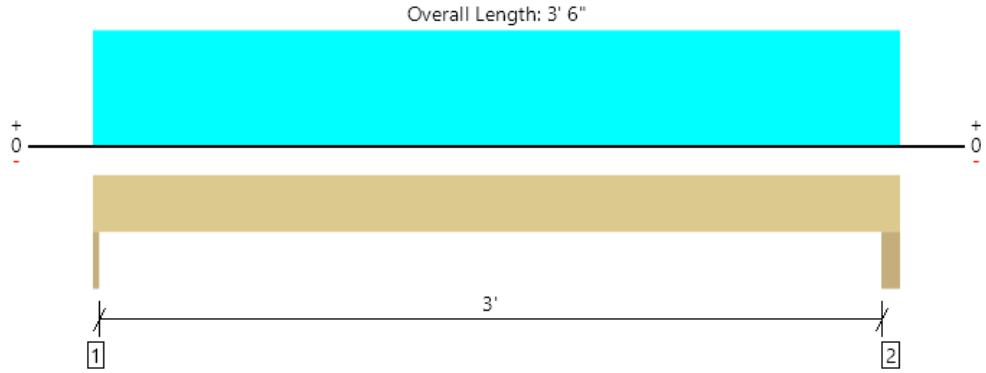
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-8

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1119 @ 0	3281 (1.50")	Passed (34%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	718 @ 7"	2657	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	910 @ 1' 7 1/2"	1979	Passed (46%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.010 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.022 @ 1' 7 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	632	130	488	1250	None
2 - Trimmer - SPF	4.50"	4.50"	1.50"	729	150	563	1442	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 6"	N/A	4.9	--	--	
1 - Uniform (PSF)	0 to 3' 6"	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 3' 6"	12'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	0 to 3' 6"	12'	15.0	-	25.0	ROOF

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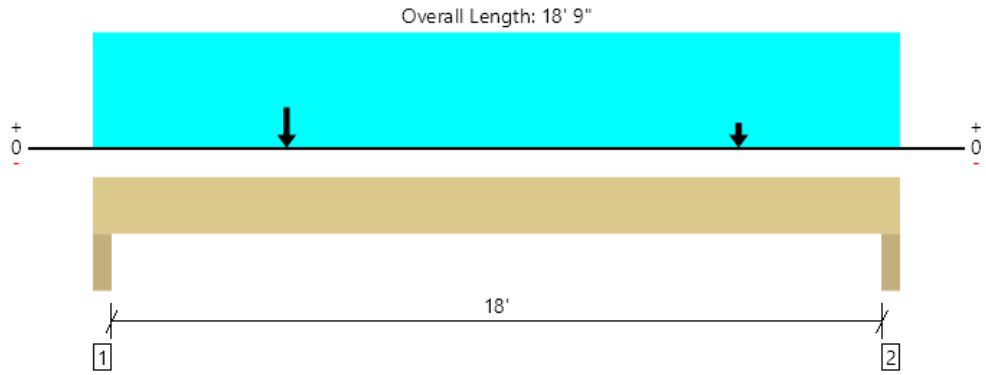
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-9

1 piece(s) 5 1/2" x 18" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	11941 @ 3"	16088 (4.50")	Passed (74%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	9371 @ 1' 10 1/2"	17490	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	45812 @ 8' 9 11/16"	57439	Passed (80%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.315 @ 9' 2 5/8"	0.608	Passed (L/695)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.623 @ 9' 2 7/16"	0.913	Passed (L/351)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 0.97 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	Total	
1 - Trimmer - SPF	4.50"	4.50"	3.34"	5950	4989	2999	13938	None
2 - Trimmer - SPF	4.50"	4.50"	2.92"	5108	5075	2048	12231	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	18' 9" o/c	
Bottom Edge (Lu)	18' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 18' 9"	N/A	24.1	--	--	
1 - Uniform (PSF)	0 to 18' 9"	11'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 18' 9"	12'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	0 to 18' 9"	4'	15.0	-	25.0	ROOF
4 - Point (lb)	4' 6"	N/A	2677	897	2526	Linked from: TB-6, Support 1
5 - Point (lb)	15'	N/A	955	917	646	Linked from: TB-5, Support 1

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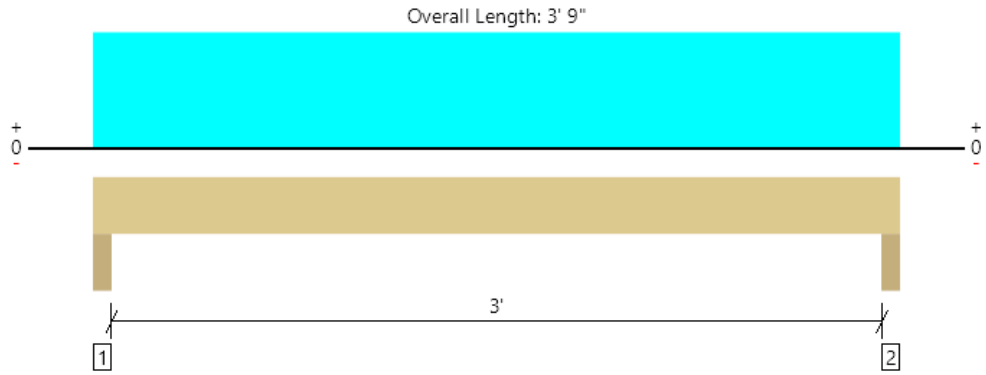
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-10

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	440 @ 3"	9844 (4.50")	Passed (4%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	193 @ 10"	2079	Passed (9%)	0.90	1.0 D (All Spans)
Moment (Ft-lbs)	244 @ 1' 10 1/2"	1548	Passed (16%)	0.90	1.0 D (All Spans)
Live Load Defl. (in)	0.002 @ 1' 10 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.008 @ 1' 10 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	4.50"	4.50"	1.50"	347	94	441	None
2 - Trimmer - SPF	4.50"	4.50"	1.50"	347	94	441	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 9" o/c	
Bottom Edge (Lu)	3' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 9"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 3' 9"	10'	15.0	-	EXT WALL
2 - Uniform (PSF)	0 to 3' 9"	2'	15.0	25.0	ROOF

Weyerhaeuser Notes

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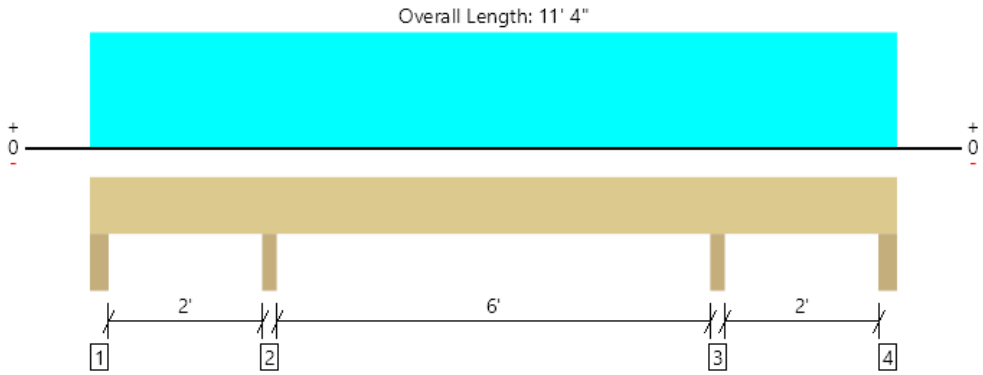
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

sh, SH-11

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	939 @ 2' 6 1/4"	7656 (3.50")	Passed (12%)	--	1.0 D + 0.75 L + 0.75 S (Adj Spans)
Shear (lbs)	434 @ 3' 1 1/2"	2657	Passed (16%)	1.15	1.0 D + 0.75 L + 0.75 S (Adj Spans)
Moment (Ft-lbs)	-476 @ 2' 6 1/4"	1979	Passed (24%)	1.15	1.0 D + 0.75 L + 0.75 S (Adj Spans)
Live Load Defl. (in)	0.009 @ 5' 8"	0.210	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.026 @ 5' 8"	0.313	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/5/16").
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	4.50"	4.50"	1.50"	18	40/-35	37/-25	95/-60	None
2 - Trimmer - SPF	3.50"	3.50"	1.50"	605	167	277	1049	None
3 - Trimmer - SPF	3.50"	3.50"	1.50"	605	167	277	1049	None
4 - Trimmer - SPF	4.50"	4.50"	1.50"	18	40/-35	37/-25	95/-60	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	11' 4" o/c	
Bottom Edge (Lu)	11' 4" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11' 4"	N/A	4.9	--	--	
1 - Uniform (PSF)	0 to 11' 4"	3'	10.0	10.0	-	CEILING
2 - Uniform (PSF)	0 to 11' 4"	3'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	0 to 11' 4"	2'	15.0	-	25.0	ROOF

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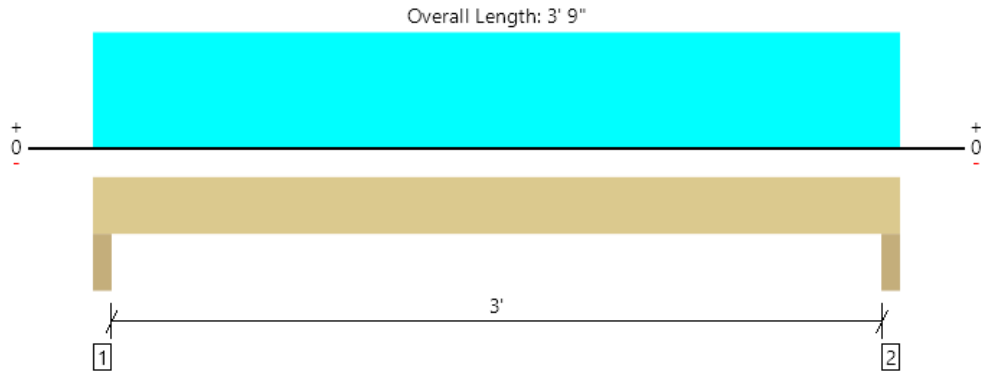
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-12

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	497 @ 3"	9844 (4.50")	Passed (5%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	276 @ 10"	2310	Passed (12%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	350 @ 1' 10 1/2"	1720	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.006 @ 1' 10 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.009 @ 1' 10 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - SPF	4.50"	4.50"	1.50"	122	375	497	None
2 - Trimmer - SPF	4.50"	4.50"	1.50"	122	375	497	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 9" o/c	
Bottom Edge (Lu)	3' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 9"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 3' 9"	5'	12.0	40.0	FLOOR

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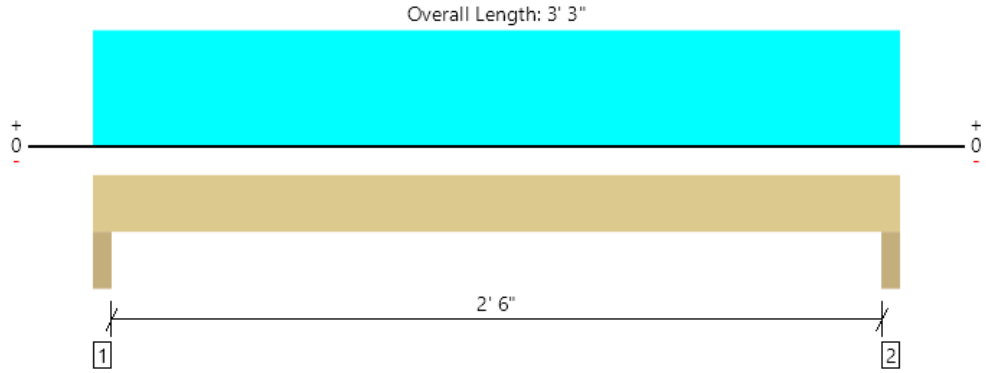
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-13

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	203 @ 3"	9844 (4.50")	Passed (2%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	99 @ 10"	2657	Passed (4%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	118 @ 1' 7 1/2"	1979	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.001 @ 1' 7 1/2"	0.092	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.002 @ 1' 7 1/2"	0.138	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	4.50"	4.50"	1.50"	81	122	203	None
2 - Trimmer - SPF	4.50"	4.50"	1.50"	81	122	203	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 3' 3"	3'	15.0	25.0	ROOF

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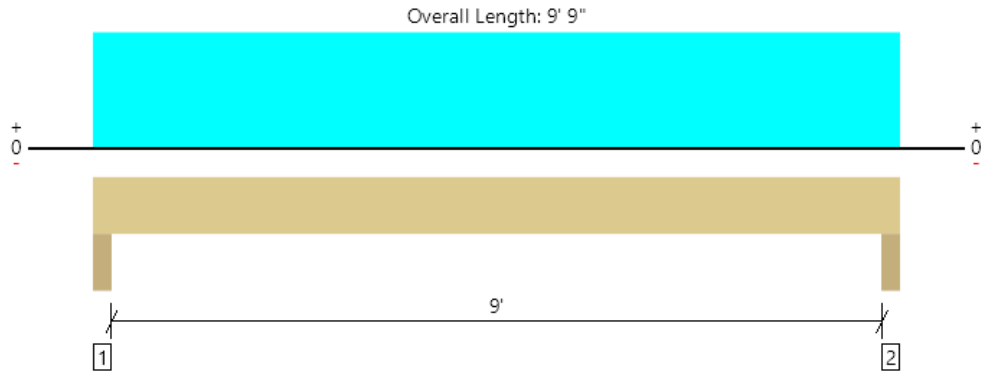
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-14
1 piece(s) 4 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	625 @ 3"	9844 (4.50")	Passed (6%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	478 @ 1' 1 3/4"	4468	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1371 @ 4' 10 1/2"	5166	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.033 @ 4' 10 1/2"	0.308	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.057 @ 4' 10 1/2"	0.463	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	4.50"	4.50"	1.50"	259	366	625	None
2 - Trimmer - SPF	4.50"	4.50"	1.50"	259	366	625	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 9"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 9' 9"	3'	15.0	25.0	ROOF

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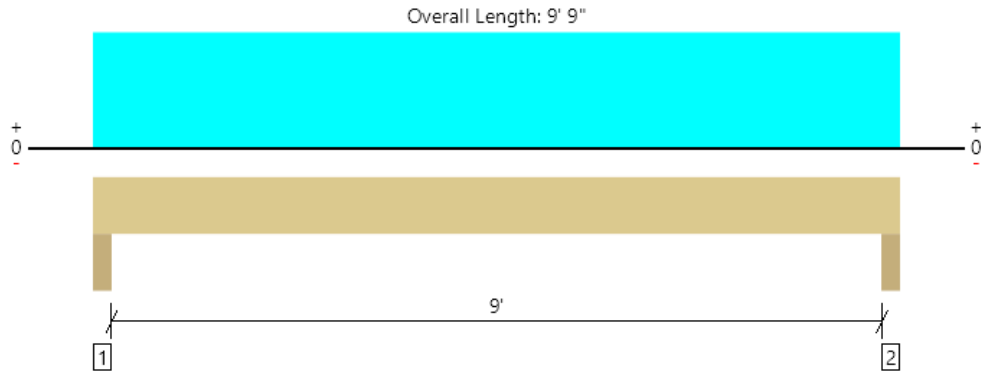
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-15

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2543 @ 3"	10238 (4.50")	Passed (25%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1956 @ 1' 1 1/2"	5565	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	5579 @ 4' 10 1/2"	9450	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.121 @ 4' 10 1/2"	0.308	Passed (L/921)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.225 @ 4' 10 1/2"	0.463	Passed (L/494)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 9' 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	Total	
1 - Trimmer - SPF	4.50"	4.50"	1.50"	1178	1365	2543	None
2 - Trimmer - SPF	4.50"	4.50"	1.50"	1178	1365	2543	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 9"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 9' 9"	10'	15.0	-	EXT WALL
2 - Uniform (PSF)	0 to 9' 9"	7'	12.0	40.0	FLOOR

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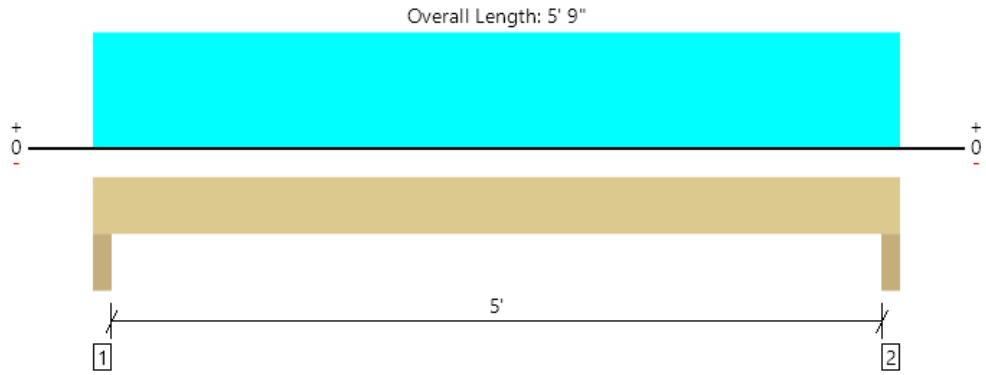
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-16

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	445 @ 3"	9844 (4.50")	Passed (5%)	--	1.0 D (All Spans)
Shear (lbs)	316 @ 10"	2079	Passed (15%)	0.90	1.0 D (All Spans)
Moment (Ft-lbs)	534 @ 2' 10 1/2"	1548	Passed (34%)	0.90	1.0 D (All Spans)
Live Load Defl. (in)	0.000 @ 0	0.175	Passed (2L/999+)	--	1.0 D (All Spans)
Total Load Defl. (in)	0.034 @ 2' 10 1/2"	0.262	Passed (L/999+)	--	1.0 D (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)		Accessories
	Total	Available	Required	Dead	Total	
1 - Trimmer - SPF	4.50"	4.50"	1.50"	445	445	None
2 - Trimmer - SPF	4.50"	4.50"	1.50"	445	445	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 9" o/c	
Bottom Edge (Lu)	5' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Comments
0 - Self Weight (PLF)	0 to 5' 9"	N/A	4.9	
1 - Uniform (PSF)	0 to 5' 9"	10'	15.0	EXT WALL

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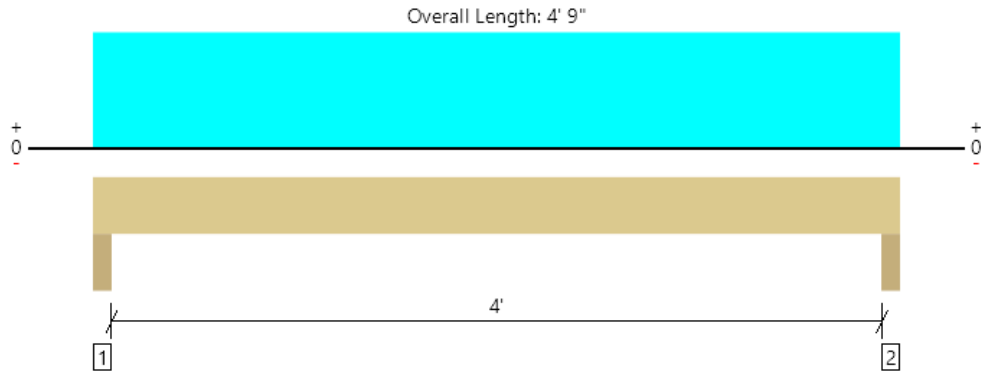
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

sh, SH-17

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	297 @ 3"	9844 (4.50")	Passed (3%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	193 @ 10"	2657	Passed (7%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	282 @ 2' 4 1/2"	1979	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.007 @ 2' 4 1/2"	0.142	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.012 @ 2' 4 1/2"	0.213	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	4.50"	4.50"	1.50"	118	178	296	None
2 - Trimmer - SPF	4.50"	4.50"	1.50"	118	178	296	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 4' 9"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 4' 9"	3'	15.0	25.0	ROOF

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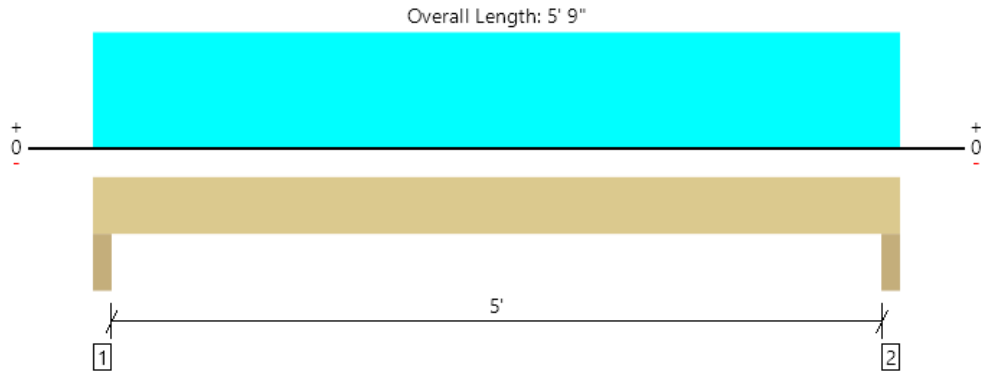
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-18
1 piece(s) 4 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3301 @ 3"	9844 (4.50")	Passed (34%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1985 @ 1' 1 3/4"	4468	Passed (44%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	3955 @ 2' 10 1/2"	5166	Passed (77%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.030 @ 2' 10 1/2"	0.175	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.053 @ 2' 10 1/2"	0.262	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	4.50"	4.50"	1.51"	1455	1212	1248	3915	None
2 - Trimmer - SPF	4.50"	4.50"	1.51"	1455	1212	1248	3915	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 9" o/c	
Bottom Edge (Lu)	5' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 9"	N/A	8.2	--	--	
1 - Uniform (PLF)	0 to 5' 9"	N/A	498.0	421.5	434.3	Linked from: tj-1, Support 1

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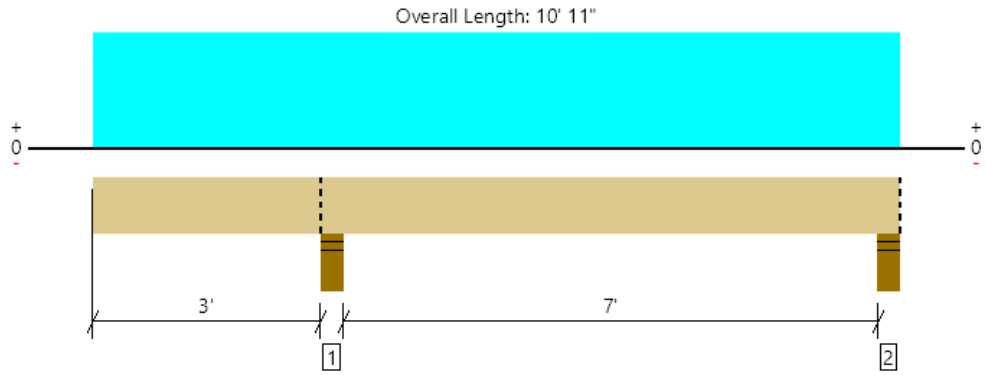
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

sh, SH-19

1 piece(s) 4 x 8 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2790 @ 3' 2 3/4"	8181 (5.50")	Passed (34%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1302 @ 4' 3/4"	3502	Passed (37%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1910 @ 3' 2 3/4"	3438	Passed (56%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.064 @ 7' 7/16"	0.184	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.093 @ 7' 1 1/4"	0.368	Passed (L/953)	--	1.0 D + 1.0 S (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - SPF	5.50"	5.50"	1.88"	1077	1713	2790	Blocking
2 - Stud wall - SPF	5.50"	5.50"	1.50"	467	823	1290	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)	10' 11" o/c	
Bottom Edge (Lu)	10' 11" 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 10' 11"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 10' 11" (Front)	9'	15.0	25.0	ROOF

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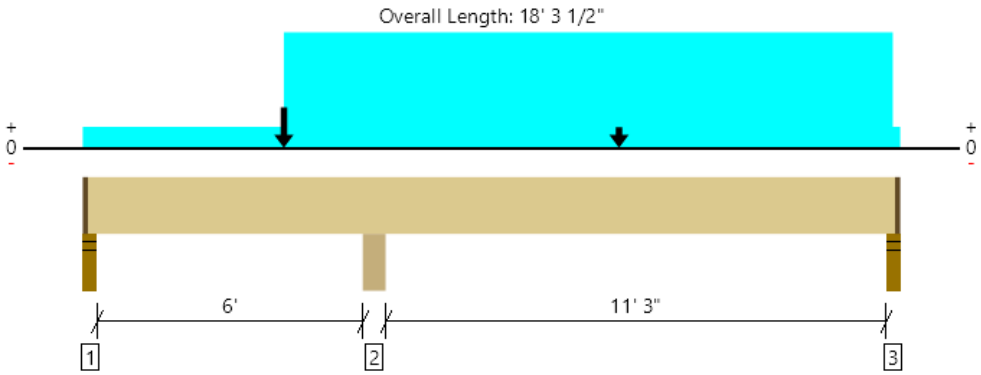
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

SB, SB-1

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	12010 @ 6' 6 1/4"	12031 (5.50")	Passed (100%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	6974 @ 4' 9 1/2"	14007	Passed (50%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	-10821 @ 6' 6 1/4"	43665	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.050 @ 12' 8 3/4"	0.290	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.063 @ 12' 10 9/16"	0.580	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	3.50"	2.25"	1.50"	911	709/-879	712	2332/-879	1 1/4" Rim Board
2 - Column - SPF	5.50"	5.50"	5.49"	5483	6350	2352	14185	None
3 - Stud wall - SPF	3.50"	2.25"	2.08"	737	2362/-72	-79	3099/-151	1 1/4" 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)	18' 1" o/c	
Bottom Edge (Lu)	18' 1" 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 1/4" to 18' 2 1/4"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 18' 3 1/2" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	4' 6" to 18' 1 1/2" (Front)	9'	12.0	40.0	-	Default Load
3 - Point (lb)	12' (Front)	N/A	460	597	129	Linked from: TB-9 (REACTION ONLY), Support 1
4 - Point (lb)	4' 6" (Front)	N/A	4405	1488	2864	Linked from: TB-14, Support 2

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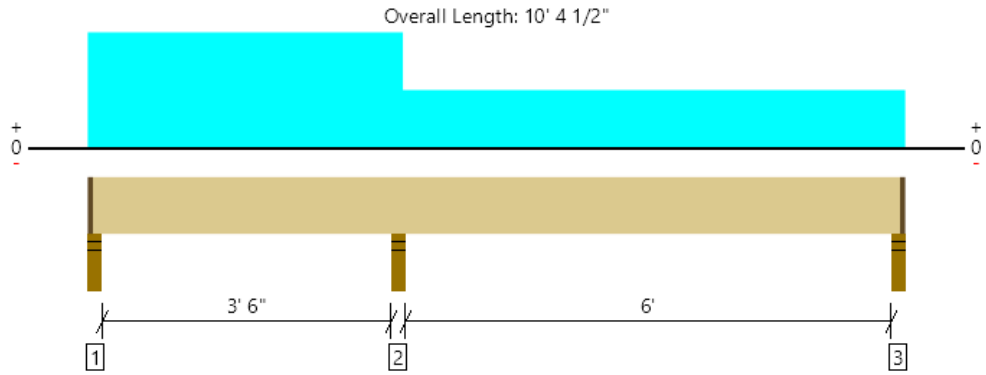
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

SB, SB-2 (REACTION ONLY)

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1956 @ 3' 11 1/4"	5206 (3.50")	Passed (38%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	497 @ 5' 7"	12180	Passed (4%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-990 @ 3' 11 1/4"	43665	Passed (2%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.002 @ 7' 3 3/4"	0.157	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.003 @ 7' 4 3/16"	0.314	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	3.50"	2.25"	1.50"	160	600/-97	760/-97	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	3.50"	1.50"	551	1404	1955	None
3 - Stud wall - SPF	3.50"	2.25"	1.50"	176	450/-17	626/-17	1 1/4" 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)	10' 2" o/c	
Bottom Edge (Lu)	10' 2" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1 1/4" to 10' 3 1/4"	N/A	19.7	--	
1 - Uniform (PSF)	0 to 4' (Front)	4'	12.0	40.0	STAIR
2 - Uniform (PSF)	0 to 10' 4 1/2" (Front)	4'	12.0	40.0	Default Load

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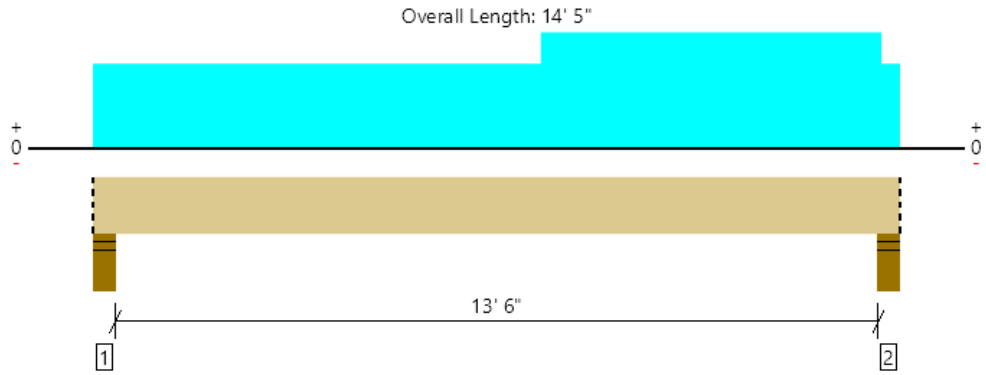
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

SB, SB-3

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7548 @ 14' 1"	8181 (5.50")	Passed (92%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	5398 @ 12' 5 1/2"	14007	Passed (39%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	22993 @ 7' 8 1/16"	50215	Passed (46%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.124 @ 7' 3 13/16"	0.344	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.247 @ 7' 3 7/16"	0.688	Passed (L/667)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	5.50"	5.50"	4.40"	3376	1530	2703	7609	Blocking
2 - Stud wall - SPF	5.50"	5.50"	5.07"	3661	2480	2703	8844	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)	14' 5" o/c	
Bottom Edge (Lu)	14' 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 14' 5"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 14' 5" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 14' 5" (Front)	2'	12.0	40.0	-	3RD FLOOR
3 - Uniform (PSF)	8' to 14' 1" (Front)	7'	12.0	40.0	-	3RD FLOOR
4 - Uniform (PSF)	0 to 14' 5" (Front)	15'	15.0	-	25.0	ROOF
5 - Uniform (PSF)	0 to 14' 5" (Front)	20'	8.0	-	-	INT WALL

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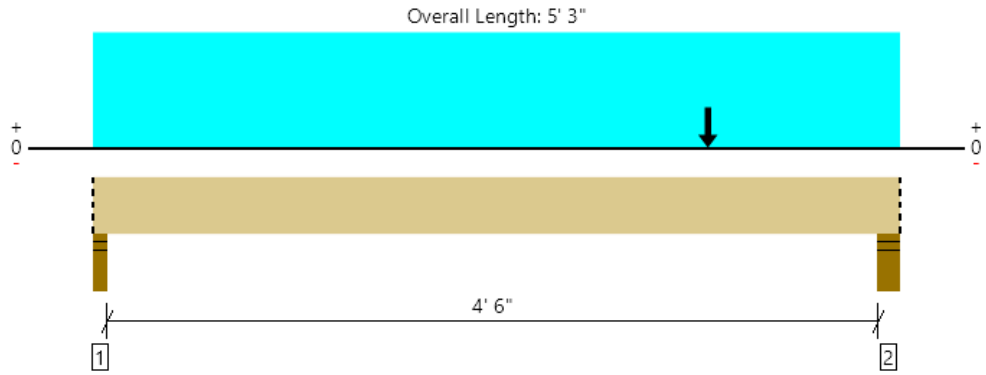
SB, SB-4

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	11291 @ 4' 11"	12272 (5.50")	Passed (92%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4548 @ 3' 3 1/2"	21011	Passed (22%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	10085 @ 4'	75322	Passed (13%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.007 @ 4'	0.119	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.015 @ 4'	0.237	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.52"	1624	1337	1021	3982	Blocking
2 - Stud wall - SPF	5.50"	5.50"	5.06"	5796	3056	4271	13123	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)	5' 3" o/c	
Bottom Edge (Lu)	5' 3" 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 5' 3"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 5' 3" (Front)	8'	12.0	40.0	-	Default Load
2 - Point (lb)	4' (Front)	N/A	3385	1183	2589	Linked from: TB-11, Support 2
3 - Point (lb)	4' (Front)	N/A	3376	1530	2703	Linked from: SB-3, Support 1

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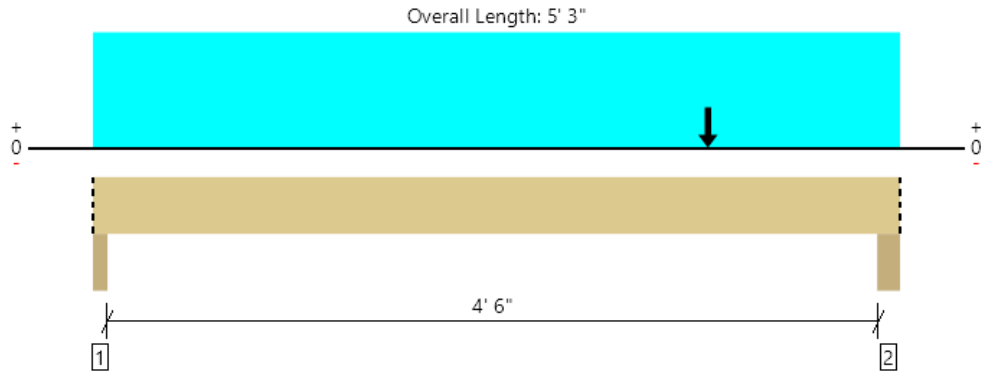
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

SB, SB-5

1 piece(s) 7" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	18444 @ 4' 11"	24063 (5.50")	Passed (77%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	7464 @ 3' 3 1/2"	28014	Passed (27%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	16544 @ 4'	100429	Passed (16%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.010 @ 4'	0.119	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.018 @ 4'	0.237	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Column - SPF	3.50"	3.50"	1.50"	2446	2259	1627	6332	Blocking
2 - Column - SPF	5.50"	5.50"	4.22"	8870	5961	6805	21636	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)	5' 3" o/c	
Bottom Edge (Lu)	5' 3" 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 5' 3"	N/A	39.4	--	--	
1 - Uniform (PSF)	0 to 5' 3" (Front)	11'	12.0	40.0	-	Default Load
2 - Point (lb)	4' (Front)	N/A	3661	2480	2703	Linked from: SB-3, Support 2
3 - Point (lb)	4' (Front)	N/A	6755	3430	5729	Linked from: TB-25, Support 2

Weyerhaeuser Notes

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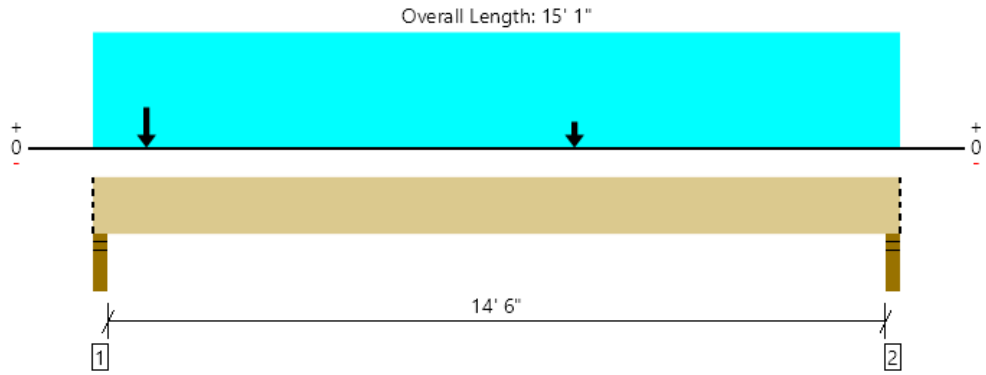
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

SB, SB-6

1 piece(s) 3 1/2" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5130 @ 2"	5206 (3.50")	Passed (99%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2908 @ 1' 9 1/2"	14007	Passed (21%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	10252 @ 9'	50215	Passed (20%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.058 @ 7' 6 3/4"	0.369	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.117 @ 7' 6 7/8"	0.738	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	3.50"	3.50"	3.45"	2655	1620	1679	5954	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	1021	858	524	2403	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)	15' 1" o/c	
Bottom Edge (Lu)	15' 1" 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 15' 1"	N/A	19.7	--	--	
1 - Uniform (PSF)	0 to 15' 1" (Front)	2'	12.0	40.0	-	Default Load
2 - Point (lb)	9' (Front)	N/A	960	337	736	Linked from: TB-8 (REACTION ONLY), Support 2
3 - Point (lb)	1' (Front)	N/A	960	337	736	Linked from: TB-8 (REACTION ONLY), Support 1
4 - Point (lb)	1' (Front)	N/A	1097	597	731	Linked from: TB-9 (REACTION ONLY), Support 2

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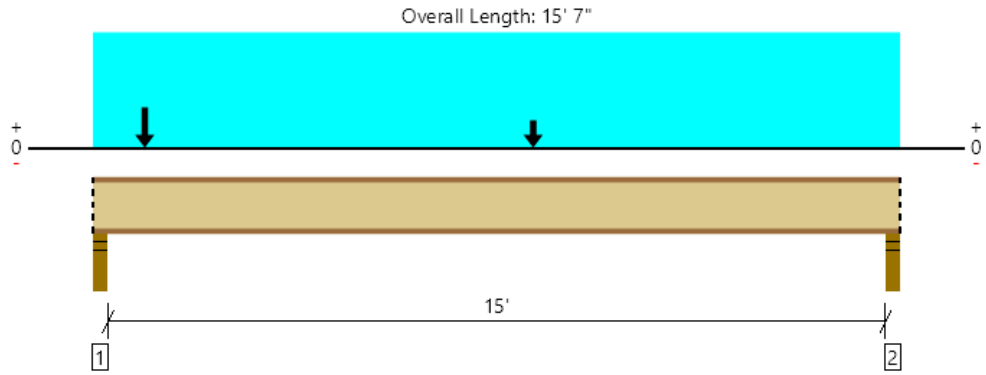
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

SB, SJ-1 (REACTION ONLY)
1 piece(s) 18" TJI® 360 @ 12" OC



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)	1175 @ 2 1/2"	1505 (3.50")	Passed (78%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1160 @ 3 1/2"	2425	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2993 @ 8' 6"	9465	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.090 @ 7' 9"	0.379	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.130 @ 7' 9 1/8"	0.758	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	64	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/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	Total	
1 - Stud wall - SPF	3.50"	3.50"	2.14"	356	819	1175	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.75"	181	444	625	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' 11" o/c	
Bottom Edge (Lu)	15' 7" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 15' 7"	12"	12.0	40.0	Default Load
2 - Point (PLF)	1'	12"	210.0	440.0	3RD FLOOR + INT WALL
3 - Point (PLF)	8' 6"	12"	140.0	200.0	3RD FLOOR + INT WALL

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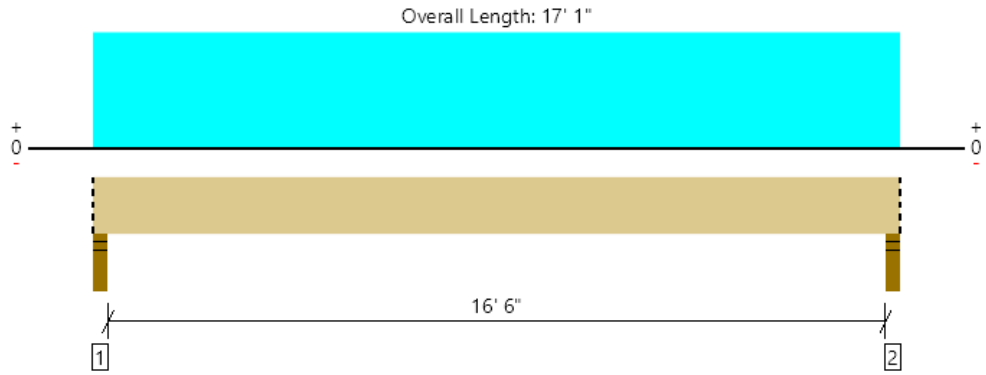
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

SB, SB-7

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6471 @ 2"	7809 (3.50")	Passed (83%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	5113 @ 1' 9 1/2"	18270	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	26567 @ 8' 6 1/2"	65497	Passed (41%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.198 @ 8' 6 1/2"	0.419	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.268 @ 8' 6 1/2"	0.837	Passed (L/749)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - SPF	3.50"	3.50"	2.90"	1687	4783	6470	Blocking
2 - Stud wall - SPF	3.50"	3.50"	2.90"	1687	4783	6470	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)	17' 1" o/c	
Bottom Edge (Lu)	17' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 17' 1"	N/A	29.5	--	
1 - Uniform (PSF)	0 to 17' 1" (Front)	14'	12.0	40.0	Default Load

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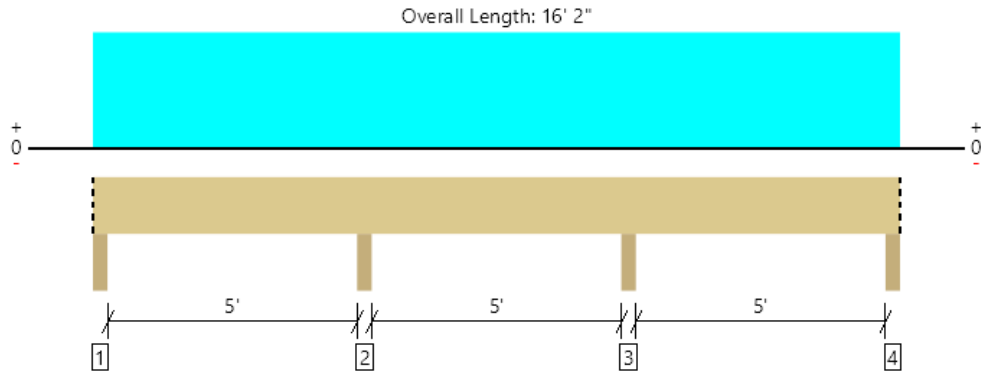
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

SB, SB-8

1 piece(s) 4 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4248 @ 5' 5 1/4"	7656 (3.50")	Passed (55%)	--	1.0 D + 1.0 L (Adj Spans)
Shear (lbs)	1584 @ 4' 6 1/4"	3885	Passed (41%)	1.00	1.0 D + 1.0 L (Adj Spans)
Moment (Ft-lbs)	-2148 @ 5' 5 1/4"	4492	Passed (48%)	1.00	1.0 D + 1.0 L (Adj Spans)
Live Load Defl. (in)	0.019 @ 2' 8 1/4"	0.132	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.023 @ 2' 7 13/16"	0.264	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Column - SPF	3.50"	3.50"	1.50"	373	1320/-138	1693/-138	Blocking
2 - Column - SPF	3.50"	3.50"	1.94"	954	3294	4248	None
3 - Column - SPF	3.50"	3.50"	1.94"	954	3294	4248	None
4 - Column - SPF	3.50"	3.50"	1.50"	373	1320/-138	1693/-138	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' 2" o/c	
Bottom Edge (Lu)	16' 2" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 16' 2"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 16' 2" (Front)	13'	12.0	40.0	Default Load

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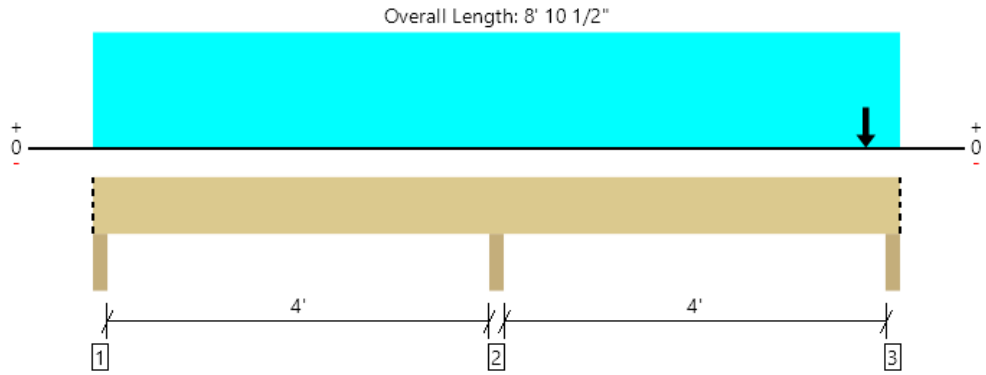
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

SB, SB-9

1 piece(s) 4 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	7629 @ 4' 5 1/4"	7656 (3.50")	Passed (100%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2334 @ 5' 4 1/4"	3885	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-2964 @ 4' 5 1/4"	4492	Passed (66%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.012 @ 6' 8 1/2"	0.107	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.017 @ 6' 9 1/16"	0.214	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Column - SPF	3.50"	3.50"	1.50"	1016	1346/-202	826	3188/-202	Blocking
2 - Column - SPF	3.50"	3.50"	3.49"	3126	3686	2318	9130	None
3 - Column - SPF	3.50"	3.50"	2.22"	1524	3330/-177	826	5680/-177	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)	8' 11" o/c	
Bottom Edge (Lu)	8' 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 8' 10 1/2"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 8' 10 1/2" (Front)	6'	12.0	40.0	-	Default Load
2 - Point (lb)	8' 6" (Front)	N/A	534	2112	-	Linked from: TB-3, Support 3
3 - Uniform (PLF)	0 to 8' 10 1/2" (Front)	N/A	498.0	421.5	434.3	Linked from: tj-1, Support 1

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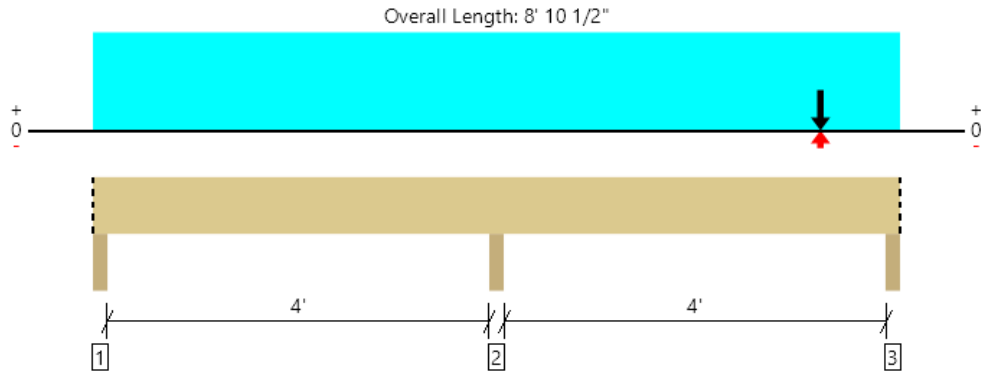
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

Weyerhaeuser

SB, SB-10

1 piece(s) 6 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	9077 @ 4' 5 1/4"	12031 (3.50")	Passed (75%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	4306 @ 7' 9 1/2"	5922	Passed (73%)	1.00	1.0 D + 1.0 L (Alt Spans) [1]
Moment (Ft-lbs)	4697 @ 7' 11 7/8"	6032	Passed (78%)	1.00	1.0 D + 1.0 L (Alt Spans) [1]
Live Load Defl. (in)	0.014 @ 6' 10 1/4"	0.107	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [1]
Total Load Defl. (in)	0.025 @ 6' 10 13/16"	0.214	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [1]

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Column - SPF	3.50"	3.50"	1.50"	903	1346/-297	814	3063/-297	Blocking
2 - Column - SPF	3.50"	3.50"	2.64"	3900	4267	2636	10803	None
3 - Column - SPF	3.50"	3.50"	2.25"	3564	3715/-177	1848	9127/-177	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)	8' 11" o/c	
Bottom Edge (Lu)	8' 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 8' 10 1/2"	N/A	13.2	--	--	
1 - Uniform (PSF)	0 to 8' 10 1/2" (Front)	6'	12.0	40.0	-	Default Load
2 - Point (lb)	8' (Front)	N/A	1689	1203	691	Linked from: TB-10, Support 3
3 - Point (lb)	8' (Front)	N/A	1502	1781	597/-86	Linked from: TB-18, Support 1
4 - Uniform (PLF)	0 to 8' 10 1/2" (Front)	N/A	498.0	421.5	434.3	Linked from: tj-1, Support 1

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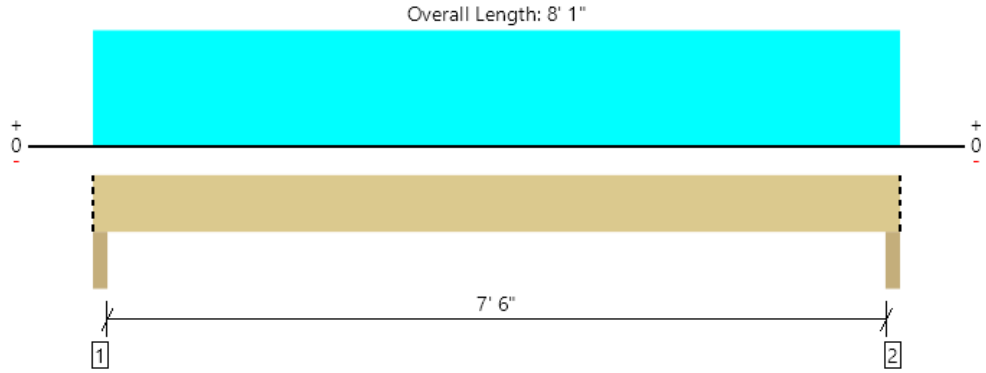
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

SB, SB-11

1 piece(s) 4 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1714 @ 2"	7656 (3.50")	Passed (22%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1264 @ 1' 3/4"	3885	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3185 @ 4' 1/2"	4492	Passed (71%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.070 @ 4' 1/2"	0.194	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.093 @ 4' 1/2"	0.387	Passed (L/998)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Column - SPF	3.50"	3.50"	1.50"	421	1293	1714	Blocking
2 - Column - SPF	3.50"	3.50"	1.50"	421	1293	1714	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)	8' 1" o/c	
Bottom Edge (Lu)	8' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 8' 1"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 8' 1" (Front)	8'	12.0	40.0	Default Load

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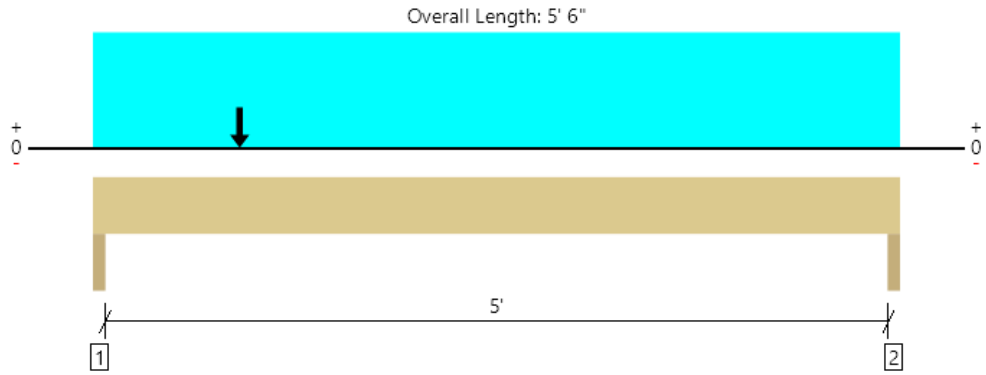
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

FH, FH-1

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4961 @ 1 1/2"	6825 (3.00")	Passed (73%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3726 @ 1'	5565	Passed (67%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	5116 @ 2' 5 15/16"	9450	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.044 @ 2' 8 11/16"	0.175	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.067 @ 2' 8 1/2"	0.262	Passed (L/933)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 5' 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	Total	
1 - Trimmer - SPF	3.00"	3.00"	2.18"	1884	3077	437	5398	None
2 - Trimmer - SPF	3.00"	3.00"	1.63"	1203	2505	87	3795	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 6" o/c	
Bottom Edge (Lu)	5' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 6"	N/A	7.7	--	--	
1 - Uniform (PSF)	0 to 5' 6"	1'	12.0	40.0	-	Default Load
2 - Point (lb)	1'	N/A	1021	858	524	Linked from: SB-6, Support 2
3 - Uniform (PLF)	0 to 5' 6"	N/A	356.0	819.0	-	Linked from: SJ-1 (REACTION ONLY), Support 1

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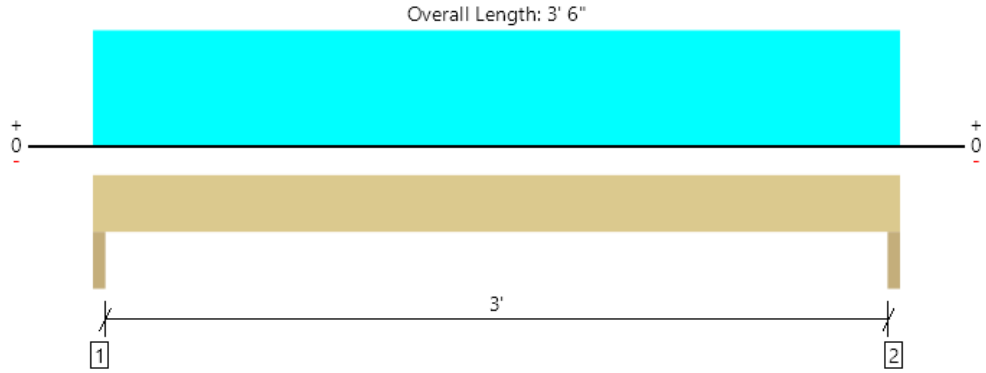
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

Weyerhaeuser

FH, FH-2

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	919 @ 1 1/2"	6563 (3.00")	Passed (14%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	547 @ 8 1/2"	2310	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	693 @ 1' 9"	1720	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.013 @ 1' 9"	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.017 @ 1' 9"	0.162	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - SPF	3.00"	3.00"	1.50"	219	700	919	None
2 - Trimmer - SPF	3.00"	3.00"	1.50"	219	700	919	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 6"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 3' 6"	10'	12.0	40.0	Default Load

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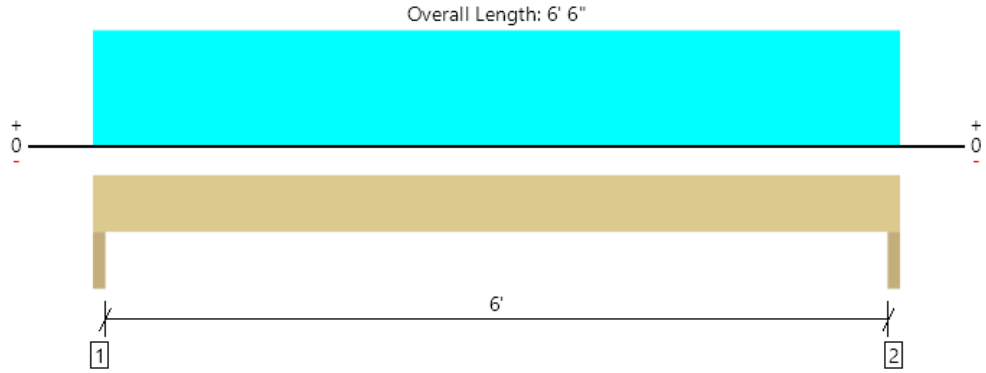
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

FH, FH-3
1 piece(s) 4 x 10 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2042 @ 1 1/2"	6563 (3.00")	Passed (31%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1401 @ 1' 1/4"	4468	Passed (31%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	3069 @ 3' 3"	5166	Passed (59%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.018 @ 3' 3"	0.208	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.058 @ 3' 3"	0.313	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	3.00"	3.00"	1.50"	1421	260	569	2250	None
2 - Trimmer - SPF	3.00"	3.00"	1.50"	1421	260	569	2250	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 6"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 6' 6"	1'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 6' 6"	1'	12.0	40.0	-	3RD FLOOR
3 - Uniform (PSF)	0 to 6' 6"	20'	15.0	-	-	EXT WALL
4 - Uniform (PSF)	0 to 6' 6"	7'	15.0	-	25.0	ROOF

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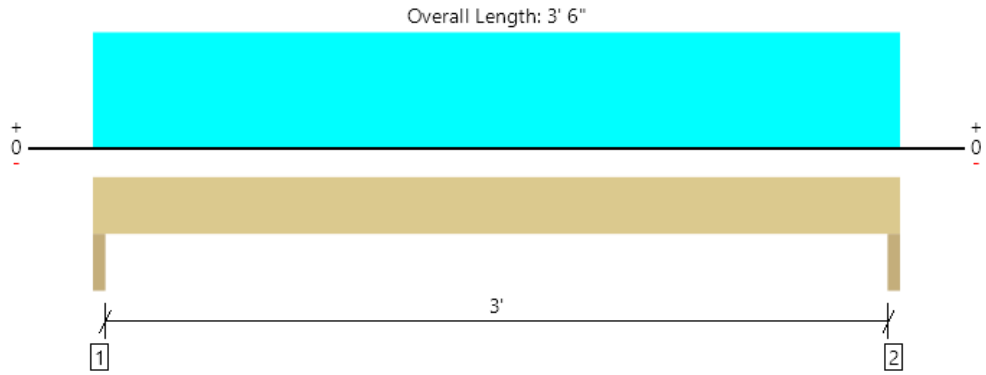
ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

Weyerhaeuser

FH, FH-4

1 piece(s) 4 x 6 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	191 @ 1 1/2"	6563 (3.00")	Passed (3%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	113 @ 8 1/2"	2310	Passed (5%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	144 @ 1' 9"	1720	Passed (8%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.003 @ 1' 9"	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.004 @ 1' 9"	0.162	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - SPF	3.00"	3.00"	1.50"	51	140	191	None
2 - Trimmer - SPF	3.00"	3.00"	1.50"	51	140	191	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 6"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 3' 6"	2'	12.0	40.0	Default Load

Weyerhaeuser Notes

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ForteWEB Software Operator	Job Notes
A P L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

LONGITUDE
ONE TWENTY°
ENGINEERING & DESIGN

FOUNDATION CALCULATIONS

FOOTING REFERENCE PER PLAN

L120 ENGINEERING & DESIGN, LLC
(206) 790 9502
L120Engineering.com

Wall Footing

File = W:\ENGINE~1\FOUNDA~1\FOUNDA~1.EC6
ENERCALC, INC. 1983-2016, Build:6.16.6.7, Ver:6.14.5.31

Description : 1'-4" (16") Footing and Stem-wall (non retaining) - max loading

Code References

Calculations per ACI 318-14, IBC 2015, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50 ksi
fy : Rebar Yield	=	40.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

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
AutoCalc Footing Weight as DL	:	Yes

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
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

Reference Depth below Surface	=	1.50 ft
Allow. Pressure Increase per foot of depth	=	ksf
when base footing is below	=	ft

Increases based on footing Width

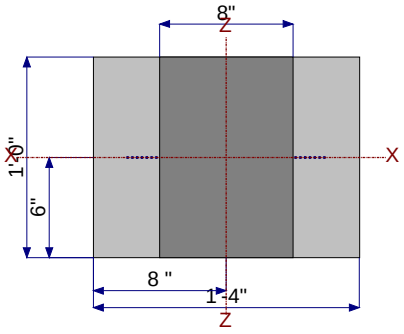
Allow. Pressure Increase per foot of width	=	ksf
when footing is wider than	=	ft

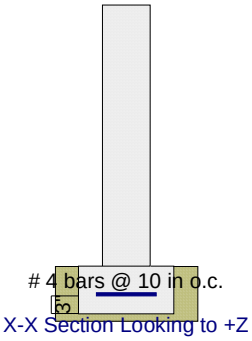
Adjusted Allowable Bearing Pressure = 2.0 ksf

Dimensions

Footing Width	=	1.333 ft	Footing Thickness	=	8.0 in	Bars along X-X Axis	
Wall Thickness	=	8.0 in	Rebar Centerline to Edge of Concrete...			Bar spacing	= 10.00
Wall center offset from center of footing	=	0 in	at Bottom of footing	=	3.0 in	Reinforcing Bar Size	= # 4

Reinforcing





X-X Section Looking to +Z

Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	1.0		0.750	1.0				k
OB : Overburden	=								ksf
V-x	=								k
M-zz	=								k-ft
Vx applied	=	in above top of footing							

Wall Footing

File = W:\ENGINE~1\FOUNDA~1\FOUNDA~1.EC6
ENERCALC, INC. 1983-2016, Build:6.16.6.7, Ver:6.14.5.31

Description : 1'-4" (16") Footing and Stem-wall (non retaining) - max loading

DESIGN SUMMARY

Design OK

	Factor of Safety	Item	Applied	Capacity	Governing Load Combination
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	Uplift	0.0 k	0.0 k	No Uplift

	Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9157	Soil Bearing	1.831 ksf	2.0 ksf	+D+0.750L+0.750S+0.5
PASS	0.04001	Z Flexure (+X)	0.1386 k-ft	3.464 k-ft	+1.20D+0.50L+1.60S+1
PASS	0.01221	Z Flexure (-X)	0.04229 k-ft	3.464 k-ft	+0.90D+E+0.90H
PASS	n/a	1-way Shear (+X)	0.0 psi	75.0 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Actual Soil Bearing Stress -X	Actual Soil Bearing Stress +X	Actual / Allowable Ratio
, +D+H	2.0 ksf	0.0 in	0.8469 ksf	0.8469 ksf	0.423
, +D+L+H	2.0 ksf	0.0 in	1.409 ksf	1.409 ksf	0.705
, +D+Lr+H	2.0 ksf	0.0 in	0.8469 ksf	0.8469 ksf	0.423
, +D+S+H	2.0 ksf	0.0 in	1.597 ksf	1.597 ksf	0.799
, +D+0.750Lr+0.750L+H	2.0 ksf	0.0 in	1.269 ksf	1.269 ksf	0.634
, +D+0.750L+0.750S+H	2.0 ksf	0.0 in	1.831 ksf	1.831 ksf	0.916
, +D+0.60W+H	2.0 ksf	0.0 in	0.8469 ksf	0.8469 ksf	0.423
, +D+0.70E+H	2.0 ksf	0.0 in	0.8469 ksf	0.8469 ksf	0.423
, +D+0.750Lr+0.750L+0.450W+H	2.0 ksf	0.0 in	1.269 ksf	1.269 ksf	0.634
, +D+0.750L+0.750S+0.450W+H	2.0 ksf	0.0 in	1.831 ksf	1.831 ksf	0.916
, +D+0.750L+0.750S+0.5250E+H	2.0 ksf	0.0 in	1.831 ksf	1.831 ksf	0.916
, +0.60D+0.60W+0.60H	2.0 ksf	0.0 in	0.5081 ksf	0.5081 ksf	0.254
, +0.60D+0.70E+0.60H	2.0 ksf	0.0 in	0.5081 ksf	0.5081 ksf	0.254

Overturning Stability

Units : k-ft

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status

Footing Has NO Overturning

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
, +1.40D+1.60H	0.06579	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.40D+1.60H	0.06579	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+0.50Lr+1.60L+1.60H	0.1063	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+0.50Lr+1.60L+1.60H	0.1063	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+1.60L+0.50S+1.60H	0.1272	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+1.60L+0.50S+1.60H	0.1272	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+1.60Lr+0.50L+1.60H	0.072	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+1.60Lr+0.50L+1.60H	0.072	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+1.60Lr+0.50W+1.60H	0.05639	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+1.60Lr+0.50W+1.60H	0.05639	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+0.50L+1.60S+1.60H	0.1386	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+0.50L+1.60S+1.60H	0.1386	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+1.60S+0.50W+1.60H	0.123	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+1.60S+0.50W+1.60H	0.123	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+0.50Lr+0.50L+W+1.60H	0.072	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+0.50Lr+0.50L+W+1.60H	0.072	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+0.50L+0.50S+W+1.60H	0.09281	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+0.50L+0.50S+W+1.60H	0.09281	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK

Wall Footing

Description : 1'-4" (16") Footing and Stem-wall (non retaining) - max loading

, +1.20D+0.50L+0.20S+E+1.60H	0.08033	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +1.20D+0.50L+0.20S+E+1.60H	0.08033	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK

Wall Footing

Description : 1'-4" (16") Footing and Stem-wall (non retaining) - max loading

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
, +0.90D+W+0.90H	0.04229	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +0.90D+W+0.90H	0.04229	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +0.90D+E+0.90H	0.04229	-X	Bottom	0.1728	Min Temp %	0.24	3.464	OK
, +0.90D+E+0.90H	0.04229	+X	Bottom	0.1728	Min Temp %	0.24	3.464	OK

One Way Shear

Units : k

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+1.60L+0.50S+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+1.60Lr+0.50L+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+1.60Lr+0.50W+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50L+1.60S+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+1.60S+0.50W+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50Lr+0.50L+W+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50L+0.50S+W+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50L+0.20S+E+1.60H	0 psi	0 psi	0 psi	75 psi	0	OK
+0.90D+W+0.90H	0 psi	0 psi	0 psi	75 psi	0	OK
+0.90D+E+0.90H	0 psi	0 psi	0 psi	75 psi	0	OK

General Footing

File = W:\ENGINE~1\FOUNDA~1\FOUNDA~1.EC6
ENERCALC, INC. 1983-2016, Build:6.16.6.7, Ver:6.14.5.31

Description : 2' SQ FTG - max loading

Code References

Calculations per ACI 318-14, IBC 2015, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	40.0	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

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	:	No	
Use Pedestal wt for stability, mom & shear	:	No	

Soil Design Values

Allowable Soil Bearing	=	2.0	ksf
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	=	0.670	ft
Allow press. increase per foot of depth	=		ksf
when footing base is below	=		ft

Increases based on footing plan dimension

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

Dimensions

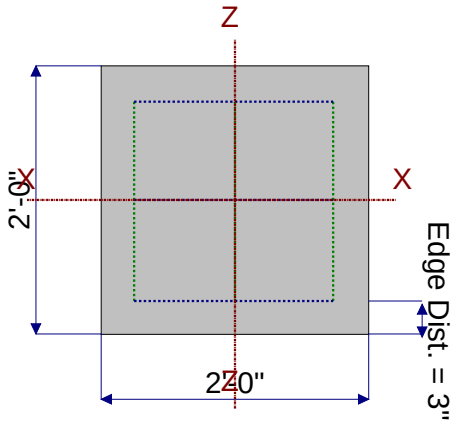
Width parallel to X-X Axis	=	2.0	ft
Length parallel to Z-Z Axis	=	2.0	ft
Footing Thickness	=	10.0	in

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

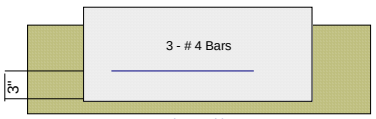


Reinforcing

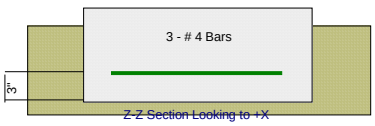
Bars parallel to X-X Axis			
Number of Bars	=	3.0	
Reinforcing Bar Size	=	# 4	
Bars parallel to Z-Z Axis			
Number of Bars	=	3.0	
Reinforcing Bar Size	=	# 4	

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



X-X Section Looking to +Z



Z-Z Section Looking to +X

Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	2.50		5.0					k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

General Footing

Description : 2' SQ FTG - max loading

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+H 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	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.2258	Z Flexure (+X)	1.375 k-ft	6.088 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2258	Z Flexure (-X)	1.375 k-ft	6.088 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2258	X Flexure (+Z)	1.375 k-ft	6.088 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2258	X Flexure (-Z)	1.375 k-ft	6.088 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1892	1-way Shear (+X)	14.187 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1892	1-way Shear (-X)	14.187 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1892	1-way Shear (+Z)	14.187 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1892	1-way Shear (-Z)	14.187 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3405	2-way Punching	51.071 psi	150.0 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location Bottom, -Z	Top, +Z	Left, -X	Right, +X	Actual / Allow Ratio
X-X, +D+H	2.0	n/a	0.0	0.7458	0.7458	n/a	n/a	0.373
X-X, +D+L+H	2.0	n/a	0.0	1.996	1.996	n/a	n/a	0.998
X-X, +D+Lr+H	2.0	n/a	0.0	0.7458	0.7458	n/a	n/a	0.373
X-X, +D+S+H	2.0	n/a	0.0	0.7458	0.7458	n/a	n/a	0.373
X-X, +D+0.750Lr+0.750L+H	2.0	n/a	0.0	1.683	1.683	n/a	n/a	0.842
X-X, +D+0.750L+0.750S+H	2.0	n/a	0.0	1.683	1.683	n/a	n/a	0.842
X-X, +D+0.60W+H	2.0	n/a	0.0	0.7458	0.7458	n/a	n/a	0.373
X-X, +D+0.70E+H	2.0	n/a	0.0	0.7458	0.7458	n/a	n/a	0.373
X-X, +D+0.750Lr+0.750L+0.450W+H	2.0	n/a	0.0	1.683	1.683	n/a	n/a	0.842
X-X, +D+0.750L+0.750S+0.450W+H	2.0	n/a	0.0	1.683	1.683	n/a	n/a	0.842
X-X, +D+0.750L+0.750S+0.5250E+H	2.0	n/a	0.0	1.683	1.683	n/a	n/a	0.842
X-X, +0.60D+0.60W+0.60H	2.0	n/a	0.0	0.4475	0.4475	n/a	n/a	0.224
X-X, +0.60D+0.70E+0.60H	2.0	n/a	0.0	0.4475	0.4475	n/a	n/a	0.224
Z-Z, +D+H	2.0	0.0	n/a	n/a	n/a	0.7458	0.7458	0.373
Z-Z, +D+L+H	2.0	0.0	n/a	n/a	n/a	1.996	1.996	0.998
Z-Z, +D+Lr+H	2.0	0.0	n/a	n/a	n/a	0.7458	0.7458	0.373
Z-Z, +D+S+H	2.0	0.0	n/a	n/a	n/a	0.7458	0.7458	0.373
Z-Z, +D+0.750Lr+0.750L+H	2.0	0.0	n/a	n/a	n/a	1.683	1.683	0.842
Z-Z, +D+0.750L+0.750S+H	2.0	0.0	n/a	n/a	n/a	1.683	1.683	0.842
Z-Z, +D+0.60W+H	2.0	0.0	n/a	n/a	n/a	0.7458	0.7458	0.373
Z-Z, +D+0.70E+H	2.0	0.0	n/a	n/a	n/a	0.7458	0.7458	0.373
Z-Z, +D+0.750Lr+0.750L+0.450W+H	2.0	0.0	n/a	n/a	n/a	1.683	1.683	0.842
Z-Z, +D+0.750L+0.750S+0.450W+H	2.0	0.0	n/a	n/a	n/a	1.683	1.683	0.842
Z-Z, +D+0.750L+0.750S+0.5250E+H	2.0	0.0	n/a	n/a	n/a	1.683	1.683	0.842
Z-Z, +0.60D+0.60W+0.60H	2.0	0.0	n/a	n/a	n/a	0.4475	0.4475	0.224
Z-Z, +0.60D+0.70E+0.60H	2.0	0.0	n/a	n/a	n/a	0.4475	0.4475	0.224

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+1.60H	0.4375	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.40D+1.60H	0.4375	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	1.375	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	1.375	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK

General Footing

Description : 2' SQ FTG - max loading

X-X, +1.20D+1.60L+0.50S+1.60H	1.375	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK

General Footing

Description : 2' SQ FTG - max loading

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, +1.20D+1.60L+0.50S+1.60H	1.375	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+1.60Lr+0.50L+1.60H	0.6875	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+1.60Lr+0.50L+1.60H	0.6875	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+1.60Lr+0.50W+1.60H	0.3750	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+1.60Lr+0.50W+1.60H	0.3750	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+0.50L+1.60S+1.60H	0.6875	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+0.50L+1.60S+1.60H	0.6875	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+1.60S+0.50W+1.60H	0.3750	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+1.60S+0.50W+1.60H	0.3750	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+0.50Lr+0.50L+W+1.60H	0.6875	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+0.50Lr+0.50L+W+1.60H	0.6875	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+0.50L+0.50S+W+1.60H	0.6875	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+0.50L+0.50S+W+1.60H	0.6875	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+0.50L+0.20S+E+1.60H	0.6875	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +1.20D+0.50L+0.20S+E+1.60H	0.6875	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +0.90D+W+0.90H	0.2813	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +0.90D+W+0.90H	0.2813	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +0.90D+E+0.90H	0.2813	+Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
X-X, +0.90D+E+0.90H	0.2813	-Z	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.40D+1.60H	0.4375	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.40D+1.60H	0.4375	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	1.375	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	1.375	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	1.375	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	1.375	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+1.60Lr+0.50L+1.60H	0.6875	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+1.60Lr+0.50L+1.60H	0.6875	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60H	0.3750	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60H	0.3750	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+0.50L+1.60S+1.60H	0.6875	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+0.50L+1.60S+1.60H	0.6875	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+1.60S+0.50W+1.60H	0.3750	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+1.60S+0.50W+1.60H	0.3750	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+0.50Lr+0.50L+W+1.60H	0.6875	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+0.50Lr+0.50L+W+1.60H	0.6875	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+0.50L+0.50S+W+1.60H	0.6875	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+0.50L+0.50S+W+1.60H	0.6875	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+0.50L+0.20S+E+1.60H	0.6875	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +1.20D+0.50L+0.20S+E+1.60H	0.6875	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +0.90D+W+0.90H	0.2813	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +0.90D+W+0.90H	0.2813	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +0.90D+E+0.90H	0.2813	-X	Bottom	0.216	Min Temp %	0.30	6.088	OK
Z-Z, +0.90D+E+0.90H	0.2813	+X	Bottom	0.216	Min Temp %	0.30	6.088	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	4.514 psi	4.514 psi	4.514 psi	4.514 psi	4.514 psi	75 psi	0.06019	OK
+1.20D+0.50Lr+1.60L+1.60H	14.187 psi	14.187 psi	14.187 psi	14.187 psi	14.187 psi	75 psi	0.1892	OK
+1.20D+1.60L+0.50S+1.60H	14.187 psi	14.187 psi	14.187 psi	14.187 psi	14.187 psi	75 psi	0.1892	OK
+1.20D+1.60Lr+0.50L+1.60H	7.093 psi	7.093 psi	7.093 psi	7.093 psi	7.093 psi	75 psi	0.09458	OK
+1.20D+1.60Lr+0.50W+1.60H	3.869 psi	3.869 psi	3.869 psi	3.869 psi	3.869 psi	75 psi	0.05159	OK
+1.20D+0.50L+1.60S+1.60H	7.093 psi	7.093 psi	7.093 psi	7.093 psi	7.093 psi	75 psi	0.09458	OK
+1.20D+1.60S+0.50W+1.60H	3.869 psi	3.869 psi	3.869 psi	3.869 psi	3.869 psi	75 psi	0.05159	OK
+1.20D+0.50Lr+0.50L+W+1.60H	7.093 psi	7.093 psi	7.093 psi	7.093 psi	7.093 psi	75 psi	0.09458	OK
+1.20D+0.50L+0.50S+W+1.60H	7.093 psi	7.093 psi	7.093 psi	7.093 psi	7.093 psi	75 psi	0.09458	OK
+1.20D+0.50L+0.20S+E+1.60H	7.093 psi	7.093 psi	7.093 psi	7.093 psi	7.093 psi	75 psi	0.09458	OK
+0.90D+W+0.90H	2.902 psi	2.902 psi	2.902 psi	2.902 psi	2.902 psi	75 psi	0.03869	OK
+0.90D+E+0.90H	2.902 psi	2.902 psi	2.902 psi	2.902 psi	2.902 psi	75 psi	0.03869	OK

Punching Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	16.25 psi	150 psi	0.1083	OK
+1.20D+0.50Lr+1.60L+1.60H	51.071 psi	150 psi	0.3405	OK

General Footing

Description : 2' SQ FTG - max loading

Punching Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.20D+1.60L+0.50S+1.60H	51.071 psi	150 psi	0.3405	OK
+1.20D+1.60Lr+0.50L+1.60H	25.536 psi	150 psi	0.1702	OK
+1.20D+1.60Lr+0.50W+1.60H	13.929 psi	150 psi	0.09286	OK
+1.20D+0.50L+1.60S+1.60H	25.536 psi	150 psi	0.1702	OK
+1.20D+1.60S+0.50W+1.60H	13.929 psi	150 psi	0.09286	OK
+1.20D+0.50Lr+0.50L+W+1.60H	25.536 psi	150 psi	0.1702	OK
+1.20D+0.50L+0.50S+W+1.60H	25.536 psi	150 psi	0.1702	OK
+1.20D+0.50L+0.20S+E+1.60H	25.536 psi	150 psi	0.1702	OK
+0.90D+W+0.90H	10.446 psi	150 psi	0.06964	OK
+0.90D+E+0.90H	10.446 psi	150 psi	0.06964	OK

General Footing

Description : 2.5' (30") SQ FTG @ Deck - max loading

Code References

Calculations per ACI 318-14, IBC 2015, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Material Properties

f'c : Concrete 28 day strength	=	3.0	ksi
fy : Rebar Yield	=	40.0	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

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	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Bearing	=	2.0	ksf
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	=	ft
Allow press. increase per foot of depth	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

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

Dimensions

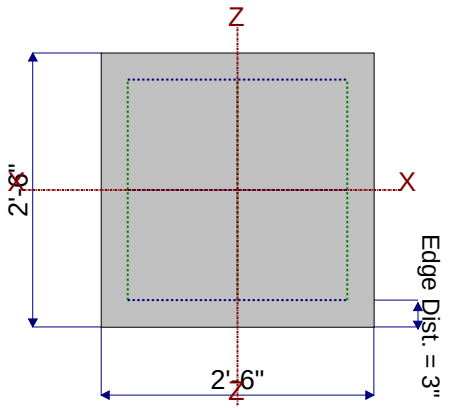
Width parallel to X-X Axis	=	2.50 ft
Length parallel to Z-Z Axis	=	2.50 ft
Footing Thickness	=	10.0 in

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

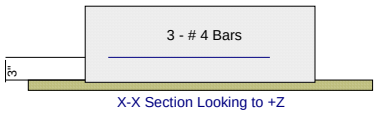


Reinforcing

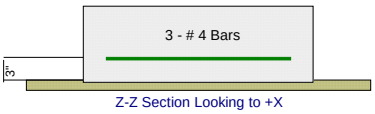
Bars parallel to X-X Axis			
Number of Bars	=		3.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		3.0
Reinforcing Bar Size	=	#	4

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



X-X Section Looking to +Z



Z-Z Section Looking to +X

Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	4.0		6.0					k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

General Footing

Description : 2.5' (30") SQ FTG @ Deck - max loading

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.8605	Soil Bearing	1.721 ksf	2.0 ksf	+D+L+H 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	0.3653	Z Flexure (+X)	1.80 k-ft	4.927 k-ft	+1.20D+1.60L+0.50S+1.60H
PASS	0.3653	Z Flexure (-X)	1.80 k-ft	4.927 k-ft	+1.20D+1.60L+0.50S+1.60H
PASS	0.3653	X Flexure (+Z)	1.80 k-ft	4.927 k-ft	+1.20D+1.60L+0.50S+1.60H
PASS	0.3653	X Flexure (-Z)	1.80 k-ft	4.927 k-ft	+1.20D+1.60L+0.50S+1.60H
PASS	0.2226	1-way Shear (+X)	18.286 psi	82.158 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2226	1-way Shear (-X)	18.286 psi	82.158 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2226	1-way Shear (+Z)	18.286 psi	82.158 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2226	1-way Shear (-Z)	18.286 psi	82.158 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4228	2-way Punching	69.469 psi	164.317 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location Bottom, -Z	Top, +Z	Left, -X	Right, +X	Actual / Allow Ratio
X-X, +D+H	2.0	n/a	0.0	0.7608	0.7608	n/a	n/a	0.380
X-X, +D+L+H	2.0	n/a	0.0	1.721	1.721	n/a	n/a	0.861
X-X, +D+Lr+H	2.0	n/a	0.0	0.7608	0.7608	n/a	n/a	0.380
X-X, +D+S+H	2.0	n/a	0.0	0.7608	0.7608	n/a	n/a	0.380
X-X, +D+0.750Lr+0.750L+H	2.0	n/a	0.0	1.481	1.481	n/a	n/a	0.741
X-X, +D+0.750L+0.750S+H	2.0	n/a	0.0	1.481	1.481	n/a	n/a	0.741
X-X, +D+0.60W+H	2.0	n/a	0.0	0.7608	0.7608	n/a	n/a	0.380
X-X, +D+0.70E+H	2.0	n/a	0.0	0.7608	0.7608	n/a	n/a	0.380
X-X, +D+0.750Lr+0.750L+0.450W+H	2.0	n/a	0.0	1.481	1.481	n/a	n/a	0.741
X-X, +D+0.750L+0.750S+0.450W+H	2.0	n/a	0.0	1.481	1.481	n/a	n/a	0.741
X-X, +D+0.750L+0.750S+0.5250E+H	2.0	n/a	0.0	1.481	1.481	n/a	n/a	0.741
X-X, +0.60D+0.60W+0.60H	2.0	n/a	0.0	0.4565	0.4565	n/a	n/a	0.228
X-X, +0.60D+0.70E+0.60H	2.0	n/a	0.0	0.4565	0.4565	n/a	n/a	0.228
Z-Z, +D+H	2.0	0.0	n/a	n/a	n/a	0.7608	0.7608	0.380
Z-Z, +D+L+H	2.0	0.0	n/a	n/a	n/a	1.721	1.721	0.861
Z-Z, +D+Lr+H	2.0	0.0	n/a	n/a	n/a	0.7608	0.7608	0.380
Z-Z, +D+S+H	2.0	0.0	n/a	n/a	n/a	0.7608	0.7608	0.380
Z-Z, +D+0.750Lr+0.750L+H	2.0	0.0	n/a	n/a	n/a	1.481	1.481	0.741
Z-Z, +D+0.750L+0.750S+H	2.0	0.0	n/a	n/a	n/a	1.481	1.481	0.741
Z-Z, +D+0.60W+H	2.0	0.0	n/a	n/a	n/a	0.7608	0.7608	0.380
Z-Z, +D+0.70E+H	2.0	0.0	n/a	n/a	n/a	0.7608	0.7608	0.380
Z-Z, +D+0.750Lr+0.750L+0.450W+H	2.0	0.0	n/a	n/a	n/a	1.481	1.481	0.741
Z-Z, +D+0.750L+0.750S+0.450W+H	2.0	0.0	n/a	n/a	n/a	1.481	1.481	0.741
Z-Z, +D+0.750L+0.750S+0.5250E+H	2.0	0.0	n/a	n/a	n/a	1.481	1.481	0.741
Z-Z, +0.60D+0.60W+0.60H	2.0	0.0	n/a	n/a	n/a	0.4565	0.4565	0.228
Z-Z, +0.60D+0.70E+0.60H	2.0	0.0	n/a	n/a	n/a	0.4565	0.4565	0.228

Overturning Stability

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

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				

General Footing

Description : 2.5' (30") SQ FTG @ Deck - max loading

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+1.60H	0.70	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK

General Footing

Description : 2.5' (30") SQ FTG @ Deck - max loading

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+1.60H	0.70	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	1.80	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	1.80	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+1.60L+0.50S+1.60H	1.80	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+1.60L+0.50S+1.60H	1.80	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+1.60Lr+0.50L+1.60H	0.9750	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+1.60Lr+0.50L+1.60H	0.9750	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+1.60Lr+0.50W+1.60H	0.60	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+1.60Lr+0.50W+1.60H	0.60	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+0.50L+1.60S+1.60H	0.9750	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+0.50L+1.60S+1.60H	0.9750	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+1.60S+0.50W+1.60H	0.60	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+1.60S+0.50W+1.60H	0.60	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+0.50Lr+0.50L+W+1.60H	0.9750	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+0.50Lr+0.50L+W+1.60H	0.9750	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+0.50L+0.50S+W+1.60H	0.9750	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+0.50L+0.50S+W+1.60H	0.9750	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+0.50L+0.20S+E+1.60H	0.9750	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +1.20D+0.50L+0.20S+E+1.60H	0.9750	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +0.90D+W+0.90H	0.450	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +0.90D+W+0.90H	0.450	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +0.90D+E+0.90H	0.450	+Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
X-X, +0.90D+E+0.90H	0.450	-Z	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.40D+1.60H	0.70	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.40D+1.60H	0.70	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	1.80	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	1.80	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	1.80	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	1.80	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+1.60Lr+0.50L+1.60H	0.9750	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+1.60Lr+0.50L+1.60H	0.9750	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60H	0.60	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60H	0.60	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+0.50L+1.60S+1.60H	0.9750	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+0.50L+1.60S+1.60H	0.9750	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+1.60S+0.50W+1.60H	0.60	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+1.60S+0.50W+1.60H	0.60	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+0.50Lr+0.50L+W+1.60H	0.9750	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+0.50Lr+0.50L+W+1.60H	0.9750	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+0.50L+0.50S+W+1.60H	0.9750	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+0.50L+0.50S+W+1.60H	0.9750	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+0.50L+0.20S+E+1.60H	0.9750	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +1.20D+0.50L+0.20S+E+1.60H	0.9750	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +0.90D+W+0.90H	0.450	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +0.90D+W+0.90H	0.450	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +0.90D+E+0.90H	0.450	-X	Bottom	0.216	Min Temp %	0.240	4.927	OK
Z-Z, +0.90D+E+0.90H	0.450	+X	Bottom	0.216	Min Temp %	0.240	4.927	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	7.111 psi	7.111 psi	7.111 psi	7.111 psi	7.111 psi	82.158 psi	0.08655	OK
+1.20D+0.50Lr+1.60L+1.60H	18.286 psi	18.286 psi	18.286 psi	18.286 psi	18.286 psi	82.158 psi	0.2226	OK
+1.20D+1.60L+0.50S+1.60H	18.286 psi	18.286 psi	18.286 psi	18.286 psi	18.286 psi	82.158 psi	0.2226	OK
+1.20D+1.60Lr+0.50L+1.60H	9.905 psi	9.905 psi	9.905 psi	9.905 psi	9.905 psi	82.158 psi	0.1206	OK
+1.20D+1.60Lr+0.50W+1.60H	6.095 psi	6.095 psi	6.095 psi	6.095 psi	6.095 psi	82.158 psi	0.07419	OK
+1.20D+0.50L+1.60S+1.60H	9.905 psi	9.905 psi	9.905 psi	9.905 psi	9.905 psi	82.158 psi	0.1206	OK
+1.20D+1.60S+0.50W+1.60H	6.095 psi	6.095 psi	6.095 psi	6.095 psi	6.095 psi	82.158 psi	0.07419	OK
+1.20D+0.50Lr+0.50L+W+1.60H	9.905 psi	9.905 psi	9.905 psi	9.905 psi	9.905 psi	82.158 psi	0.1206	OK
+1.20D+0.50L+0.50S+W+1.60H	9.905 psi	9.905 psi	9.905 psi	9.905 psi	9.905 psi	82.158 psi	0.1206	OK
+1.20D+0.50L+0.20S+E+1.60H	9.905 psi	9.905 psi	9.905 psi	9.905 psi	9.905 psi	82.158 psi	0.1206	OK
+0.90D+W+0.90H	4.571 psi	4.571 psi	4.571 psi	4.571 psi	4.571 psi	82.158 psi	0.05564	OK
+0.90D+E+0.90H	4.571 psi	4.571 psi	4.571 psi	4.571 psi	4.571 psi	82.158 psi	0.05564	OK

General Footing

Description : 2.5' (30") SQ FTG @ Deck - max loading

Punching Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	27.016 psi	164.317 psi	0.1644	OK
+1.20D+0.50Lr+1.60L+1.60H	69.469 psi	164.317 psi	0.4228	OK
+1.20D+1.60L+0.50S+1.60H	69.469 psi	164.317 psi	0.4228	OK
+1.20D+1.60Lr+0.50L+1.60H	37.629 psi	164.317 psi	0.229	OK
+1.20D+1.60Lr+0.50W+1.60H	23.156 psi	164.317 psi	0.1409	OK
+1.20D+0.50L+1.60S+1.60H	37.629 psi	164.317 psi	0.229	OK
+1.20D+1.60S+0.50W+1.60H	23.156 psi	164.317 psi	0.1409	OK
+1.20D+0.50Lr+0.50L+W+1.60H	37.629 psi	164.317 psi	0.229	OK
+1.20D+0.50L+0.50S+W+1.60H	37.629 psi	164.317 psi	0.229	OK
+1.20D+0.50L+0.20S+E+1.60H	37.629 psi	164.317 psi	0.229	OK
+0.90D+W+0.90H	17.367 psi	164.317 psi	0.1057	OK
+0.90D+E+0.90H	17.367 psi	164.317 psi	0.1057	OK

General Footing

Description : 3' SQ FTG - max loading

Code References

Calculations per ACI 318-14, IBC 2015, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	40.0	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=		
Min Allow % Temp Reinf.	=	0.00180	
Min. Overturning Safety Factor	=	1.50	: 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	:	No	
Use Pedestal wt for stability, mom & shear	:	No	

Soil Design Values

Allowable Soil Bearing	=	2.0	ksf
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	=	ft
Allow press. increase per foot of depth	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

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

Dimensions

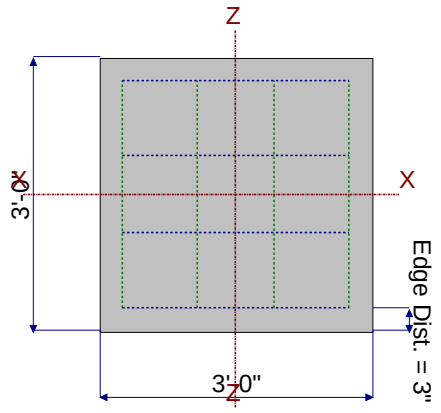
Width parallel to X-X Axis	=	3.0 ft
Length parallel to Z-Z Axis	=	3.0 ft
Footing Thickness	=	10.0 in

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

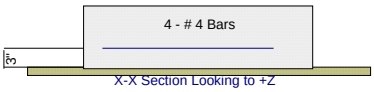


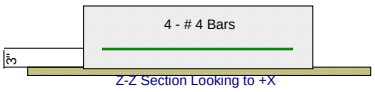
Reinforcing

Bars parallel to X-X Axis			
Number of Bars	=		4.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		4.0
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	=	6.0		9.0					k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

General Footing

Description : 3' SQ FTG - max loading

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.8940	Soil Bearing	1.788 ksf	2.0 ksf	+D+L+H 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	0.4970	Z Flexure (+X)	2.70 k-ft	5.433 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4970	Z Flexure (-X)	2.70 k-ft	5.433 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4970	X Flexure (+Z)	2.70 k-ft	5.433 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4970	X Flexure (-Z)	2.70 k-ft	5.433 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3429	1-way Shear (+X)	25.714 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3429	1-way Shear (-X)	25.714 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3429	1-way Shear (+Z)	25.714 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3429	1-way Shear (-Z)	25.714 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.7053	2-way Punching	105.796 psi	150.0 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location Bottom, -Z	Top, +Z	Left, -X	Right, +X	Actual / Allow Ratio
X-X, +D+H	2.0	n/a	0.0	0.7875	0.7875	n/a	n/a	0.394
X-X, +D+L+H	2.0	n/a	0.0	1.788	1.788	n/a	n/a	0.894
X-X, +D+Lr+H	2.0	n/a	0.0	0.7875	0.7875	n/a	n/a	0.394
X-X, +D+S+H	2.0	n/a	0.0	0.7875	0.7875	n/a	n/a	0.394
X-X, +D+0.750Lr+0.750L+H	2.0	n/a	0.0	1.538	1.538	n/a	n/a	0.769
X-X, +D+0.750L+0.750S+H	2.0	n/a	0.0	1.538	1.538	n/a	n/a	0.769
X-X, +D+0.60W+H	2.0	n/a	0.0	0.7875	0.7875	n/a	n/a	0.394
X-X, +D+0.70E+H	2.0	n/a	0.0	0.7875	0.7875	n/a	n/a	0.394
X-X, +D+0.750Lr+0.750L+0.450W+H	2.0	n/a	0.0	1.538	1.538	n/a	n/a	0.769
X-X, +D+0.750L+0.750S+0.450W+H	2.0	n/a	0.0	1.538	1.538	n/a	n/a	0.769
X-X, +D+0.750L+0.750S+0.5250E+H	2.0	n/a	0.0	1.538	1.538	n/a	n/a	0.769
X-X, +0.60D+0.60W+0.60H	2.0	n/a	0.0	0.4725	0.4725	n/a	n/a	0.236
X-X, +0.60D+0.70E+0.60H	2.0	n/a	0.0	0.4725	0.4725	n/a	n/a	0.236
Z-Z, +D+H	2.0	0.0	n/a	n/a	n/a	0.7875	0.7875	0.394
Z-Z, +D+L+H	2.0	0.0	n/a	n/a	n/a	1.788	1.788	0.894
Z-Z, +D+Lr+H	2.0	0.0	n/a	n/a	n/a	0.7875	0.7875	0.394
Z-Z, +D+S+H	2.0	0.0	n/a	n/a	n/a	0.7875	0.7875	0.394
Z-Z, +D+0.750Lr+0.750L+H	2.0	0.0	n/a	n/a	n/a	1.538	1.538	0.769
Z-Z, +D+0.750L+0.750S+H	2.0	0.0	n/a	n/a	n/a	1.538	1.538	0.769
Z-Z, +D+0.60W+H	2.0	0.0	n/a	n/a	n/a	0.7875	0.7875	0.394
Z-Z, +D+0.70E+H	2.0	0.0	n/a	n/a	n/a	0.7875	0.7875	0.394
Z-Z, +D+0.750Lr+0.750L+0.450W+H	2.0	0.0	n/a	n/a	n/a	1.538	1.538	0.769
Z-Z, +D+0.750L+0.750S+0.450W+H	2.0	0.0	n/a	n/a	n/a	1.538	1.538	0.769
Z-Z, +D+0.750L+0.750S+0.5250E+H	2.0	0.0	n/a	n/a	n/a	1.538	1.538	0.769
Z-Z, +0.60D+0.60W+0.60H	2.0	0.0	n/a	n/a	n/a	0.4725	0.4725	0.236
Z-Z, +0.60D+0.70E+0.60H	2.0	0.0	n/a	n/a	n/a	0.4725	0.4725	0.236

Overturning Stability

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

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				

General Footing

Description : 3' SQ FTG - max loading

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+1.60H	1.050	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK

General Footing

Description : 3' SQ FTG - max loading

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+1.60H	1.050	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	2.70	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	2.70	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+1.60L+0.50S+1.60H	2.70	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+1.60L+0.50S+1.60H	2.70	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+1.60Lr+0.50L+1.60H	1.463	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+1.60Lr+0.50L+1.60H	1.463	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+1.60Lr+0.50W+1.60H	0.90	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+1.60Lr+0.50W+1.60H	0.90	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+0.50L+1.60S+1.60H	1.463	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+0.50L+1.60S+1.60H	1.463	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+1.60S+0.50W+1.60H	0.90	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+1.60S+0.50W+1.60H	0.90	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+0.50Lr+0.50L+W+1.60H	1.463	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+0.50Lr+0.50L+W+1.60H	1.463	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+0.50L+0.50S+W+1.60H	1.463	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+0.50L+0.50S+W+1.60H	1.463	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+0.50L+0.20S+E+1.60H	1.463	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +1.20D+0.50L+0.20S+E+1.60H	1.463	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +0.90D+W+0.90H	0.6750	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +0.90D+W+0.90H	0.6750	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +0.90D+E+0.90H	0.6750	+Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
X-X, +0.90D+E+0.90H	0.6750	-Z	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.40D+1.60H	1.050	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.40D+1.60H	1.050	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	2.70	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	2.70	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	2.70	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	2.70	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+1.60Lr+0.50L+1.60H	1.463	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+1.60Lr+0.50L+1.60H	1.463	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60H	0.90	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60H	0.90	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+0.50L+1.60S+1.60H	1.463	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+0.50L+1.60S+1.60H	1.463	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+1.60S+0.50W+1.60H	0.90	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+1.60S+0.50W+1.60H	0.90	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+0.50Lr+0.50L+W+1.60H	1.463	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+0.50Lr+0.50L+W+1.60H	1.463	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+0.50L+0.50S+W+1.60H	1.463	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+0.50L+0.50S+W+1.60H	1.463	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+0.50L+0.20S+E+1.60H	1.463	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +1.20D+0.50L+0.20S+E+1.60H	1.463	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +0.90D+W+0.90H	0.6750	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +0.90D+W+0.90H	0.6750	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +0.90D+E+0.90H	0.6750	-X	Bottom	0.216	Min Temp %	0.2667	5.433	OK
Z-Z, +0.90D+E+0.90H	0.6750	+X	Bottom	0.216	Min Temp %	0.2667	5.433	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	10 psi	10 psi	10 psi	10 psi	10 psi	75 psi	0.1333	OK
+1.20D+0.50Lr+1.60L+1.60H	25.714 psi	25.714 psi	25.714 psi	25.714 psi	25.714 psi	75 psi	0.3429	OK
+1.20D+1.60L+0.50S+1.60H	25.714 psi	25.714 psi	25.714 psi	25.714 psi	25.714 psi	75 psi	0.3429	OK
+1.20D+1.60Lr+0.50L+1.60H	13.929 psi	13.929 psi	13.929 psi	13.929 psi	13.929 psi	75 psi	0.1857	OK
+1.20D+1.60Lr+0.50W+1.60H	8.571 psi	8.571 psi	8.571 psi	8.571 psi	8.571 psi	75 psi	0.1143	OK
+1.20D+0.50L+1.60S+1.60H	13.929 psi	13.929 psi	13.929 psi	13.929 psi	13.929 psi	75 psi	0.1857	OK
+1.20D+1.60S+0.50W+1.60H	8.571 psi	8.571 psi	8.571 psi	8.571 psi	8.571 psi	75 psi	0.1143	OK
+1.20D+0.50Lr+0.50L+W+1.60H	13.929 psi	13.929 psi	13.929 psi	13.929 psi	13.929 psi	75 psi	0.1857	OK
+1.20D+0.50L+0.50S+W+1.60H	13.929 psi	13.929 psi	13.929 psi	13.929 psi	13.929 psi	75 psi	0.1857	OK
+1.20D+0.50L+0.20S+E+1.60H	13.929 psi	13.929 psi	13.929 psi	13.929 psi	13.929 psi	75 psi	0.1857	OK
+0.90D+W+0.90H	6.429 psi	6.429 psi	6.429 psi	6.429 psi	6.429 psi	75 psi	0.08571	OK
+0.90D+E+0.90H	6.429 psi	6.429 psi	6.429 psi	6.429 psi	6.429 psi	75 psi	0.08571	OK

General Footing

Description : 3' SQ FTG - max loading

Punching Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	41.143 psi	150 psi	0.2743	OK
+1.20D+0.50Lr+1.60L+1.60H	105.796 psi	150 psi	0.7053	OK
+1.20D+1.60L+0.50S+1.60H	105.796 psi	150 psi	0.7053	OK
+1.20D+1.60Lr+0.50L+1.60H	57.306 psi	150 psi	0.382	OK
+1.20D+1.60Lr+0.50W+1.60H	35.265 psi	150 psi	0.2351	OK
+1.20D+0.50L+1.60S+1.60H	57.306 psi	150 psi	0.382	OK
+1.20D+1.60S+0.50W+1.60H	35.265 psi	150 psi	0.2351	OK
+1.20D+0.50Lr+0.50L+W+1.60H	57.306 psi	150 psi	0.382	OK
+1.20D+0.50L+0.50S+W+1.60H	57.306 psi	150 psi	0.382	OK
+1.20D+0.50L+0.20S+E+1.60H	57.306 psi	150 psi	0.382	OK
+0.90D+W+0.90H	26.449 psi	150 psi	0.1763	OK
+0.90D+E+0.90H	26.449 psi	150 psi	0.1763	OK

General Footing

Description : 4' SQ FTG - max loading

Code References

Calculations per ACI 318-14, IBC 2015, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	40.0	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.50 : 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	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Bearing	=	2.0	ksf
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	=	ft
Allow press. increase per foot of depth	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

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

Dimensions

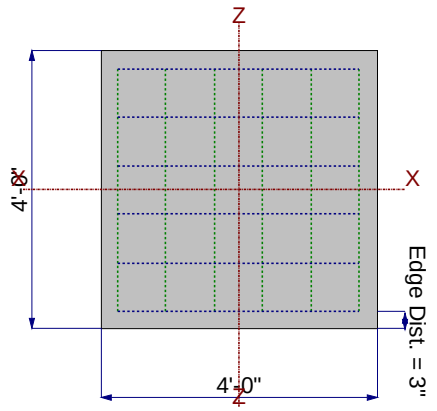
Width parallel to X-X Axis	=	4.0 ft
Length parallel to Z-Z Axis	=	4.0 ft
Footing Thickness	=	12.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in

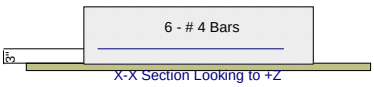
Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0 in

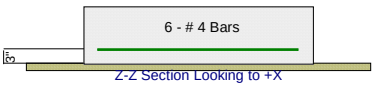


Reinforcing

Bars parallel to X-X Axis			
Number of Bars	=		6.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		6.0
Reinforcing Bar Size	=	#	4



X-X Section Looking to +Z



Z-Z Section Looking to +X

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	=	9.0		7.0	11.0				k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

General Footing

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 60x36x12

Code References

Calculations per ACI 318-14, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	60.0	ksi
Ec : Concrete Elastic Modulus	=	3,155.92	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

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	:	No
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Beari	=	1.50	ksf
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	=	1.0	ft
Allow press. increase per foot of depth	=		ksf
when footing base is below	=		ft

Increases based on footing plan dimension

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

Dimensions

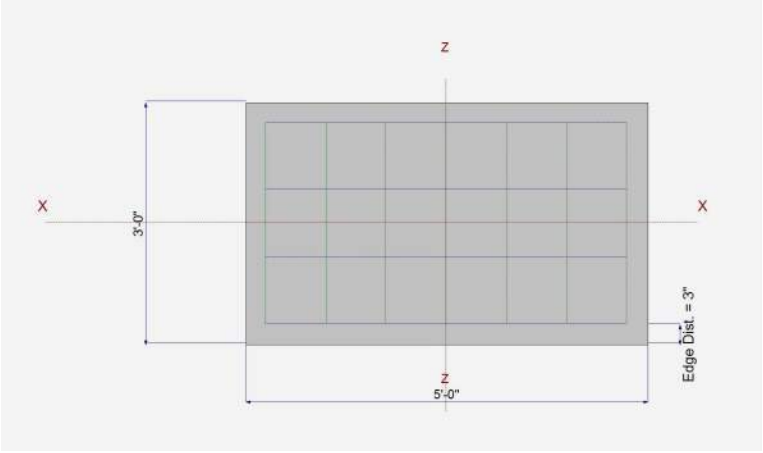
Width parallel to X-X Axis	=	5.0	ft
Length parallel to Z-Z Axis	=	3.0	ft
Footing Thickness	=	12.0	in

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



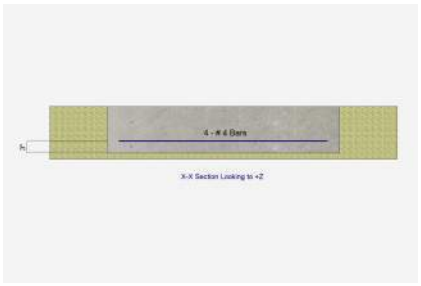
Reinforcing

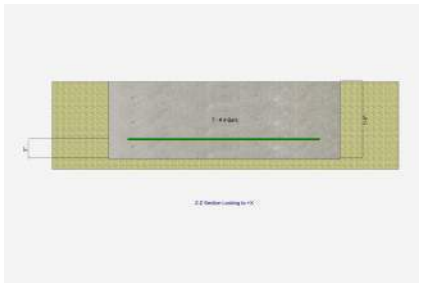
Bars parallel to X-X Axis			
Number of Bars	=		4.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		7.0
Reinforcing Bar Size	=	#	4

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separatio — Bars along Z-Z Axis

# Bars required within zone	75.0 %
# Bars required on each side of zone	25.0 %





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	7.0		6.30					k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

General Footing

Lic. # : KW-06011993 L120 Engineering and Design

DESCRIPTIO 60x36x12

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.5911	Soil Bearing	0.8867 ksf	1.50 ksf	+D+L+H 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	0.3694	Z Flexure (+X)	3.850 k-ft/ft	10.424 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3694	Z Flexure (-X)	3.850 k-ft/ft	10.424 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1269	X Flexure (+Z)	1.386 k-ft/ft	10.925 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1269	X Flexure (-Z)	1.386 k-ft/ft	10.925 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2662	1-way Shear (+X)	19.963 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2662	1-way Shear (-X)	19.963 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1141	1-way Shear (+Z)	8.556 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1141	1-way Shear (-Z)	8.556 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3660	2-way Punching	54.898 psi	150.0 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location Bottom, -Z	Top, +Z	Left, -X	Right, +X	Actual / Allow Ratio
X-X, +D+H	1.50	n/a	0.0	0.4667	0.4667	n/a	n/a	0.311
X-X, +D+L+H	1.50	n/a	0.0	0.8867	0.8867	n/a	n/a	0.591
X-X, +D+Lr+H	1.50	n/a	0.0	0.4667	0.4667	n/a	n/a	0.311
X-X, +D+S+H	1.50	n/a	0.0	0.4667	0.4667	n/a	n/a	0.311
X-X, +D+0.750Lr+0.750L+H	1.50	n/a	0.0	0.7817	0.7817	n/a	n/a	0.521
X-X, +D+0.750L+0.750S+H	1.50	n/a	0.0	0.7817	0.7817	n/a	n/a	0.521
X-X, +D+0.60W+H	1.50	n/a	0.0	0.4667	0.4667	n/a	n/a	0.311
X-X, +D+0.70E+H	1.50	n/a	0.0	0.4667	0.4667	n/a	n/a	0.311
X-X, +D+0.750Lr+0.750L+0.450W	1.50	n/a	0.0	0.7817	0.7817	n/a	n/a	0.521
X-X, +D+0.750L+0.750S+0.450W	1.50	n/a	0.0	0.7817	0.7817	n/a	n/a	0.521
X-X, +D+0.750L+0.750S+0.5250E	1.50	n/a	0.0	0.7817	0.7817	n/a	n/a	0.521
X-X, +0.60D+0.60W+0.60H	1.50	n/a	0.0	0.280	0.280	n/a	n/a	0.187
X-X, +0.60D+0.70E+0.60H	1.50	n/a	0.0	0.280	0.280	n/a	n/a	0.187
Z-Z, +D+H	1.50	0.0	n/a	n/a	n/a	0.4667	0.4667	0.311
Z-Z, +D+L+H	1.50	0.0	n/a	n/a	n/a	0.8867	0.8867	0.591
Z-Z, +D+Lr+H	1.50	0.0	n/a	n/a	n/a	0.4667	0.4667	0.311
Z-Z, +D+S+H	1.50	0.0	n/a	n/a	n/a	0.4667	0.4667	0.311
Z-Z, +D+0.750Lr+0.750L+H	1.50	0.0	n/a	n/a	n/a	0.7817	0.7817	0.521
Z-Z, +D+0.750L+0.750S+H	1.50	0.0	n/a	n/a	n/a	0.7817	0.7817	0.521
Z-Z, +D+0.60W+H	1.50	0.0	n/a	n/a	n/a	0.4667	0.4667	0.311
Z-Z, +D+0.70E+H	1.50	0.0	n/a	n/a	n/a	0.4667	0.4667	0.311
Z-Z, +D+0.750Lr+0.750L+0.450W	1.50	0.0	n/a	n/a	n/a	0.7817	0.7817	0.521
Z-Z, +D+0.750L+0.750S+0.450W	1.50	0.0	n/a	n/a	n/a	0.7817	0.7817	0.521
Z-Z, +D+0.750L+0.750S+0.5250E	1.50	0.0	n/a	n/a	n/a	0.7817	0.7817	0.521
Z-Z, +0.60D+0.60W+0.60H	1.50	0.0	n/a	n/a	n/a	0.280	0.280	0.187
Z-Z, +0.60D+0.70E+0.60H	1.50	0.0	n/a	n/a	n/a	0.280	0.280	0.187

Overturning Stability

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

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				

General Footing

Lic. # : KW-06011993 L120 Engineering and Design

DESCRIPTIO 60x36x12

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+1.60H	0.7350	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.40D+1.60H	0.7350	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	1.386	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	1.386	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+1.60L+0.50S+1.60H	1.386	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+1.60L+0.50S+1.60H	1.386	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+1.60Lr+0.50L+1.60H	0.8663	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+1.60Lr+0.50L+1.60H	0.8663	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+1.60Lr+0.50W+1.60	0.630	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+1.60Lr+0.50W+1.60	0.630	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+0.50L+1.60S+1.60H	0.8663	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+0.50L+1.60S+1.60H	0.8663	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+1.60S+0.50W+1.60H	0.630	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+1.60S+0.50W+1.60H	0.630	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+0.50Lr+0.50L+W+1.	0.8663	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+0.50Lr+0.50L+W+1.	0.8663	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+0.50L+0.50S+W+1.6	0.8663	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+0.50L+0.50S+W+1.6	0.8663	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+0.50L+0.20S+E+1.6	0.8663	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +1.20D+0.50L+0.20S+E+1.6	0.8663	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +0.90D+W+0.90H	0.4725	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +0.90D+W+0.90H	0.4725	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +0.90D+E+0.90H	0.4725	+Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
X-X, +0.90D+E+0.90H	0.4725	-Z	Bottom	0.2592	Min Temp %	0.280	10.925	OK
Z-Z, +1.40D+1.60H	2.042	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.40D+1.60H	2.042	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	3.850	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	3.850	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	3.850	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	3.850	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+1.60Lr+0.50L+1.60H	2.406	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+1.60Lr+0.50L+1.60H	2.406	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60	1.750	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60	1.750	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50L+1.60S+1.60H	2.406	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50L+1.60S+1.60H	2.406	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+1.60S+0.50W+1.60H	1.750	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+1.60S+0.50W+1.60H	1.750	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50Lr+0.50L+W+1.	2.406	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50Lr+0.50L+W+1.	2.406	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50L+0.50S+W+1.6	2.406	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50L+0.50S+W+1.6	2.406	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50L+0.20S+E+1.6	2.406	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50L+0.20S+E+1.6	2.406	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +0.90D+W+0.90H	1.313	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +0.90D+W+0.90H	1.313	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +0.90D+E+0.90H	1.313	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +0.90D+E+0.90H	1.313	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	10.59 psi	10.59 psi	4.54 psi	4.54 psi	10.59 psi	75.00 psi	0.14	OK
+1.20D+0.50Lr+1.60L+1.60H	19.96 psi	19.96 psi	8.56 psi	8.56 psi	19.96 psi	75.00 psi	0.27	OK
+1.20D+1.60L+0.50S+1.60H	19.96 psi	19.96 psi	8.56 psi	8.56 psi	19.96 psi	75.00 psi	0.27	OK
+1.20D+1.60Lr+0.50L+1.60H	12.48 psi	12.48 psi	5.35 psi	5.35 psi	12.48 psi	75.00 psi	0.17	OK
+1.20D+1.60Lr+0.50W+1.60H	9.07 psi	9.07 psi	3.89 psi	3.89 psi	9.07 psi	75.00 psi	0.12	OK
+1.20D+0.50L+1.60S+1.60H	12.48 psi	12.48 psi	5.35 psi	5.35 psi	12.48 psi	75.00 psi	0.17	OK
+1.20D+1.60S+0.50W+1.60H	9.07 psi	9.07 psi	3.89 psi	3.89 psi	9.07 psi	75.00 psi	0.12	OK
+1.20D+0.50Lr+0.50L+W+1.60H	12.48 psi	12.48 psi	5.35 psi	5.35 psi	12.48 psi	75.00 psi	0.17	OK
+1.20D+0.50L+0.50S+W+1.60H	12.48 psi	12.48 psi	5.35 psi	5.35 psi	12.48 psi	75.00 psi	0.17	OK
+1.20D+0.50L+0.20S+E+1.60H	12.48 psi	12.48 psi	5.35 psi	5.35 psi	12.48 psi	75.00 psi	0.17	OK
+0.90D+W+0.90H	6.81 psi	6.81 psi	2.92 psi	2.92 psi	6.81 psi	75.00 psi	0.09	OK

General Footing

Lic. # : KW-06011993 L120 Engineering and Design

DESCRIPTIO 60x36x12

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+0.90D+E+0.90H	6.81 psi	6.81 psi	2.92 psi	2.92 psi	6.81 psi	75.00 psi	0.09	OK
							All units k	

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	29.11 psi	150.00 psi	0.1941	OK
+1.20D+0.50Lr+1.60L+1.60H	54.90 psi	150.00 psi	0.366	OK
+1.20D+1.60L+0.50S+1.60H	54.90 psi	150.00 psi	0.366	OK
+1.20D+1.60Lr+0.50L+1.60H	34.31 psi	150.00 psi	0.2287	OK
+1.20D+1.60Lr+0.50W+1.60H	24.95 psi	150.00 psi	0.1664	OK
+1.20D+0.50L+1.60S+1.60H	34.31 psi	150.00 psi	0.2287	OK
+1.20D+1.60S+0.50W+1.60H	24.95 psi	150.00 psi	0.1664	OK
+1.20D+0.50Lr+0.50L+W+1.60H	34.31 psi	150.00 psi	0.2287	OK
+1.20D+0.50L+0.50S+W+1.60H	34.31 psi	150.00 psi	0.2287	OK
+1.20D+0.50L+0.20S+E+1.60H	34.31 psi	150.00 psi	0.2287	OK
+0.90D+W+0.90H	18.72 psi	150.00 psi	0.1248	OK
+0.90D+E+0.90H	18.72 psi	150.00 psi	0.1248	OK

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 10'6" backfill (2.5 ksi)

Calculations per ACI 318-11, ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10

Criteria

Retained Height	=	10.50 ft
Wall height above s	=	0.50 ft
Slope Behind W	=	0.00 : 1
Height of Soil over T	=	16.00 in
Water height over hee	=	0.0 ft

Vertical component of active
Lateral soil pressure options:
NOTUSED for Soil Pressure.
NOTUSED for Sliding Resistanc
NOTUSED for Overturning Resistanc

Soil Data

Allow Soil Bea	=	2,600.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	30.0 psf/ft
Toe Active Pressure	=	0.0 psf/ft
Passive Pressure	=	350.0 psf/ft
Soil Density, He	=	110.00 pcf
Soil Density, Toe	=	0.00 pcf
Friction Coeff btwn Ftg &	=	0.400
Soil height to ignore for passive pressure	=	12.00 in

Surcharge Loads

Surcharge Over He	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over To	=	0.0 psf
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Loa	=	1,000.0 lbs
Axial Live Loa	=	1,000.0 lbs
Axial Load Eccentric	=	0.0 in

Lateral Load Applied to Stem

Lateral Loa	=	84.0 plf
...Height to To	=	10.50 ft
...Height to Botto	=	0.00 ft
Wind on Exposed Ste	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soi at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.350

Design Summary

Wall Stability Ratios

Overturning	=	1.50	OK
Sliding	=	0.89	OK
Slab Resists All Sliding !			
Total Bearing Loa	=	5,444 lbs	
...resultant ecc	=	11.67 in	
Soil Pressure @ To	=	1,790 psf	OK
Soil Pressure @ He	=	25 psf	OK
Allowable	=	2,600 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	2,280 psf	
ACI Factored @ Heel	=	31 psf	
Footing Shear @ To	=	40.8 psi	OK
Footing Shear @ He	=	17.2 psi	OK
Allowable	=	75.0 psi	

Sliding Calcs Slab Resists All Sliding !

Lateral Sliding For	=	2,865.8 lbs	
less 100% Passive For	= -	777.8 lbs	
less 100% Friction Forc	= -	1,770.0 lbs	
Added Force Req	=	310.3 lbs	NG
....for 1.5 : 1 Stabili	=	1,743.2 lbs	NG

Load Factors

Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Top Stem	2nd	3rd
		Stem OK	Stem OK	Stem OK
Design Height Above	ft =	5.00	2.50	0.00
Wall Material Above "H	=	Concrete	Concrete	Concrete
Thickness	in =	8.00	8.00	8.00
Rebar Size	=	# 4	# 4	# 4
Rebar Spacing	in =	16.00	8.00	4.00
Rebar Placed at	=	Edge	Edge	Edge
Design Data				
fb/FB + fa/Fa	=	**0.635**	**0.852**	**0.928**
Total Force @ Section	lbs =	1,188.0	2,208.0	3,528.0
Moment....Actual	ft-l =	2,601.5	6,784.0	13,891.5
Moment.....Allowable	ft-l =	4,099.3	7,959.6	14,963.4
Shear.....Actual	psi =	19.5	34.8	54.1
Shear.....Allowable	psi =	75.0	75.0	75.0
Wall Weight	psf =	100.0	100.0	100.0
Rebar Depth 'd'	in =	6.25	6.25	6.25
Lap splice if above	in =	18.72	18.72	18.72
Lap splice if below	in =	18.72	18.72	5.04
Hook embed into footing	in =	18.72	18.72	5.04
Concrete Data				
f'c	psi =	2,500.0	2,500.0	2,500.0
Fy	psi =	60,000.0	60,000.0	60,000.0

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 10'6" backfill (2.5 ksi)

Footing Dimensions & Strengths

Toe Width	=	4.08 ft
Heel Width	=	1.92
Total Footing Wid	=	6.00
Footing Thickness	=	12.00 in
Key Width	=	12.00 in
Key Depth	=	0.00 in
Key Distance from Tc	=	2.00 ft

f'c = 2,500 psi Fy = 60,000 psi
Footing Concrete Dens = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	2,280	31	psf
Mu' : Upward	=	14,751	0	ft-lb
Mu' : Downward	=	2,967	1,224	ft-lb
Mu: Design	=	11,784	1,224	ft-lb
Actual 1-Way Shea	=	40.78	17.18	psi
Allow 1-Way Shear	=	75.00	75.00	psi

Toe Reinforcir = # 4 @ 4.00 in
Heel Reinforcir = None Spec'd
Key Reinforcin = None Spec'd

Other Acceptable Sizes & Spacings

Toe: #4@ 7.25 in, #5@ 11.00 in, #6@ 15.75 in, #7@ 21.25 in, #8@ 28.00 in, #9
Heel:Not req'd, Mu < S * Fr
Key:

Summary of Overturning & Resisting Forces & Moments

		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-lb			.....RESISTING..... Force lbs	Distance ft	Moment ft-lb
Heel Active Pressure	=	1,983.8	3.83	7,604.4	Soil Over He	=	1,444.1	5.37	7,762.0
Surcharge over Heel	=				Sloped Soil Over He	=			
Toe Active Pressure	=		0.78		Surcharge Over He	=			
Surcharge Over Tc	=				Adjacent Footing Lo	=			
Adjacent Footing Lo	=				Axial Dead Load on St	=	1,000.0	4.42	4,416.3
Added Lateral Loa	=	882.0	6.25	5,512.5	* Axial Live Load on Stem	=	1,000.0	4.42	4,416.3
Load @ Stem Above S	=				Soil Over Tc	=		2.04	
					Surcharge Over Tc	=			
					Stem Weight(	=	1,100.0	4.42	4,858.0
					Earth @ Stem Transitic	=			
					Footing Weig	=	900.0	3.00	2,700.0
					Key Weigh	=		2.50	
					Vert. Compone	=			
Total	=	2,865.8	**O.T.M.** =	13,116.9	**Total =**		4,444.1 lbs	**R.M.=**	19,736.3

Resisting/Overturning Ratio = **1.50**

ertical Loads used for Soil Pressure = 5,444.1 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 8' backfill (2.5 ksi)

Calculations per ACI 318-11, ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10

Criteria

Retained Height	=	8.00 ft
Wall height above s	=	0.50 ft
Slope Behind W	=	0.00 : 1
Height of Soil over T	=	16.00 in
Water height over hee	=	0.0 ft

Vertical component of active
Lateral soil pressure options:
NOTUSED for Soil Pressure.
NOTUSED for Sliding Resistanc
NOTUSED for Overturning Resistanc

Soil Data

Allow Soil Bea	=	2,600.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	30.0 psf/ft
Toe Active Pressure	=	0.0 psf/ft
Passive Pressure	=	350.0 psf/ft
Soil Density, He	=	110.00 pcf
Soil Density, Toe	=	0.00 pcf
Friction Coeff btwn Ftg &	=	0.400
Soil height to ignore for passive pressure	=	12.00 in

Surcharge Loads

Surcharge Over He	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over To	=	0.0 psf
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Loa	=	900.0 lbs
Axial Live Loa	=	1,500.0 lbs
Axial Load Eccentric	=	0.0 in

Lateral Load Applied to Stem

Lateral Loa	=	64.0 plf
...Height to To	=	8.00 ft
...Height to Botto	=	0.00 ft
Wind on Exposed Ste	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soi at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.350

Design Summary

Wall Stability Ratios

Overturning	=	1.61	OK
Sliding	=	1.26	OK
Slab Resists All Sliding !			
Total Bearing Loa	=	4,987 lbs	
...resultant ecc	=	6.74 in	
Soil Pressure @ To	=	2,106 psf	OK
Soil Pressure @ He	=	242 psf	OK
Allowable	=	2,600 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	2,781 psf	
ACI Factored @ Heel	=	320 psf	
Footing Shear @ To	=	30.2 psi	OK
Footing Shear @ He	=	13.6 psi	OK
Allowable	=	75.0 psi	

Sliding Calcs Slab Resists All Sliding !

Lateral Sliding For	=	1,727.0 lbs	
less 100% Passive For	= -	777.8 lbs	
less 100% Friction Forc	= -	1,390.0 lbs	
Added Force Req	=	0.0 lbs	OK
....for 1.5 : 1 Stabili	=	417.8 lbs	NG

Load Factors

Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Top Stem	2nd
		Stem OK	Stem OK
Design Height Above	ft =	2.17	0.00
Wall Material Above "H	=	Concrete	Concrete
Thickness	in =	8.00	8.00
Rebar Size	=	# 4	# 4
Rebar Spacing	in =	18.00	9.00
Rebar Placed at	=	Edge	Edge
Design Data			
fb/FB + fa/Fa	=	**0.731**	**0.863**
Total Force @ Section	lbs =	1,188.9	2,048.0
Moment....Actual	ft-l =	2,672.9	6,144.0
Moment.....Allowable	ft-l =	3,655.6	7,122.4
Shear.....Actual	psi =	18.8	31.4
Shear.....Allowable	psi =	75.0	75.0
Wall Weight	psf =	100.0	100.0
Rebar Depth 'd'	in =	6.25	6.25
Lap splice if above	in =	18.72	18.72
Lap splice if below	in =	18.72	5.04
Hook embed into footing	in =	18.72	5.04
Concrete Data			
f'c	psi =	2,500.0	2,500.0
Fy	psi =	60,000.0	60,000.0

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 L120 Engineering and Design

DESCRIPTIO 8' backfill (2.5 ksi)

Footing Dimensions & Strengths

Toe Width	=	2.33 ft
Heel Width	=	1.92
Total Footing Wid	=	4.25
Footing Thickness	=	12.00 in
Key Width	=	12.00 in
Key Depth	=	0.00 in
Key Distance from Tc	=	2.00 ft

f'c = 2,500 psi Fy = 60,000 psi
Footing Concrete Dens = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	2,781	320	psf
Mu' : Upward	=	6,327	0	ft-lb
Mu' : Downward	=	966	966	ft-lb
Mu: Design	=	5,361	966	ft-lb
Actual 1-Way Shea	=	30.15	13.56	psi
Allow 1-Way Shear	=	75.00	75.00	psi

Toe Reinforcir = # 4 @ 9.00 in
Heel Reinforcir = None Spec'd
Key Reinforcin = None Spec'd

Other Acceptable Sizes & Spacings

Toe: #4@ 12.75 in, #5@ 19.75 in, #6@ 28.00 in, #7@ 38.00 in, #8@ 48.25 in, #
Heel:Not req'd, Mu < S * Fr
Key:

Summary of Overturning & Resisting Forces & Moments

		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-lb			.....RESISTING..... Force lbs	Distance ft	Moment ft-lb
Item									
Heel Active Pressure	=	1,215.0	3.00	3,645.0	Soil Over He	=	1,100.3	3.62	3,985.1
Surcharge over Heel	=				Sloped Soil Over He	=			
Toe Active Pressure	=		0.78		Surcharge Over He	=			
Surcharge Over Tc	=				Adjacent Footing Lo	=			
Adjacent Footing Lo	=				Axial Dead Load on St	=	900.0	2.66	2,397.0
Added Lateral Loa	=	512.0	5.00	2,560.0	* Axial Live Load on Stem	=	1,500.0	2.66	3,995.0
Load @ Stem Above S	=				Soil Over Tc	=		1.17	
					Surcharge Over Tc	=			
					Stem Weight(	=	850.0	2.66	2,263.8
					Earth @ Stem Transitic	=			
					Footing Weig	=	637.1	2.12	1,352.8
					Key Weigh	=		2.50	
					Vert. Compone	=			
Total	=	1,727.0	**O.T.M.** =	6,205.0	**Total =**		3,487.3 lbs	**R.M.=**	9,998.7

Resisting/Overturning Ratio = **1.61**

ertical Loads used for Soil Pressure = 4,987.3 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 6' backfill (2.5ksi)

Calculations per ACI 318-11, ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10

Criteria

Retained Height	=	6.00 ft
Wall height above s	=	0.50 ft
Slope Behind W	=	0.00 : 1
Height of Soil over T	=	16.00 in
Water height over hee	=	0.0 ft

Vertical component of active
Lateral soil pressure options:
NOTUSED for Soil Pressure.
NOTUSED for Sliding Resistanc
NOTUSED for Overturning Resistanc

Soil Data

Allow Soil Bea	=	2,600.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	30.0 psf/ft
Toe Active Pressure	=	0.0 psf/ft
Passive Pressure	=	350.0 psf/ft
Soil Density, He	=	110.00 pcf
Soil Density, Toe	=	0.00 pcf
Friction Coeff btwn Ftg &	=	0.400
Soil height to ignore for passive pressure	=	12.00 in

Surcharge Loads

Surcharge Over He	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over To	=	0.0 psf
Used for Sliding & Overturning		

Lateral Load Applied to Stem

Lateral Loa	=	48.0 plf
...Height to To	=	6.00 ft
...Height to Botto	=	0.00 ft
Wind on Exposed Ste	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soi at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.350

Axial Load Applied to Stem

Axial Dead Loa	=	900.0 lbs
Axial Live Loa	=	1,500.0 lbs
Axial Load Eccentric	=	0.0 in

Design Summary

Wall Stability Ratios

Overturning	=	2.15	OK
Sliding	=	1.87	OK
Slab Resists All Sliding !			
Total Bearing Loa	=	4,350 lbs	
...resultant ecc	=	3.99 in	
Soil Pressure @ To	=	1,953 psf	OK
Soil Pressure @ He	=	535 psf	OK
Allowable	=	2,600 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	2,613 psf	
ACI Factored @ Heel	=	715 psf	
Footing Shear @ To	=	16.8 psi	OK
Footing Shear @ He	=	10.7 psi	OK
Allowable	=	75.0 psi	

Sliding Calcs Slab Resists All Sliding !

Lateral Sliding For	=	1,023.0 lbs
less 100% Passive For	= -	777.8 lbs
less 100% Friction Forc	= -	1,130.0 lbs
Added Force Req	=	0.0 lbs OK
....for 1.5 : 1 Stabili	=	0.0 lbs OK

Load Factors

Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

Top Stem

Stem OK

Design Height Above	ft =	0.50	
Wall Material Above "H	=	Concrete	
Thickness	in =	8.00	
Rebar Size	=	# 4	
Rebar Spacing	in =	18.00	
Rebar Placed at	=	Edge	

Design Data

fb/FB + fa/Fa	=	**0.563**
Total Force @ Section	lbs =	990.0
Moment....Actual	ft-l =	2,057.0
Moment.....Allowable	ft-l =	3,655.6
Shear.....Actual	psi =	13.2
Shear.....Allowable	psi =	75.0
Wall Weight	psf =	100.0
Rebar Depth 'd'	in =	6.25
Lap splice if above	in =	18.72
Lap splice if below	in =	8.40
Hook embed into footing	in =	8.40

Concrete Data

f'c	psi =	2,500.0
Fy	psi =	

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 6' backfill (2.5ksi)

Footing Dimensions & Strengths

Toe Width	=	1.58 ft
Heel Width	=	1.92
Total Footing Wid	=	3.50
Footing Thickness	=	12.00 in
Key Width	=	11.00 in
Key Depth	=	0.00 in
Key Distance from Tc	=	2.00 ft

f'c = 2,500 psi Fy = 60,000 psi

Footing Concrete Dens	=	150.00 pcf
Min. As %	=	0.0018

Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	2,613	715	psf
Mu' : Upward	=	0	0	ft-lb
Mu' : Downward	=	0	760	ft-lb
Mu: Design	=	2,057	760	ft-lb
Actual 1-Way Shea	=	16.77	10.66	psi
Allow 1-Way Shear	=	75.00	75.00	psi

Toe Reinforcir = # 4 @ 15.00 in
Heel Reinforcir = None Spec'd
Key Reinforcin = None Spec'd

Other Acceptable Sizes & Spacings

Toe: Not req'd, Mu < S * Fr
Heel:Not req'd, Mu < S * Fr
Key:

Summary of Overturning & Resisting Forces & Moments

	.....OVERTURNING..... Force lbs	Distance ft	Moment ft-lb		.....RESISTING..... Force lbs	Distance ft	Moment ft-lb
Heel Active Pressure =	735.0	2.33	1,715.0	Soil Over He =	825.2	2.87	2,369.9
Surcharge over Heel =				Sloped Soil Over H =			
Toe Active Pressure =		0.78		Surcharge Over He =			
Surcharge Over Tc =				Adjacent Footing Lo =			
Adjacent Footing Lo =				Axial Dead Load on St =	900.0	1.91	1,722.0
Added Lateral Loa =	288.0	4.00	1,152.0	* Axial Live Load on Stem =	1,500.0	1.91	2,870.0
Load @ Stem Above S =				Soil Over Tc =		0.79	
				Surcharge Over Tc =			
				Stem Weight(=	600.0	1.91	1,148.0
				Earth @ Stem Transitic =			
				Footing Weig =	524.6	1.75	917.2
				Key Weigh =		2.46	
				Vert. Compone =			
Total =	1,023.0	**O.T.M.** =	2,867.0	**Total =**	2,849.8 lbs	**R.M.=**	6,157.1

Resisting/Overturning Ratio = **2.15**

ertical Loads used for Soil Pressure = 4,349.8 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 4' backfill (2.5 ksi)

Calculations per ACI 318-11, ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10

Criteria

Retained Height	=	4.00 ft
Wall height above s	=	0.50 ft
Slope Behind W	=	0.00 : 1
Height of Soil over T	=	16.00 in
Water height over hee	=	0.0 ft

Vertical component of active
Lateral soil pressure options:
NOTUSED for Soil Pressure.
NOTUSED for Sliding Resistanc
NOTUSED for Overturning Resistanc

Soil Data

Allow Soil Bea	=	2,600.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	30.0 psf/ft
Toe Active Pressure	=	0.0 psf/ft
Passive Pressure	=	350.0 psf/ft
Soil Density, He	=	110.00 pcf
Soil Density, Toe	=	0.00 pcf
Friction Coeff btwn Ftg &	=	0.400
Soil height to ignore for passive pressure	=	12.00 in

Surcharge Loads

Surcharge Over He	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over To	=	0.0 psf
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Loa	=	900.0 lbs
Axial Live Loa	=	1,500.0 lbs
Axial Load Eccentric	=	0.0 in

Lateral Load Applied to Stem

Lateral Loa	=	32.0 plf
...Height to To	=	4.00 ft
...Height to Botto	=	0.00 ft
Wind on Exposed Ste	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soi at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Design Summary

Wall Stability Ratios

Overturning	=	2.95	OK
Sliding	=	3.24	OK
Slab Resists All Sliding !			
Total Bearing Loa	=	3,628 lbs	
...resultant ecc	=	2.28 in	
Soil Pressure @ To	=	2,113 psf	OK
Soil Pressure @ He	=	789 psf	OK
Allowable	=	2,600 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	2,886 psf	
ACI Factored @ Heel	=	1,078 psf	
Footing Shear @ To	=	4.9 psi	OK
Footing Shear @ He	=	5.7 psi	OK
Allowable	=	75.0 psi	

Sliding Calcs Slab Resists All Sliding !

Lateral Sliding For	=	503.0 lbs	
less 100% Passive For	= -	777.8 lbs	
less 100% Friction Forc	= -	850.0 lbs	
Added Force Req	=	0.0 lbs	OK
....for 1.5 : 1 Stabili	=	0.0 lbs	OK

Load Factors

Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

Top Stem

Stem OK

Design Height Above	ft =	0.00	
Wall Material Above "H	=	Concrete	
Thickness	in =	8.00	
Rebar Size	=	# 4	
Rebar Spacing	in =	18.00	
Rebar Placed at	=	Edge	

Design Data

fb/FB + fa/Fa	=	**0.210**
Total Force @ Section	lbs =	512.0
Moment....Actual	ft-l =	768.0
Moment.....Allowable	ft-l =	3,655.6
Shear.....Actual	psi =	6.8
Shear.....Allowable	psi =	75.0
Wall Weight	psf =	100.0
Rebar Depth 'd'	in =	6.25
Lap splice if above	in =	18.72
Lap splice if below	in =	8.40
Hook embed into footing	in =	8.40

Concrete Data

f'c	psi =	2,500.0
Fy	psi =	

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 4' backfill (2.5 ksi)

Footing Dimensions & Strengths

Toe Width	=	0.92 ft
Heel Width	=	1.58
Total Footing Wid	=	2.50
Footing Thickness	=	12.00 in
Key Width	=	11.00 in
Key Depth	=	0.00 in
Key Distance from Tc	=	2.00 ft

f'c = 2,500 psi Fy = 60,000 psi

Footing Concrete Dens	=	150.00 pcf
Min. As %	=	0.0018

Cover @ Top 2.00 @ Btm = 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	2,886	1,078	psf
Mu' : Upward	=	0	0	ft-lb
Mu' : Downward	=	0	297	ft-lb
Mu: Design	=	768	297	ft-lb
Actual 1-Way Shea	=	4.89	5.69	psi
Allow 1-Way Shear	=	75.00	75.00	psi

Toe Reinforcir = # 4 @ 18.00 in
Heel Reinforcir = None Spec'd
Key Reinforcin = None Spec'd

Other Acceptable Sizes & Spacings

Toe: Not req'd, Mu < S * Fr
Heel:Not req'd, Mu < S * Fr
Key:

Summary of Overturning & Resisting Forces & Moments

		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-lb			.....RESISTING..... Force lbs	Distance ft	Moment ft-lb
Heel Active Pressure	=	375.0	1.67	625.0	Soil Over He	=	403.3	2.04	823.5
Surcharge over Heel	=				Sloped Soil Over He	=			
Toe Active Pressure	=		0.78		Surcharge Over He	=			
Surcharge Over Tc	=				Adjacent Footing Lo	=			
Adjacent Footing Lo	=				Axial Dead Load on St	=	900.0	1.25	1,125.0
Added Lateral Loa	=	128.0	3.00	384.0	* Axial Live Load on Stem	=	1,500.0	1.25	1,875.0
Load @ Stem Above S	=				Soil Over Tc	=		0.46	
					Surcharge Over Tc	=			
					Stem Weight(	=	450.0	1.25	562.5
					Earth @ Stem Transitic	=			
					Footing Weig	=	375.0	1.25	468.7
					Key Weigh	=		2.46	
					Vert. Compone	=			
Total	=	503.0	**O.T.M.** =	1,009.0	**Total =**		2,128.3 lbs	**R.M.=**	2,979.7

Resisting/Overturning Ratio = **2.95**

ertical Loads used for Soil Pressure = 3,628.3 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 1'6" backfill (2.5 ksi)

Calculations per ACI 318-11, ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10

Criteria

Retained Height	=	1.50 ft
Wall height above s	=	0.50 ft
Slope Behind W	=	0.00 : 1
Height of Soil over T	=	16.00 in
Water height over hee	=	0.0 ft

Vertical component of active
Lateral soil pressure options:
NOTUSED for Soil Pressure.
NOTUSED for Sliding Resistanc
NOTUSED for Overturning Resistanc

Soil Data

Allow Soil Bea	=	2,600.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	30.0 psf/ft
Toe Active Pressure	=	0.0 psf/ft
Passive Pressure	=	350.0 psf/ft
Soil Density, He	=	110.00 pcf
Soil Density, Toe	=	0.00 pcf
Friction Coeff btwn Ftg &	=	0.400
Soil height to ignore for passive pressure	=	12.00 in

Surcharge Loads

Surcharge Over He	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over To	=	0.0 psf
Used for Sliding & Overturning		

Lateral Load Applied to Stem

Lateral Loa	=	0.0 plf
...Height to To	=	0.00 ft
...Height to Botto	=	0.00 ft
Wind on Exposed Ste	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soi at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.350

Axial Load Applied to Stem

Axial Dead Loa	=	1,500.0 lbs
Axial Live Loa	=	2,000.0 lbs
Axial Load Eccentric	=	0.0 in

Design Summary

Wall Stability Ratios

Overturning	=	26.88	OK
Sliding	=	17.67	OK
Slab Resists All Sliding !			
Total Bearing Loa	=	3,991 lbs	
...resultant ecc	=	0.05 in	
Soil Pressure @ To	=	2,428 psf	OK
Soil Pressure @ He	=	2,361 psf	OK
Allowable	=	2,600 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	3,400 psf	
ACI Factored @ Heel	=	3,307 psf	
Footing Shear @ To	=	0.0 psi	OK
Footing Shear @ He	=	1.9 psi	OK
Allowable	=	82.2 psi	

Sliding Calcs Slab Resists All Sliding !

Lateral Sliding For	=	81.7 lbs	
less 100% Passive For	= -	646.5 lbs	
less 100% Friction Forc	= -	796.8 lbs	
Added Force Req	=	0.0 lbs	OK
....for 1.5 : 1 Stabili	=	0.0 lbs	OK

Load Factors

Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

Top Stem

Stem OK

Design Height Above	ft =	0.00	
Wall Material Above "H	=	Concrete	
Thickness	in =	8.00	
Rebar Size	=	# 4	
Rebar Spacing	in =	18.00	
Rebar Placed at	=	User Spec	

Design Data

fb/FB + fa/Fa	=	**0.012**
Total Force @ Section	lbs =	54.0
Moment....Actual	ft-l =	27.0
Moment.....Allowable	ft-l =	2,305.6
Shear.....Actual	psi =	1.1
Shear.....Allowable	psi =	75.0
Wall Weight	psf =	100.0
Rebar Depth 'd'	in =	4.00
Lap splice if above	in =	18.72
Lap splice if below	in =	6.00
Hook embed into footing	in =	6.00

Concrete Data

f'c	psi =	2,500.0
Fy	psi =	

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 1'6" backfill (2.5 ksi)

Footing Dimensions & Strengths

Toe Width	=	0.50 ft
Heel Width	=	1.17
Total Footing Wid	=	1.67
Footing Thickness	=	10.00 in
Key Width	=	11.00 in
Key Depth	=	0.00 in
Key Distance from Tc	=	2.00 ft

f'c = 3,000 psi Fy = 60,000 psi
Footing Concrete Dens = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	3,400	3,307	psf
Mu' : Upward	=	0	0	ft-lb
Mu' : Downward	=	0	0	ft-lb
Mu: Design	=	27	27	ft-lb
Actual 1-Way Shea	=	0.00	1.93	psi
Allow 1-Way Shear	=	82.16	82.16	psi
Toe Reinforcir	=	None Spec'd		
Heel Reinforcir	=	None Spec'd		
Key Reinforcin	=	None Spec'd		

Other Acceptable Sizes & Spacings
Toe: Not req'd, Mu < S * Fr
Heel:Not req'd, Mu < S * Fr
Key:

Summary of Overturning & Resisting Forces & Moments

		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-lb			.....RESISTING..... Force lbs	Distance ft	Moment ft-lb
Heel Active Pressure	=	81.7	0.78	63.5	Soil Over He	=	82.5	1.42	116.9
Surcharge over Heel	=				Sloped Soil Over He	=			
Toe Active Pressure	=		0.72		Surcharge Over He	=			
Surcharge Over Tc	=				Adjacent Footing Lo	=			
Adjacent Footing Lo	=				Axial Dead Load on St	=	1,500.0	0.83	1,250.0
Added Lateral Loa	=				* Axial Live Load on Stem	=	2,000.0	0.83	1,666.7
Load @ Stem Above S	=				Soil Over Tc	=		0.25	
					Surcharge Over Tc	=			
					Stem Weight(	=	200.0	0.83	166.7
					Earth @ Stem Transitic	=			
					Footing Weig	=	208.3	0.83	173.6
					Key Weigh	=		2.46	
					Vert. Compone	=			
Total	=	81.7	**O.T.M.** =	63.5	**Total =**		1,990.8 lbs	**R.M.=**	1,707.2

Resisting/Overturning Ratio = **26.88**
ertical Loads used for Soil Pressure = 3,990.8 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 4' backfill (2.5 ksi) (no slab)

Calculations per ACI 318-11, ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10

Criteria

Retained Height	=	4.75 ft
Wall height above s	=	0.50 ft
Slope Behind W	=	0.00 : 1
Height of Soil over T	=	9.00 in
Water height over hee	=	0.0 ft

Vertical component of active
Lateral soil pressure options:
USED for Soil Pressure.
USED for Sliding Resistanc
USED for Overturning Resistanc

Soil Data

Allow Soil Bea	=	2,600.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	30.0 psf/ft
Toe Active Pressure	=	0.0 psf/ft
Passive Pressure	=	350.0 psf/ft
Soil Density, He	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Friction Coeff btwn Ftg &	=	0.400
Soil height to ignore for passive pressure	=	12.00 in

Surcharge Loads

Surcharge Over He	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over To	=	0.0 psf
Used for Sliding & Overturning		

Lateral Load Applied to Stem

Lateral Loa	=	32.0 plf
...Height to To	=	4.00 ft
...Height to Botto	=	0.00 ft
Wind on Exposed Ste	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Line Load
Base Above/Below Soi at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Axial Load Applied to Stem

Axial Dead Loa	=	0.0 lbs
Axial Live Loa	=	0.0 lbs
Axial Load Eccentric	=	0.0 in

Design Summary

Wall Stability Ratios

Overturning	=	1.72	OK
Sliding	=	1.57	OK
Total Bearing Loa	=	1,386 lbs	
...resultant ecc	=	7.68 in	
Soil Pressure @ To	=	1,513 psf	OK
Soil Pressure @ He	=	0 psf	OK
Allowable	=	2,600 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	1,816 psf	
ACI Factored @ Heel	=	0 psf	
Footing Shear @ To	=	9.2 psi	OK
Footing Shear @ He	=	9.0 psi	OK
Allowable	=	82.2 psi	

Sliding Calcs (Vertical Component Used)

Lateral Sliding For	=	581.8 lbs	
less 100% Passive For	= -	360.9 lbs	
less 100% Friction Forc	= -	550.6 lbs	
Added Force Req	=	0.0 lbs	OK
....for 1.5 : 1 Stabili	=	0.0 lbs	OK

Load Factors

Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

Top Stem

Stem OK

Design Height Above	ft =	0.00	
Wall Material Above "H	=	Concrete	
Thickness	in =	8.00	
Rebar Size	=	# 4	
Rebar Spacing	in =	18.00	
Rebar Placed at	=	Edge	

Design Data

fb/FB + fa/Fa	=	**0.453**
Total Force @ Section	lbs =	669.5
Moment....Actual	ft-l =	1,113.4
Moment.....Allowable	ft-l =	2,458.0
Shear.....Actual	psi =	8.9
Shear.....Allowable	psi =	75.0
Wall Weight	psf =	100.0
Rebar Depth 'd'	in =	6.25
Lap splice if above	in =	12.48
Lap splice if below	in =	6.00
Hook embed into footing	in =	6.00

Concrete Data

f'c	psi =	2,500.0
Fy	psi =	

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 4' backfill (2.5 ksi) (no slab)

Footing Dimensions & Strengths

Toe Width	=	0.92 ft
Heel Width	=	1.58
Total Footing Wid	=	2.50
Footing Thickness	=	9.00 in
Key Width	=	8.00 in
Key Depth	=	3.00 in
Key Distance from Tc	=	0.00 ft

f'c = 3,000 psi Fy = 40,000 psi

Footing Concrete Dens	=	150.00 pcf
Min. As %	=	0.0018

Cover @ Top 2.00 @ Btm = 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	1,816	0	psf
Mu' : Upward	=	637	0	ft-lb
Mu' : Downward	=	98	321	ft-lb
Mu: Design	=	538	321	ft-lb
Actual 1-Way Shea	=	9.19	8.96	psi
Allow 1-Way Shear	=	82.16	82.16	psi

Toe Reinforcir	=	# 4 @ 18.00 in
Heel Reinforcir	=	None Spec'd
Key Reinforcin	=	None Spec'd

Other Acceptable Sizes & Spacings

Toe: Not req'd, Mu < S * Fr
Heel:Not req'd, Mu < S * Fr
Key: Not req'd, Mu < S * Fr

Summary of Overturning & Resisting Forces & Moments

		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-lb			.....RESISTING..... Force lbs	Distance ft	Moment ft-lb
Heel Active Pressure	=	453.8	1.83	831.9	Soil Over He	=	479.3	2.04	979.0
Surcharge over Heel	=				Sloped Soil Over He	=			
Toe Active Pressure	=		0.50		Surcharge Over He	=			
Surcharge Over Tc	=				Adjacent Footing Lo	=			
Adjacent Footing Lo	=				Axial Dead Load on St	=			
Added Lateral Loa	=	128.0	2.75	352.0	* Axial Live Load on Stem	=			
Load @ Stem Above S	=				Soil Over Tc	=	75.7	0.46	34.7
					Surcharge Over Tc	=			
					Stem Weight(	=	525.0	1.25	656.6
					Earth @ Stem Transitic	=			
Total	=	581.8	**O.T.M.** =	1,183.9	Footing Weig	=	281.4	1.25	351.9
					Key Weigh	=	25.0	0.33	8.3
					Vert. Compone	=		2.50	
					Total =		1,386.4 lbs	**R.M.=**	2,030.5

Resisting/Overturning Ratio = **1.72**

ertical Loads used for Soil Pressure = 1,386.4 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 8' backfill (2.5 ksi) site-retaining

Calculations per ACI 318-11, ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10

Criteria

Retained Height	=	8.00 ft
Wall height above s	=	0.50 ft
Slope Behind W	=	0.00 : 1
Height of Soil over T	=	6.00 in
Water height over hee	=	0.0 ft

Vertical component of active
Lateral soil pressure options:
NOTUSED for Soil Pressure.
NOTUSED for Sliding Resistanc
NOTUSED for Overturning Resistanc

Soil Data

Allow Soil Bea	=	2,600.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	30.0 psf/ft
Toe Active Pressure	=	0.0 psf/ft
Passive Pressure	=	350.0 psf/ft
Soil Density, He	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Friction Coeff btwn Ftg &	=	0.400
Soil height to ignore for passive pressure	=	12.00 in

Surcharge Loads

Surcharge Over He	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over To	=	0.0 psf
Used for Sliding & Overturning		

Lateral Load Applied to Stem

Lateral Loa	=	64.0 plf
...Height to To	=	8.00 ft
...Height to Botto	=	0.00 ft
Wind on Exposed Ste	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Line Load
Base Above/Below Soi at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.350

Axial Load Applied to Stem

Axial Dead Loa	=	900.0 lbs
Axial Live Loa	=	1,500.0 lbs
Axial Load Eccentrici	=	0.0 in

Design Summary

Wall Stability Ratios

Overturning	=	1.64	OK
Sliding	=	1.53	OK
Total Bearing Loa	=	5,240 lbs	
...resultant ecc	=	7.21 in	
Soil Pressure @ To	=	2,281 psf	OK
Soil Pressure @ He	=	187 psf	OK
Allowable	=	2,600 psf	

Soil Pressure Less Than Allowable

ACI Factored @ Toe	=	2,999 psf	
ACI Factored @ Heel	=	245 psf	
Footing Shear @ To	=	35.1 psi	OK
Footing Shear @ He	=	13.6 psi	OK
Allowable	=	75.0 psi	

Sliding Calcs (Vertical Component NOT Used)

Lateral Sliding For	=	1,727.0 lbs
less 100% Passive For	= -	1,148.4 lbs
less 100% Friction Forc	= -	1,496.0 lbs
Added Force Req	=	0.0 lbs OK
....for 1.5 : 1 Stabili	=	0.0 lbs OK

Load Factors

Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

		Top Stem	2nd
		Stem OK	Stem OK
Design Height Above	ft =	2.17	0.00
Wall Material Above "H	=	Concrete	Concrete
Thickness	in =	8.00	8.00
Rebar Size	=	# 4	# 4
Rebar Spacing	in =	18.00	9.00
Rebar Placed at	=	Edge	Edge
Design Data			
fb/FB + fa/Fa	=	**0.731**	**0.863**
Total Force @ Section	lbs =	1,188.9	2,048.0
Moment....Actual	ft-l =	2,672.9	6,144.0
Moment.....Allowable	ft-l =	3,655.6	7,122.4
Shear.....Actual	psi =	18.8	31.4
Shear.....Allowable	psi =	75.0	75.0
Wall Weight	psf =	100.0	100.0
Rebar Depth 'd'	in =	6.25	6.25
Lap splice if above	in =	18.72	18.72
Lap splice if below	in =	18.72	5.04
Hook embed into footing	in =	18.72	5.04
Concrete Data			
f'c	psi =	2,500.0	2,500.0
Fy	psi =	60,000.0	60,000.0

Project Title:
Engineer:
Project ID:
Project Descr:

Cantilevered Retaining Wall

Lic. # : KW-06011993 — L120 Engineering and Design

DESCRIPTIO 8' backfill (2.5 ksi) site-retaining

Footing Dimensions & Strengths

Toe Width	=	2.33 ft
Heel Width	=	1.92
Total Footing Wid	=	4.25
Footing Thickness	=	12.00 in
Key Width	=	8.00 in
Key Depth	=	15.00 in
Key Distance from Tc	=	0.00 ft

f'c = 2,500 psi Fy = 60,000 psi
Footing Concrete Dens = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel
Factored Pressure	=	2,999	245 psf
Mu' : Upward	=	6,773	0 ft-lb
Mu' : Downward	=	668	966 ft-lb
Mu: Design	=	6,105	966 ft-lb
Actual 1-Way Shea	=	35.06	13.56 psi
Allow 1-Way Shear	=	75.00	75.00 psi

Toe Reinforcir = # 4 @ 9.00 in
Heel Reinforcir = None Spec'd
Key Reinforcin = None Spec'd

Other Acceptable Sizes & Spacings

Toe: #4@ 11.25 in, #5@ 17.25 in, #6@ 24.50 in, #7@ 33.25 in, #8@ 43.75 in, #
Heel:Not req'd, Mu < S * Fr
Key: #4@ 22.25 in, #5@ 34.50 in, #6@ 48.25 in, #7@ 48.25 in,

Summary of Overturning & Resisting Forces & Moments

		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-lb			.....RESISTING..... Force lbs	Distance ft	Moment ft-lb
Heel Active Pressure	=	1,215.0	3.00	3,645.0	Soil Over He	=	1,100.3	3.62	3,985.1
Surcharge over Heel	=				Sloped Soil Over He	=			
Toe Active Pressure	=		0.50		Surcharge Over He	=			
Surcharge Over Tc	=				Adjacent Footing Lo	=			
Adjacent Footing Lo	=				Axial Dead Load on St	=	900.0	2.66	2,397.0
Added Lateral Loa	=	512.0	5.00	2,560.0	* Axial Live Load on Stem	=	1,500.0	2.66	3,995.0
Load @ Stem Above S	=				Soil Over Tc	=	128.2	1.17	149.3
					Surcharge Over Tc	=			
					Stem Weight(	=	850.0	2.66	2,263.8
					Earth @ Stem Transitic	=			
					Footing Weig	=	637.1	2.12	1,352.8
					Key Weigh	=	125.0	0.33	41.7
					Vert. Compone	=			
Total	=	1,727.0	**O.T.M.** =	6,205.0	**Total =**		3,740.5 lbs	**R.M.=**	10,189.6

Resisting/Overturning Ratio = **1.64**
ertical Loads used for Soil Pressure = 5,240.5 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

LONGITUDE
ONE TWENTY°
ENGINEERING & DESIGN

LATERAL CALCULATIONS

SHEAR-WALL REFERENCE PER PLAN

L120 ENGINEERING & DESIGN, LLC
(206) 790 9502
L120Engineering.com

Hazards by Location

Search Information

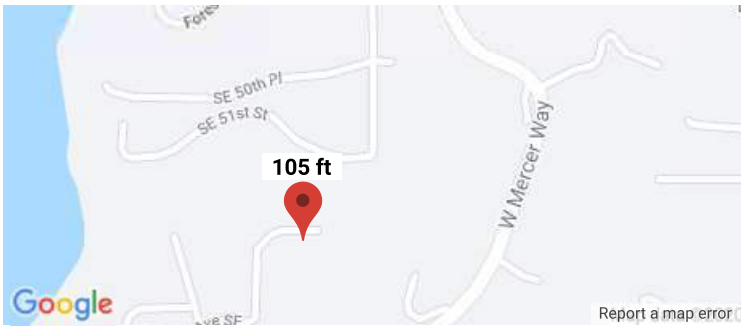
Address: 5202 Forest Ave SE, Mercer Island, WA 98040, USA

Coordinates: 47.55627369999999, -122.227956

Elevation: 105 ft

Timestamp: 2020-05-13T03:15:44.525Z

Hazard Type: Wind



ASCE 7-16

MRI 10-Year	67 mph
MRI 25-Year	73 mph
MRI 50-Year	78 mph
MRI 100-Year	83 mph
Risk Category I	92 mph
Risk Category II	97 mph
Risk Category III	104 mph
Risk Category IV	108 mph

ASCE 7-10

MRI 10-Year	72 mph
MRI 25-Year	79 mph
MRI 50-Year	85 mph
MRI 100-Year	91 mph
Risk Category I	100 mph
Risk Category II	110 mph
Risk Category III-IV	115 mph

ASCE 7-05

ASCE 7-05 Wind Speed	85 mph

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

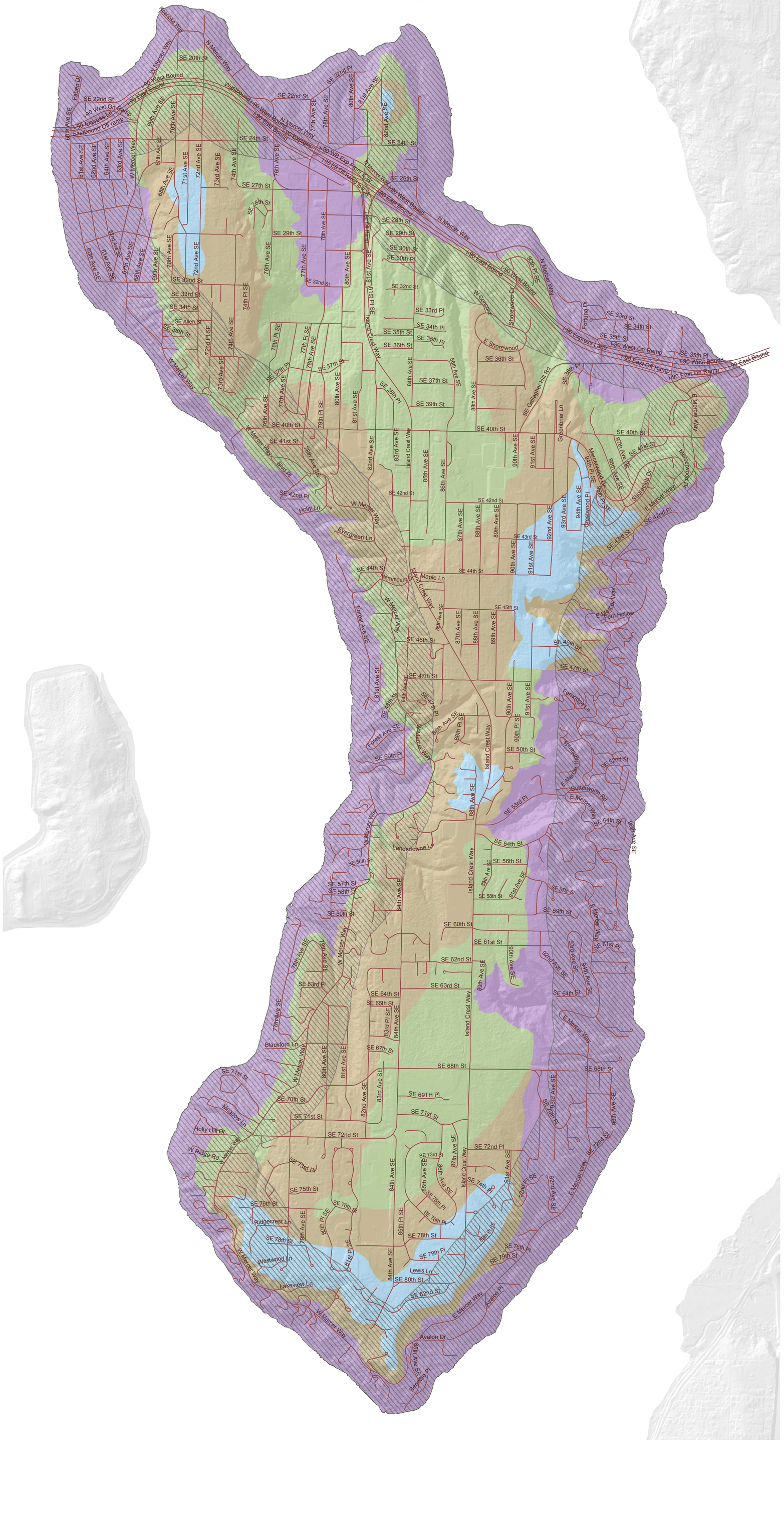
Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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

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

0 0.5 1 Kilometers 1:12,000
0 0.5 1 Miles

T N



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 Kzt factor to be utilized for each specific project. The Kzt 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 Kzt 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	
	$K_zt = 1.0$
	$K_zt = 1.3$
	$K_zt = 1.6$
	$K_zt = 1.9$

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 indentified 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.

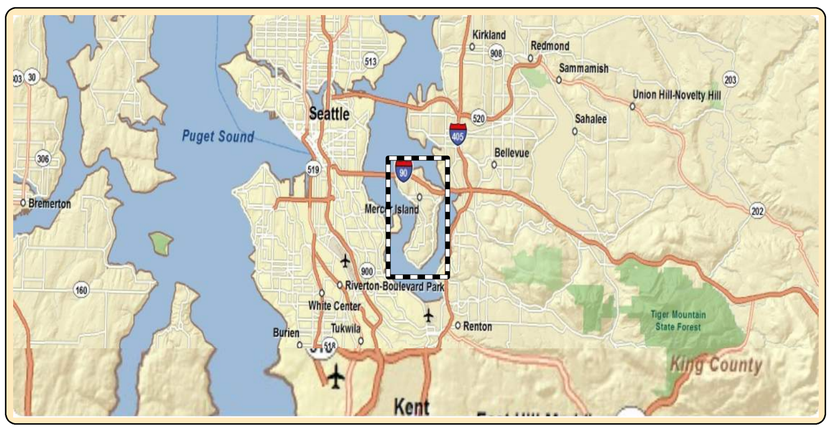
DEFINITIONS:

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.

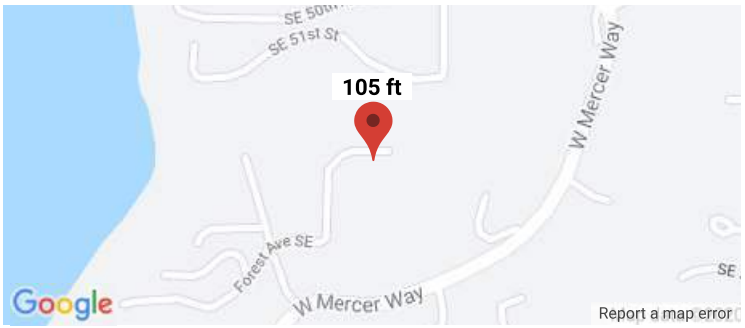
Exposure C: The wind exposure category that applies where the site in question is located within 1500 feet from the shoreline per IBC 2006 section 1609.4.3.

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



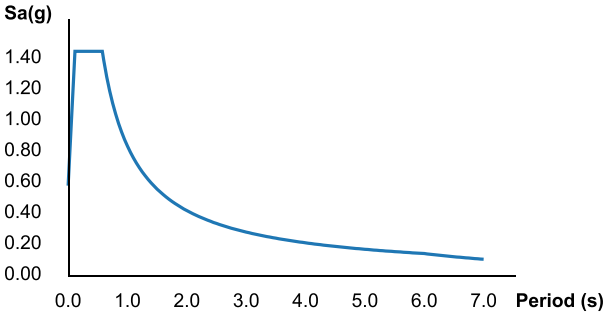
Hazards by Location

Search Information

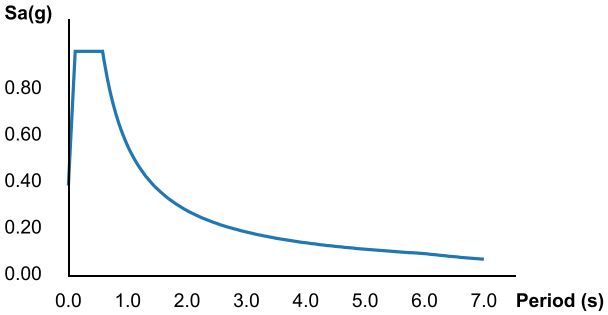


Address:	5202 Forest Ave SE, Mercer Island, WA 98040, USA
Coordinates:	47.55627369999999, -122.227956
Elevation:	105 ft
Timestamp:	2020-05-13T03:17:16.759Z
Hazard Type:	Seismic
Reference Document:	ASCE7-10
Risk Category:	II
Site Class:	D

MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	1.444	MCE_R ground motion (period=0.2s)
S_1	0.554	MCE_R ground motion (period=1.0s)
S_{MS}	1.444	Site-modified spectral acceleration value
S_{M1}	0.832	Site-modified spectral acceleration value
S_{DS}	0.962	Numeric seismic design value at 0.2s SA
S_{D1}	0.554	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	D	Seismic design category
F_a	1	Site amplification factor at 0.2s
F_v	1.5	Site amplification factor at 1.0s
CR_S	0.95	Coefficient of risk (0.2s)
CR_1	0.928	Coefficient of risk (1.0s)
PGA	0.599	MCE_G peak ground acceleration
F_{PGA}	1	Site amplification factor at PGA
PGA_M	0.599	Site modified peak ground acceleration
T_L	6	Long-period transition period (s)
SsRT	1.444	Probabilistic risk-targeted ground motion (0.2s)

SsUH	1.52	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	3.484	Factored deterministic acceleration value (0.2s)
S1RT	0.554	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.597	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	1.307	Factored deterministic acceleration value (1.0s)
PGAd	1.344	Factored deterministic acceleration value (PGA)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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Project Number:	Plan:	Sheet Number:
xxx	**Forest Ave Lot 3**	**L1**
Engineer:	**Specifics:**	**Date**
xxx	**WIND FORCES**	**5/12/2021**

IBC 2015 Section 1609 → ASCE 7-10 Section 28.6 - Simplified Procedure → Main Wind-Force Resisting System

LOAD CRITERIA:

Basic Wind Speed, V_s =	110 mph	(ASCE 7-10, Section 26.5 page 246)
Exposure =	C	(ASCE 7-10, Section 26.7 page 246)

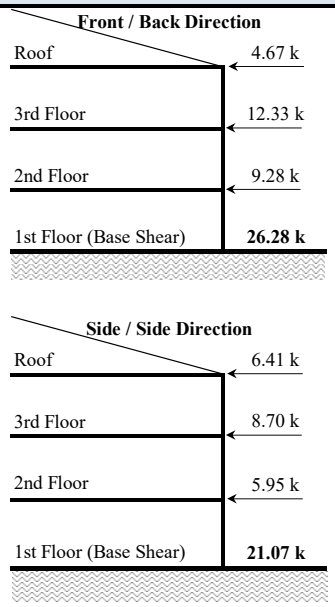
BUILDING GEOMETRY:

Roof Slope =	2.00 :12	=	9.46	degrees
Loads From Front/Back - Width (ft)=	68 ft		Roof:	Hip
Loads From Side - Width (ft) =	40 ft		Roof:	Gable
Average Eave Height =	27 ft			
Mean Roof Ht. , h =	29.00 ft		(ASCE 7-10, Figure 27.6-2 page 275)	
Edge Strip Width, a =	4 ft		(ASCE 7-10, Figure 28.6-1 page 303)	
End Zone Width, 2a =	8.00 ft		(ASCE 7-10, Figure 28.6-1 page 303)	

DESIGN:

Topographic Factor , Kzt =	1.00	(ASCE 7-10, Section 26.8, page 251)
Adjustment Factor, λ =	1.40	(ASCE 7-10, Figure 28.6-1, page 305)

WIND LOAD SUMMARY:

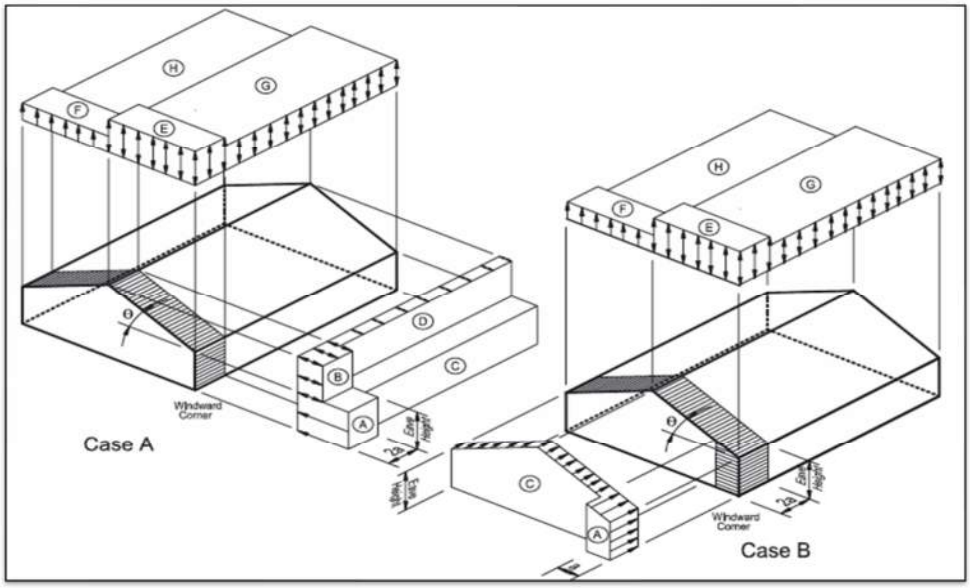


SIMPLIFIED DESIGN WIND PRESSURE, P_{S30} (psf)

(Exposure B at h = 30ft.)

Basic Wind Speed, Vs (mph)	Roof Angle (Degrees)	Load Case	ZONES*									
			Horizontal Pressure				Vertical Presssure				Overhang	
			A	B	C	D	E	F	G	H	E_{OH}	G_{OH}
110	9.46	A	21.34	-9.11	14.22	-5.28	-23.10	-13.99	-16.00	-10.72	-32.30	-25.30

* *Values Interpolated from Figure 28.6-1 ASCE 7 - 10 p. 303 to 305*



Project Number:	Plan:	Sheet Number:
xxx	**Forest Ave Lot 3**	**L1**
Engineer:	Specifics:	Date
xxx	**WIND FORCES**	**5/12/2021**

IBC 2015 Section 1609 → ASCE 7-10 Section 28.6 - Simplified Procedure → Main Wind-Force Resisting System

HORIZONTAL LOADS (psf) $p_s = \lambda * Kzt * Ps30$				**MIN. LOADS (psf)** *Per ASCE 7-10, 28.6.3*	
End zone		Interior zone		Roof	Wall
A (Wall)	B (Roof)	C (Wall)	D (Roof)		
29.88	-12.75	19.90	-7.39	8.0	16.0

ASD WIND FORCES: FRONT / BACK LOADING DIRECTION

	Location	Width (ft)	Height (ft)	Plane	End Zone Length (ft)	End Zone Pressure (W) (psf)	Interior zone Length (ft)	Interior zone Pressure (W) (psf)	Force 0.6 ω*W (kips)	Min Force 0.6 ω*W (kips)
ROOF	Height" of Roof to Plate (see note)	68.0	3.00	(roof)	8.0	-12.75	60.0	-7.39	0.00	1.27
	Plate to Mid 3rd LVL	68.0	4.00	(wall)	8.0	29.88	60.0	19.90	4.47	3.39
								Σ =	4.47	4.67
3rd FLOOR	Mid 3rd LVL to Floor	68.0	4.00	(wall)	8.0	29.88	60.0	19.90	4.47	3.39
	ght" Low-Roof to Plate (see note)	20.0	0.00	(roof)	8.0	-12.75	12.0	-7.39	0.00	0.00
	Floor to Mid 2nd LVL	88.0	5.50	(wall)	8.0	29.88	80.0	19.90	7.86	6.04
								Σ =	12.33	9.43
2nd FLOOR	Mid 2nd LVL to Floor	88.0	5.50	(wall)	8.0	29.88	80.0	19.90	7.86	6.04
	ght" Low-Roof to Plate (see note)	0.0	0.00	(roof)	8.0	-12.75	-8.0	-7.39	0.00	0.00
	Floor to Mid 1st LVL	88.0	1.00	(wall)	8.0	29.88	80.0	19.90	1.43	1.10
								Σ =	9.28	7.14
								Total Wind Base Shear (kips)	26.09	21.24

ASD WIND FORCES: SIDE / SIDE LOADING DIRECTION

	Location	Width (ft)	Height (ft)	Plane	End Zone Length (ft)	End Zone Pressure (W) (psf)	Interior zone Length (ft)	Interior zone Pressure (W) (psf)	Force 0.6 ω*W kips	Min Force 0.6 ω*W kips
ROOF	Height" of Roof to Plate (see note)	55.0	3.00	(roof)	8.0	29.88	47.0	19.90	2.75	1.03
	Plate to Mid 3rd LVL	55.0	4.00	(wall)	8.0	29.88	47.0	19.90	3.66	2.75
								Σ =	6.41	3.78
3rd FLOOR	Mid 3rd LVL to Floor	55.0	4.00	(wall)	8.0	29.88	47.0	19.90	3.66	2.75
	ght" Low-Roof to Plate (see note)	0.0	0.00	(roof)	8.0	29.88	-8.0	19.90	0.00	0.00
	Floor to Mid 2nd LVL	55.0	5.50	(wall)	8.0	29.88	47.0	19.90	5.04	3.78
								Σ =	8.70	6.52
2nd FLOOR	Mid 2nd LVL to Floor	55.0	5.50	(wall)	8.0	29.88	47.0	19.90	5.04	3.78
	ght" Low-Roof to Plate (see note)	0.0	0.00	(roof)	8.0	29.88	-8.0	19.90	0.00	0.00
	Floor to Mid 1st LVL	55.0	1.00	(wall)	8.0	29.88	47.0	19.90	0.92	0.69
								Σ =	5.95	4.46
								Total Wind Base Shear (kips)	21.07	14.76

Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 3**	**L2**
Engineer:	Specifics:	Date:
xxx	**SEISMIC WEIGHTS**	**5/12/2021**

Unit Weights (psf)

Roof:	15	psf	Seismic Weights include: (REF §12.7)
Floor:	12	psf	25% of storage Live loads
Exterior Wall:	12	psf	Actual partition weight or 10 psf min if applicable
Interior Wall:	8	psf	Operating weight of permenant equipment
			20% of uniform design snow loads for areas where Pf > 30 psf

LEVEL	ITEM	AREA / LENGTH	HEIGHT (ft)	UNIT WEIGH (psf)		Item Total Weight. (lbs)	Level Sub- (kips)	Average Pressure (psf)
ROOF								
	Roof	3,400	1.03	15	=	52,781		
	Ext. Wall Below	250	4.00	12	=	12,000		
	Corridor Wall Below	300	4.00	8	=	9,600		
							74	**22**
3rd FLOOR								
	3rd Floor	2,600	1.00	12	=	31,200		
	Low Roof	600	1.03	15	=	9,314		
	Ext. Wall Above	250	4.00	12	=	12,000		
	Corridor Wall Above	300	4.00	8	=	9,600		
	Ext. Wall Below	220	4.50	12	=	11,880		
	Corridor Wall Below	200	4.50	8	=	7,200		
							81	**25**
2nd FLOOR								
	2nd Floor	200	1.00	12	=	2,400		
	Low Roof	0	1.03	15	=	0		
	Ext. Wall Above	220	4.50	12	=	11,880		
	Corridor Wall Above	200	4.50	8	=	7,200		
	Ext. Wall Below	100	4.50	12	=	5,400		
	Corridor Wall Below	0	4.50	8	=	0		
							27	**134**
1st FLOOR								
	Ext. Wall Above	100	4.50	12	=	5,400		
	Corridor Wall Above	0	4.50	8	=	0		
							5	

STRUCTURE WEIGHT FOR SEISMIC BASE SHEAR: 182 kips

TOTAL WEIGHT OF STRUCTURE: 188 kips
(Includes Basement Dead Load)

Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 3**	**L3**
Engineer:	**Specifics:**	**Date:**
xxx	**SEISMIC FORCES**	**5/12/2021**

Equivelant Lateral Force Analysis per IBC 2015 1613.1 →ASCE 7-10 Table 12.6-1 →Sec 12.8

Data generated by: Seismic Design Values for Buildin **"Java Ground Motion Parameter Calculation"**

S_1 =	0.554		Maps
S_{DS} =	0.962		(ASCE 7 EQ 11.4.-3)
S_{D1} =	0.554		(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 =	30.0	ft	
Building Period Coefficient, C_T =	0.020		(ASCE 7 Table 12.8.-2)
Approx. Fundamental Period, T_a =	0.256	$(C_T*(h_n^{0.75})$	(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 =	0.148		(ASCE 7 EQ 12.8.-2)

Seismic Response Coefficient, Maximum

$C_{s,\,MAX} = S_{D1}/(T*R/I)$	$C_{s,\,MAX}$ =	0.332	$T \le T_L$	(ASCE 7 EQ 12.8.-3)
$C_{s,\,MAX} = S_{D1}\,T_L/(T^2*R/$	$C_{s,\,MAX}$ =	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 S1 > 0.6	(ASCE 7 EQ 12.8.-6)

C_s =	**0.148**		
Dead Load W =	182	kips	
V = Cs W =	27.0	kips	(ASCE 7 EQ 12.8.-1)
Q_E = V =	27.0	kips	(ASCE 7 EQ 12.4-3)
ρ =	1.3		(ASCE 7 12.3.4.2)
$E_H = \rho\,Q_E$ =	35.1	kips	(ASCE 7 EQ 12.4-3)
$Ev = .2\,S_{DS}\,D$ =	0.19 x D	kips	

Factor for Alternate Basic Load conbinations - 2015 IBC 1605.3.2

$E_H/1.4$ =	**25.1**	**kips**	IBC 2015 1605.3.2
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 Cvx	Story Force Fx (kips)	Factored Story Force (ASD) Fx ρ/1.4 = E_H/1.4 (kips)
Roof	3,400	10.00	21.50	74	1,599	0.62	16.9	**15.7**
3rd	2,600	10.50	11.50	81	934	0.36	9.8	**9.1**
2nd	200	1.00	1.00	27	27	0.01	0.3	**0.3**
			Sum =	2,560	1.000	27.0	**25.1**	

ASD DIAPHRAGM FORCES

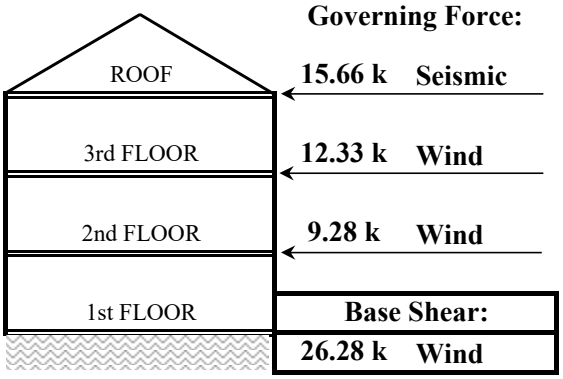
Floor	Design Shear Vi = Σfx (kips)	Fpx Min $0.2S_{DS}I_e w_{px}$ (kips)	Fpx Max $0.4S_{DS}I_e w_{px}$ (kips)	Fpx (kips)
Roof	15.66	13.02	26.05	15.66
3rd	24.81	14.22	28.43	12.95
2nd	25.07	4.71	9.41	3.69

Fpx DIAPHRAGM	
(kips)	(psf)
15.66	4.6
14.22	5.5
4.71	23.5

Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 3**	L4
Engineer:	**Specifics:**	**Date:**
xxx	**DESIGN LOADS**	5/12/2021

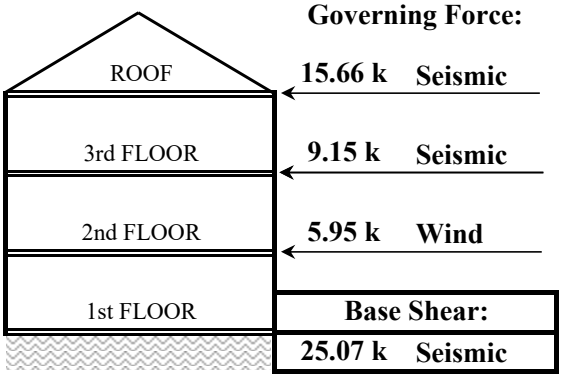
FRONT / BACK DIRECTION

Wind Force $0.6\,\omega * W_{F/B}$ (kips)		Seismic Force $E/1.4$ (kips)	
Per Level	Sum	Per Level	Sum
4.67		15.66	
12.33	4.67	9.15	15.66
9.28	17.00	0.26	24.81
	26.28		25.07



SIDE / SIDE DIRECTION

Wind Force $0.6\,\omega * W_{S}$ (kips)		Seismic Force $E/1.4$ (kips)	
Per Level	Sum	Per Level	Sum
6.41		15.66	
8.70	6.41	9.15	15.66
5.95	15.12	0.26	24.81
	21.07		25.07



Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 3**	**L5**
Engineer:	Specifics:	Date:
xxx	**Shear walls**	**5/12/2021**

Notes:

* All walls designed with Force-Transfer should meet a minimum height to width ratio of 2:1 at Pier (SDPWS 2015, Table 4.3.4 p.25)
* Maximum allowed height to width ratio 3.5:1 for walls w/o openings (increased shear design values per SDPWS 2015, Table 4.3.4 p.25)
* Shear panel height is height to underside or roof or floor framing.

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

3rd Story Walls (Front - Back Direction)

Temporary Shoring shear (kips) 60%

100% story shear YES

Stud Species: HF

Gyp capacity = (PLF) 60.00

Story shear(kips) = 15.66
Story height (ft) = 9.08
Shear Panel height (ft) = 8.08
Total Diaphragm width (ft) = 68.00

Governing Force (F/B Direction) = Seismic
Dead load factor (F/B Direction) = 0.90 IBC 2015 Equation 16-22
Shear panel capacity (Wind or Seismic) = Seismic
load balance check = OK

3rd 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. Width (ft)	Percent Sharing (%)	Effective Trib. Width	Story V(kips)	Sum V(kips)	Panel Shear (plf)	Height/Width Reduction (%) R = 2*L/H	Design Panel Shear (plf)	Wall Type	Roof 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
3	1.1	13.75	9.00	5.00	2.00	1.08	4.75	20.00	0.30	5.94	1.37	1.37	288	1.00	288	SW4	2.00	0.13	0.13	12.4	10.8	0.12	flr-flr	HF	Edge	No HD	1.91	CS14
3	1.2	22.75	11.50	5.00	2.00	1.08	11.25	20.00	0.70	14.06	3.24	3.24	288	1.00	288	SW4	2.00	0.13	0.13	29.4	29.6	-0.01	flr-flr	HF	Edge	No HD	1.91	CS14
3	2.1	16.50	0.00	0.00	0.00	0.00	16.50	25.00	0.48	11.96	2.75	2.75	167	1.00	167	SW6	2.00	0.13	0.13	25.0	15.6	0.59	flr-beam	HF	Edge	No HD	0.00	No strap
3	2.2	18.00	0.00	0.00	0.00	0.00	18.00	25.00	0.52	13.04	3.00	3.00	167	1.00	167	SW6	2.00	0.13	0.13	27.3	18.5	0.50	flr-flr	HF	Edge	No HD	0.00	No strap
3	3.1	11.50	0.00	0.00	0.00	0.00	11.50	14.00	1.00	14.00	3.23	3.23	280	1.00	280	SW4	2.00	0.13	0.13	29.3	7.6	1.98	flr-flr	HF	Edge	MST37	0.00	No strap
3	4.1	5.00	0.00	0.00	0.00	0.00	5.00	9.00	0.40	3.60	0.83	0.83	WSW24X20															
3	4.2	3.75	0.00	0.00	0.00	0.00	3.75	9.00	0.30	2.70	0.62	0.62	166	0.93	179	SW6	2.00	0.13	0.13	5.6	0.8	1.49	flr-flr	HF	Edge	MST37	0.00	No strap
3	4.3	3.75	0.00	0.00	0.00	0.00	3.75	9.00	0.30	2.70	0.62	0.62	166	0.93	179	SW6	2.00	0.13	0.13	5.6	0.8	1.49	flr-flr	HF	Edge	MST37	0.00	No strap

Total Length GYP required in F/B direction to resist 100% lateral forces (ft) (including discounted capacity accounted for by OSB) **Not required**

S = 95.00 | Total OSB wall length = (feet) 74.50 | S = 68.00 | 15.66 | **15.66** | OK | Total OSB Capacity (kips) 15.66

2nd Story Walls (Front - Back Direction)

Shear panel capacity (Wind or Seismic) = Seismic

Story shear(kips) = 9.15
Story height (ft) = 10.08
Shear Panel height (ft) = 9.08
Total Diaphragm width (ft) = 88.00

Accumulated Shear = 24.81
load balance check = OK

2nd 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. Width (ft)	Percent Sharing (%)	Effective Trib. Width	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
2	0.1	7.50	0.00	0.00	0.00	0.00	7.50	14.00	1.00	14.00	1.46	1.46	194	1.00	194	SW6	2.00	0.13	NO	0.13	14.7	3.4	1.61	flr-conc	HF	Edge	STHD14	0.00	No strap
2	1.1	13.00	0.00	0.00	0.00	0.00	13.00	17.00	0.65	11.05	1.15	2.52	194	1.00	194	SW6	2.00	0.13	NO	0.13	25.4	10.1	1.22	flr-beam	HF	Edge	MSTC48B3	0.00	No strap
2	1.2	3.50	0.00	0.00	0.00	0.00	3.50	17.00	0.18	2.98	0.31	1.93	551	0.87	636	2W4	2.00	0.13	NO	0.13	19.4	0.7	6.24	flr-conc	HF	Edge	HDU8	0.00	No strap
2	1.3	3.50	0.00	0.00	0.00	0.00	3.50	17.00	0.18	2.98	0.31	1.93	551	0.87	636	2W4	14.00	0.28	NO	0.28	19.4	1.5	5.97	flr-conc	HF	Edge	HDU8	0.00	No strap
2	2.1	4.50	0.00	0.00	0.00	0.00	4.50	16.00	1.00	16.00	1.66	1.66	370	1.00	370	SW3	14.00	0.28	NO	0.28	16.8	2.5	3.56	flr-conc	HF	Edge	HDU5	0.00	No strap
2	3.1	3.00	0.00	0.00	0.00	0.00	3.00	12.00	0.27	3.20	0.33	1.87	623	0.74	839	2W3	2.00	0.13	NO	0.13	18.8	0.5	7.32	flr-conc	HF	Edge	HDU11	0.00	No strap
2	3.2	5.25	0.00	0.00	0.00	0.00	5.25	12.00	0.47	5.60	0.58	3.27	623	1.00	623	2W4	2.00	0.13	NO	0.13	33.0	1.6	6.59	flr-conc	HF	Edge	HDU11	0.00	No strap
2	3.3	3.00	0.00	0.00	0.00	0.00	3.00	12.00	0.27	3.20	0.33	1.87	WSW24X10																
2	4.1	9.25	0.00	0.00	0.00	0.00	9.25	14.00	0.52	7.30	0.76	3.98	431	1.00	431	SW3	2.00	0.13	NO	0.13	40.2	5.1	4.00	flr-conc	HF	Edge	HDU5	0.00	No strap
2	4.2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	1.00	0.00	0.00	0.83	WSW24X20																
2	4.3	3.00	0.00	0.00	0.00	0.00	3.00	14.00	0.17	2.37	0.25	0.25	82	0.74	110	SW6	2.00	0.13	NO	0.13	2.5	0.5	0.78	flr-conc	HF	Edge	STHD14	0.00	No strap
2	4.4	5.50	0.00	0.00	0.00	0.00	5.50	14.00	0.31	4.34	0.45	0.45	82	1.00	82	SW6	2.00	0.13	NO	0.13	4.5	1.8	0.55	flr-conc	HF	Edge	STHD14	0.00	No strap
2	5.1	3.00	0.00	0.00	0.00	0.00	3.00	15.00	1.00	15.00	1.56	2.80	WSW24X10																

Total Length GYP required in F/B direction to resist 100% lateral forces (ft) (including discounted capacity accounted for by OSB) **Not required**

S = 69.00 | Total OSB wall length = (feet) 69.00 | S = 88.00 | 9.15 | **24.81** | OK | Total OSB Capacity (kips) 9.15

1st Story Walls (Front - Back Direction)

Shear panel capacity (Wind or Seismic) = Seismic

Story shear(kips) = 1.47
Story height (ft) = 10.08
Shear Panel height (ft) = 9.08
Total Diaphragm width (ft) = 88.00

Accumulated Shear = 26.28
load balance check = Warning-Wall loads do not match story shear

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. Width (ft)	Percent Sharing (%)	Effective Trib. Width	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

Note: all first story/basement walls are concrete retaining walls

Total Length GYP required in F/B direction to resist 100% lateral forces (ft) (including discounted capacity accounted for by OSB) **Not required**

S = 0.00 | Total OSB wall length = (feet) 0.00 | S = 0.00 | 0.00 | **0.00** | Warning- | Total OSB Capacity (kips) 1.47

Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 3**	**L6**
Engineer:	**Specifics:**	**Date:**
xxx	**Shear walls**	**5/12/2021**

Notes:

* All walls designed with Force-Transfer should meet a minimum height to width ratio of 2:1 at Pier (SDPWS 2015, Table 4.3.4 p.25)
* Maximum allowed height to width ratio 3.5:1 for walls w/o openings (increased shear design values per SDPWS 2015, Table 4.3.4 p.25)
* Shear panel height is height to underside or roof or floor framing.

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

3rd Story Walls (Side / Side Direction)

3rd Story Walls (Side / Side Direction)
Hold downs and window straps

Story shear(kips) = 15.66 | **Temporary Shoring shear (kips) 60%** | **Governing Force (F/B Direction) =** Seismic | Stud Species HF
Story height (ft) = 9.08 | **Dead load factor (F/B Direction) =** 0.90 | IBC 2015 Equation 16-22 | **Gyp capacity =** 60.00 (PLF)
Shear Panel height (ft) = 8.08 | **100% story shear** YES | **Shear panel capacity (Wind or Seismic) =** Seismic
Total Diaphragm width (ft) = 55.00 | load balance check = OK

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. Width (ft)	Percent Sharing (%)	Effective Trib. Width	Story V(kips)	Sum V(kips)	Panel Shear (plf)	Height/Width Reduction (%) R = 2*L/H	Design Panel Shear (plf)	Wall Type	Roof 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
3	A.1	18.50	0.00	0.00	0.00	0.00	18.50	9.00	0.47	4.24	1.21	1.21	65	1.00	65	SW6	2.00	0.13	0.13	11.0	19.6	-0.48	flr-flr	HF	Edge	No HD	0.00	No strap
3	A.2	6.75	0.00	0.00	0.00	0.00	6.75	9.00	0.17	1.55	0.44	0.44	65	1.00	65	SW6	2.00	0.13	0.13	4.0	2.6	0.22	flr-flr	HF	Edge	No HD	0.00	No strap
3	A.3	14.00	0.00	0.00	0.00	0.00	14.00	9.00	0.36	3.21	0.91	0.91	65	1.00	65	SW6	2.00	0.13	0.13	8.3	11.2	-0.21	flr-flr	HF	Edge	No HD	0.00	No strap
3	B.1	7.00	0.00	0.00	0.00	0.00	7.00	17.00	0.18	3.01	0.86	0.86	123	1.00	123	SW6	10.00	0.25	0.25	7.8	5.4	0.36	flr-flr	HF	Edge	No HD	0.00	No strap
3	B.2	13.00	0.00	0.00	0.00	0.00	13.00	17.00	0.33	5.59	1.59	1.59	123	1.00	123	SW6	10.00	0.25	0.25	14.5	18.8	-0.34	flr-flr	HF	Edge	No HD	0.00	No strap
3	B.3	7.00	0.00	0.00	0.00	0.00	7.00	17.00	0.18	3.01	0.86	0.86	123	1.00	123	SW6	10.00	0.25	0.25	7.8	5.4	0.36	flr-flr	HF	Edge	No HD	0.00	No strap
3	B.4	12.50	0.00	0.00	0.00	0.00	12.50	17.00	0.32	5.38	1.53	1.53	123	1.00	123	SW6	10.00	0.25	0.25	13.9	17.4	-0.29	flr-flr	HF	Edge	No HD	0.00	No strap
3	C.1	17.50	0.00	0.00	0.00	0.00	17.50	19.00	1.00	19.00	5.41	5.41	309	1.00	309	SW4	2.00	0.13	0.13	49.1	17.5	1.86	flr-flr	HF	Edge	MST37	0.00	No strap
3	D.1	12.75	0.00	0.00	0.00	0.00	12.75	10.00	0.47	4.72	1.34	1.34	105	1.00	105	SW6	2.00	0.13	0.13	12.2	9.3	0.24	flr-flr	HF	Edge	No HD	0.00	No strap
3	D.2	3.75	0.00	0.00	0.00	0.00	3.75	10.00	0.14	1.39	0.40	0.40	105	0.93	114	SW6	2.00	0.13	0.13	3.6	0.8	0.86	flr-flr	HF	Edge	MST37	0.00	No strap
3	D.3	3.75	0.00	0.00	0.00	0.00	3.75	10.00	0.14	1.39	0.40	0.40	105	0.93	114	SW6	2.00	0.13	0.13	3.6	0.8	0.86	flr-flr	HF	Edge	MST37	0.00	No strap
3	D.4	10.75	4.00	5.00	2.00	1.08	6.75	10.00	0.25	2.50	0.71	0.71	105	1.00	105	SW6	2.00	0.13	0.13	6.5	6.6	-0.01	flr-flr	HF	Edge	No HD	0.70	CS16

Total Length GYP required in F/B direction to resist 100% lateral forces (ft) | **Not required**
(including discounted capacity accounted for by OSB)

S = 127.25 | Total OSB wall length = (feet) 123.25 | S = 55.00 | 15.66 | **15.66** | OK | Total OSB Capacity (kips) | **15.66**

2nd Story Walls (Side / Side Direction)

2nd Story Walls (Side / Side Direction)
Hold downs and window straps

Shear panel capacity (Wind or Seismic) = Seismic

Story shear(kips) = 9.15 | **Accumulated Shear =** 24.81
Story height (ft) = 10.08 | load balance check = OK
Shear Panel height (ft) = 9.08
Total Diaphragm width (ft) = 55.00

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. Width (ft)	Percent Sharing (%)	Effective Trib. Width	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
2	A.1	7.75	0.00	0.00	0.00	0.00	7.75	9.00	0.43	3.88	0.64	1.35	175	1.00	175	SW6	2.00	0.13	NO	0.13	13.7	3.6	1.39	flr-conc	HF	Edge	STHD14	0.00	No strap
2	A.2	10.25	0.00	0.00	0.00	0.00	10.25	9.00	0.57	5.13	0.85	1.79	175	1.00	175	SW6	2.00	0.13	NO	0.13	18.1	6.3	1.21	flr-conc	HF	Edge	STHD14	0.00	No strap
2	A.3	14.25	0.00	0.00	0.00	0.00	14.25	0.00	0.00	0.00	0.00	0.91	64	1.00	64	SW6	2.00	0.13	NO	0.13	9.2	12.1	-0.21	flr-conc	HF	Edge	No HD	0.00	No strap
2	B.1	8.25	0.00	0.00	0.00	0.00	8.25	19.00	0.45	8.59	1.43	3.62	438	1.00	438	SW3	2.00	0.13	NO	0.13	36.5	4.1	4.18	flr-beam	HF	Edge	(2) MSCTC66B3	0.00	No strap
2	B.2	4.00	0.00	0.00	0.00	0.00	4.00	19.00	0.22	4.16	0.69	1.75	438	0.99	443	SW3	2.00	0.13	NO	0.13	17.7	1.0	4.78	flr-conc	HF	Edge	HDU8	0.00	No strap
2	B.3	6.00	0.00	0.00	0.00	0.00	6.00	19.00	0.33	6.25	1.04	2.63	438	1.00	438	SW3	2.00	0.13	NO	0.13	26.5	2.2	4.43	flr-conc	HF	Edge	HDU8	0.00	No strap
2	C.1	3.50	0.00	0.00	0.00	0.00	3.50	18.00	0.13	2.27	0.38	1.06	303	0.87	350	SW4	2.00	0.13	NO	0.13	10.7	0.7	3.32	flr-conc	HF	Edge	HDU5	0.00	No strap
2	C.2	6.00	0.00	0.00	0.00	0.00	6.00	18.00	0.22	3.89	0.65	1.82	303	1.00	303	SW4	2.00	0.13	NO	0.13	18.3	2.2	2.94	flr-conc	HF	Edge	STHD14	0.00	No strap
2	C.3	12.75	0.00	0.00	0.00	0.00	12.75	18.00	0.46	8.27	1.38	3.86	303	1.00	303	SW4	2.00	0.13	NO	0.13	38.9	9.7	2.38	flr-conc	HF	Edge	STHD14	0.00	No strap
2	C.4	5.50	0.00	0.00	0.00	0.00	5.50	18.00	0.20	3.57	0.59	1.67	303	1.00	303	SW4	2.00	0.13	NO	0.13	16.8	1.8	3.00	flr-conc	HF	Edge	STHD14	0.00	No strap
2	D.1	19.00	0.00	0.00	0.00	0.00	19.00	9.00	0.45	4.07	0.68	1.97	103	1.00	103	SW6	2.00	0.13	NO	0.13	19.8	21.6	-0.10	flr-conc	HF	Edge	No HD	0.00	No strap
2	D.2	9.75	0.00	0.00	0.00	0.00	9.75	9.00	0.23	2.09	0.35	1.01	103	1.00	103	SW6	2.00	0.13	NO	0.13	10.2	5.7	0.48	flr-conc	HF	Edge	No HD	0.00	No strap
2	D.3	13.25	0.00	0.00	0.00	0.00	13.25	9.00	0.32	2.84	0.47	1.37	103	1.00	103	SW6	2.00	0.13	NO	0.13	13.8	10.5	0.26	flr-conc	HF	Edge	No HD	0.00	No strap

Total Length GYP required in F/B direction to resist 100% lateral forces (ft) | **Not required**
(including discounted capacity accounted for by OSB)

S = 120.25 | Total OSB wall length = (feet) 120.25 | S = 55.00 | 9.15 | **24.81** | OK | Total OSB Capacity (kips) | **9.15**

1st Story Walls (Side / Side Direction)

1st Story Walls (Side / Side Direction)
Hold downs and window straps

Shear panel capacity (Wind or Seismic) = Seismic

Story shear(kips) = 0.26 | **Accumulated Shear =** 25.07
Story height (ft) = 10.08 | load balance check = ads do not match story shear
Shear Panel height (ft) = 9.08
Total Diaphragm width (ft) = 55.00

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. Width (ft)	Percent Sharing (%)	Effective Trib. Width	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

Note: all first story/basement walls are concrete retaining walls

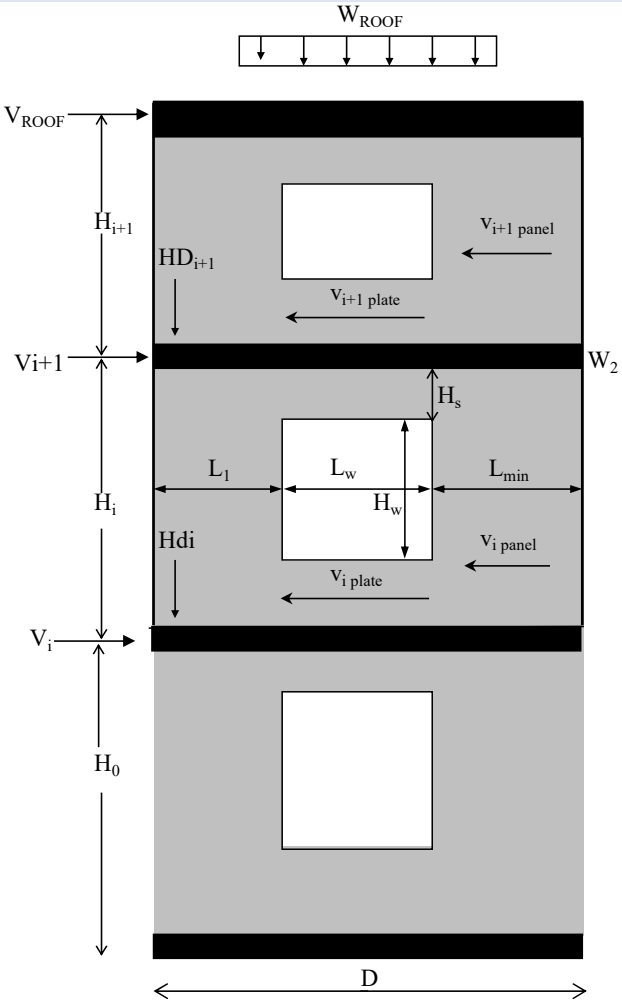
REST INTO CONCRETE RETAINING WALLS

Total Length GYP required in F/B direction to resist 100% lateral forces (ft) | **Not required**
(including discounted capacity accounted for by OSB)

S = 0.00 | Total OSB wall length = (feet) 0.00 | S = 0.00 | 0.00 | **0.00** | Warning- | Total OSB Capacity (kips) | **0.26**

Project	sheet number:
Forest Ave Lot 3	**L7**
Subject	Date
SHEAR WALL EQUATION DIAGRAM	**5/12/2021**

SHEAR WALL WITH WINDOW BASED ON SHEAR TRANSFER:



Where:

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

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

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

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

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

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

$HD_i = (M_{OTi} - M_{R1i})/(D - 6")$

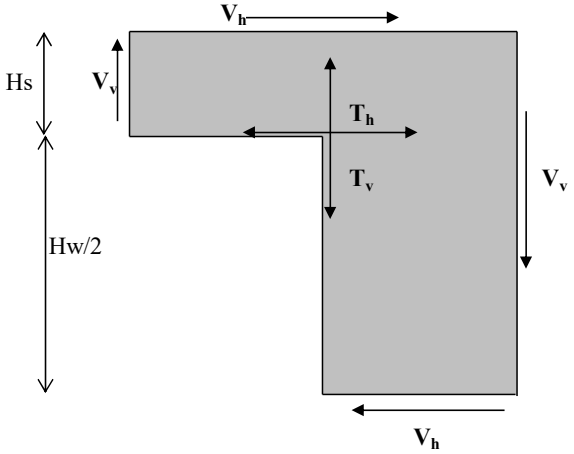
$V_{i+1\ panel} = V_{ROOF} / (L_1 + L_{max})$

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

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

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

FORCE TRANSFER AROUND WINDOW CALCULATION (CANTILEVER PIER METHOD)



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

$V_v = HD_i$

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

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