LONGITUDE
ONE TWENTY°
ENGINEERING & DESIGN

Calculation Package for

Forest Ave Lot 4

Project no: S200420

March 3, 2021

(206) 790 9502
L120Engineering.com

Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 4**	**DC**
Engineer:	Specifics:	Date:
xxx	**Design Criteria**	**6/16/2020**

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**

LONGITUDE
ONE TWENTY°
ENGINEERING & DESIGN

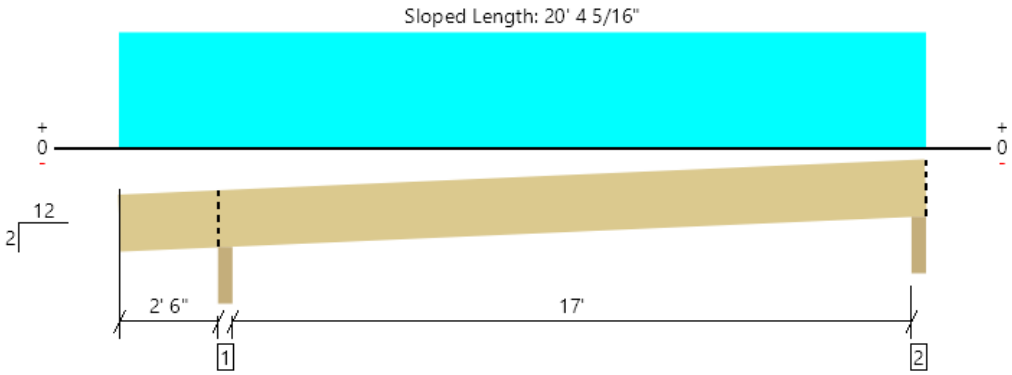
FRAMING CALCULATIONS

BEAM REFERENCE PER PLAN

(206) 790 9502
L120Engineering.com

RF, RJ-1 (TYP ROOF RAFTER)

1 piece(s) 2 x 12 Hem-Fir 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' 6 3/16"

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)	922 @ 2' 7 3/4"	2156 (3.50")	Passed (43%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	623 @ 3' 8 5/8"	1941	Passed (32%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2888 @ 11' 4 13/16"	2964	Passed (97%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.428 @ 11' 3 9/16"	0.873	Passed (L/490)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.681 @ 11' 3 11/16"	1.164	Passed (L/308)	--	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"	349	573	922	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	1.50"	262	436	698	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)	1' 5" o/c	
Bottom Edge (Lu)	20' 4" 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' 1"	24"	15.0	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

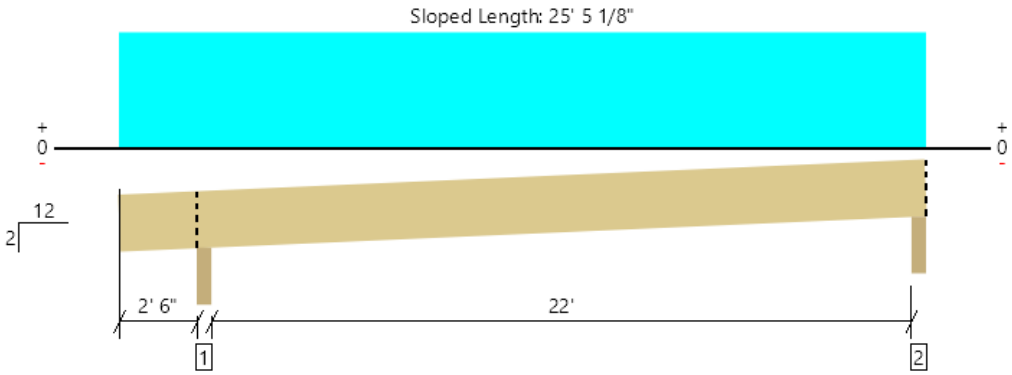
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

RF, RJ-2

2 piece(s) 2 x 12 Hem-Fir 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 : 25' 7"

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)	1119 @ 2' 7 3/4"	4311 (3.50")	Passed (26%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	820 @ 3' 8 5/8"	3881	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4870 @ 13' 10 7/16"	5928	Passed (82%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.600 @ 13' 9 7/16"	1.127	Passed (L/451)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.958 @ 13' 9 9/16"	1.502	Passed (L/282)	--	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). Upward deflection on left cantilever exceeds overhang deflection criteria.
- 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"	423	696	1119	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	1.50"	340	562	902	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' 4" o/c	
Bottom Edge (Lu)	25' 5" o/c	

•Maximum allowable bracing intervals based on applied load.

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

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

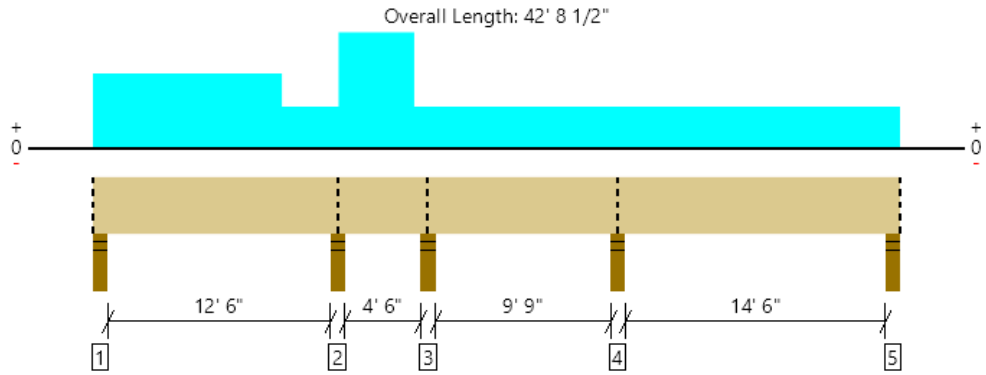
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

RF, RB-6

1 piece(s) 4 x 12 Hem-Fir 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)	5025 @ 12' 11 1/4"	4961 (3.50")	Passed (101%)	--	1.0 D + 1.0 S (Adj Spans)
Shear (lbs)	2158 @ 11' 10 1/4"	4528	Passed (48%)	1.15	1.0 D + 1.0 S (Adj Spans)
Moment (Ft-lbs)	-5606 @ 12' 11 1/4"	6615	Passed (85%)	1.15	1.0 D + 1.0 S (Adj Spans)
Live Load Defl. (in)	0.133 @ 5' 10 3/4"	0.426	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.217 @ 5' 10 9/16"	0.639	Passed (L/708)	--	1.0 D + 1.0 S (Alt Spans)

System : Floor
Member Type : Drop Beam
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 - Stud wall - SPF	3.50"	3.50"	1.50"	759	1190	1949	Blocking
2 - Stud wall - SPF	3.50"	3.50"	3.55"	1924	3101	5025	Blocking
3 - Stud wall - SPF	3.50"	3.50"	1.50"	212	977/-128	1189/-128	Blocking
4 - Stud wall - SPF	3.50"	3.50"	2.39"	1364	2027	3391	Blocking
5 - Stud wall - SPF	3.50"	3.50"	1.50"	518	781	1299	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	31' 4" o/c	
Bottom Edge (Lu)	23' 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 42' 8 1/2"	N/A	10.0	--	
1 - Uniform (PSF)	0 to 10' (Front)	9'	15.0	25.0	ROOF
2 - Uniform (PSF)	10' to 13' (Front)	5'	15.0	25.0	ROOF
3 - Uniform (PSF)	13' to 17' (Front)	14'	15.0	25.0	ROOF
4 - Uniform (PSF)	17' to 42' 8 1/2" (Front)	5'	15.0	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

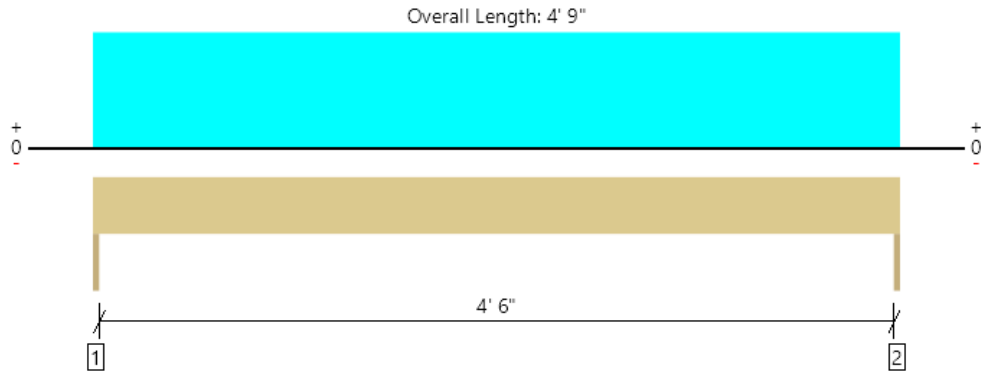
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

RF, PH-1

1 piece(s) 4 x 6 Douglas Fir-Larch 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 @ 0	3281 (1.50")	Passed (9%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	224 @ 7"	2310	Passed (10%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	352 @ 2' 4 1/2"	1720	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.012 @ 2' 4 1/2"	0.158	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.018 @ 2' 4 1/2"	0.237	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"	107	190	297	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	107	190	297	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 (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4' 9"	N/A	4.9	--	
1 - Uniform (PSF)	0 to 4' 9"	4'	10.0	20.0	ATTIC

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

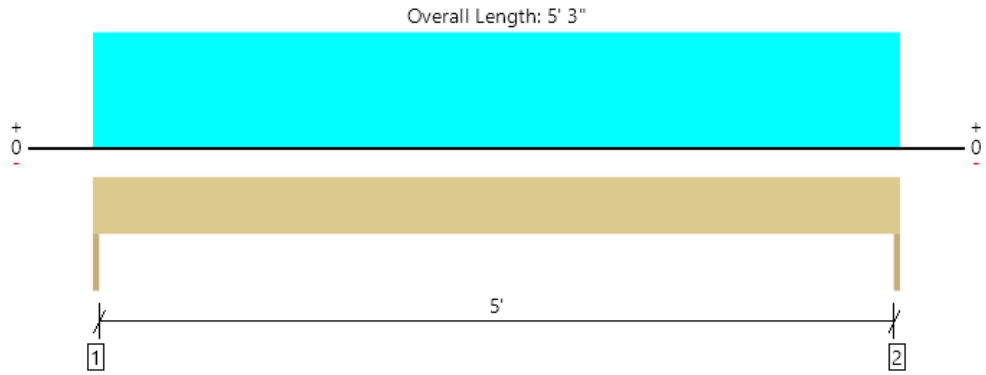
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TH, TH-1

1 piece(s) 4 x 8 Douglas Fir-Larch 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)	1592 @ 0	3281 (1.50")	Passed (49%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1150 @ 8 3/4"	3502	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2089 @ 2' 7 1/2"	3438	Passed (61%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.036 @ 2' 7 1/2"	0.175	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.058 @ 2' 7 1/2"	0.262	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"	607	984	1591	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	607	984	1591	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 (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 5' 3"	15'	15.0	25.0	Roof

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

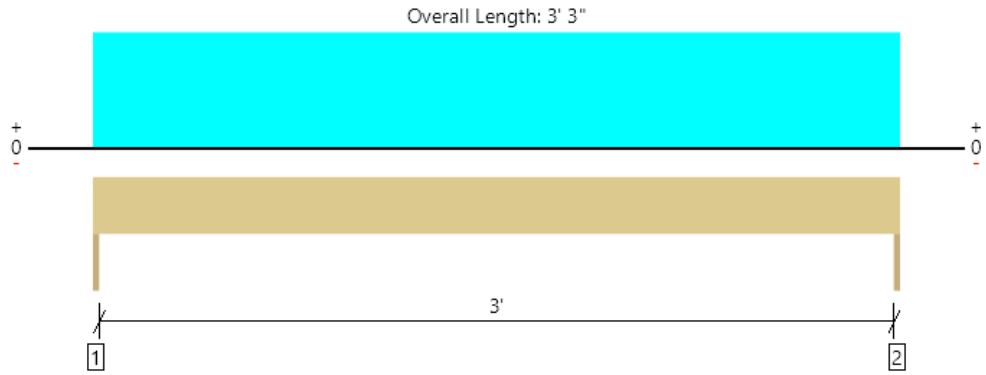
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TH, TH-2

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	528 @ 0	3281 (1.50")	Passed (16%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	338 @ 7"	2657	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	429 @ 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"	203	325	528	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	203	325	528	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 (Side)	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'	15.0	25.0	Roof

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

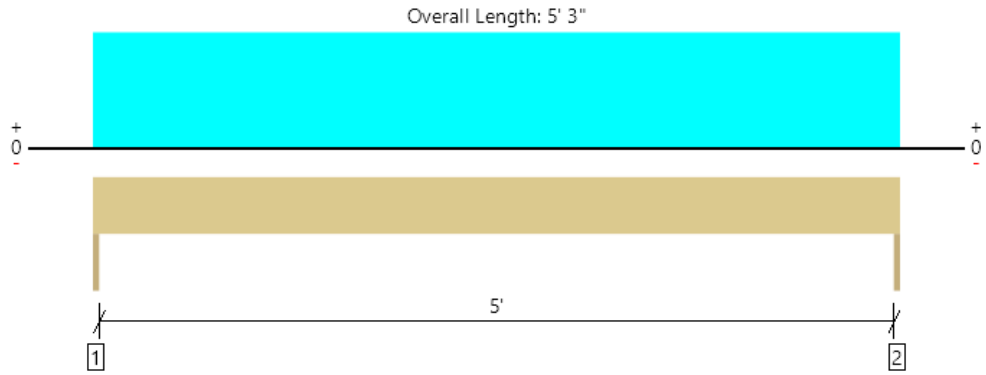
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TH, TH-3

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	958 @ 0	3281 (1.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	745 @ 7"	2657	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1257 @ 2' 7 1/2"	1979	Passed (64%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.050 @ 2' 7 1/2"	0.175	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.080 @ 2' 7 1/2"	0.262	Passed (L/784)	--	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"	367	591	958	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	367	591	958	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 (Side)	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"	9'	15.0	25.0	Roof

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

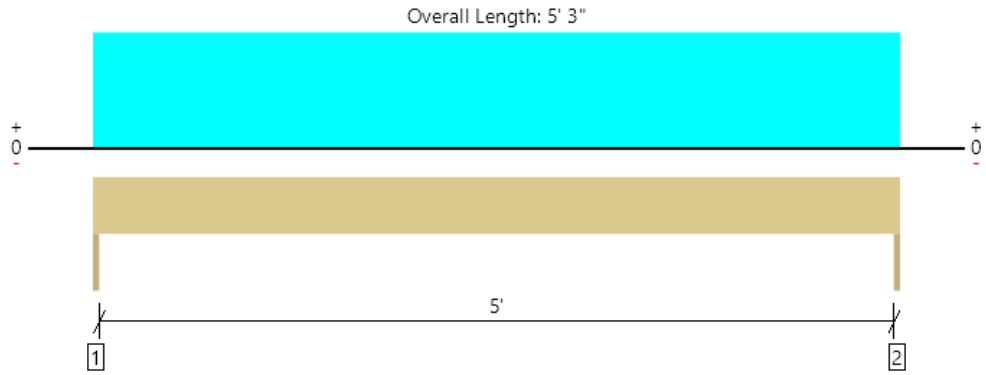
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TH, TH-4

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	1273 @ 0	3281 (1.50")	Passed (39%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	990 @ 7"	2657	Passed (37%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1671 @ 2' 7 1/2"	1979	Passed (84%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.066 @ 2' 7 1/2"	0.175	Passed (L/954)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.107 @ 2' 7 1/2"	0.262	Passed (L/590)	--	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"	485	788	1273	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	485	788	1273	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 (Side)	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"	12'	15.0	25.0	Roof

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

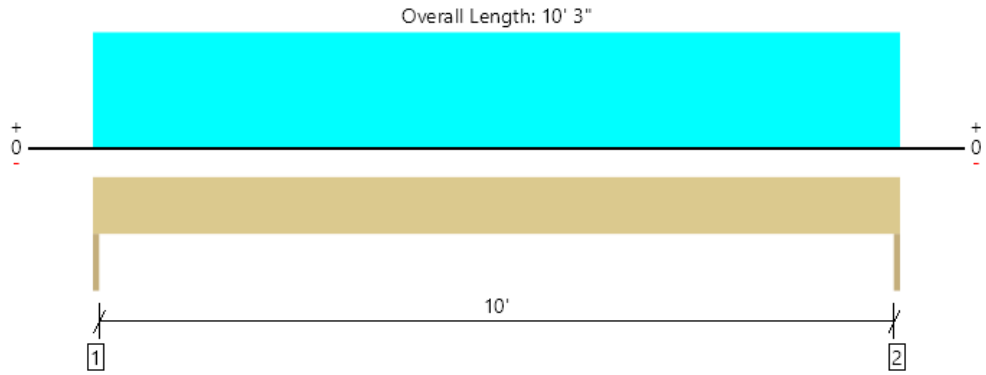
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TH, TH-5

1 piece(s) 4 x 10 Douglas Fir-Larch 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)	657 @ 0	3281 (1.50")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	542 @ 10 3/4"	4468	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1684 @ 5' 1 1/2"	5166	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.050 @ 5' 1 1/2"	0.342	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.086 @ 5' 1 1/2"	0.512	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"	273	384	657	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	273	384	657	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 3" o/c	
Bottom Edge (Lu)	10' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 3"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 10' 3"	3'	15.0	25.0	Roof

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

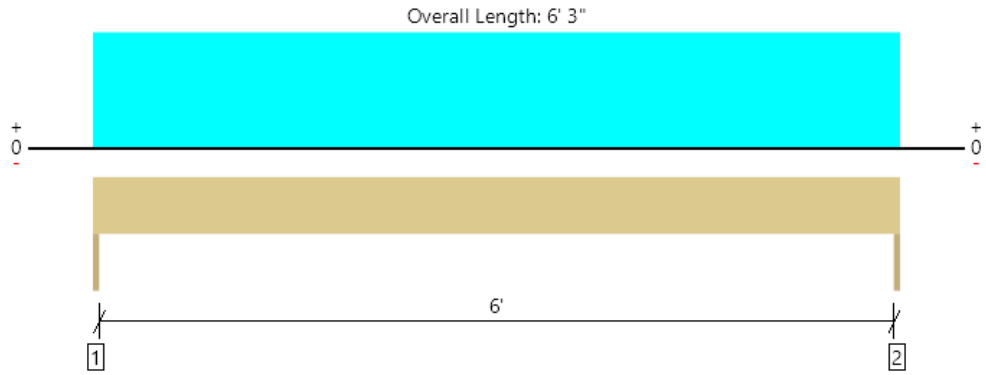
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TH, TH-6

1 piece(s) 4 x 10 Douglas Fir-Larch 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)	401 @ 0	3281 (1.50")	Passed (12%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	286 @ 10 3/4"	4468	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	626 @ 3' 1 1/2"	5166	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.007 @ 3' 1 1/2"	0.208	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.012 @ 3' 1 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/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"	166	234	400	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	166	234	400	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 3"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 6' 3"	3'	15.0	25.0	Roof

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

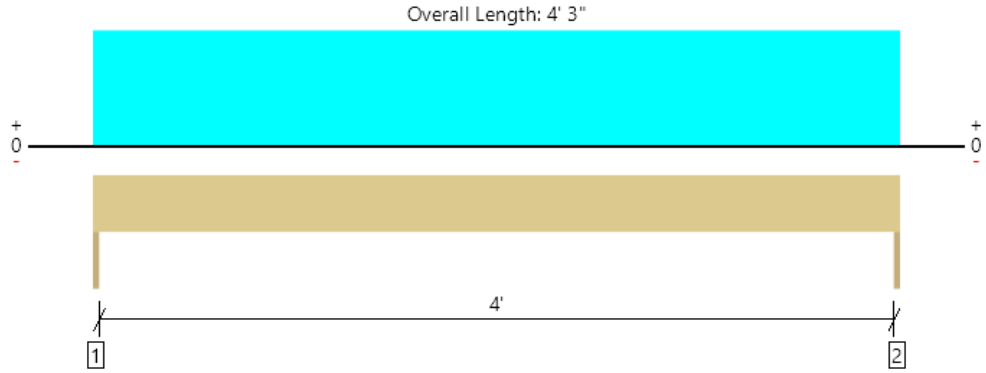
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TH, TH-7

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	520 @ 0	3281 (1.50")	Passed (16%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	378 @ 7"	2657	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	553 @ 2' 1 1/2"	1979	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.014 @ 2' 1 1/2"	0.142	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.023 @ 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"	202	319	521	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	202	319	521	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 (Side)	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"	6'	15.0	25.0	Roof

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

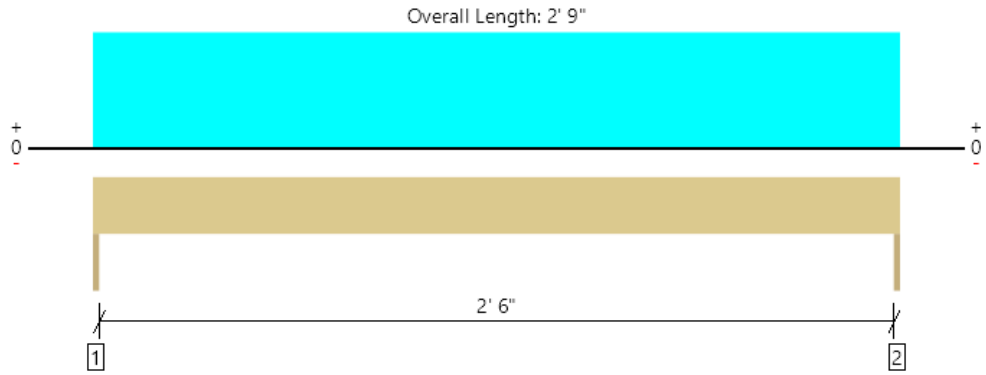
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TH, TH-8

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	667 @ 0	3281 (1.50")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	384 @ 7"	2657	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	458 @ 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	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	254	413	667	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	254	413	667	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 (Side)	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"	12'	15.0	25.0	Roof

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

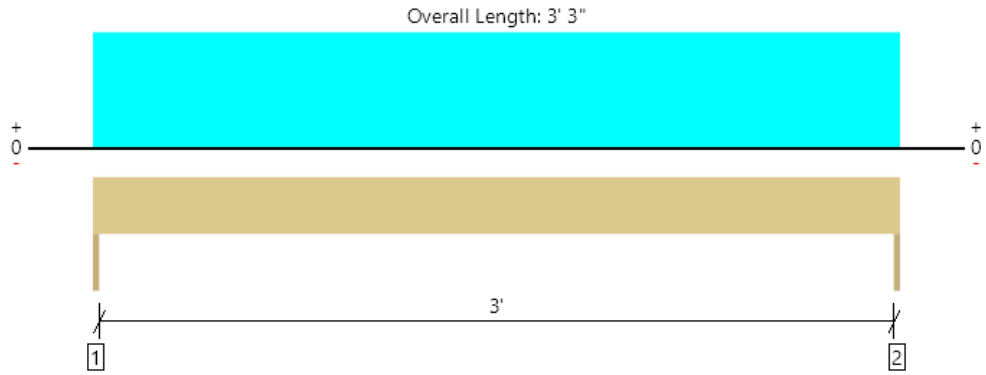
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TH, TH-9

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	788 @ 0	3281 (1.50")	Passed (24%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	505 @ 7"	2657	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	640 @ 1' 7 1/2"	1979	Passed (32%)	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"	300	488	788	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	300	488	788	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 (Side)	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'	15.0	25.0	Roof

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

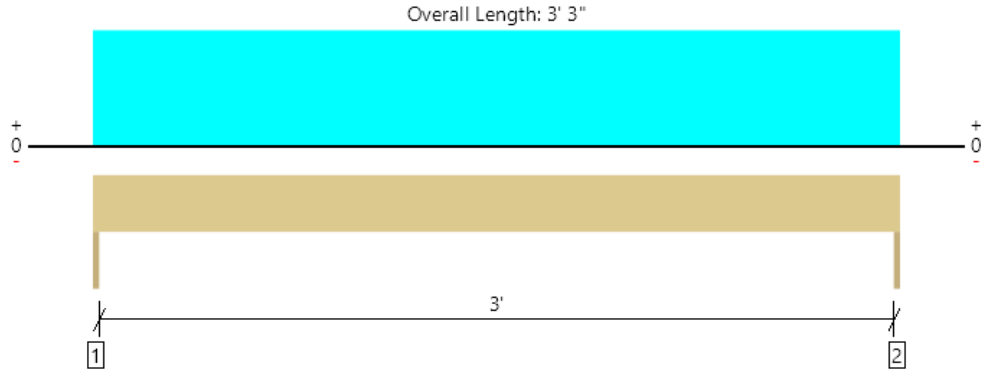
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TH, TH-10

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	252 @ 0	3281 (1.50")	Passed (8%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	161 @ 7"	2310	Passed (7%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	204 @ 1' 7 1/2"	1720	Passed (12%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.003 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.005 @ 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"	89	163	252	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	89	163	252	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 (Side)	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"	5'	10.0	20.0	ATTIC

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

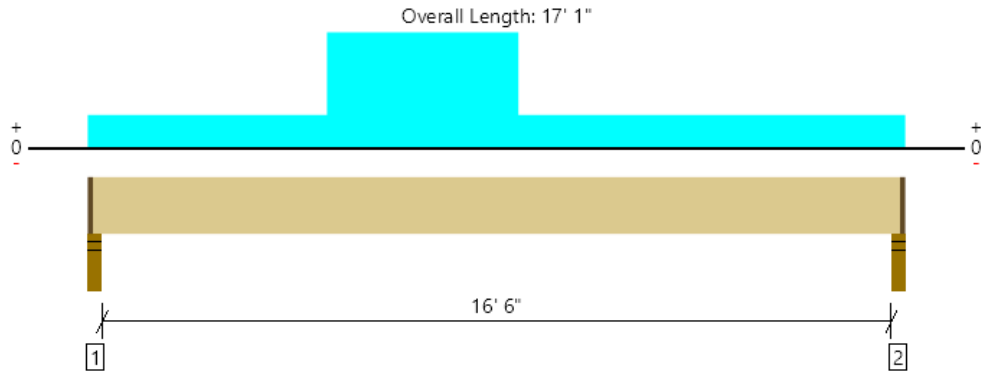
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TB, TB-1 (REACTION ONLY)

1 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL



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)	1548 @ 2"	1673 (2.25")	Passed (93%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1418 @ 1' 3 3/8"	4295	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	7527 @ 7' 8 5/8"	7977	Passed (94%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.747 @ 8' 4 5/16"	0.419	Failed (L/269)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	1.003 @ 8' 4 3/8"	0.837	Failed (L/200)	--	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"	2.25"	2.08"	402	1157	1559	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.82"	358	1010	1368	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)	2' 5" o/c	
Bottom Edge (Lu)	16' 11" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1 1/4" to 16' 11 3/4"	N/A	6.5	--	
1 - Uniform (PSF)	0 to 17' 1" (Front)	2'	12.0	40.0	Default Load
2 - Uniform (PSF)	5' to 9' (Front)	5'	12.0	40.0	STAIR

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

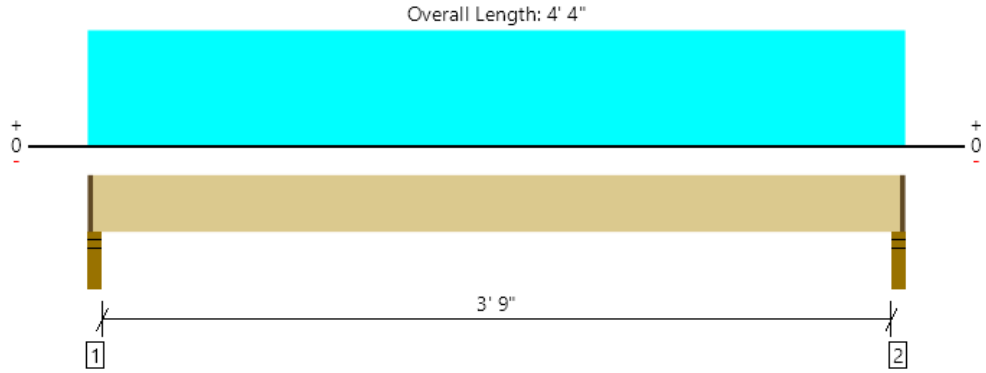
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TB, TB-2 (REACTION ONLY)

1 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL



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)	550 @ 2"	1673 (2.25")	Passed (33%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	236 @ 1' 3 3/8"	4295	Passed (5%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	533 @ 2' 2"	7977	Passed (7%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.006 @ 2' 2"	0.100	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.008 @ 2' 2"	0.200	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 - Stud wall - SPF	3.50"	2.25"	1.50"	143	433	576	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.50"	143	433	576	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)	4' 2" o/c	
Bottom Edge (Lu)	4' 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 4' 2 3/4"	N/A	6.5	--	
1 - Uniform (PSF)	0 to 4' 4" (Front)	5'	12.0	40.0	Default Load

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

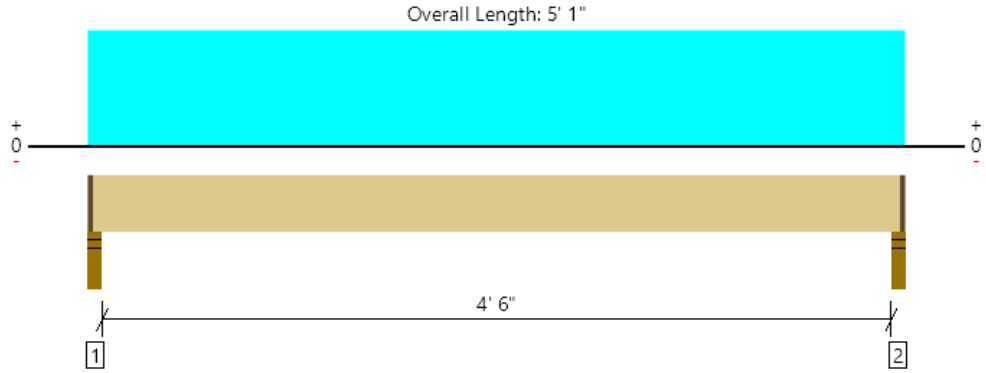
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TB, TB-3 (REACTION ONLY)

1 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL



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)	1410 @ 2"	1673 (2.25")	Passed (84%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	729 @ 1' 3 3/8"	4295	Passed (17%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1632 @ 2' 6 1/2"	7977	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.022 @ 2' 6 1/2"	0.119	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.029 @ 2' 6 1/2"	0.237	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 - Stud wall - SPF	3.50"	2.25"	1.90"	351	1118	1469	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.90"	351	1118	1469	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)	4' 11" o/c	
Bottom Edge (Lu)	4' 11" 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 4' 11 3/4"	N/A	6.5	--	
1 - Uniform (PSF)	0 to 5' 1" (Front)	11'	12.0	40.0	Default Load

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

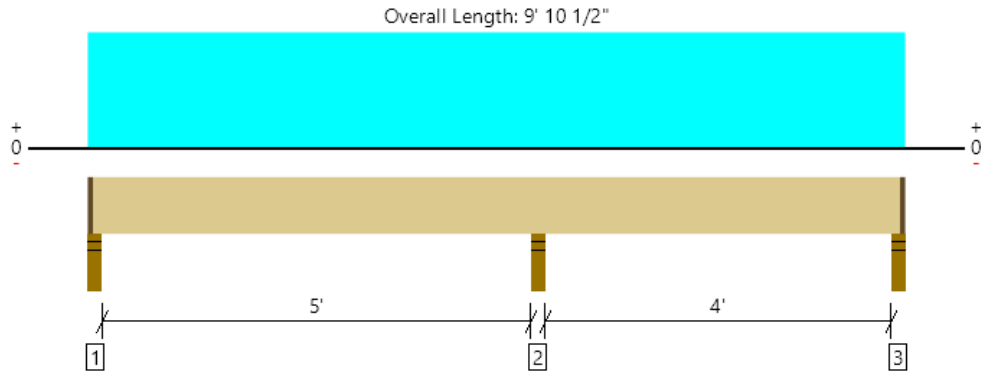
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TB, TB-4 (REACTION ONLY)

1 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL



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)	2590 @ 5' 5 1/4"	2603 (3.50")	Passed (99%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	886 @ 4' 3 5/8"	4939	Passed (18%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1265 @ 5' 5 1/4"	9173	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.013 @ 2' 7"	0.132	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.022 @ 2' 6 9/16"	0.264	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	3.50"	2.25"	1.50"	404	195/-7	585	1184/-7	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	3.50"	3.48"	1086	481	1504	3071	None
3 - Stud wall - SPF	3.50"	2.25"	1.50"	291	165/-28	460	916/-28	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)	9' 8" o/c	
Bottom Edge (Lu)	9' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/4" to 9' 9 1/4"	N/A	6.5	--	--	
1 - Uniform (PSF)	0 to 9' 10 1/2" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 9' 10 1/2" (Front)	10'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

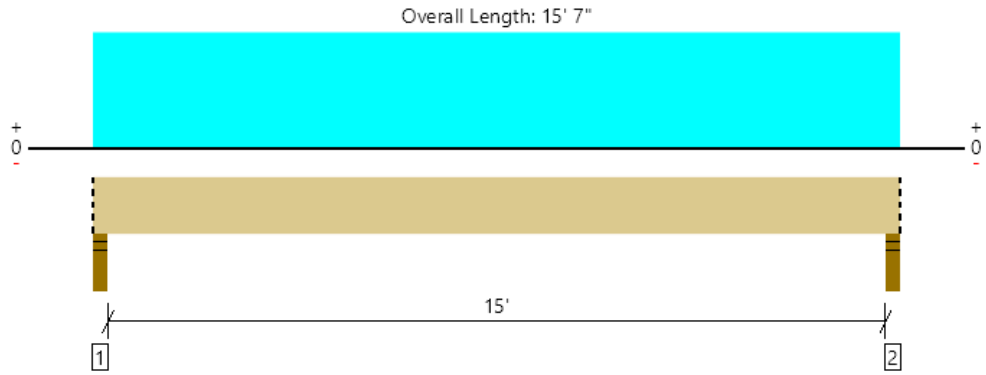
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-5 (REACTION ONLY)
1 piece(s) 3 1/2" x 18" 2.0E 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)	3457 @ 2"	5206 (3.50")	Passed (66%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2662 @ 1' 9 1/2"	14007	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	12897 @ 7' 9 1/2"	50215	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.103 @ 7' 9 1/2"	0.381	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.182 @ 7' 9 1/2"	0.762	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 - SPF	3.50"	3.50"	2.32"	1509	623	1948	4080	Blocking
2 - Stud wall - SPF	3.50"	3.50"	2.32"	1509	623	1948	4080	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' 7" o/c	
Bottom Edge (Lu)	15' 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 15' 7"	N/A	19.6	--	--	
1 - Uniform (PSF)	0 to 15' 7" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 15' 7" (Front)	10'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

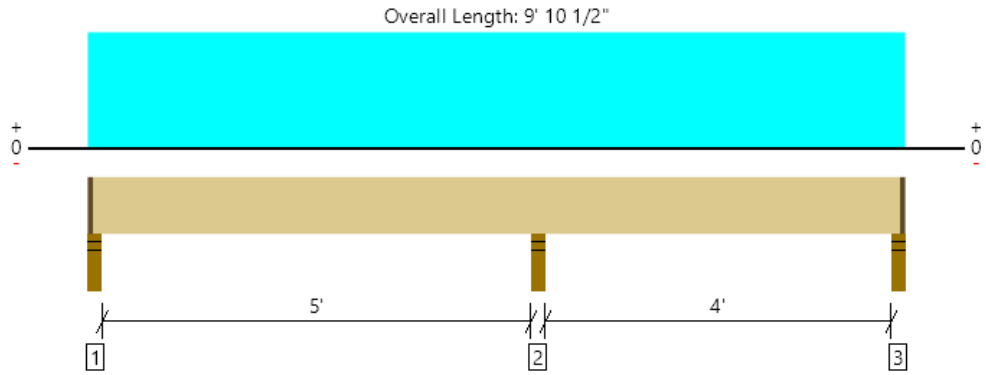
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TB, TB-6 (REACTION ONLY)

1 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1154 @ 5' 5 1/4"	2603 (3.50")	Passed (44%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	395 @ 4' 3 5/8"	4939	Passed (8%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	-564 @ 5' 5 1/4"	9173	Passed (6%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.006 @ 2' 7 3/16"	0.132	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.010 @ 2' 6 3/4"	0.264	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	3.50"	2.25"	1.50"	169	195/-7	176	540/-7	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	3.50"	1.55"	454	481	451	1386	None
3 - Stud wall - SPF	3.50"	2.25"	1.50"	121	165/-28	138	424/-28	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)	9' 8" o/c	
Bottom Edge (Lu)	9' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/4" to 9' 9 1/4"	N/A	6.5	--	--	
1 - Uniform (PSF)	0 to 9' 10 1/2" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 9' 10 1/2" (Front)	3'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

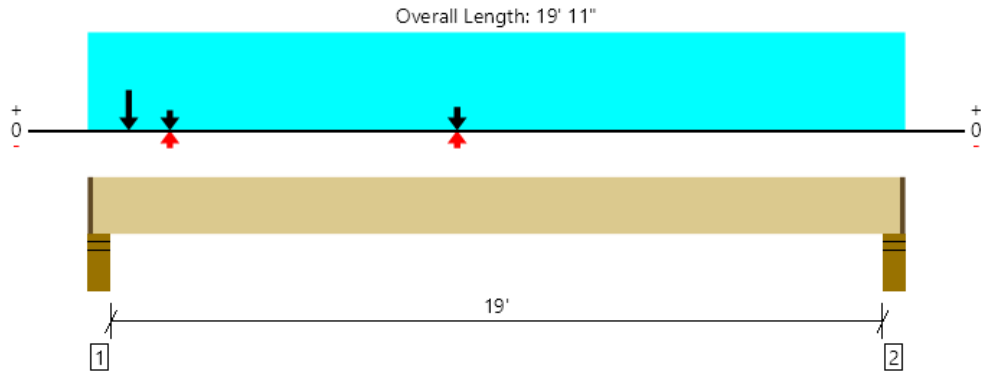
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-7 (REACTION ONLY)
1 piece(s) 5 1/4" x 18" 2.0E 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)	8615 @ 4"	9483 (4.25")	Passed (91%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	5594 @ 1' 11 1/2"	18270	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	29580 @ 9' 5 3/4"	65497	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.276 @ 9' 11 1/4"	0.481	Passed (L/837)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.420 @ 9' 10 7/8"	0.962	Passed (L/550)	--	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"	4.25"	3.86"	3372	4225	2834	10431	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	2.68"	1974	4072	787	6833	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)	19' 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 19' 9 3/4"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 19' 11" (Front)	10'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 19' 11" (Front)	2'	15.0	-	25.0	ROOF
3 - Point (lb)	9' (Front)	N/A	291	165/-28	460	Linked from: TB-4 (REACTION ONLY), Support 3
4 - Point (lb)	1' (Front)	N/A	1364	-	2027	Linked from: RB-6, Support 4
5 - Point (lb)	2' (Front)	N/A	121	165/-28	138	Linked from: TB-6 (REACTION ONLY), Support 3

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

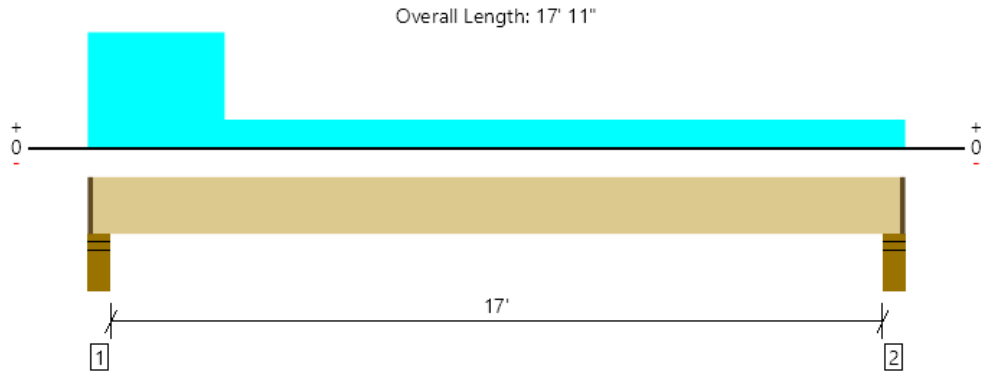
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TB, TB-8 (REACTION ONLY)

1 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL



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)	1527 @ 4"	3161 (4.25")	Passed (48%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	991 @ 1' 5 3/8"	4295	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4326 @ 8' 8 13/16"	7977	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.442 @ 8' 11 1/2"	0.431	Failed (L/468)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.648 @ 8' 10 3/4"	0.863	Passed (L/319)	--	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"	4.25"	2.05"	608	717	559	1884	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	1.50"	297	717	41	1055	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)	7' 6" o/c	
Bottom Edge (Lu)	17' 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 17' 9 3/4"	N/A	6.5	--	--	
1 - Uniform (PSF)	0 to 17' 11" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 3' (Front)	8'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

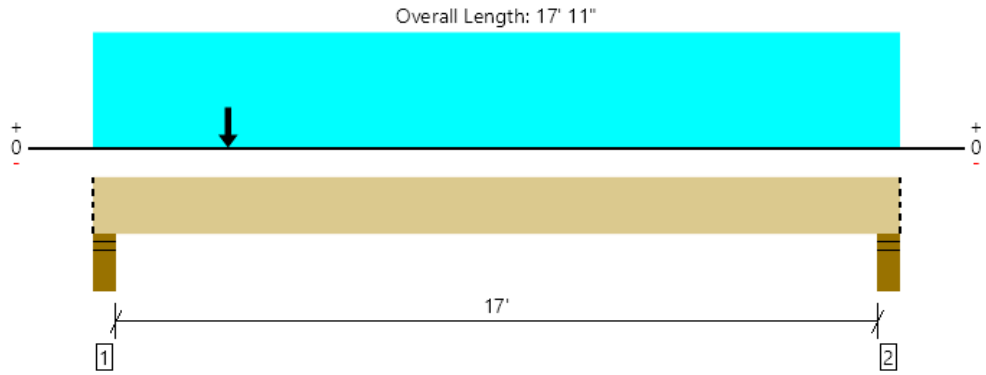
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-9 (REACTION ONLY)
1 piece(s) 5 1/4" x 18" 2.0E 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)	10763 @ 4"	12272 (5.50")	Passed (88%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	10011 @ 1' 11 1/2"	21011	Passed (48%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	28161 @ 5' 5 9/16"	75322	Passed (37%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.188 @ 8' 4 1/4"	0.431	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.324 @ 8' 4 5/8"	0.863	Passed (L/638)	--	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"	4.82"	4405	4289	4188	12882	Blocking
2 - Stud wall - SPF	5.50"	5.50"	2.14"	2076	1370	2230	5676	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)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 17' 11" (Front)	8'	15.0	-	25.0	ROOF
3 - Point (lb)	3' (Front)	N/A	3372	4225	2834	Linked from: TB-7 (REACTION ONLY), Support 1

Weyerhaeuser Notes

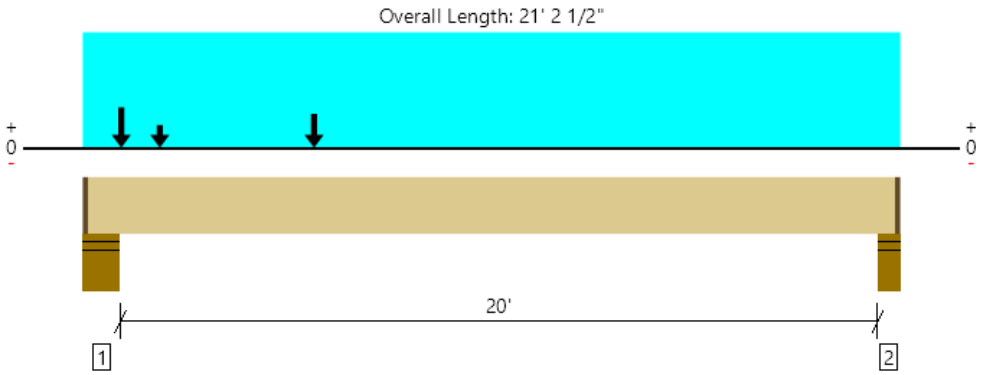
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-10 (REACTION ONLY)
1 piece(s) 5 1/4" x 18" 2.0E 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)	15885 @ 7 1/2"	17292 (7.75")	Passed (92%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	10181 @ 2' 3"	21011	Passed (48%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	42194 @ 9' 9 3/8"	65497	Passed (64%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.389 @ 10' 5 1/4"	0.506	Passed (L/625)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.765 @ 10' 5 5/8"	1.013	Passed (L/317)	--	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	9.00"	7.75"	7.12"	7555	5242	5960	18757	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	3.81"	4294	3537	2180	10011	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)	21' o/c	
Bottom Edge (Lu)	21' 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 21' 1 1/4"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 21' 2 1/2" (Front)	8'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 21' 2 1/2" (Front)	6'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 21' 2 1/2" (Front)	10'	15.0	-	-	Ext Wall
4 - Point (lb)	6' (Front)	N/A	1509	623	1948	Linked from: TB-5 (REACTION ONLY), Support 2
5 - Point (lb)	2' (Front)	N/A	518	-	781	Linked from: RB-6, Support 5
6 - Point (lb)	1' (Front)	N/A	2076	1370	2230	Linked from: TB-9 (REACTION ONLY), Support 2

Weyerhaeuser Notes

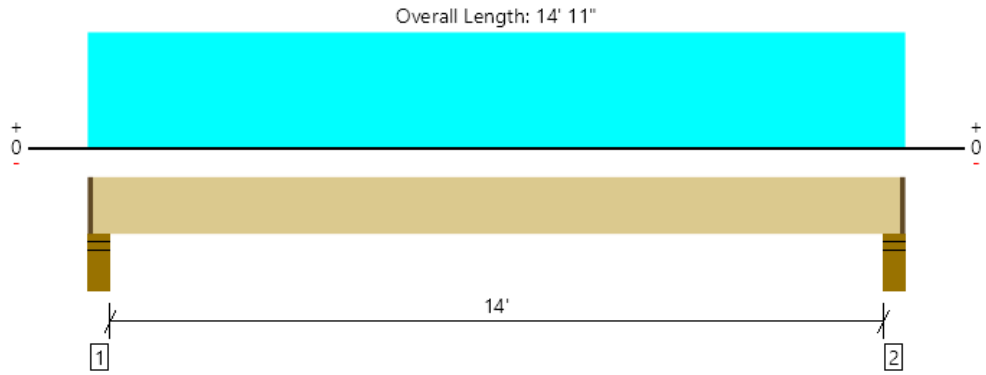
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-11 (REACTION ONLY)
1 piece(s) 3 1/2" x 18" 2.0E 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)	6204 @ 4"	6322 (4.25")	Passed (98%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4640 @ 1' 11 1/2"	14007	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	21414 @ 7' 5 1/2"	50215	Passed (43%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.160 @ 7' 5 1/2"	0.356	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.269 @ 7' 5 1/2"	0.712	Passed (L/635)	--	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"	4.17"	2561	597	3729	6887	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	4.17"	2561	597	3729	6887	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	19.6	--	--	
1 - Uniform (PSF)	0 to 14' 11" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 14' 11" (Front)	20'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

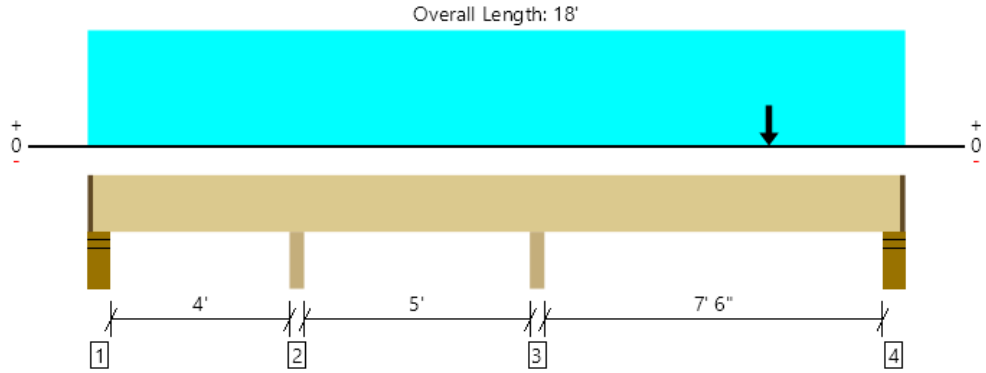
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-12 (REACTION ONLY)
1 piece(s) 5 1/4" x 9 1/2" 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)	8920 @ 9' 10 3/4"	11484 (3.50")	Passed (78%)	--	1.0 D + 0.75 L + 0.75 S (Adj Spans)
Shear (lbs)	4411 @ 16' 9"	9643	Passed (46%)	1.00	1.0 D + 1.0 L (Alt Spans)
Moment (Ft-lbs)	11215 @ 15'	19585	Passed (57%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.069 @ 14' 3 1/8"	0.194	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.140 @ 14' 3 1/4"	0.389	Passed (L/665)	--	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"	1.50"	860	537/-45	637	2034/-45	1 1/4" Rim Board
2 - Column - SPF	3.50"	3.50"	1.50"	742	923/-442	1132	2797/-442	None
3 - Column - SPF	3.50"	3.50"	2.72"	4580	3047	2739	10366	None
4 - Stud wall - SPF	5.50"	4.25"	2.49"	2886	2141/-6	1520	6547/-6	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)	17' 10" o/c	
Bottom Edge (Lu)	17' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/4" to 17' 10 3/4"	N/A	15.6	--	--	
1 - Uniform (PSF)	0 to 18' (Front)	4'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 18' (Front)	10'	12.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 18' (Front)	10'	15.0	-	-	EXT WALL
4 - Point (lb)	15' (Front)	N/A	3067	2777	1120	Linked from: TB-13 (REACTION ONLY), Support 1

Weyerhaeuser Notes

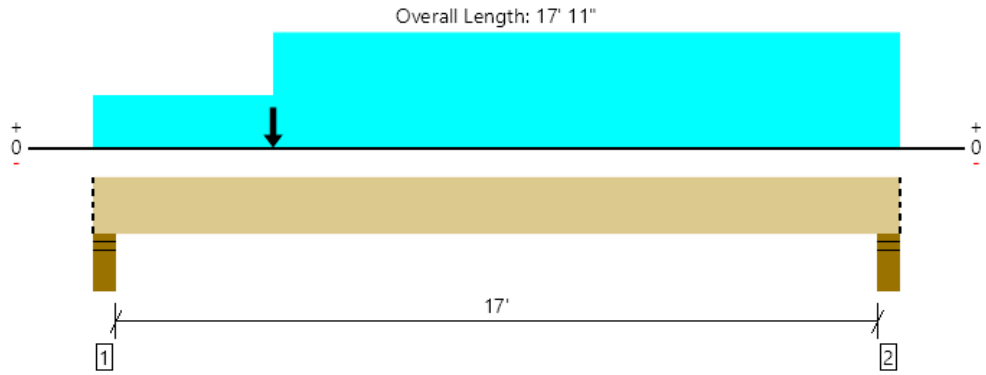
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-13 (REACTION ONLY)
1 piece(s) 3 1/2" x 18" 2.0E 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)	6224 @ 17' 7"	8181 (5.50")	Passed (76%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	5365 @ 1' 11 1/2"	12180	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	26536 @ 8' 7 7/16"	43665	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.238 @ 8' 10 1/2"	0.431	Passed (L/868)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.471 @ 8' 10 3/4"	0.863	Passed (L/439)	--	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"	4.03"	3067	2777	1120	6964	Blocking
2 - Stud wall - SPF	5.50"	5.50"	4.18"	3112	3030	1120	7262	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	19.6	--	--	
1 - Uniform (PSF)	4' to 17' 11" (Front)	8'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 17' 11" (Front)	5'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 17' 11" (Front)	10'	15.0	-	-	EXT WALL
4 - Point (lb)	4' (Front)	N/A	460	1353	-	Linked from: TB-14 (REACTION ONLY), Support 1

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

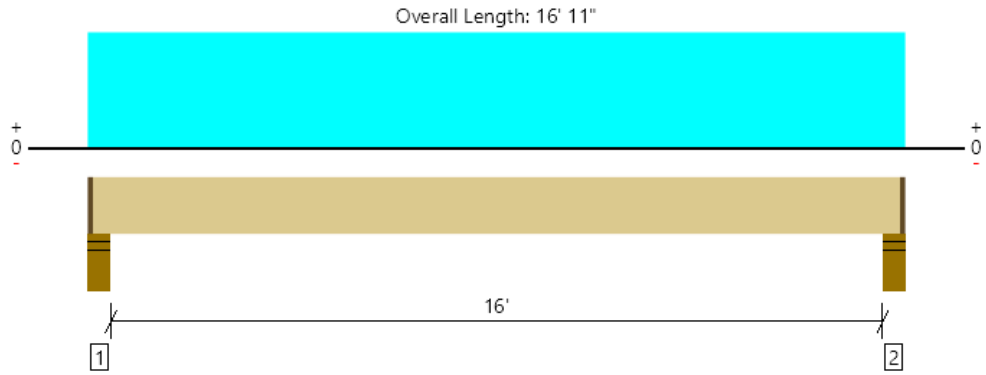
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

TB, TB-14 (REACTION ONLY)

1 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL



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)	1792 @ 4"	3161 (4.25")	Passed (57%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1504 @ 1' 5 3/8"	4295	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	7080 @ 8' 5 1/2"	7977	Passed (89%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.701 @ 8' 5 1/2"	0.406	Failed (L/278)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.940 @ 8' 5 1/2"	0.813	Failed (L/208)	--	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	5.50"	4.25"	2.41"	460	1353	1813	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	2.41"	460	1353	1813	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)	3' 5" o/c	
Bottom Edge (Lu)	16' 9" 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 16' 9 3/4"	N/A	6.5	--	
1 - Uniform (PSF)	0 to 16' 11" (Front)	4'	12.0	40.0	Default Load

Weyerhaeuser Notes

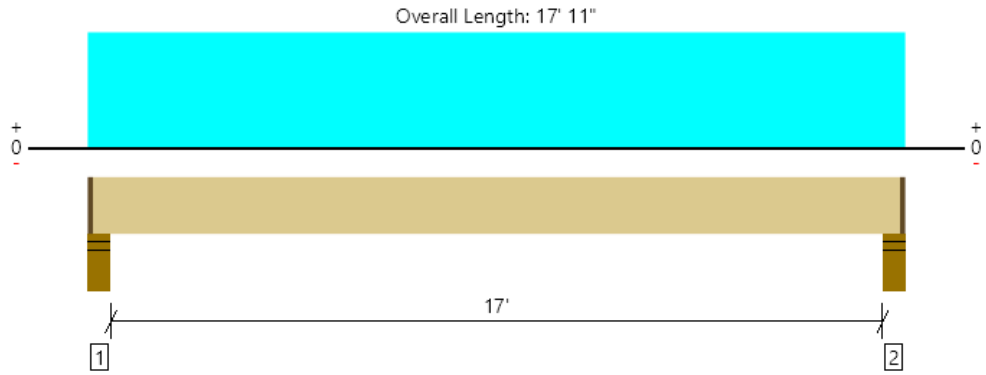
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-15 (REACTION ONLY)
1 piece(s) 3 1/2" x 11 7/8" 2.0E 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)	1531 @ 4"	6322 (4.25")	Passed (24%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1299 @ 1' 5 3/8"	9241	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6433 @ 8' 11 1/2"	22888	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.214 @ 8' 11 1/2"	0.431	Passed (L/966)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.371 @ 8' 11 1/2"	0.863	Passed (L/559)	--	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	Snow	Total	
1 - Stud wall - SPF	5.50"	4.25"	1.50"	652	896	1548	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	1.50"	652	896	1548	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)	17' 9" o/c	
Bottom Edge (Lu)	17' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/4" to 17' 9 3/4"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 17' 11" (Front)	4'	15.0	25.0	ROOF

Weyerhaeuser Notes

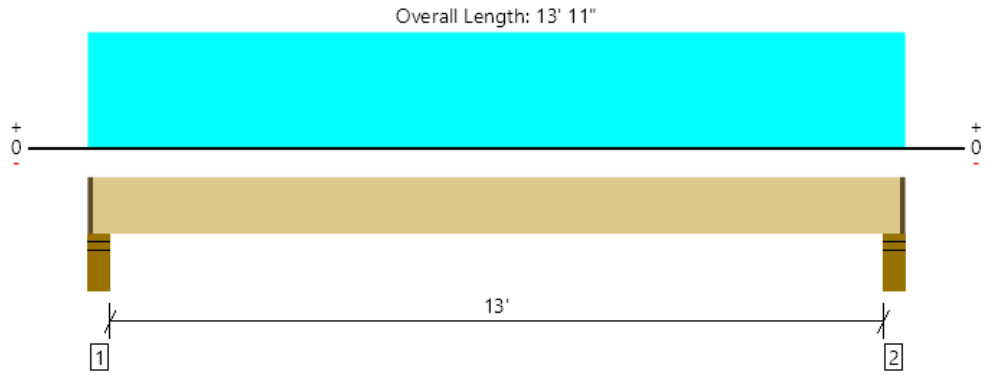
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-16 (REACTION ONLY)
1 piece(s) 3 1/2" x 18" 2.0E 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)	3315 @ 4"	6322 (4.25")	Passed (52%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2418 @ 1' 11 1/2"	14007	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	10614 @ 6' 11 1/2"	50215	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.067 @ 6' 11 1/2"	0.331	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.118 @ 6' 11 1/2"	0.663	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 - SPF	5.50"	4.25"	2.23"	1450	557	1914	3921	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	4.25"	2.23"	1450	557	1914	3921	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)	13' 9" o/c	
Bottom Edge (Lu)	13' 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 13' 9 3/4"	N/A	19.6	--	--	
1 - Uniform (PSF)	0 to 13' 11" (Front)	11'	15.0	-	25.0	ROOF
2 - Uniform (PSF)	0 to 13' 11" (Front)	2'	12.0	40.0	-	DEFAULT

Weyerhaeuser Notes

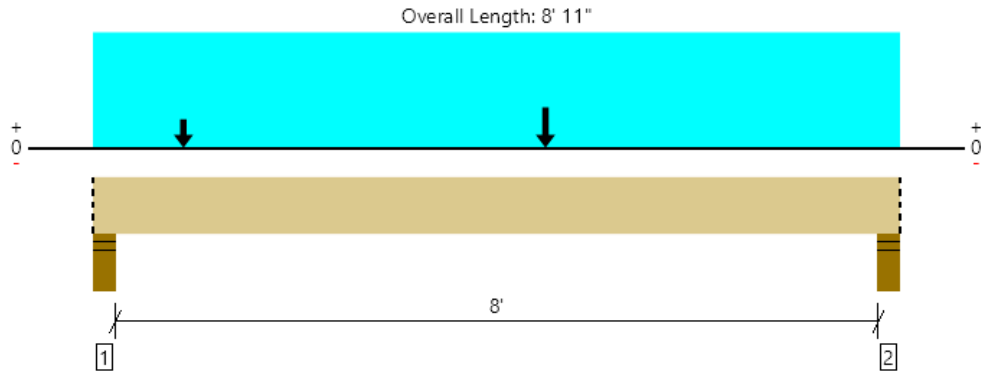
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-17 (REACTION ONLY)
1 piece(s) 3 1/2" x 18" 2.0E 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)	5651 @ 4"	8181 (5.50")	Passed (69%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3270 @ 1' 11 1/2"	14007	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	11378 @ 5'	50215	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.030 @ 5'	0.206	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.057 @ 5'	0.412	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 - SPF	5.50"	5.50"	3.80"	2748	648	2903	6299	Blocking
2 - Stud wall - SPF	5.50"	5.50"	2.80"	2087	351	2078	4516	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' 11"	N/A	19.6	--	--	
1 - Uniform (PSF)	0 to 8' 11" (Front)	8'	12.0	-	25.0	ROOF
2 - Uniform (PSF)	0 to 8' 11" (Front)	10'	15.0	-	-	Ext Wall
3 - Point (lb)	1' (Front)	N/A	759	-	1190	Linked from: RB-6, Support 1
4 - Point (lb)	5' (Front)	N/A	1450	557	1914	Linked from: TB-16 (REACTION ONLY), Support 1
5 - Point (lb)	1' (Front)	N/A	257	442	94	Linked from: TB-18 (REACTION ONLY), Support 1

Weyerhaeuser Notes

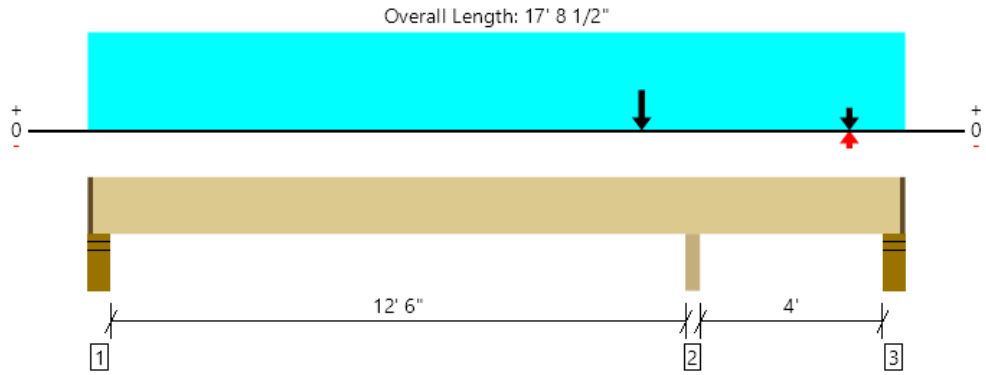
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

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

Weyerhaeuser

TB, TB-18 (REACTION ONLY)
1 piece(s) 3 1/2" x 11 7/8" 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)	6507 @ 13' 1 1/4"	7656 (3.50")	Passed (85%)	--	1.0 D + 1.0 S (All Spans) [1]
Shear (lbs)	4966 @ 11' 11 5/8"	9241	Passed (54%)	1.15	1.0 D + 1.0 S (All Spans) [1]
Moment (Ft-lbs)	-4710 @ 13' 1 1/4"	22888	Passed (21%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Live Load Defl. (in)	0.039 @ 6' 8 1/16"	0.319	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [8]
Total Load Defl. (in)	0.066 @ 6' 8 7/16"	0.639	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [8]

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.
- -849 lbs uplift at support located at 17' 4 1/2". Strapping or other restraint may be required.

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"	257	442	94	793	1 1/4" Rim Board
2 - Column - SPF	3.50"	3.50"	2.97"	2741	1078	3766	7585	None
3 - Stud wall - SPF	5.50"	4.25"	1.50"	-210	187/-278	490/-624	677/-1112	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)	17' 6" o/c	
Bottom Edge (Lu)	17' 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)	1 1/4" to 17' 7 1/4"	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 17' 8 1/2" (Front)	2'	12.0	40.0	-	Default Load
2 - Point (lb)	12' (Front)	N/A	1924	-	3101	Linked from: RB-6, Support 2
3 - Point (lb)	16' 6" (Front)	N/A	212	-	977/-128	Linked from: RB-6, Support 3

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

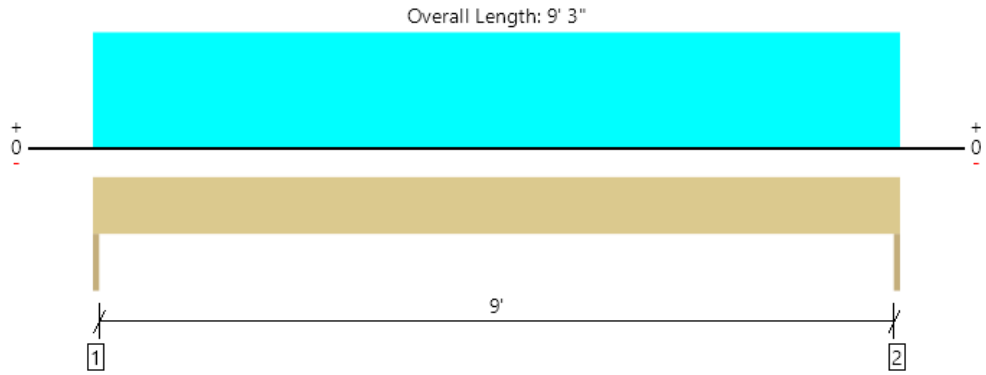
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-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)	2450 @ 0	3413 (1.50")	Passed (72%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1986 @ 10 1/2"	6400	Passed (31%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	5665 @ 4' 7 1/2"	10868	Passed (52%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.097 @ 4' 7 1/2"	0.308	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.228 @ 4' 7 1/2"	0.463	Passed (L/487)	--	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.
- 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	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	1409	185	1041	2635	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	1409	185	1041	2635	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 (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 3"	N/A	7.7	--	--	
1 - Uniform (PSF)	0 to 9' 3"	1'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 9' 3"	10'	15.0	-	-	Ext Wall
3 - Uniform (PSF)	0 to 9' 3"	9'	15.0	-	25.0	Roof

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

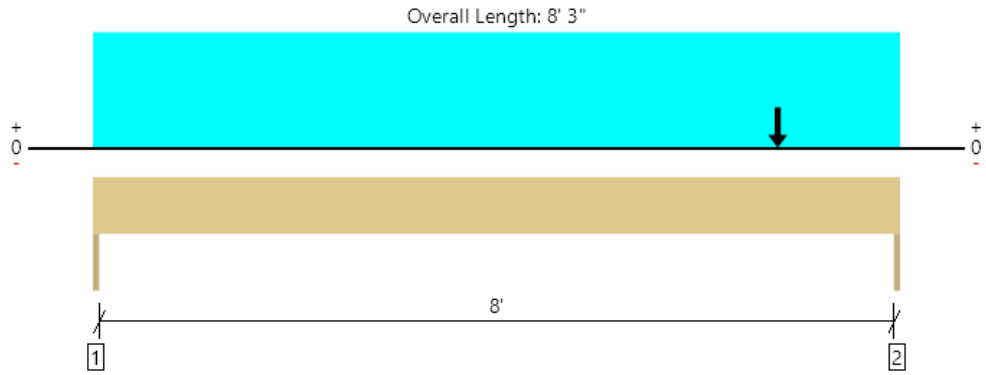
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-2

1 piece(s) 5 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)	4556 @ 8' 3"	5363 (1.50")	Passed (85%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3772 @ 7' 4 1/2"	8745	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	8270 @ 4' 3 9/16"	14850	Passed (56%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.128 @ 4' 2 1/16"	0.275	Passed (L/771)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.170 @ 4' 2 1/16"	0.412	Passed (L/581)	--	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 = 8' 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"	936	2914	6	3856	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	1143	3413	35	4591	None

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)	0 to 8' 3"	N/A	12.0	--	--	
1 - Uniform (PSF)	0 to 8' 3"	17'	12.0	40.0	-	Default Load
2 - Point (lb)	7'	N/A	297	717	41	Linked from: TB-8 (REACTION ONLY), Support 2

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

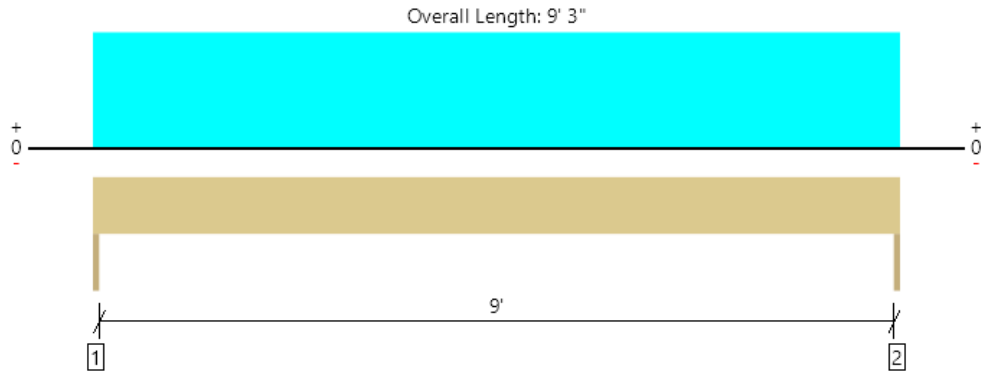
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-3

1 piece(s) 3 1/2" x 9" 24F-V8 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)	2635 @ 0	3413 (1.50")	Passed (77%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2136 @ 10 1/2"	6400	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	6093 @ 4' 7 1/2"	10868	Passed (56%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.108 @ 4' 7 1/2"	0.308	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.245 @ 4' 7 1/2"	0.463	Passed (L/453)	--	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.
- 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.
- 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"	1478	185	1156	2819	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	1478	185	1156	2819	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 (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 3"	N/A	7.7	--	--	
1 - Uniform (PSF)	0 to 9' 3"	1'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 9' 3"	10'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 9' 3"	10'	15.0	-	-	EXT WALL

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

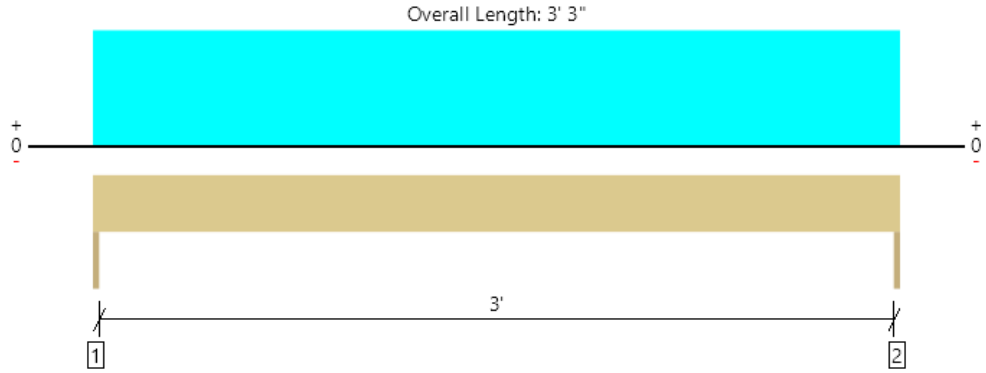
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-4

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	333 @ 0	3281 (1.50")	Passed (10%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	213 @ 7"	2657	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	271 @ 1' 7 1/2"	1979	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.004 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.007 @ 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"	130	203	333	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	130	203	333	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 (Side)	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"	5'	15.0	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

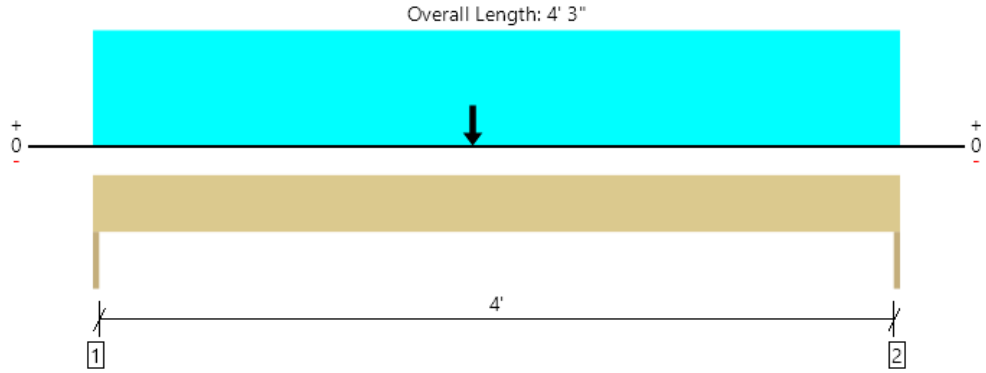
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-5

1 piece(s) 4 x 10 Douglas Fir-Larch 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)	1174 @ 0	3281 (1.50")	Passed (36%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1027 @ 10 3/4"	3885	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2020 @ 2'	4492	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.011 @ 2' 1 3/8"	0.142	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.015 @ 2' 1 3/8"	0.213	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"	307	868	1175	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	283	799	1082	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 (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4' 3"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 4' 3"	3'	12.0	40.0	DEFAULT
2 - Point (lb)	2'	N/A	402	1157	Linked from: TB-1 (REACTION ONLY), Support 1

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

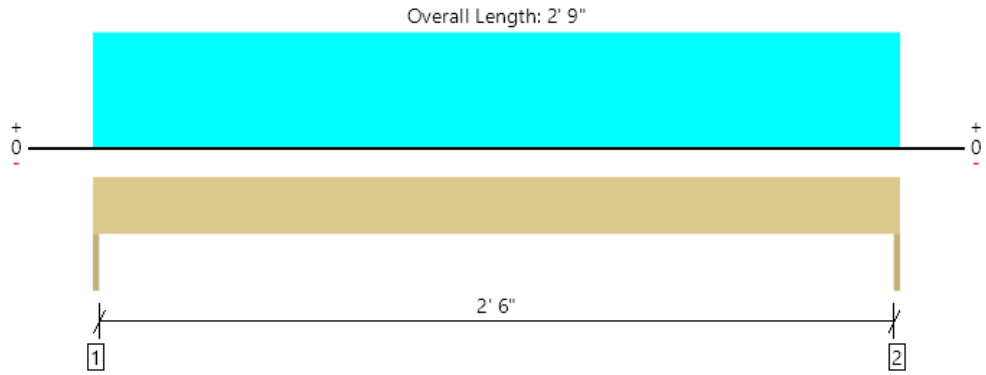
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-6

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	849 @ 0	3281 (1.50")	Passed (26%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	470 @ 7"	2310	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	561 @ 1' 4 1/2"	1720	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.005 @ 1' 4 1/2"	0.092	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.010 @ 1' 4 1/2"	0.138	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"	432	385	172	989	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	432	385	172	989	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 (Side)	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"	7'	12.0	40.0	-	DEFAULT
2 - Uniform (PSF)	0 to 2' 9"	10'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	0 to 2' 9"	5'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

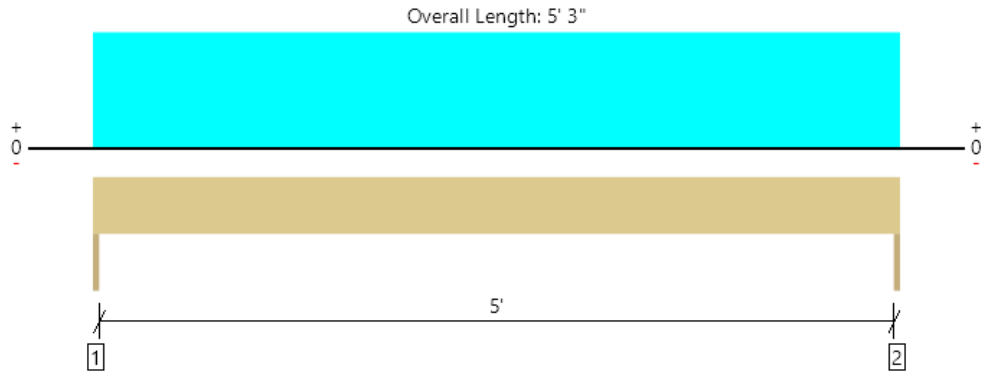
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-7

1 piece(s) 4 x 10 Douglas Fir-Larch 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)	1807 @ 0	3281 (1.50")	Passed (55%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1085 @ 10 3/4"	3885	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2161 @ 2' 7 1/2"	4492	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.016 @ 2' 7 1/2"	0.175	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.032 @ 2' 7 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	1.50"	1.50"	1.50"	911	735	459	2105	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	911	735	459	2105	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 (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 5' 3"	7'	12.0	40.0	-	DEFAULT
2 - Uniform (PSF)	0 to 5' 3"	10'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	0 to 5' 3"	7'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

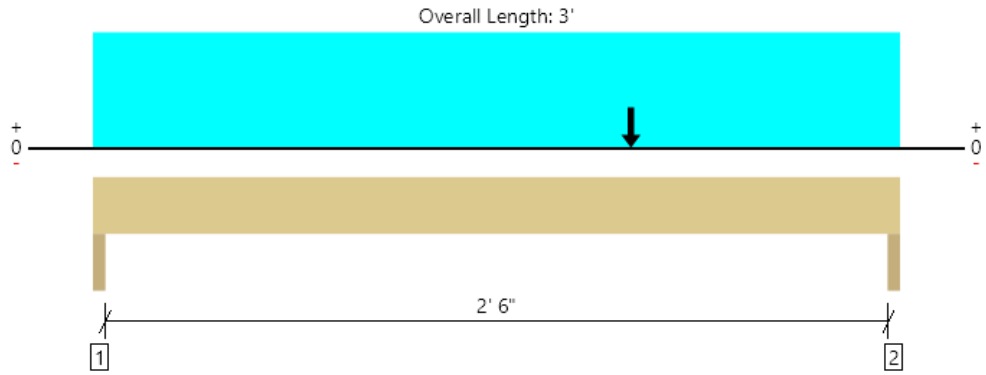
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-8

1 piece(s) 4 x 10 Douglas Fir-Larch 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)	2952 @ 2' 10 1/2"	6563 (3.00")	Passed (45%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2386 @ 1' 11 3/4"	4468	Passed (53%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	2353 @ 2'	5166	Passed (46%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.004 @ 1' 6 1/2"	0.092	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.007 @ 1' 6 1/2"	0.138	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"	756	717	609	2082	None
2 - Trimmer - SPF	3.00"	3.00"	1.50"	1283	920	1305	3508	None

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.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3'	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 3'	9'	12.0	40.0	-	DEFAULT
2 - Uniform (PSF)	0 to 3'	10'	8.0	-	-	INT WALL
3 - Point (lb)	2'	N/A	1450	557	1914	Linked from: TB-16 (REACTION ONLY), Support 2

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

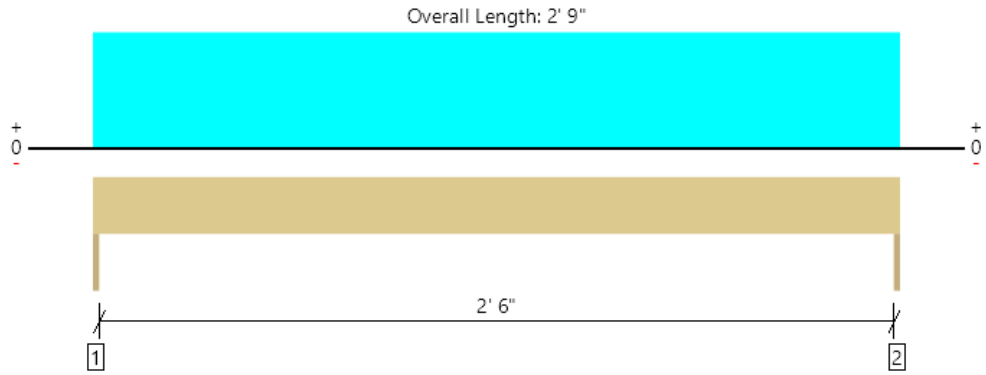
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-9

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	927 @ 0	3281 (1.50")	Passed (28%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	534 @ 7"	2657	Passed (20%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	637 @ 1' 4 1/2"	1979	Passed (32%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.006 @ 1' 4 1/2"	0.092	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.011 @ 1' 4 1/2"	0.138	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"	422	330	344	1096	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	422	330	344	1096	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 (Side)	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"	6'	12.0	40.0	-	DEFAULT
2 - Uniform (PSF)	0 to 2' 9"	10'	8.0	-	-	INT WALL
3 - Uniform (PSF)	0 to 2' 9"	10'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

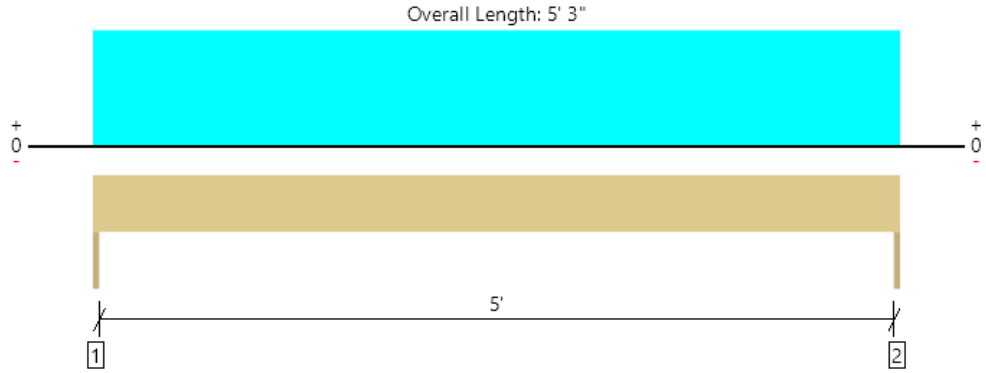
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-10

1 piece(s) 4 x 10 Douglas Fir-Larch 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)	1779 @ 0	3281 (1.50")	Passed (54%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1172 @ 10 3/4"	4468	Passed (26%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	2335 @ 2' 7 1/2"	5166	Passed (45%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.017 @ 2' 7 1/2"	0.175	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.031 @ 2' 7 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	1.50"	1.50"	1.50"	814	630	656	2100	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	814	630	656	2100	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 (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 5' 3"	6'	12.0	40.0	-	DEFAULT
2 - Uniform (PSF)	0 to 5' 3"	10'	8.0	-	-	INT WALL
3 - Uniform (PSF)	0 to 5' 3"	10'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

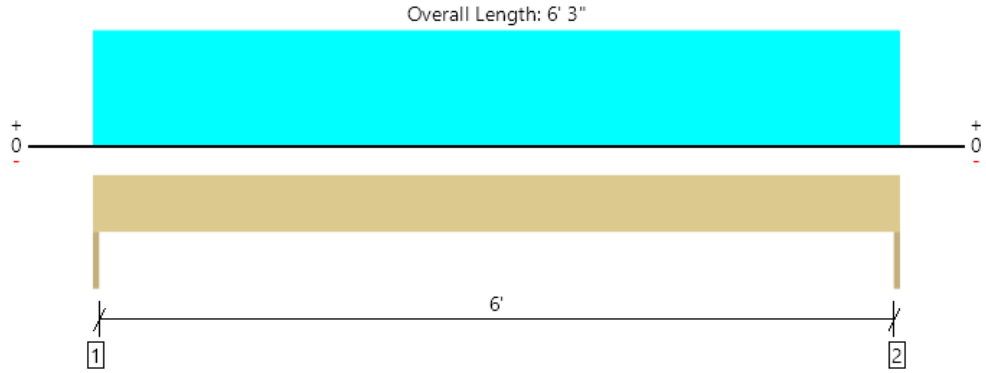
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SH, SH-11

1 piece(s) 4 x 10 Douglas Fir-Larch 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)	1782 @ 0	3281 (1.50")	Passed (54%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1271 @ 10 3/4"	4468	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2784 @ 3' 1 1/2"	5166	Passed (54%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.023 @ 3' 1 1/2"	0.208	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.053 @ 3' 1 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/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"	1001	125	781	1907	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	1001	125	781	1907	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 3"	N/A	8.2	--	--	
1 - Uniform (PSF)	0 to 6' 3"	1'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 6' 3"	10'	15.0	-	25.0	ROOF
3 - Uniform (PSF)	0 to 6' 3"	10'	15.0	-	-	EXT WALL

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

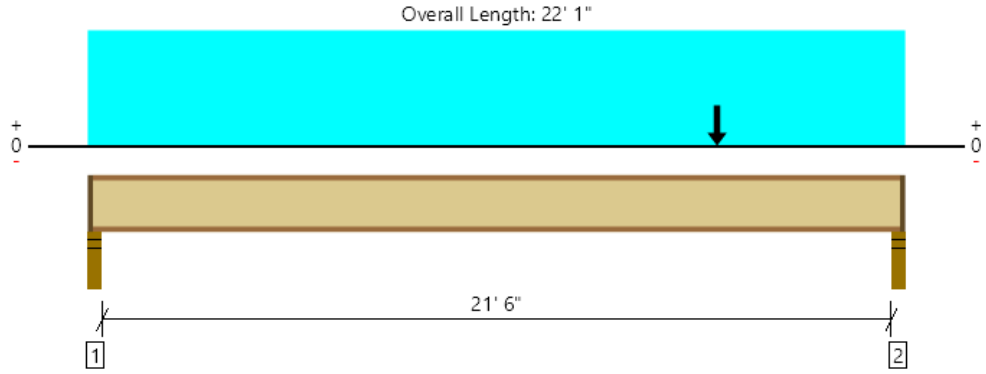
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SJ, SJ-1 (REACTION ONLY)
1 piece(s) 11 7/8" TJI® 210 @ 16" OC

Support 2 failed reaction check due to insufficient bearing capacity.



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)	1177 @ 21' 10 1/2"	1134 (2.25")	Failed (104%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1164 @ 21' 9 1/2"	1655	Passed (70%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5491 @ 12' 9 1/2"	3795	Failed (145%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.747 @ 11' 4 9/16"	0.542	Failed (L/348)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	1.318 @ 11' 7"	1.083	Failed (L/197)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
TJ-Pro™ Rating	19	40	Failed	--	--

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"	2.25"	1.75"	298	589	90	977	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	2.42"	595	589	310	1494	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)	6" o/c	
Bottom Edge (Lu)	21' 11" o/c	

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

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 22' 1"	16"	12.0	40.0	-	Default Load
2 - Point (PLF)	17'	16"	225.0	-	-	EXT WALL
3 - Point (PLF)	17'	16"	180.0	-	300.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

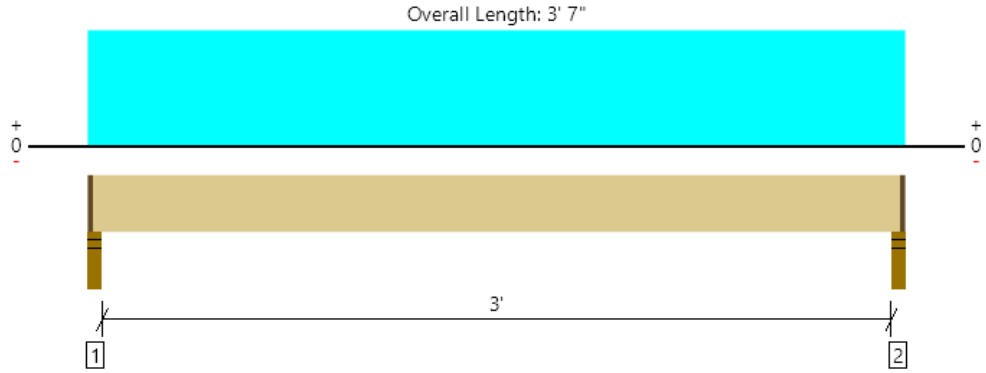
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-1 (REACTION ONLY)

1 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL



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)	450 @ 2"	1673 (2.25")	Passed (27%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	136 @ 1' 3 3/8"	4295	Passed (3%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	352 @ 1' 9 1/2"	7977	Passed (4%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.003 @ 1' 9 1/2"	0.081	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.004 @ 1' 9 1/2"	0.162	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 - Stud wall - SPF	3.50"	2.25"	1.50"	118	358	476	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.50"	118	358	476	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)	3' 5" o/c	
Bottom Edge (Lu)	3' 5" 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 3' 5 3/4"	N/A	6.5	--	
1 - Uniform (PSF)	0 to 3' 7" (Front)	5'	12.0	40.0	Default Load

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

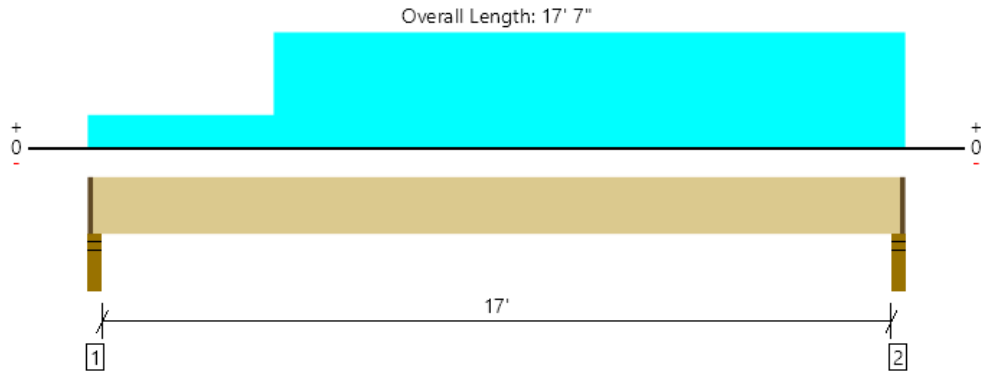
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-2 (REACTION ONLY)

1 piece(s) 3 1/2" x 18" 2.0E 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)	3222 @ 17' 5"	3347 (2.25")	Passed (96%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2575 @ 15' 9 1/2"	12180	Passed (21%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	13331 @ 9' 15/16"	43665	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.168 @ 8' 10 5/8"	0.431	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.232 @ 8' 10 9/16"	0.863	Passed (L/894)	--	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"	2.25"	1.63"	695	1747	2442	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	2.17"	884	2376	3260	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)	17' 5" o/c	
Bottom Edge (Lu)	17' 5" 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 17' 5 3/4"	N/A	19.6	--	
1 - Uniform (PSF)	0 to 17' 7" (Front)	2'	12.0	40.0	Default Load
2 - Uniform (PSF)	4' to 17' 7" (Front)	5'	12.0	40.0	Default Load

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

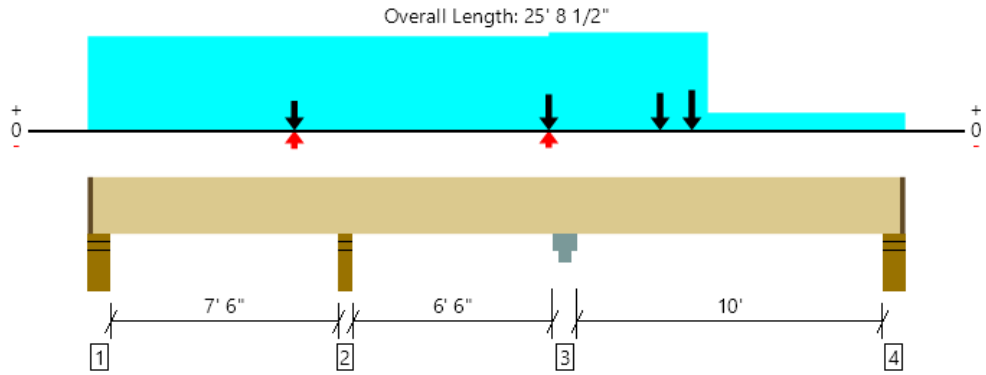
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-3 (REACTION ONLY)

1 piece(s) 3 1/2" x 18" 2.0E 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)	5242 @ 8' 1 1/4"	5206 (3.50")	Passed (101%)	--	1.0 D + 0.75 L + 0.75 S (Adj Spans) [1]
Shear (lbs)	6375 @ 16' 9"	12180	Passed (52%)	1.00	1.0 D + 1.0 L (Adj Spans) [1]
Moment (Ft-lbs)	-11416 @ 15'	43665	Passed (26%)	1.00	1.0 D + 1.0 L (Adj Spans) [1]
Live Load Defl. (in)	0.060 @ 19'	0.259	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans) [1]
Total Load Defl. (in)	0.080 @ 19'	0.519	Passed (L/999+)	--	1.0 D + 1.0 L (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.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - SPF	5.50"	4.25"	1.57"	821	1576/-85	141/-3	2538/-88	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	3.50"	3.52"	1722	3515/-119	1178	6415/-119	None
3 - Column Cap - steel	6.00"	6.00"	5.91"	3621	9302	556	13479	None
4 - Stud wall - SPF	5.50"	4.25"	1.50"	600	1632/-79	9/-9	2241/-88	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)	25' 6" o/c	
Bottom Edge (Lu)	25' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

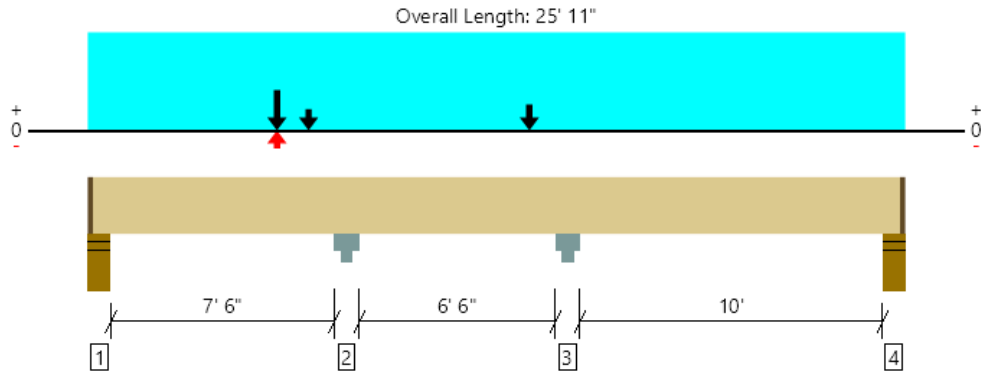
Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/4" to 25' 7 1/4"	N/A	19.6	--	--	
1 - Uniform (PSF)	0 to 25' 8 1/2" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	14' 6" to 19' 6" (Front)	9'	12.0	40.0	-	Default Load
3 - Uniform (PSF)	0 to 14' 6" (Front)	7'	12.0	40.0	-	3RD STORY LIVING
4 - Uniform (PSF)	0 to 14' 6" (Front)	10'	8.0	-	-	INT WALL
5 - Point (lb)	14' 6" (Front)	N/A	404	195/-7	585	Linked from: TB-4 (REACTION ONLY), Support 1
6 - Point (lb)	18' (Front)	N/A	351	1118	-	Linked from: TB-3 (REACTION ONLY), Support 2
7 - Point (lb)	14' 6" (Front)	N/A	351	1118	-	Linked from: TB-3 (REACTION ONLY), Support 1
8 - Point (lb)	6' 6" (Front)	N/A	212	-	977/-128	Linked from: RB-6, Support 3
9 - Point (lb)	6' 6" (Front)	N/A	169	195/-7	176	Linked from: TB-6 (REACTION ONLY), Support 1
10 - Point (lb)	18' (Front)	N/A	358	1010	-	Linked from: TB-1 (REACTION ONLY), Support 2
11 - Point (lb)	19' (Front)	N/A	884	2376	-	Linked from: SB-2, Support 2

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

SB, SB-4 (REACTION ONLY)
1 piece(s) 5 1/4" x 18" 2.0E 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)	12064 @ 8' 2 1/2"	19688 (6.00")	Passed (61%)	--	1.0 D + 0.75 L + 0.75 S (Adj Spans) [1]
Shear (lbs)	6767 @ 6' 5 1/2"	18270	Passed (37%)	1.00	1.0 D + 1.0 L (Adj Spans) [1]
Moment (Ft-lbs)	-8450 @ 8' 2 1/2"	65497	Passed (13%)	1.00	1.0 D + 1.0 L (Adj Spans) [1]
Live Load Defl. (in)	0.020 @ 4' 5 1/4"	0.197	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [1]
Total Load Defl. (in)	0.032 @ 4' 4 7/8"	0.394	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.

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"	1297	1999/-85	497	3793/-85	1 1/4" Rim Board
2 - Column Cap - steel	6.00"	6.00"	3.68"	4772	6550	3173	14495	None
3 - Column Cap - steel	6.00"	6.00"	2.19"	2760	4424	1109	8293	None
4 - Stud wall - SPF	5.50"	4.25"	1.50"	1007	1772/-46	19/-26	2798/-72	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)	25' 9" o/c	
Bottom Edge (Lu)	25' 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 25' 9 3/4"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 25' 11" (Front)	4'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 25' 11" (Front)	5'	12.0	40.0	-	3RD STORY LIVING
3 - Uniform (PSF)	0 to 25' 11" (Front)	10'	8.0	-	-	INT WALL
4 - Point (lb)	14' (Front)	N/A	1086	481	1504	Linked from: TB-4 (REACTION ONLY), Support 2
5 - Point (lb)	7' (Front)	N/A	454	481	451	Linked from: TB-6 (REACTION ONLY), Support 2
6 - Point (lb)	6' (Front)	N/A	2665	2861/-317	2590	Linked from: SB-6 (REACTION ONLY), Support 1

Weyerhaeuser Notes

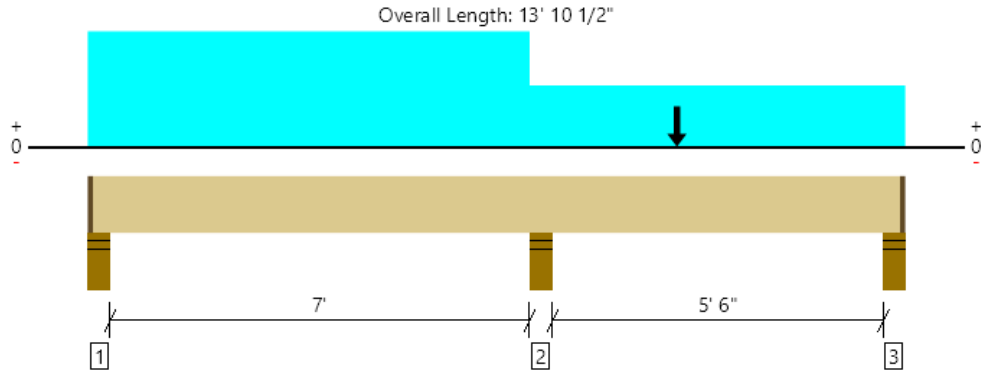
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

SB, SB-5 (REACTION ONLY)

1 piece(s) 3 1/2" x 18" 2.0E Parallam® PSL

Support 2 failed reaction check due to insufficient bearing capacity.



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)	9938 @ 7' 8 1/4"	8181 (5.50")	Failed (121%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3592 @ 5' 11 1/2"	12180	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-7100 @ 7' 8 1/4"	43665	Passed (16%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.024 @ 3' 9 9/16"	0.184	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.033 @ 3' 9"	0.368	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	5.50"	4.25"	3.00"	1250	3358/-72	-38	4608/-110	1 1/4" Rim Board
2 - Stud wall - SPF	5.50"	5.50"	6.68"	3162	6776	424	10362	None
3 - Stud wall - SPF	5.50"	4.25"	1.50"	653	1632/-566	173	2458/-566	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)	13' 8" o/c	
Bottom Edge (Lu)	13' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/4" to 13' 9 1/4"	N/A	19.6	--	--	
1 - Uniform (PSF)	0 to 7' 6" (Front)	15'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 13' 10 1/2" (Front)	9'	12.0	40.0	-	3RD STORY LIVING
3 - Uniform (PSF)	0 to 13' 10 1/2" (Front)	10'	8.0	-	-	INT WALL
4 - Uniform (PSF)	7' 6" to 13' 10 1/2" (Front)	3'	12.0	40.0	-	Default Load
5 - Point (lb)	10' (Front)	N/A	608	717	559	Linked from: TB-8 (REACTION ONLY), Support 1

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

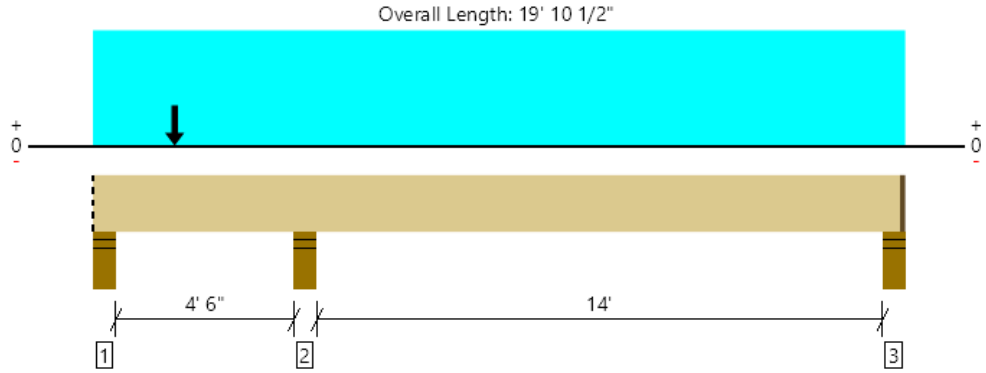
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-6 (REACTION ONLY)

1 piece(s) 3 1/2" x 18" 2.0E 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)	6753 @ 4"	8181 (5.50")	Passed (83%)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Shear (lbs)	6550 @ 1' 11 1/2"	14007	Passed (47%)	1.15	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Moment (Ft-lbs)	11053 @ 2'	50215	Passed (22%)	1.15	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Live Load Defl. (in)	0.019 @ 2'	0.121	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans)
Total Load Defl. (in)	0.031 @ 2'	0.243	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"	4.54"	2665	2861/-317	2590	8116/-317	Blocking
2 - Stud wall - SPF	5.50"	5.50"	3.91"	2398	2901	1652	6951	None
3 - Stud wall - SPF	5.50"	4.25"	1.50"	208	494/-51	-54	702/-105	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)	19' 9" o/c	
Bottom Edge (Lu)	19' 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)	0 to 19' 9 1/4"	N/A	19.6	--	--	
1 - Uniform (PSF)	0 to 19' 10 1/2" (Front)	2'	12.0	40.0	-	Default Load
2 - Point (lb)	2' (Front)	N/A	4405	4289	4188	Linked from: TB-9 (REACTION ONLY), Support 1

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

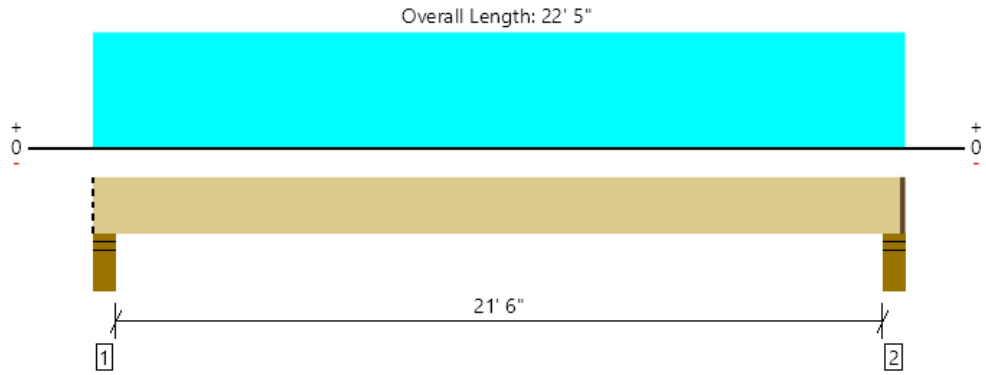
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-7 (REACTION ONLY)

1 piece(s) 5 1/4" x 18" 2.0E 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)	5467 @ 22' 1"	9483 (4.25")	Passed (58%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4554 @ 1' 11 1/2"	21011	Passed (22%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	29111 @ 11' 2 1/2"	75322	Passed (39%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.163 @ 11' 2 1/2"	0.544	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.521 @ 11' 2 1/2"	1.087	Passed (L/501)	--	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"	2.47"	3795	897	1401	6093	Blocking
2 - Stud wall - SPF	5.50"	4.25"	2.45"	3792	897	1401	6090	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)	22' 4" o/c	
Bottom Edge (Lu)	22' 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)	0 to 22' 3 3/4"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 22' 5" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 22' 5" (Front)	14'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	0 to 22' 5" (Front)	5'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

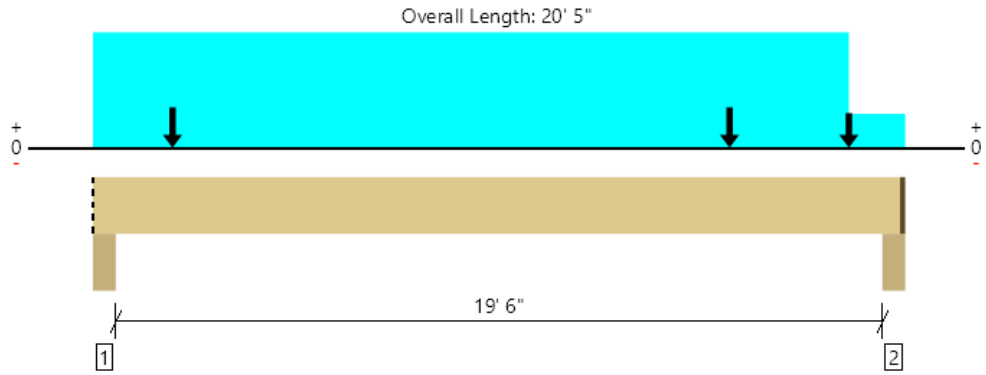
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-8 (REACTION ONLY)

1 piece(s) 7" x 18" 2.0E 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)	18839 @ 20' 1"	18594 (4.25")	Passed (101%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	13870 @ 18' 5 1/2"	24360	Passed (57%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	60898 @ 10' 9 15/16"	87330	Passed (70%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.389 @ 10' 4 5/8"	0.494	Passed (L/610)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.755 @ 10' 4 7/8"	0.988	Passed (L/314)	--	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	5.50"	5.50"	3.70"	7659	6441	4949	19049	Blocking
2 - Column - SPF	5.50"	4.25"	4.31"	10103	6494	5192	21789	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)	20' 4" o/c	
Bottom Edge (Lu)	20' 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)	0 to 20' 3 3/4"	N/A	39.5	--	--	
1 - Uniform (PSF)	0 to 20' 5" (Front)	3'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 20' 5" (Front)	10'	15.0	-	-	EXT WALL
3 - Point (lb)	2' (Front)	N/A	2561	597	3729	Linked from: TB-11 (REACTION ONLY), Support 1
4 - Point (lb)	16' (Front)	N/A	2561	597	3729	Linked from: TB-11 (REACTION ONLY), Support 2
5 - Point (lb)	19' (Front)	N/A	3795	897	1401	Linked from: SB-7 (REACTION ONLY), Support 1
6 - Uniform (PLF)	0 to 19' (Front)	N/A	223.5	441.8	67.5	Linked from: SJ-1 (REACTION ONLY), Support 1

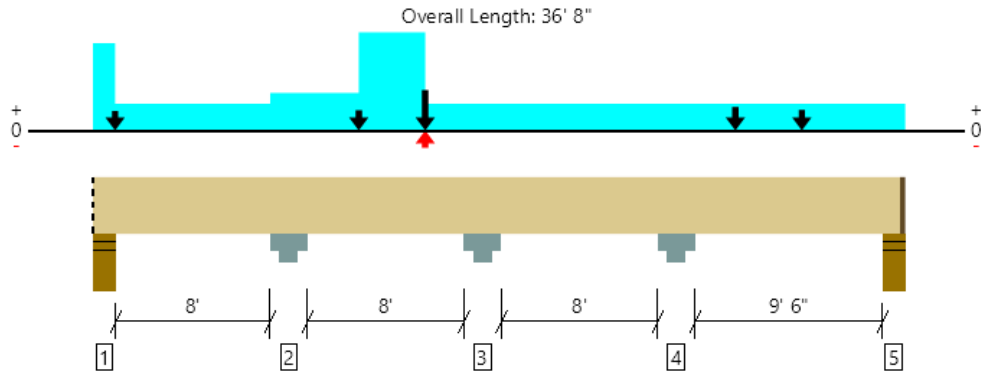
Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

SB, SB-9 (REACTION ONLY)

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)	32217 @ 17' 7"	39375 (9.00")	Passed (82%)	--	1.0 D + 0.75 L + 0.75 S (Adj Spans) [1]
Shear (lbs)	24481 @ 15' 8 1/2"	24360	Passed (100%)	1.00	1.0 D + 1.0 L (Adj Spans) [1]
Moment (Ft-lbs)	40297 @ 15'	87330	Passed (46%)	1.00	1.0 D + 1.0 L (Alt Spans) [1]
Live Load Defl. (in)	0.059 @ 13' 7 9/16"	0.219	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (Alt Spans) [1]
Total Load Defl. (in)	0.108 @ 13' 7 15/16"	0.438	Passed (L/976)	--	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.
- -841 lbs uplift at support located at 4". Strapping or other restraint may be required.
- 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"	1.64"	477	4405/-1194	-563	4882/-1757	Blocking
2 - Column Cap - steel	9.00"	9.00"	4.41"	8385	10893	3572	22850	None
3 - Column Cap - steel	9.00"	9.00"	7.36"	13866	15691/-135	8777	38334/-135	None
4 - Column Cap - steel	9.00"	9.00"	2.94"	5255	7508/-836	2614	15377/-836	None
5 - Stud wall - SPF	5.50"	4.25"	1.96"	2778	2757/-80	1335	6870/-80	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)	36' 7" o/c	
Bottom Edge (Lu)	36' 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 36' 6 3/4"	N/A	39.4	--	--	
1 - Uniform (PSF)	0 to 36' 8" (Front)	7'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	8' to 15' (Front)	10'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	12' to 15' (Front)	16'	12.0	40.0	-	THIRD FLOOR
4 - Point (lb)	12' (Front)	N/A	1143	3413	35	Linked from: SH-2, Support 2
5 - Point (lb)	15' (Front)	N/A	7659	6441	4949	Linked from: SB-8 (REACTION ONLY), Support 1
6 - Point (lb)	32' (Front)	N/A	2628	1193	1678	Linked from: SB-10 (REACTION ONLY), Support 2
7 - Point (lb)	15' (Front)	N/A	7555	5242	5960	Linked from: TB-10 (REACTION ONLY), Support 1
8 - Point (lb)	29' (Front)	N/A	4294	3537	2180	Linked from: TB-10 (REACTION ONLY), Support 2
9 - Point (lb)	15' (Front)	N/A	208	494/-51	-54	Linked from: SB-6 (REACTION ONLY), Support 3
10 - Point (lb)	1' (Front)	N/A	936	2914	6	Linked from: SH-2, Support 1
11 - Uniform (PSF)	0 to 1' (Front)	16'	12.0	40.0	-	Default Load

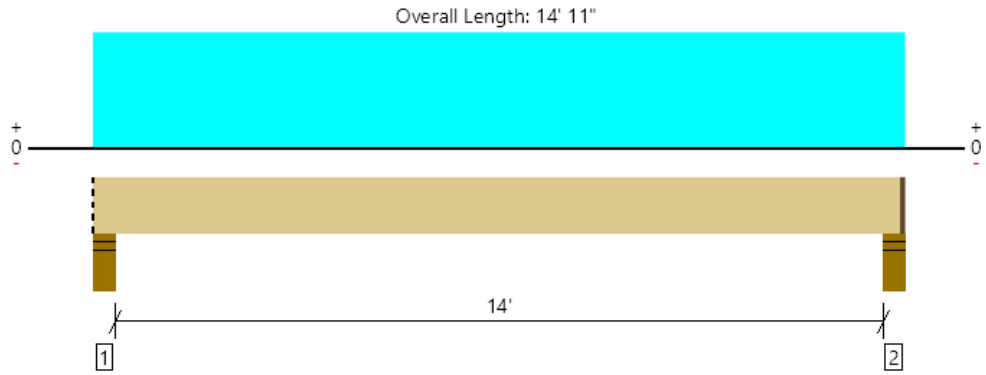
Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

SB, SB-10 (REACTION ONLY)

1 piece(s) 3 1/2" x 18" 2.0E 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)	4717 @ 14' 7"	6322 (4.25")	Passed (75%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	3528 @ 1' 11 1/2"	14007	Passed (25%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	16281 @ 7' 5 1/2"	50215	Passed (32%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.092 @ 7' 5 1/2"	0.356	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.205 @ 7' 5 1/2"	0.712	Passed (L/835)	--	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"	3.22"	2630	1193	1678	5501	Blocking
2 - Stud wall - SPF	5.50"	4.25"	3.17"	2628	1193	1678	5499	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)	14' 10" o/c	
Bottom Edge (Lu)	14' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14' 9 3/4"	N/A	19.6	--	--	
1 - Uniform (PSF)	0 to 14' 11" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 14' 11" (Front)	10'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	0 to 14' 11" (Front)	2'	12.0	40.0	-	THIRD FLOOR
4 - Uniform (PSF)	0 to 14' 11" (Front)	9'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

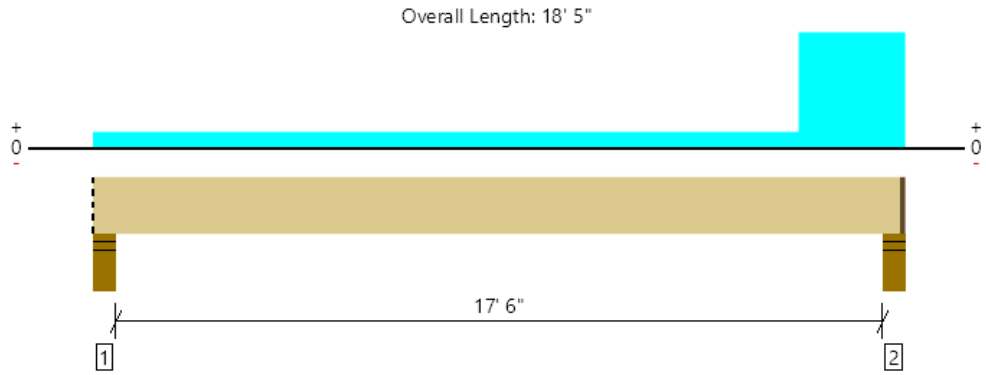
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-11 (REACTION ONLY)

1 piece(s) 1 3/4" x 11 7/8" 1.55E TimberStrand® LSL



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)	2033 @ 18' 1"	3161 (4.25")	Passed (64%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1254 @ 16' 11 5/8"	4295	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4875 @ 9' 8 3/4"	7977	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.551 @ 9' 4"	0.444	Failed (L/387)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.778 @ 9' 4 5/16"	0.887	Passed (L/274)	--	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"	304	771	21	1096	Blocking
2 - Stud wall - SPF	5.50"	4.25"	2.73"	714	1379	402	2495	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)	6' 5" 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)	0 to 18' 3 3/4"	N/A	6.5	--	--	
1 - Uniform (PSF)	0 to 18' 5" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	16' to 18' 5" (Front)	7'	12.0	40.0	-	Default Load
3 - Uniform (PSF)	16' to 18' 5" (Front)	7'	15.0	-	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

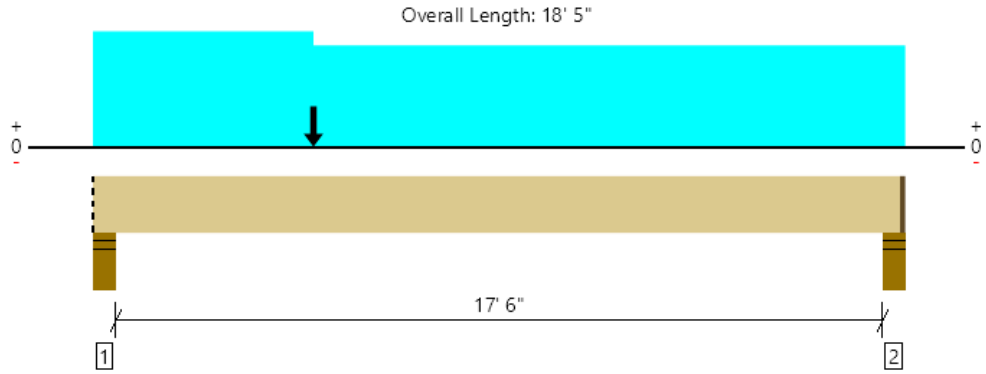
ForteWEB Software Operator	Job Notes
AP L120 Engineering and Design (214) 625-2819 apatsevich@l120engineering.com	

Weyerhaeuser

SB, SB-12 (REACTION ONLY)

1 piece(s) 5 1/4" x 18" 2.0E Parallam® PSL

Support 1 failed reaction check due to insufficient bearing capacity.



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)	12702 @ 4"	12272 (5.50")	Failed (104%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	10705 @ 1' 11 1/2"	21011	Passed (51%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	49321 @ 7' 5 15/16"	75322	Passed (65%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.302 @ 8' 11 1/4"	0.444	Passed (L/706)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.607 @ 8' 11"	0.887	Passed (L/351)	--	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"	5.69"	6595	4161	3981	14737	Blocking
2 - Stud wall - SPF	5.50"	4.25"	4.26"	4761	3854	2605	11220	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)	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)	0 to 18' 3 3/4"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 18' 5" (Front)	2'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 18' 5" (Front)	8'	12.0	40.0	-	3RD FLOOR
3 - Uniform (PSF)	0 to 18' 5" (Front)	8'	15.0	-	25.0	ROOF
4 - Uniform (PSF)	0 to 5' (Front)	20'	15.0	-	-	EXT WALL
5 - Uniform (PSF)	5' to 18' 5" (Front)	20'	8.0	-	-	INT WALL
6 - Point (lb)	5' (Front)	N/A	2748	648	2903	Linked from: TB-17 (REACTION ONLY), Support 1

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

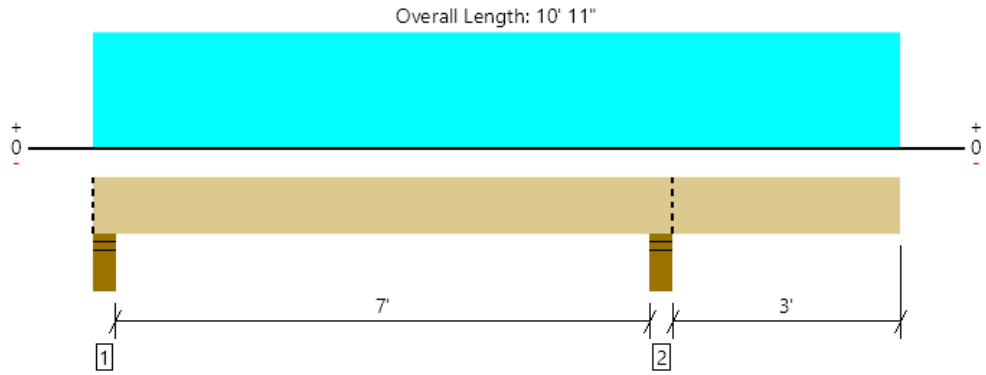
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-13 (REACTION ONLY)

1 piece(s) 4 x 10 Douglas Fir-Larch 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)	2499 @ 7' 8 1/4"	8181 (5.50")	Passed (31%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1111 @ 6' 8 1/4"	4468	Passed (25%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1711 @ 7' 8 1/4"	5166	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.027 @ 3' 10 9/16"	0.184	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.040 @ 3' 9 11/16"	0.368	Passed (L/999+)	--	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"	1.50"	423	731	1154	Blocking
2 - Stud wall - SPF	5.50"	5.50"	1.68"	976	1523	2499	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	8.2	--	
1 - Uniform (PSF)	0 to 10' 11" (Front)	8'	15.0	25.0	ROOF

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

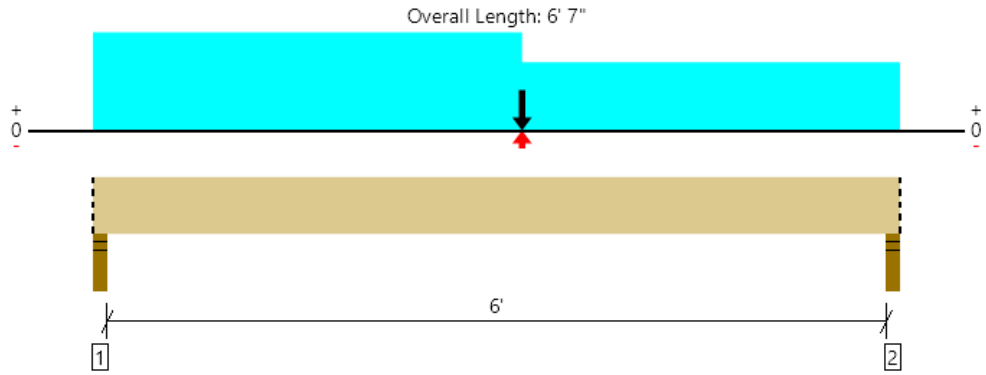
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-14 (REACTION ONLY)

1 piece(s) 3 1/2" x 18" 2.0E 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)	3502 @ 2"	5206 (3.50")	Passed (67%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	2406 @ 4' 9 1/2"	12180	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	7241 @ 3' 6"	43665	Passed (17%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.012 @ 3' 6"	0.156	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.026 @ 3' 6"	0.313	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	3.50"	3.50"	2.35"	2015	1481	503	3999	Blocking
2 - Stud wall - SPF	3.50"	3.50"	2.22"	1978	1255	504	3737	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' 7" o/c	
Bottom Edge (Lu)	6' 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 6' 7"	N/A	19.6	--	--	
1 - Uniform (PSF)	0 to 3' 6" (Front)	6'	12.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 6' 7" (Front)	20'	15.0	-	-	EXT WALL
3 - Uniform (PSF)	0 to 6' 7" (Front)	6'	15.0	-	25.0	ROOF
4 - Uniform (PSF)	3' 6" to 6' 7" (Front)	1'	12.0	40.0	-	Default Load
5 - Point (lb)	3' 6" (Front)	N/A	1007	1772/-46	19/-26	Linked from: SB-4 (REACTION ONLY), Support 4

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

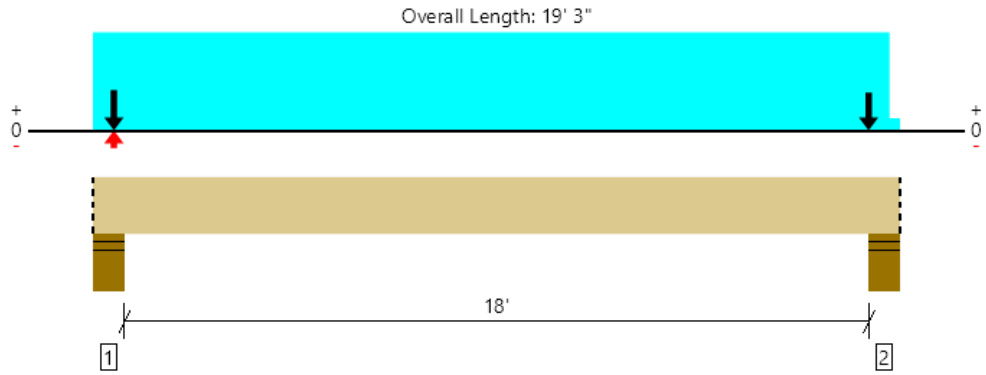
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-15 (REACTION ONLY)

1 piece(s) 5 1/4" x 18" 2.0E 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)	16669 @ 6"	16734 (7.50")	Passed (100%)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Shear (lbs)	7658 @ 17' 1 1/2"	18270	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	41287 @ 9' 8 5/16"	65497	Passed (63%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.317 @ 9' 7 11/16"	0.456	Passed (L/691)	--	1.0 D + 0.75 L + 0.75 S (All Spans) [1]
Total Load Defl. (in)	0.613 @ 9' 7 13/16"	0.913	Passed (L/357)	--	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	7.50"	7.50"	7.47"	7987	7021	4555	19563	Blocking
2 - Stud wall - SPF	7.50"	7.50"	7.15"	8789	5026	4524	18339	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' 3" o/c	
Bottom Edge (Lu)	19' 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 19' 3"	N/A	29.5	--	--	
1 - Uniform (PSF)	0 to 19' 3" (Front)	4'	15.0	-	25.0	ROOF
2 - Point (lb)	18' 6" (Front)	N/A	3795	897	1401	Linked from: SB-7 (REACTION ONLY), Support 1
3 - Uniform (PLF)	0 to 19' (Front)	N/A	446.3	441.8	232.5	Linked from: SJ-1 (REACTION ONLY), Support 2
4 - Point (lb)	6" (Front)	N/A	2778	2757/-80	1335	Linked from: SB-9 (REACTION ONLY), Support 5

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

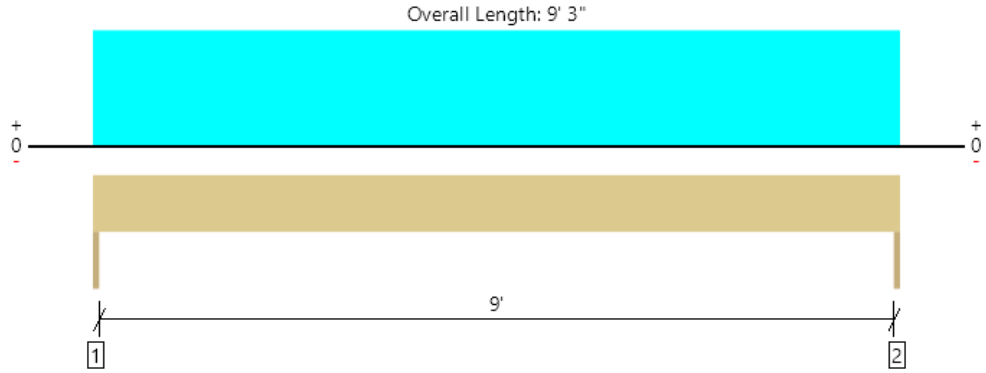
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

SB, SB-16 (REACTION ONLY)

1 piece(s) 3 1/2" x 6" 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)	764 @ 0	3413 (1.50")	Passed (22%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	660 @ 7 1/2"	4267	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	1766 @ 4' 7 1/2"	4830	Passed (37%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.145 @ 4' 7 1/2"	0.308	Passed (L/764)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.240 @ 4' 7 1/2"	0.313	Passed (L/463)	--	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.
- 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	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	301	462	763	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	301	462	763	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 (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 3"	N/A	5.1	--	
1 - Uniform (PSF)	0 to 9' 3"	4'	15.0	25.0	SNOW

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

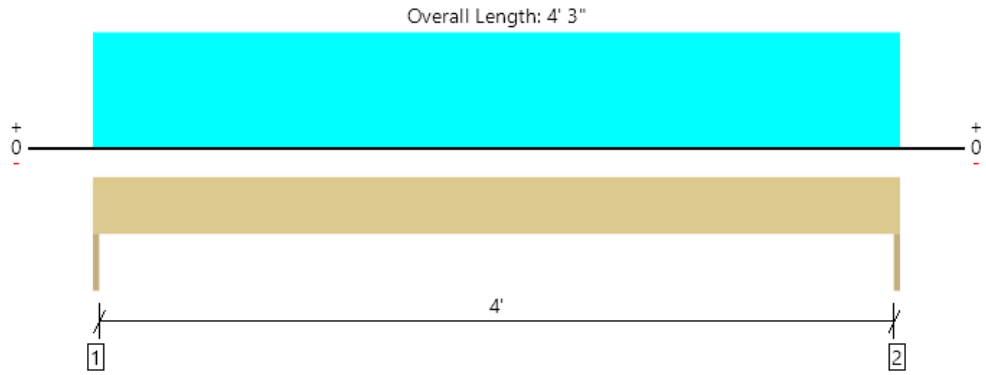
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

FH, FH-1

1 piece(s) 6 x 6 Douglas Fir-Larch 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)	1393 @ 0	5156 (1.50")	Passed (27%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1011 @ 7"	3428	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1480 @ 2' 1 1/2"	1733	Passed (85%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.027 @ 2' 1 1/2"	0.142	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.049 @ 2' 1 1/2"	0.213	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.
- This product has a square cross section. The analysis engine has checked both edge and plank orientations to allow for either installation.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	628	765	1393	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	628	765	1393	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 (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4' 3"	N/A	7.7	--	
1 - Uniform (PSF)	0 to 4' 3"	9'	12.0	40.0	Default Load
2 - Uniform (PSF)	0 to 4' 3"	12'	15.0	-	EXT WALL

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

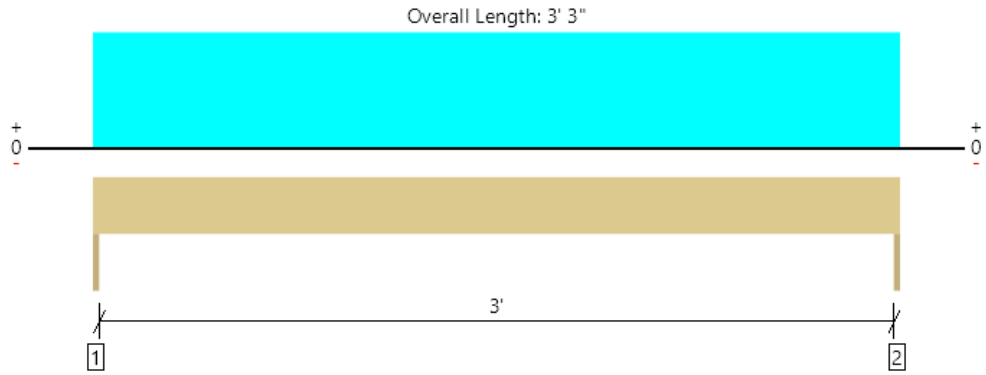
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

FH, FH-3

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	268 @ 0	3281 (1.50")	Passed (8%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	172 @ 7"	2657	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	218 @ 1' 7 1/2"	1979	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.003 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.005 @ 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"	105	163	268	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	105	163	268	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 (Side)	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"	4'	15.0	25.0	SNOW

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

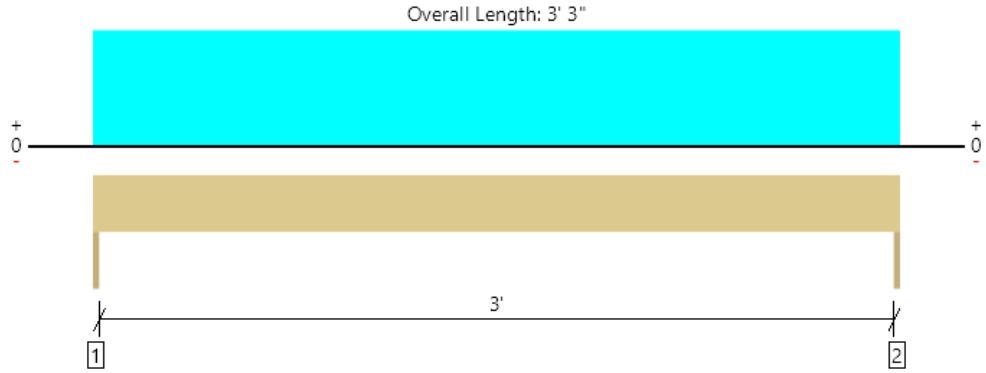
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

FH, FH-4

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	1050 @ 0	3281 (1.50")	Passed (32%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	673 @ 7"	2310	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	853 @ 1' 7 1/2"	1720	Passed (50%)	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 + 1.0 L (All Spans)
Total Load Defl. (in)	0.021 @ 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"	432	618	1050	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	432	618	1050	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 (Side)	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"	8'	12.0	40.0	DEFAULT
2 - Uniform (PSF)	0 to 3' 3"	10'	15.0	-	EXT WALL
3 - Uniform (PSF)	0 to 3' 3"	1'	15.0	60.0	DECK

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

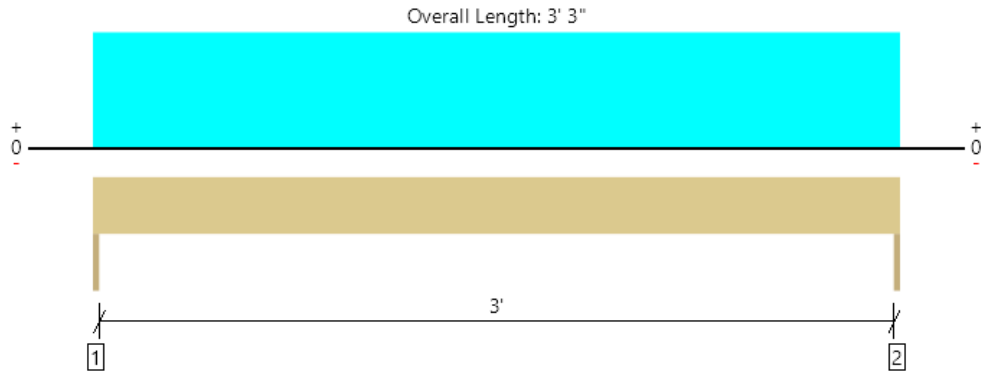
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

FH, FH-5

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	1378 @ 0	3281 (1.50")	Passed (42%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	883 @ 7"	2310	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1119 @ 1' 7 1/2"	1720	Passed (65%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.014 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.027 @ 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"	695	683	1378	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	695	683	1378	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 (Side)	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"	9'	12.0	40.0	DEFAULT
2 - Uniform (PSF)	0 to 3' 3"	20'	15.0	-	EXT WALL
3 - Uniform (PSF)	0 to 3' 3"	1'	15.0	60.0	DEFAULT

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

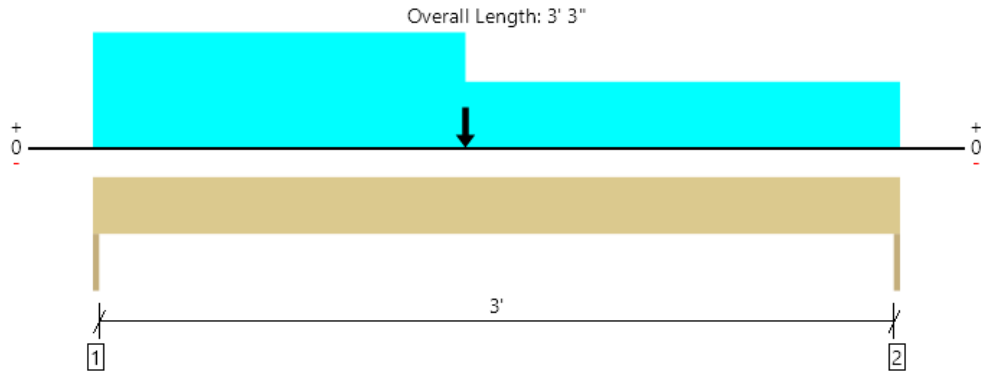
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

FH, FH-6

1 piece(s) 4 x 8 Douglas Fir-Larch 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)	2364 @ 0	3281 (1.50")	Passed (72%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1560 @ 8 3/4"	3045	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2306 @ 1' 6"	2989	Passed (77%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.012 @ 1' 7 3/16"	0.108	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.022 @ 1' 7 1/4"	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"	978	1386	328	2692	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	832	1041	281	2154	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 (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	6.4	--	--	
1 - Uniform (PSF)	0 to 3' 3"	9'	12.0	40.0	-	DEFAULT
2 - Uniform (PSF)	0 to 3' 3"	20'	8.0	-	-	INT WALL
3 - Uniform (PSF)	0 to 1' 6"	9'	12.0	40.0	-	DEFAULT
4 - Point (lb)	1' 6"	N/A	756	717	609	Linked from: SH-8, Support 1

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

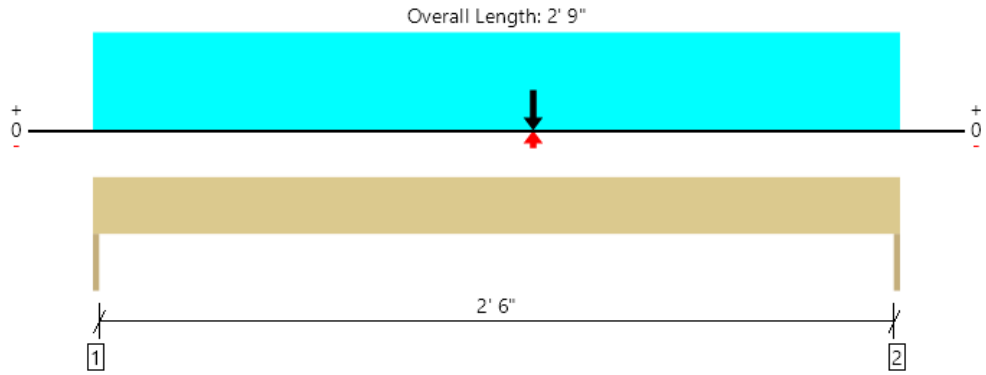
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

FH, FH-7

1 piece(s) 3 1/2" x 7 1/2" 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) [Group]
Member Reaction (lbs)	3366 @ 2' 9"	3413 (1.50")	Passed (99%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	3088 @ 2'	4638	Passed (67%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Pos Moment (Ft-lbs)	3918 @ 1' 6"	6563	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.013 @ 1' 4 5/8"	0.092	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.020 @ 1' 4 5/8"	0.138	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans) [1]

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 = 2' 9".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	907	1983	535	3425	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	1064	2302	643	4009	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 (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 2' 9"	N/A	6.4	--	--	
1 - Uniform (PSF)	0 to 2' 9"	7'	12.0	40.0	-	DEFAULT
2 - Point (lb)	1' 6"	N/A	1722	3515/-119	1178	Linked from: SB-3 (REACTION ONLY), Support 2

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

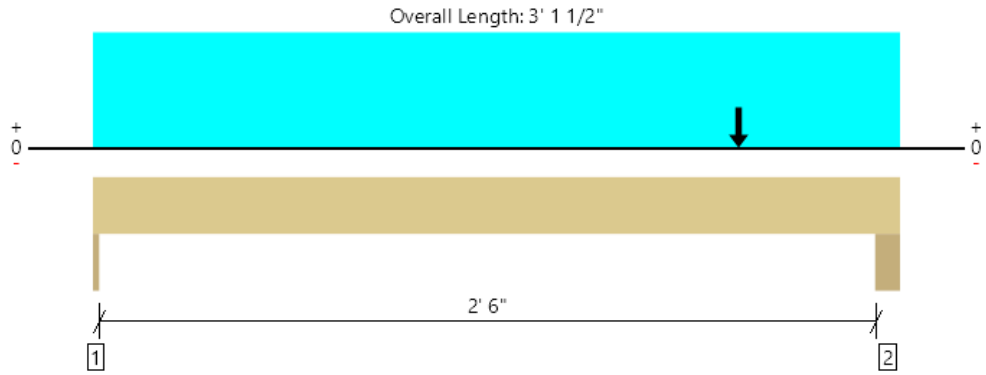
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

FH, FH-8

1 piece(s) 3 1/2" x 7 1/2" 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)	11493 @ 2' 9"	13650 (6.00")	Passed (84%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1467 @ 2'	4638	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	2689 @ 2' 6"	6563	Passed (41%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.008 @ 1' 5 7/8"	0.092	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.013 @ 1' 5 7/8"	0.138	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.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 2' 9".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	558	980	288	1826	None
2 - Trimmer - SPF	6.00"	6.00"	5.05"	4496	6445	2885	13826	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 2" o/c	
Bottom Edge (Lu)	3' 2" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 1 1/2"	N/A	6.4	--	--	
1 - Uniform (PSF)	0 to 3' 1 1/2"	7'	12.0	40.0	-	DEFAULT
2 - Point (lb)	2' 6"	N/A	4772	6550	3173	Linked from: SB-4 (REACTION ONLY), Support 2

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

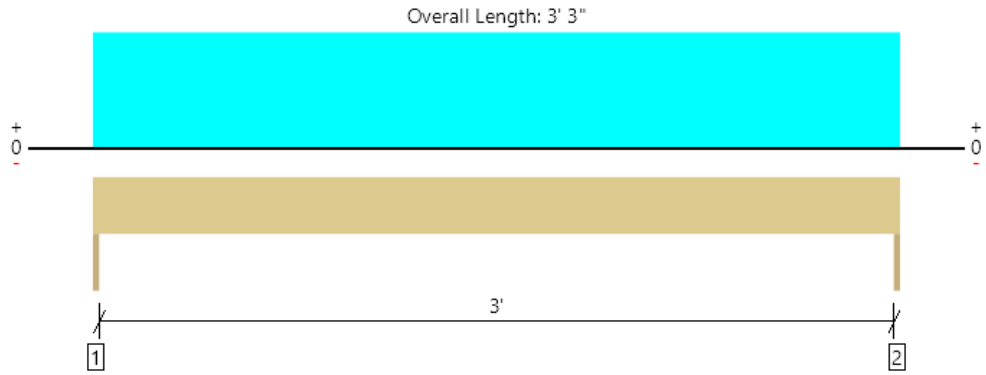
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

FH, FH-9

1 piece(s) 4 x 6 Douglas Fir-Larch 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)	853 @ 0	3281 (1.50")	Passed (26%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	547 @ 7"	2310	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	693 @ 1' 7 1/2"	1720	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.013 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.017 @ 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"	203	650	853	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	203	650	853	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 (Side)	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"	10'	12.0	40.0	DEFAULT

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

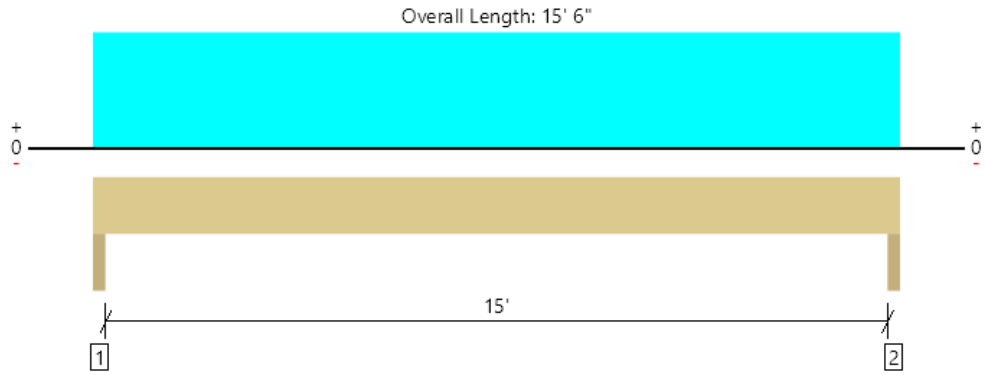
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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

Weyerhaeuser

WALL FRAMING, OH-1

1 piece(s) 3 1/2" x 14" 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)	4381 @ 1 1/2"	6563 (3.00")	Passed (67%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3580 @ 1' 5"	10894	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	16434 @ 7' 9"	31236	Passed (53%)	1.15	1.0 D + 1.0 S (All Spans)
Vert Live Load Defl. (in)	0.188 @ 7' 9"	0.508	Passed (L/972)	--	1.0 D + 1.0 S (All Spans)
Vert Total Load Defl. (in)	0.426 @ 7' 9"	0.762	Passed (L/430)	--	1.0 D + 1.0 S (All Spans)
Lat Member Reaction (lbs)	928 @ 15' 4 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	877 @ 6 1/2"	10976	Passed (8%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	3537 @ mid-span	11580	Passed (31%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	0.947 @ mid-span	1.525	Passed (L/193)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.78	1.00	Passed (78%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 S

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Lateral deflection criteria: Wind (L/120)
- Initial eccentricity applied as per ESR-1387.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - SPF	3.00"	3.00"	2.00"	2444	1937	4381	None
2 - Trimmer - SPF	3.00"	3.00"	2.00"	2444	1937	4381	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	15' 6" o/c	
Bottom Edge (Lu)	15' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Lateral Connections						
Supports	Plate Size	Plate Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Spruce-Pine-Fir		N/A	N/A	N/A
Right	2X	Spruce-Pine-Fir		N/A	N/A	N/A

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 6"	N/A	15.3	--	
1 - Uniform (PSF)	0 to 15' 6"	10'	15.0	25.0	Default Load
2 - Uniform (PSF)	0 to 15' 6"	10'	15.0	-	EXT WALL

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	10'	20.3	

• ASCE/SEI 7 Sec. 30.4: Exposure Category (B), Mean Roof Height (33'), Topographic Factor (1.0), Wind Directionality Factor (0.85), Basic Wind Speed (110), Risk Category(II), Effective Wind Area determined using full member span and trib. width.
• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

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

Weyerhaeuser

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

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

LONGITUDE
ONE TWENTY°
ENGINEERING & DESIGN

FOUNDATION CALCULATIONS

FOOTING REFERENCE PER PLAN

(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

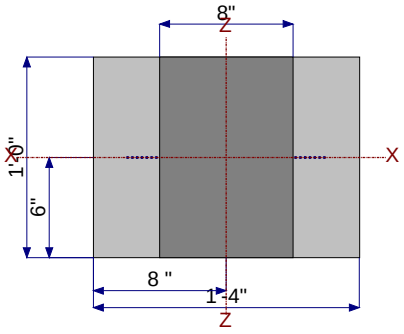
Allow. Pressure Increase per foot of width	=	ksf
when footing is wider than	=	ft

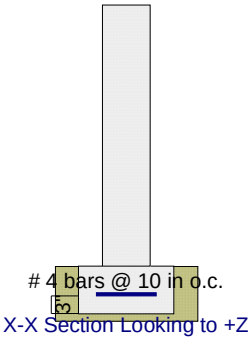
Adjusted Allowable Bearing Pressure = 2.0 ksf

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

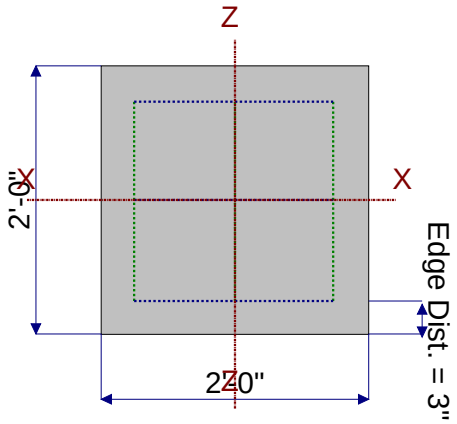
Width parallel to X-X Axis	=	2.0	ft
Length parallel to Z-Z Axis	=	2.0	ft
Footing Thickness	=	10.0	in

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

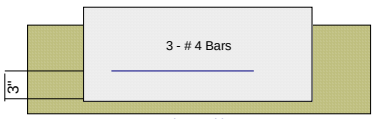


Reinforcing

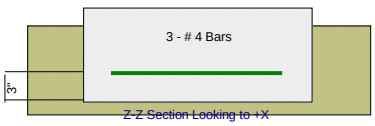
Bars parallel to X-X Axis			
Number of Bars	=	3.0	
Reinforcing Bar Size	=	# 4	
Bars parallel to Z-Z Axis			
Number of Bars	=	3.0	
Reinforcing Bar Size	=	# 4	

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

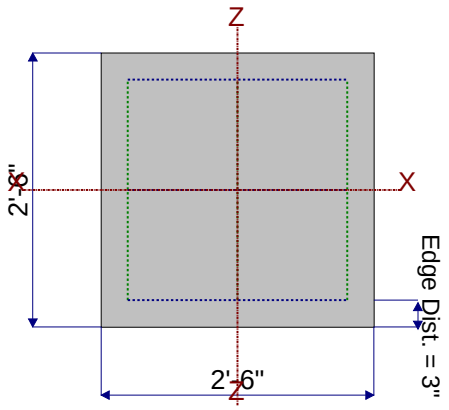
Width parallel to X-X Axis	=	2.50 ft
Length parallel to Z-Z Axis	=	2.50 ft
Footing Thickness	=	10.0 in

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

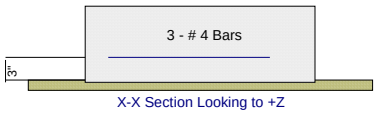


Reinforcing

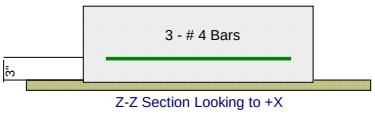
Bars parallel to X-X Axis			
Number of Bars	=		3.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		3.0
Reinforcing Bar Size	=	#	4

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

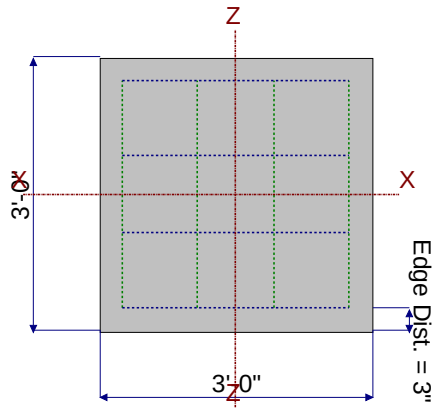
Width parallel to X-X Axis	=	3.0 ft
Length parallel to Z-Z Axis	=	3.0 ft
Footing Thickness	=	10.0 in

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

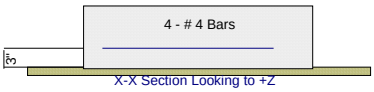


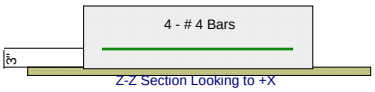
Reinforcing

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

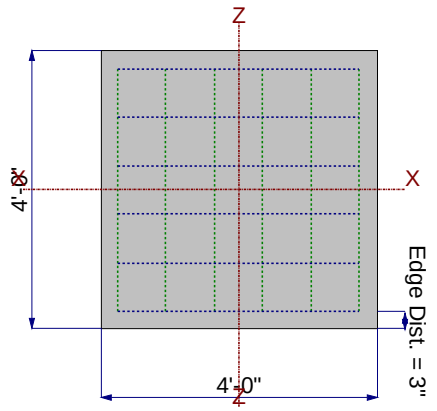
Width parallel to X-X Axis	=	4.0 ft
Length parallel to Z-Z Axis	=	4.0 ft
Footing Thickness	=	12.0 in

Pedestal dimensions...

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

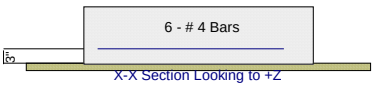
Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0 in

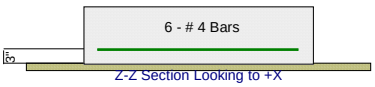


Reinforcing

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

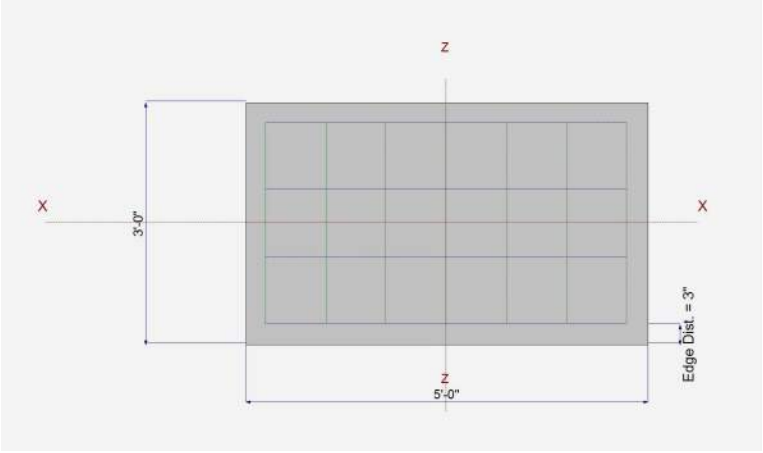
Width parallel to X-X Axis	=	5.0	ft
Length parallel to Z-Z Axis	=	3.0	ft
Footing Thickness	=	12.0	in

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

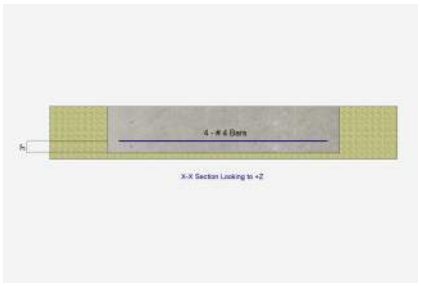
Bars parallel to X-X Axis			
Number of Bars	=		4.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		7.0
Reinforcing Bar Size	=	#	4

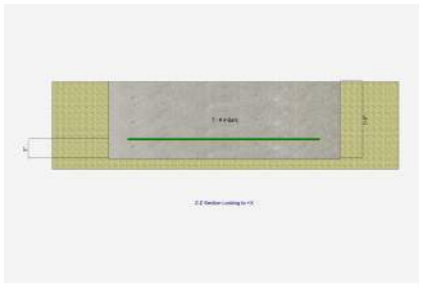
Bandwidth Distribution Check (ACI 15.4.4.2)

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 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	1.91	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

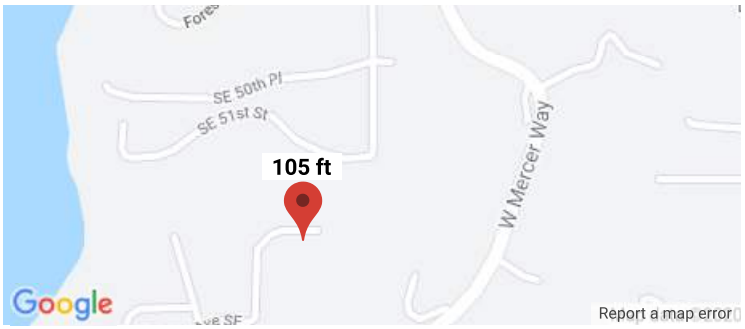
Address: 5202 Forest Ave SE, Mercer Island, WA 98040, USA

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.

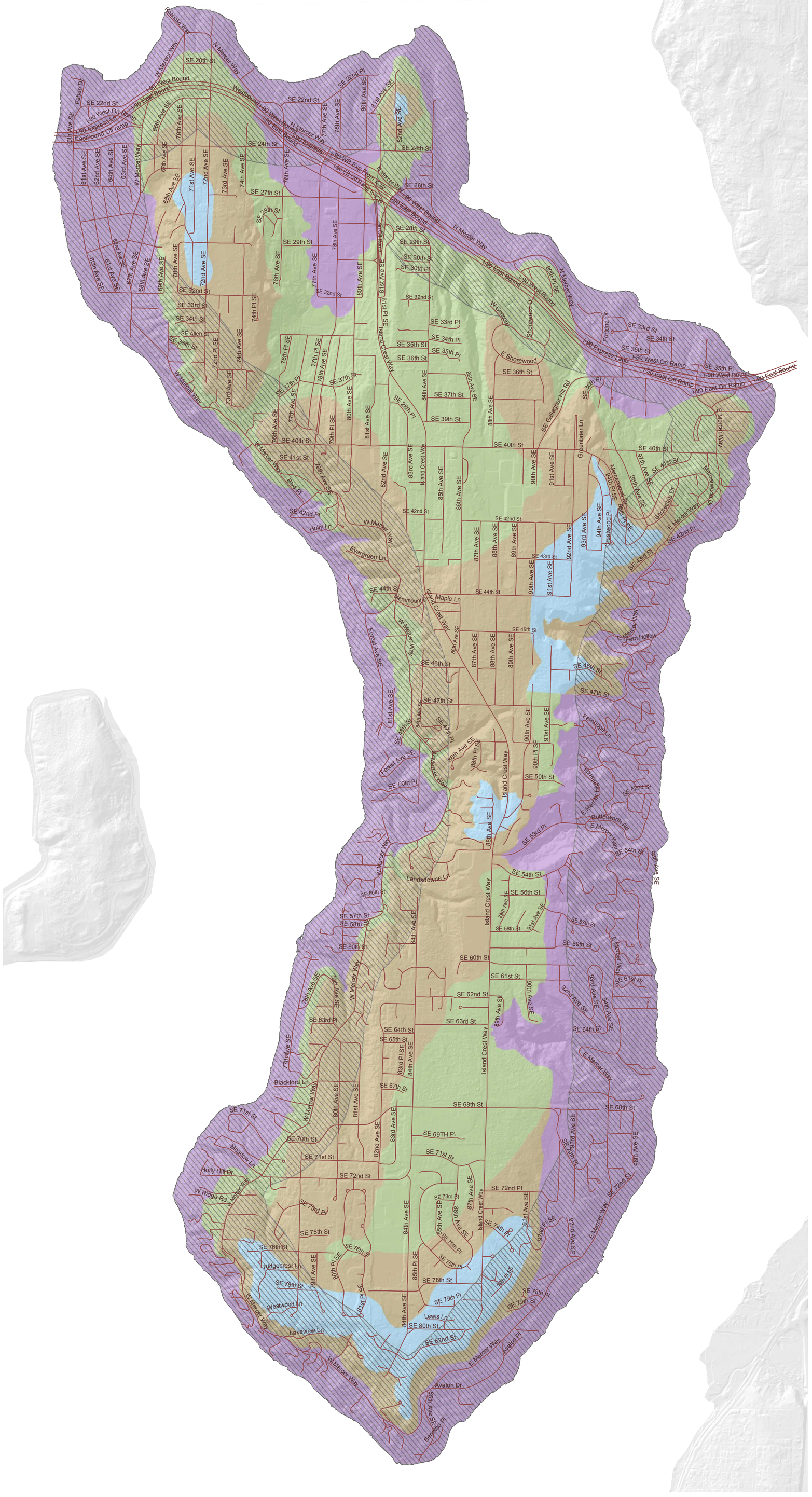
Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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.

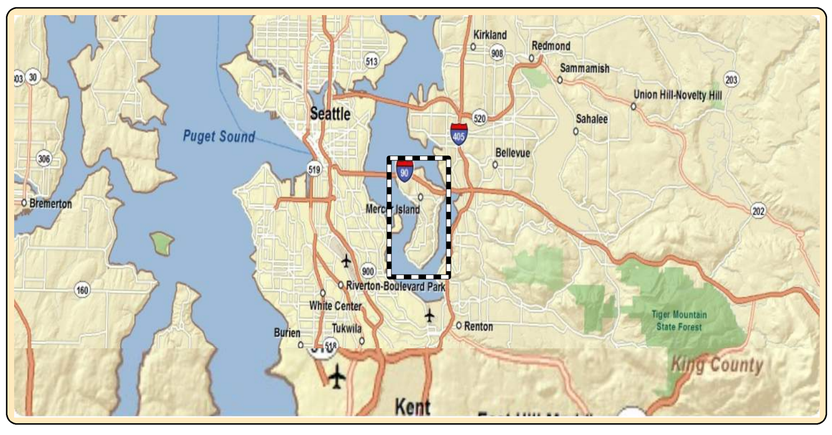
This map is for the sole use of the staff of the City of Mercer Island's Development Services Group (DSG) for the purposes of permit application evaluation. This map provides DSG staff a general assessment of Wind Exposure Category and Wind Speed-up (Topographic Effects). All areas have not been specifically 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.

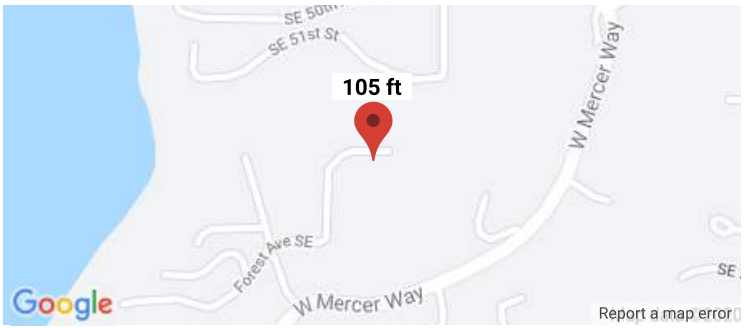
DEFINITIONS:

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

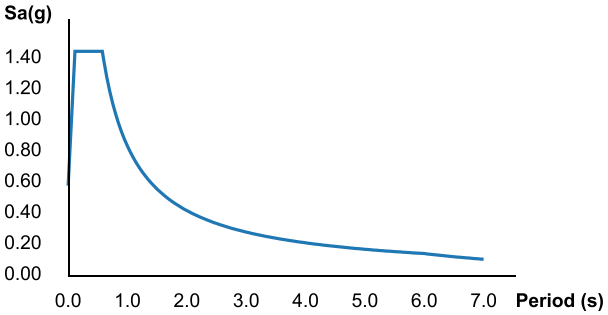
Hazard Type: Seismic

Reference Document: ASCE7-10

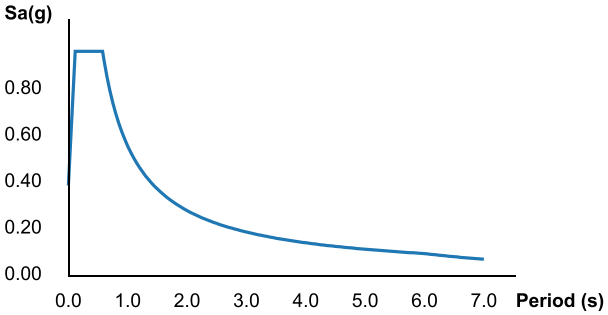
Risk Category: II

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.

While the information presented on this website is believed to be correct, ATC and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in the report should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. ATC does not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the report provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the report.

Project Number:	Plan:	Sheet Number:
xxx	**Forest Ave Lot 4**	**L1**
Engineer:	**Specifics:**	**Date**
xxx	**WIND FORCES**	**6/16/2020**

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)

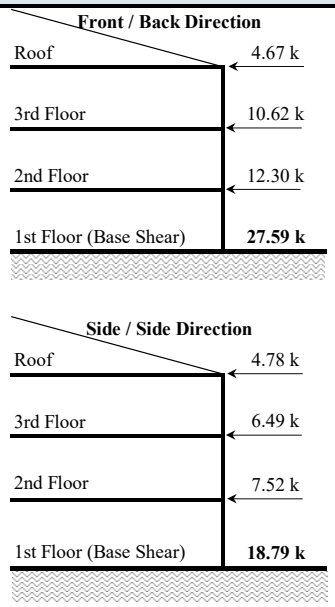
BUILDING GEOMETRY:

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:

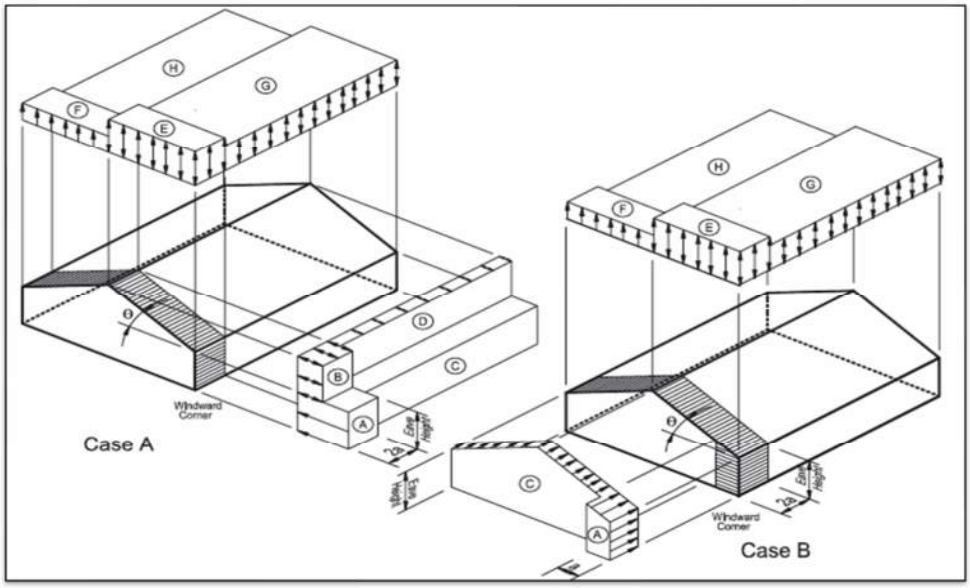


SIMPLIFIED DESIGN WIND PRESSURE, P_{S30} (psf)

(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 4**	**L1**
Engineer:	Specifics:	Date
xxx	**WIND FORCES**	**6/16/2020**

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)	0.0	0.00	(roof)	8.0	-12.75	-8.0	-7.39	0.00	0.00
	Floor to Mid 2nd LVL	68.0	5.50	(wall)	8.0	29.88	60.0	19.90	6.15	4.67
								Σ =	10.62	8.06
2nd FLOOR	Mid 2nd LVL to Floor	68.0	5.50	(wall)	8.0	29.88	60.0	19.90	6.15	4.67
	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	68.0	5.50	(wall)	8.0	29.88	60.0	19.90	6.15	4.67
								Σ =	12.30	9.34
								Total Wind Base Shear (kips)	27.39	22.06

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)	40.0	3.00	(roof)	8.0	29.88	32.0	19.90	2.05	0.75
	Plate to Mid 3rd LVL	40.0	4.00	(wall)	8.0	29.88	32.0	19.90	2.73	2.00
								Σ =	4.78	2.75
3rd FLOOR	Mid 3rd LVL to Floor	40.0	4.00	(wall)	8.0	29.88	32.0	19.90	2.73	2.00
	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	40.0	5.50	(wall)	8.0	29.88	32.0	19.90	3.76	2.75
								Σ =	6.49	4.74
2nd FLOOR	Mid 2nd LVL to Floor	40.0	5.50	(wall)	8.0	29.88	32.0	19.90	3.76	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 1st LVL	40.0	5.50	(wall)	8.0	29.88	32.0	19.90	3.76	2.75
								Σ =	7.52	5.49
								Total Wind Base Shear (kips)	18.79	12.98

Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 4**	**L2**
Engineer:	Specifics:	Date:
xxx	**SEISMIC WEIGHTS**	**6/16/2020**

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	3,000	1.03	15	=	46,571		
	Ext. Wall Below	220	4.00	12	=	10,560		
	Corridor Wall Below	300	4.00	8	=	9,600		
							67	**22**
3rd FLOOR								
	3rd Floor	1,850	1.00	12	=	22,200		
	Low Roof	200	1.03	15	=	3,105		
	Ext. Wall Above	220	4.00	12	=	10,560		
	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		
							65	**31**
2nd FLOOR								
	2nd Floor	2,300	1.00	12	=	27,600		
	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	220	4.50	12	=	11,880		
	Corridor Wall Below	80	4.50	8	=	2,880		
							61	**27**
1st FLOOR								
	Ext. Wall Above	220	4.50	12	=	11,880		
	Corridor Wall Above	80	4.50	8	=	2,880		
							15	

STRUCTURE WEIGHT FOR SEISMIC BASE SHEAR: 193 kips

TOTAL WEIGHT OF STRUCTURE: 207 kips
(Includes Basement Dead Load)

Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 4**	**L3**
Engineer:	**Specifics:**	**Date:**
xxx	**SEISMIC FORCES**	**6/16/2020**

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 =	193	kips	
V = Cs W =	28.5	kips	(ASCE 7 EQ 12.8.-1)
Q_E = V =	28.5	kips	(ASCE 7 EQ 12.4-3)
ρ =	1.3		(ASCE 7 12.3.4.2)
$E_H = \rho\,Q_E$ =	37.1	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

$E_H/1.4$ =	**26.5**	**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	3,000	10.00	31.00	67	2,069	0.51	14.5	**13.5**
3rd	1,850	10.50	21.00	65	1,355	0.33	9.5	**8.8**
2nd	2,300	10.50	10.50	61	645	0.16	4.5	**4.2**
			Sum =	4,069	1.000	28.5	**26.5**	

ASD DIAPHRAGM FORCES

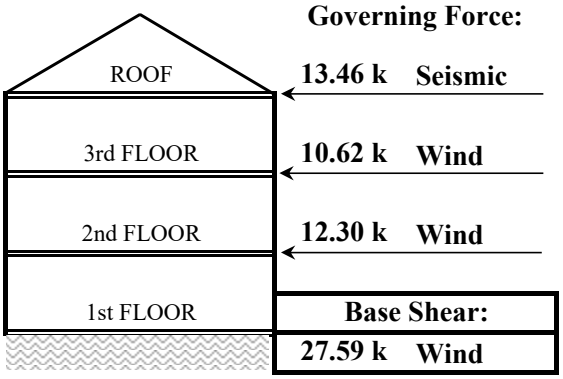
Floor	Design Shear Vi = Σfx (kips)	Fpx Min $0.2S_{DS}I_e w_{px}$ (kips)	Fpx Max $0.4S_{DS}I_e w_{px}$ (kips)	Fpx (kips)
Roof	13.46	11.68	23.37	13.46
3rd	22.29	11.30	22.60	10.96
2nd	26.48	10.76	21.51	8.44

Fpx DIAPHRAGM	
(kips)	(psf)
13.46	4.5
11.30	6.1
10.76	4.7

Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 4**	**L4**
Engineer:	**Specifics:**	**Date:**
xxx	**DESIGN LOADS**	**6/16/2020**

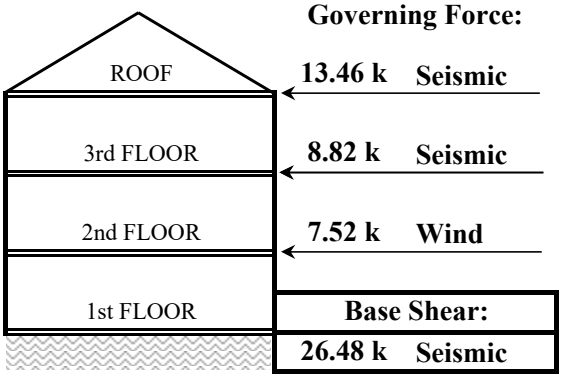
FRONT / BACK DIRECTION

Wind Force $0.6\,\omega * W_{F/B}$ (kips)		Seismic Force $E/1.4$ (kips)	
Per Level	Sum	Per Level	Sum
4.67		13.46	
10.62	4.67	8.82	13.46
12.30	15.29	4.20	22.29
	27.59		26.48



SIDE / SIDE DIRECTION

Wind Force $0.6\,\omega * W_{S}$ (kips)		Seismic Force $E/1.4$ (kips)	
Per Level	Sum	Per Level	Sum
4.78		13.46	
6.49	4.78	8.82	13.46
7.52	11.27	4.20	22.29
	18.79		26.48



Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 4**	L5
Engineer:	Specifics:	Date:
xxx	**Shear walls**	6/16/2020

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) = 13.46
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	8.00	5.00	2.00	1.08	5.75	16.00	0.23	3.76	0.74	**0.74**	129	1.00	**129**	SW6	2.00	0.13	0.13	6.8	10.8	-0.31	flr-flr	HF	Edge	**No HD**	0.86	**CS16**
3	1.2	9.75	0.00	0.00	0.00	0.00	9.75	16.00	0.40	6.37	1.26	**1.26**	129	1.00	**129**	SW6	5.00	0.17	0.17	11.4	7.4	0.44	flr-flr	HF	Edge	**No HD**	0.00	**No strap**
3	1.3	9.00	0.00	0.00	0.00	0.00	9.00	16.00	0.37	5.88	1.16	**1.16**	129	1.00	**129**	SW6	5.00	0.17	0.17	10.6	6.3	0.51	flr-flr	HF	Edge	**No HD**	0.00	**No strap**
3	2.1	16.75	9.00	5.00	2.00	1.08	7.75	10.00	0.59	5.94	1.18	**1.18**	152	1.00	**152**	SW6	2.00	0.13	0.13	10.7	16.0	-0.33	flr-flr	HF	Edge	**No HD**	1.01	**CS16**
3	2.2	5.30	0.00	0.00	0.00	0.00	5.30	10.00	0.41	4.06	0.80	**0.80**	152	1.00	**152**	SW6	2.00	0.13	0.13	7.3	1.6	1.19	flr-flr	HF	Edge	**BALLOON FR**	0.00	**No strap**
3	3.1	16.50	0.00	0.00	0.00	0.00	16.50	18.00	1.00	18.00	3.56	**3.56**	216	1.00	**216**	SW6	2.00	0.13	0.13	32.4	15.6	1.05	flr-flr	HF	Edge	**MST37**	0.00	**No strap**
3	4.1	10.50	0.00	0.00	0.00	0.00	10.50	24.00	1.00	24.00	4.75	**4.75**	453	1.00	**453**	SW3	2.00	0.13	0.13	43.1	6.3	3.68	flr-beam	HF	Edge	**MSTC66B3**	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 = 81.55 | Total OSB wall length = (feet) 64.55 | S = 68.00 | 13.46 | **13.46** | **OK** | Total OSB Capacity (kips) 13.46

2nd Story Walls (Front - Back Direction)

Shear panel capacity (Wind or Seismic) = Seismic

Story shear(kips) = 8.82
Story height (ft) = 10.08
Shear Panel height (ft) = 9.08
Total Diaphragm width (ft) = 68.00

Accumulated Shear = 22.29
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	1.1	22.25	11.00	5.00	2.00	1.08	11.25	16.00	0.56	8.89	1.15	**2.91**	259	1.00	**259**	SW4	2.00	0.13	NO	0.13	29.4	29.6	-0.01	flr-flr	HF	Edge	**No HD**	1.72	**CS14**
2	1.2	9.00	0.00	0.00	0.00	0.00	9.00	16.00	0.44	7.11	0.92	**2.33**	259	1.00	**259**	SW4	2.00	0.13	NO	0.13	23.5	4.8	2.19	flr-flr	HF	Edge	**MST37**	0.00	**No strap**
2	2.1	5.50	0.00	0.00	0.00	0.00	5.50	8.00	1.00	8.00	1.04	**3.02**	549	1.00	**549**	SW2	2.00	0.13	NO	0.13	30.4	1.8	5.72	flr-flr	HF	Edge	**(2) MSTC66B3**	0.00	**No strap**
2	3.1	3.75	0.00	0.00	0.00	0.00	3.75	19.00	0.45	8.64	1.12	**2.74**	731	0.93	**787**	2W3	14.00	0.28	NO	0.28	27.6	1.8	7.96	flr-flr	HF	Edge	**CMST12**	0.00	**No strap**
2	3.2	4.50	0.00	0.00	0.00	0.00	4.50	19.00	0.55	10.36	1.34	**3.29**	731	1.00	**731**	2W3	14.00	0.28	NO	0.28	33.1	2.5	7.66	flr-flr	HF	Edge	**CMST12**	0.00	**No strap**
2	4.1	13.25	0.00	0.00	0.00	0.00	13.25	25.00	0.47	11.83	1.53	**3.78**	286	1.00	**286**	SW4	2.00	0.13	NO	0.13	38.1	10.5	2.17	flr-beam	HF	Edge	**MSTC48B3**	0.00	**No strap**
2	4.2	8.25	0.00	0.00	0.00	0.00	8.25	25.00	0.29	7.37	0.96	**2.36**	286	1.00	**286**	SW4	2.00	0.13	NO	0.13	23.7	4.1	2.54	flr-beam	HF	Edge	**MSTC48B3**	0.00	**No strap**
2	4.3	6.50	0.00	0.00	0.00	0.00	6.50	25.00	0.23	5.80	0.75	**1.86**	286	1.00	**286**	SW4	2.00	0.13	NO	0.13	18.7	2.5	2.70	flr-beam	HF	Edge	**MSTC48B3**	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 = 73.00 | Total OSB wall length = (feet) 62.00 | S = 68.00 | 8.82 | **22.29** | **OK** | Total OSB Capacity (kips) 8.82

1st Story Walls (Front - Back Direction)

Shear panel capacity (Wind or Seismic) = Seismic

Story shear(kips) = 5.30
Story height (ft) = 10.08
Shear Panel height (ft) = 9.08
Total Diaphragm width (ft) = 68.00

Accumulated Shear = 27.59
load balance check = OK

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

Story	Wall Mark	Wall L(ft)	Opening Width (ft)	Opening Height (ft)	Opening (max) to Edge (ft)	Plate to Opening (ft)	Effective Length (ft)	Trib. 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
1	1.1	10.50	0.00	0.00	0.00	0.00	10.50	17.00	0.54	9.15	0.71	**3.97**	378	1.00	**378**	SW3	2.00	0.13	NO	0.13	40.0	6.6	3.34	flr-conc	HF	Edge	**HDU5**	0.00	**No strap**
1	1.2	9.00	0.00	0.00	0.00	0.00	9.00	17.00	0.46	7.85	0.61	**3.40**	378	1.00	**378**	SW3	2.00	0.13	NO	0.13	34.3	4.8	3.46	flr-conc	HF	Edge	**HDU5**	0.00	**No strap**
1	2.1	18.25	0.00	0.00	0.00	0.00	18.25	17.00	1.00	17.00	1.32	**6.75**	370	1.00	**370**	SW3	2.00	0.13	NO	0.13	68.1	19.9	2.71	flr-conc	HF	Edge	**STHD14**	0.00	**No strap**
1	3.1	9.00	0.00	0.00	0.00	0.00	9.00	34.00	0.36	12.24	0.95	**4.85**	539	1.00	**539**	SW2	2.00	0.13	NO	0.13	48.9	4.8	5.18	flr-conc	HF	Edge	**HDU8**	0.00	**No strap**
1	3.2	16.00	0.00	0.00	0.00	0.00	16.00	34.00	0.64	21.76	1.70	**8.62**	539	1.00	**539**	SW2	2.00	0.13	NO	0.13	86.9	15.3	4.62	flr-conc	HF	Edge	**HDU8**	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 = 62.75 | Total OSB wall length = (feet) 62.75 | S = 68.00 | 5.30 | **27.59** | **OK** | Total OSB Capacity (kips) 5.30

Project Number:	Plan Name:	Sheet Number:
xxx	**Forest Ave Lot 4**	**L6**
Engineer:	Specifics:	Date:
xxx	**Shear walls**	**6/16/2020**

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

Temporary Shoring shear (kips) **60%**

100% story shear **YES**

Story shear(kips) = **13.46**
Story height (ft) = 9.08
Shear Panel height (ft) = 8.08
Total Diaphragm width (ft) = **40.00**

Stud Species HF

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

Gyp capacity = 60.00 (PLF)

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	6.00	0.00	0.00	0.00	0.00	6.00	20.00	0.23	4.53	1.53	**1.53**	254	1.00	**254**	SW4	2.00	0.13	0.13	13.9	2.1	2.15	flr-flr	HF	Edge	**BALLOON FR**	0.00	**No strap**
3	A.2	24.50	8.00	5.00	2.00	1.08	16.50	20.00	0.62	12.47	4.20	**4.20**	254	1.00	**254**	SW4	2.00	0.13	0.13	38.1	34.3	0.16	flr-flr	HF	Edge	**No HD**	1.69	**CS16**
3	A.3	12.50	0.00	0.00	0.00	0.00	12.50	10.00	0.15	1.50	0.50	**0.50**	40	1.00	**40**	SW6	2.00	0.13	0.13	4.6	8.9	-0.36	flr-flr	HF	Edge	**No HD**	0.00	**No strap**
3	B.1	15.75	0.00	0.00	0.00	0.00	15.75	20.00	0.45	9.03	3.04	**3.04**	193	1.00	**193**	SW6	6.00	0.19	0.19	27.6	20.9	0.44	flr-flr	HF	Edge	**No HD**	0.00	**No strap**
3	B.2	16.50	0.00	0.00	0.00	0.00	16.50	20.00	0.47	9.47	3.19	**3.19**	193	1.00	**193**	SW6	6.00	0.19	0.19	28.9	22.9	0.38	flr-flr	HF	Edge	**No HD**	0.00	**No strap**
3	C.1	16.50	0.00	0.00	0.00	0.00	16.50	20.00	0.15	3.00	1.01	**1.01**	61	1.00	**61**	SW6	2.00	0.13	0.13	9.2	15.6	-0.40	flr-flr	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 = 91.75 Total OSB wall length = 83.75 (feet) S = 40.00 13.46 **13.46** **OK** Total OSB Capacity (kips) **13.46**

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) = **8.82**
Story height (ft) = 10.08
Shear Panel height (ft) = 9.08
Total Diaphragm width (ft) = **40.00**

Accumulated Shear = **22.29**
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	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	6.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	**1.53**	254	1.00	**254**	SW4	2.00	0.13	NO	0.13	15.4	2.2	2.40	flr-flr	HF	Edge	**BALLOON FR**	0.00	**No strap**
2	A.2	24.50	8.00	5.00	2.00	1.08	16.50	20.00	1.00	20.00	4.41	**9.11**	552	1.00	**552**	SW2	2.00	0.13	NO	0.13	91.9	35.9	2.33	flr-flr	HF	Edge	**MST37**	3.66	**CMSTC16**
2	A.3	12.50	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	**0.50**	40	1.00	**40**	SW6	2.00	0.13	NO	0.13	5.1	9.3	-0.35	flr-flr	HF	Edge	**No HD**	0.00	**No strap**
2	B.1	16.50	0.00	0.00	0.00	0.00	16.50	20.00	0.66	13.20	2.91	**7.35**	446	1.00	**446**	SW3	2.00	0.13	NO	0.13	74.1	16.3	3.62	flr-conc	HF	Edge	**HDU5**	0.00	**No strap**
2	B.2	16.50	8.00	5.00	2.00	1.08	8.50	20.00	0.34	6.80	1.50	**3.79**	446	1.00	**446**	SW3	2.00	0.13	NO	0.13	38.2	16.3	1.37	flr-conc	HF	Edge	**STHD14**	2.95	**CMSTC16**

Total Length GYP required in F/B direction to resist 100% lateral forces (ft) **Not required**
(including discounted capacity accounted for by OSB)

S = 76.00 Total OSB wall length = 60.00 (feet) S = 40.00 8.82 **22.29** **OK** Total OSB Capacity (kips) **8.82**

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) = **4.20**
Story height (ft) = 10.08
Shear Panel height (ft) = 9.08
Total Diaphragm width (ft) = **40.00**

Accumulated Shear = **26.48**
load balance check = ads do not match story shear

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
1	A.1	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	**1.53**	153	1.00	**153**	SW6	2.00	0.13	NO	0.13	15.4	6.0	0.99	flr-conc	HF	Edge	**STHD14**	0.00	**No strap**
1	A.2	2.00	0.00	0.00	0.00	0.00	2.00	20.00	0.25	5.00	0.52	**2.93**	1465	WSW24X9															
1	A.3	2.00	0.00	0.00	0.00	0.00	2.00	20.00	0.25	5.00	0.52	**2.93**	1465	WSW24X9															
1	A.4	2.00	0.00	0.00	0.00	0.00	2.00	20.00	0.25	5.00	0.52	**2.93**	1465	WSW24X9															
1	A.5	2.00	0.00	0.00	0.00	0.00	2.00	20.00	0.25	5.00	0.52	**2.93**	1465	WSW24X9															
1	B.3	19.25	0.00	0.00	0.00	0.00	19.25	20.00	0.50	10.00	1.05	**1.05**	55	1.00	**55**	SW6	2.00	0.13	NO	0.13	10.6	22.2	-0.62	flr-conc	HF	Edge	**No HD**	0.00	**No strap**

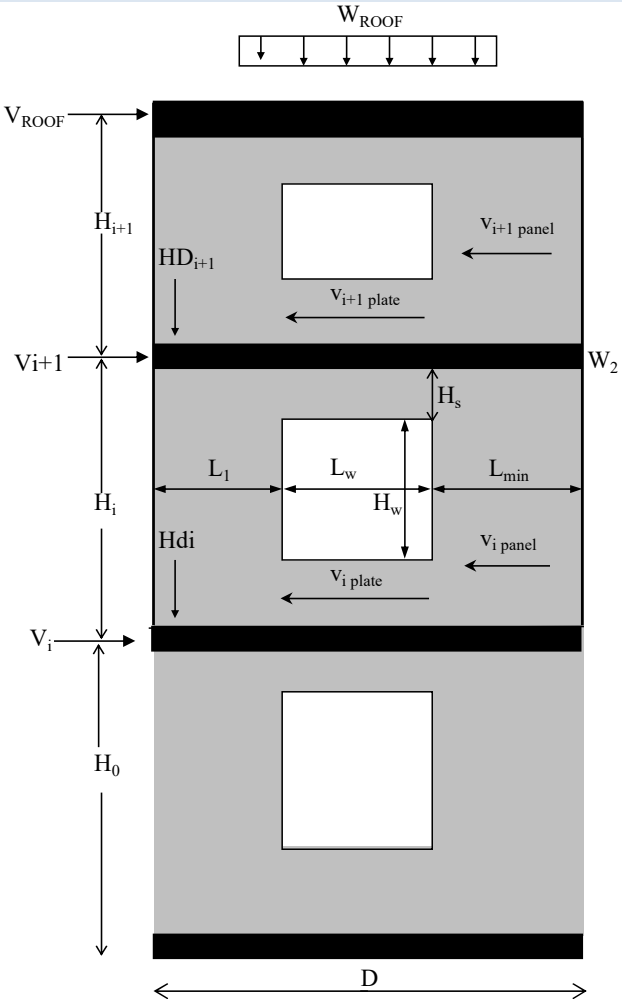
REST INTO CONCRETE RETAINING WALLS

Total Length GYP required in F/B direction to resist 100% lateral forces (ft) **Not required**
(including discounted capacity accounted for by OSB)

S = 37.25 Total OSB wall length = 37.25 (feet) S = 30.00 3.15 **14.29** **Warning-** Total OSB Capacity (kips) **4.20**

Project	sheet number:
Forest Ave Lot 4	**L7**
Subject	Date
SHEAR WALL EQUATION DIAGRAM	**6/16/2020**

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

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

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

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

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

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

$HD_i = (M_{OTi} - M_{R1i})/(D - 6")$

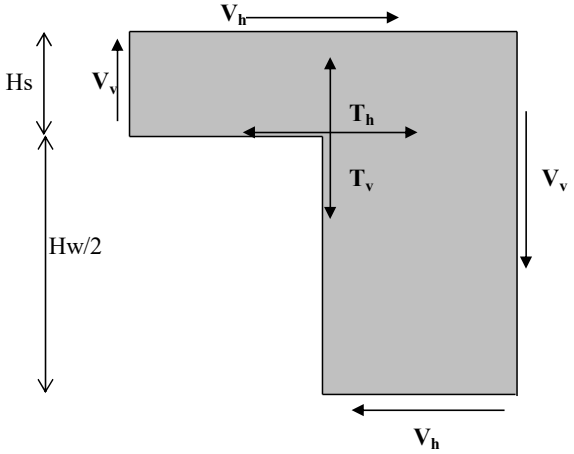
$V_{i+1\ panel} = V_{ROOF} / (L_1 + L_{max})$

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

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

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

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.