

STRUCTURAL CALCULATIONS

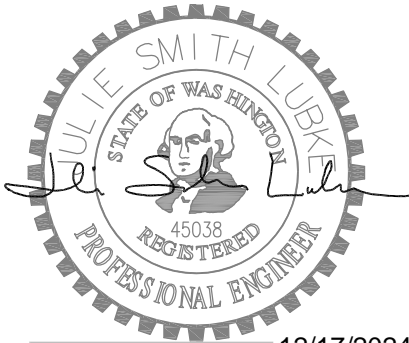
PROJECT:

Spurlock-MA Remodel
8427 SE 62nd St.
Mercer Island, WA 98040

PREPARED BY:

Julie Smith Lubke
julie@smithlubke.com

Smith Lubke Structural Design
P.O. Box 30954, Seattle, WA 98113
206.852.1536



12/17/2024

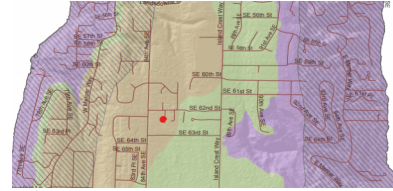
CRITERIA

Gravity

roof 5:12	dead	asphalt/composition shingles	2.5	live snow	25.0 psf
		1/2" plywood	1.5		
		2x12 @ 24"oc	2.2		
		R38 insulation	1.4		
		5/8" gyp. wallboard	2.8		
		slope factor	1.0		
		miscellaneous	1.6 12%		
			<hr/> 13.0 psf		
	total	dead + live	38.0 psf		
roof 18:12	dead	asphalt/composition shingles	2.5	live snow	25.0 psf
		1/2" plywood	1.5		
		2x12 @ 24"oc	2.2		
		R38 insulation	1.4		
		5/8" gyp. wallboard	2.8		
		slope factor	8.3		
		miscellaneous	1.3 7%		
			<hr/> 20.0 psf		
	total	dead + live	45.0 psf		
floor	dead	3/4" hardwood	3.0	live residential	40.0 psf
		3/4" shiplap	2.3		
		4x10 @ 48"oc	2.8		
		R30 insulation	1.2		
		miscellaneous	1.7 15%		
			<hr/> 11.0 psf		
	total	dead + live	51.0 psf		
walls		3/4" wood siding	2.3		
		rainscreen/rigid insulation	2.5		
		1/2" plywood/OSB	1.5		
		R21 insulation	0.8		
		2x6 @ 16"oc	1.7		
		5/8" gyp. wallboard	2.8		
		miscellaneous	0.4 3%		
			<hr/> 12.0 psf		

Lateral

wind	wind importance factor risk category basic wind speed wind exposure topographical factor (Kzt)	1.0 II 98 B 1.60 mph
------	--	----------------------------------



seismic	latitude/longitude seismic importance factor seismic risk category mapped spectral response (S _s /S ₁) spectral response coef. (S _d _s /S _d ₁) seismic design category response modification factor (R)	47.546675/-122.225965 1.0 II 1.462 0.506 g (from USGS) 1.169 g D 6.5
---------	--	--

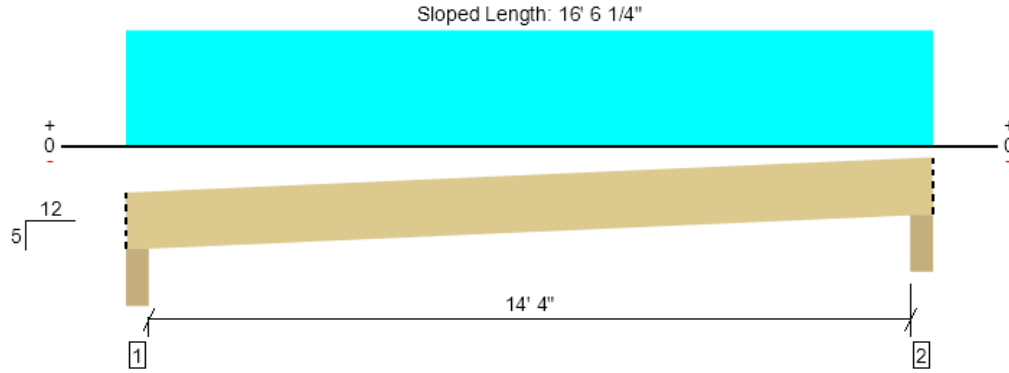
Roof			
Member Name	Results (Max UTIL %)	Current Solution	Comments
RAFTER	Passed (73% M)	1 piece(s) 2 x 12 HF No.2 @ 24" OC	
B1	Passed (92% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
B2	Passed (52% ΔT)	1 piece(s) 5 1/4" x 13 3/8" 2.0E Parallam® PSL	
B3	Passed (74% R)	1 piece(s) 5 1/4" x 16" 2.0E Parallam® PSL	
B4	Passed (68% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
B5	Passed (58% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
B6	Passed (64% R)	1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
B7	Passed (67% R)	2 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL	
B8	Passed (67% ΔT)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
B9	Passed (90% M)	2 piece(s) 2 x 10 HF No.2	
B10	Passed (101% M)	2 piece(s) 2 x 8 HF No.2	
b11	Passed (99% R)	2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL	
B12	Passed (96% ΔT)	1 piece(s) 2 x 4 HF No.2 @ 24" OC	
B13	Passed (68% R)	1 piece(s) 6 x 12 DF No.1	
B14	Passed (53% M)	2 piece(s) 2 x 6 HF No.2	
B15	Passed (21% R)	1 piece(s) 2 x 12 HF No.2	
B16	Passed (64% R)	2 piece(s) 1 3/4" x 9 1/2" 2.0E Microllam® LVL	
B17	Passed (91% R)	1 piece(s) 3 1/2" x 14" 2.0E Parallam® PSL	
B18	Passed (62% R)	2 piece(s) 2 x 10 HF No.2	
B19	Passed (62% R)	2 piece(s) 2 x 6 HF No.2	
B20	Passed (68% R)	2 piece(s) 1 3/4" x 11 1/4" 2.0E Microllam® LVL	
B21	Passed (91% R)	1 piece(s) 1 3/4" x 14" 2.0E Microllam® LVL	
LOFT			
Member Name	Results (Max UTIL %)	Current Solution	Comments
L1	Passed (85% M)	1 piece(s) 2 x 8 HF No.2 @ 16" OC	
L2	Passed (67% M)	2 piece(s) 2 x 4 HF No.2	
L3	Passed (94% R)	1 piece(s) 3 1/2" x 11 7/8" 2.0E Parallam® PSL	
L4	Passed (68% ΔT)	2 piece(s) 1 3/4" x 7 1/4" 2.0E Microllam® LVL	

ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



Roof, RAFTER

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	629 @ 4 1/2"	3341 (5.50")	Passed (19%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	520 @ 1' 3 7/8"	1941	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2168 @ 7' 7 1/2"	2964	Passed (73%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.252 @ 7' 7 1/2"	0.785	Passed (L/747)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.416 @ 7' 7 1/2"	1.047	Passed (L/453)	--	1.0 D + 1.0 S (All Spans)

Member Length : 16' 10 15/16"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD
 Member Pitch : 5/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - SPF	5.50"	5.50"	1.50"	248	381	629	Blocking
2 - Beveled Plate - SPF	5.50"	5.50"	1.50"	248	381	629	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 11" o/c	
Bottom Edge (Lu)	16' 6" o/c	

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 15' 3"	24"	15.0	25.0	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

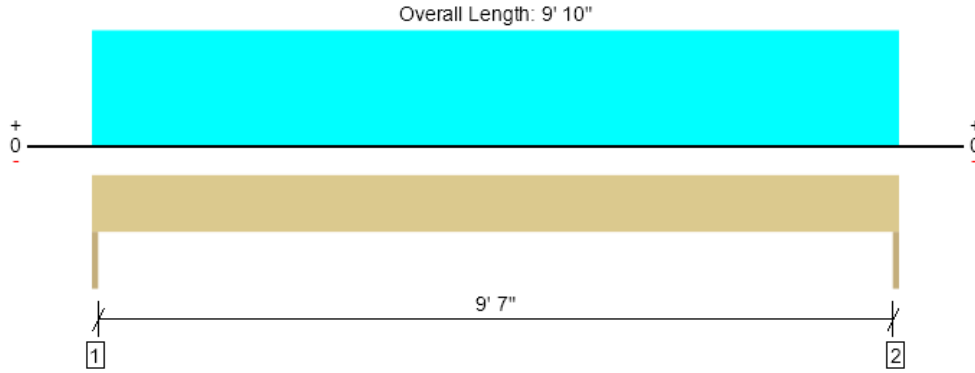
ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B1

2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3501 @ 0	3806 (1.50")	Passed (92%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2708 @ 1' 1 3/8"	9081	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	8607 @ 4' 11"	20525	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.109 @ 4' 11"	0.328	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.177 @ 4' 11"	0.492	Passed (L/666)	--	1.0 D + 1.0 S (All Spans)

Member Length : 9' 10"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	1350	2151	3501	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	1350	2151	3501	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 10" o/c	
Bottom Edge (Lu)	9' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 10"	N/A	12.1	--	
1 - Uniform (PSF)	0 to 9' 10"	17' 6"	15.0	25.0	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

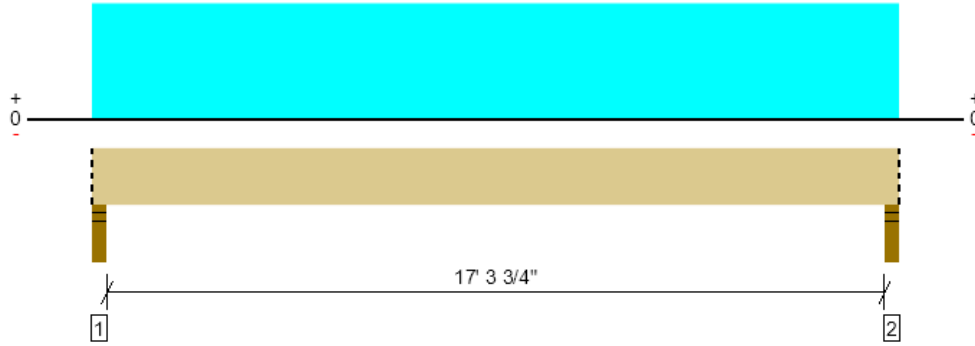
ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



Roof, B2

1 piece(s) 5 1/4" x 13 3/8" 2.0E Parallam® PSL

Overall Length: 17' 10 3/4"



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3774 @ 2"	7809 (3.50")	Passed (48%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3181 @ 1' 4 7/8"	15612	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	16261 @ 8' 11 3/8"	42981	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.286 @ 8' 11 3/8"	0.585	Passed (L/738)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.458 @ 8' 11 3/8"	0.878	Passed (L/460)	--	1.0 D + 1.0 S (All Spans)

Member Length : 17' 10 3/4"
 System : Floor
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Resawn products must maintain manufacturing stamps.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - SPF	3.50"	3.50"	1.69"	1420	2353	3774	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.69"	1420	2353	3774	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)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 17' 10 3/4"	N/A	22.0	--	
1 - Uniform (PSF)	0 to 17' 10 3/4" (Front)	10' 6 1/4"	13.0	25.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	

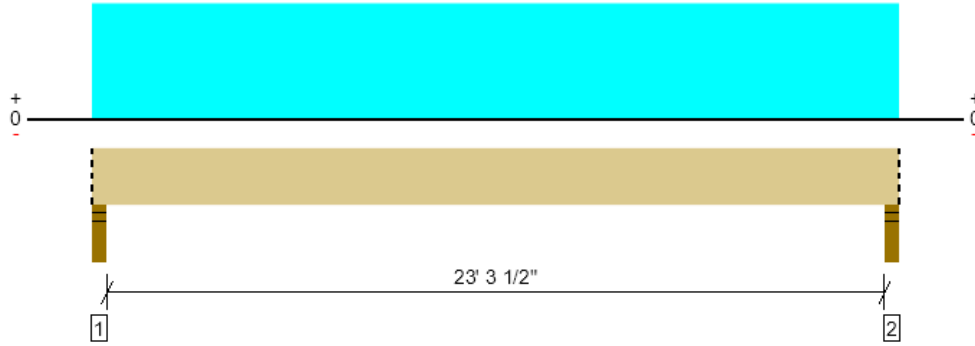


12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B3

1 piece(s) 5 1/4" x 16" 2.0E Parallam® PSL

Overall Length: 23' 10 1/2"



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5795 @ 2"	7809 (3.50")	Passed (74%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	5006 @ 1' 7 1/2"	18676	Passed (27%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	33629 @ 11' 11 1/4"	60297	Passed (56%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.611 @ 11' 11 1/4"	1.177	Passed (L/462)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.982 @ 11' 11 1/4"	1.569	Passed (L/288)	--	1.0 D + 1.0 S (All Spans)

Member Length : 23' 10 1/2"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD
 Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - SPF	3.50"	3.50"	2.60"	2189	3606	5795	Blocking
2 - Stud wall - SPF	3.50"	3.50"	2.60"	2189	3606	5795	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)	23' 11" 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 23' 10 1/2"	N/A	26.3	--	
1 - Uniform (PSF)	0 to 23' 10 1/2" (Front)	12' 1"	13.0	25.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	

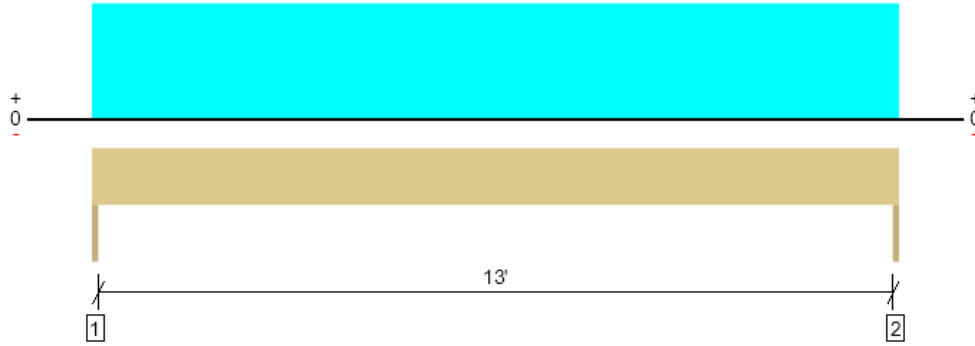


12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B4

2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 13' 3"



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2598 @ 0	3806 (1.50")	Passed (68%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2161 @ 1' 1 3/8"	9081	Passed (24%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	8605 @ 6' 7 1/2"	20525	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.193 @ 6' 7 1/2"	0.442	Passed (L/825)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.302 @ 6' 7 1/2"	0.663	Passed (L/526)	--	1.0 D + 1.0 S (All Spans)

Member Length : 13' 3"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	942	1656	2598	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	942	1656	2598	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 3" o/c	
Bottom Edge (Lu)	13' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13' 3"	N/A	12.1	--	
1 - Uniform (PSF)	0 to 13' 3"	10'	13.0	25.0	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

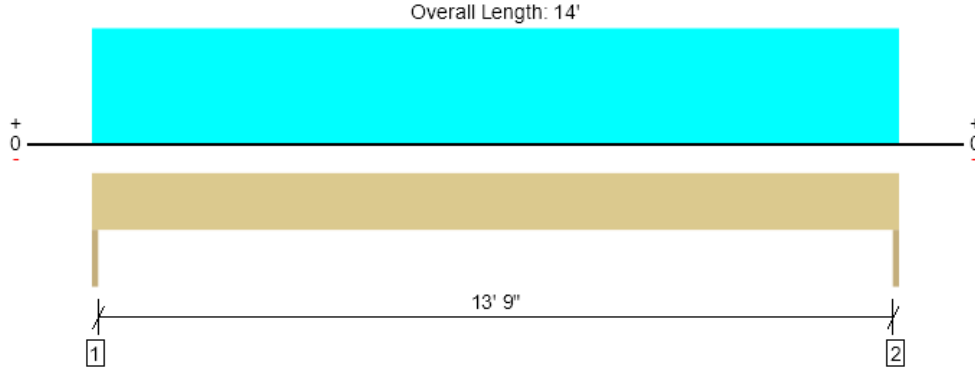
ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B5

2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2213 @ 0	3806 (1.50")	Passed (58%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1861 @ 1' 1 3/8"	9081	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	7745 @ 7'	20525	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.191 @ 7'	0.467	Passed (L/882)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.301 @ 7'	0.700	Passed (L/558)	--	1.0 D + 1.0 S (All Spans)

Member Length : 14'
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	813	1400	2213	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	813	1400	2213	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14'	N/A	12.1	--	
1 - Uniform (PSF)	0 to 14'	8'	13.0	25.0	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.

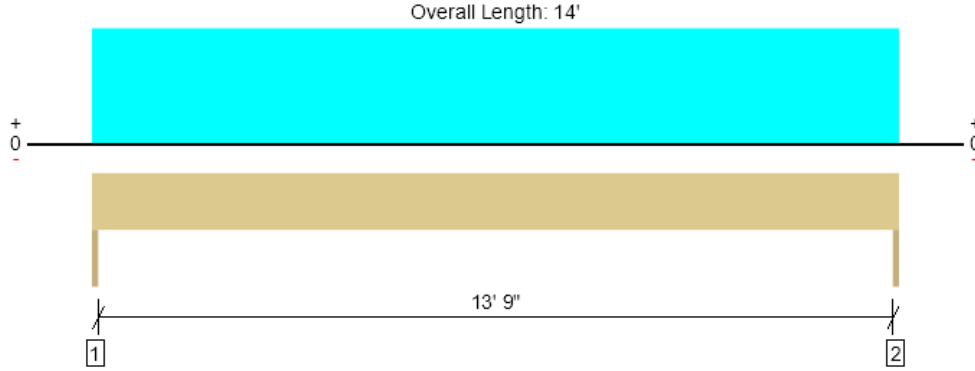
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



Roof, B6

1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1224 @ 0	1903 (1.50")	Passed (64%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1029 @ 1' 1 3/8"	4541	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4283 @ 7'	10263	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.179 @ 7'	0.467	Passed (L/940)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.333 @ 7'	0.700	Passed (L/504)	--	1.0 D + 1.0 S (All Spans)

Member Length : 14'
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	567	656	1224	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	567	656	1224	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 7" o/c	
Bottom Edge (Lu)	14' o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14'	N/A	6.1	--	
1 - Uniform (PSF)	0 to 14'	3' 9"	20.0	25.0	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
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	

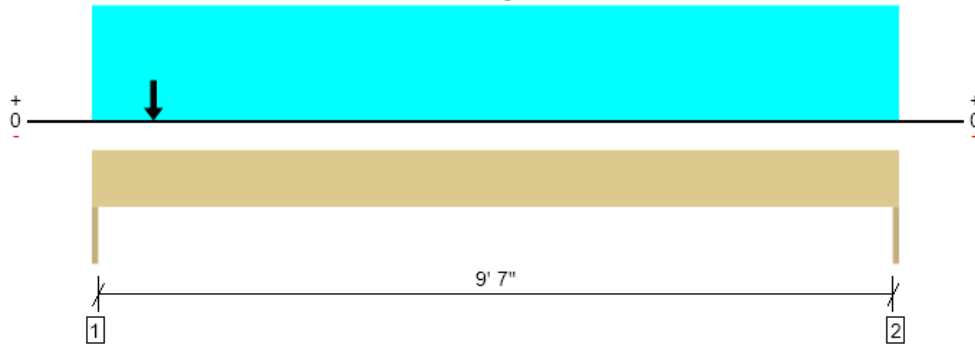


12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B7

2 piece(s) 1 3/4" x 9 1/4" 2.0E Microllam® LVL

Overall Length: 9' 10"



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2543 @ 0	3806 (1.50")	Passed (67%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2065 @ 10 3/4"	7074	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2196 @ 3' 3 1/16"	12884	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.038 @ 4' 5 7/16"	0.328	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.091 @ 4' 7 3/8"	0.492	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 9' 10"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	1127	1416	2543	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	438	230	668	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 10" o/c	
Bottom Edge (Lu)	9' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 10"	N/A	9.4	--	
1 - Uniform (PSF)	0 to 9' 10"	1'	12.0	25.0	Default Load
2 - Uniform (PLF)	0 to 9' 10"	N/A	55.0	-	
3 - Point (lb)	9"	N/A	813	1400	Linked from: B5, 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

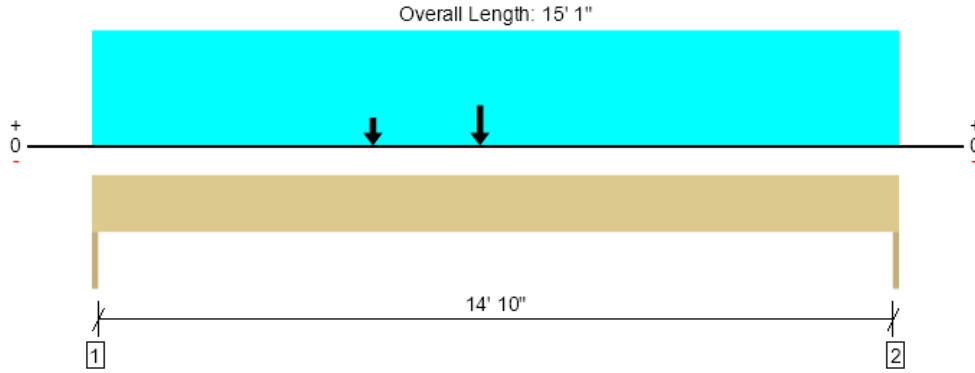
ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B8

2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2383 @ 0	3806 (1.50")	Passed (63%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2276 @ 1' 1 3/8"	9081	Passed (25%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	12693 @ 7' 3"	20525	Passed (62%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.278 @ 7' 3"	0.503	Passed (L/651)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.502 @ 7' 3"	0.754	Passed (L/360)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 15' 1"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	1064	603	1155	2383	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	861	603	901	1989	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 11" o/c	
Bottom Edge (Lu)	15' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 1"	N/A	12.1	--	--	
1 - Uniform (PSF)	0 to 15' 1"	2'	12.0	40.0	-	Default Load
2 - Point (lb)	5' 3"	N/A	567	-	656	Linked from: B6, Support 2
3 - Point (lb)	7' 3"	N/A	813	-	1400	Linked from: B5, 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.

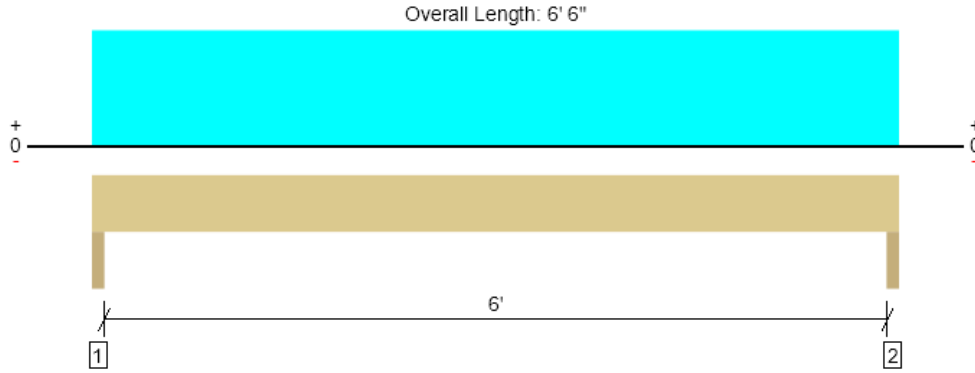
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B9
2 piece(s) 2 x 10 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2298 @ 1' 1/2"	3645 (3.00")	Passed (63%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1576 @ 1' 1/4"	3191	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3452 @ 3' 3"	3833	Passed (90%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.058 @ 3' 3"	0.208	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.094 @ 3' 3"	0.313	Passed (L/795)	--	1.0 D + 1.0 S (All Spans)

Member Length : 6' 6"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	3.00"	3.00"	1.89"	876	1422	2298	None
2 - Trimmer - SPF	3.00"	3.00"	1.89"	876	1422	2298	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 6"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 6' 6"	17' 6"	15.0	25.0	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
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	

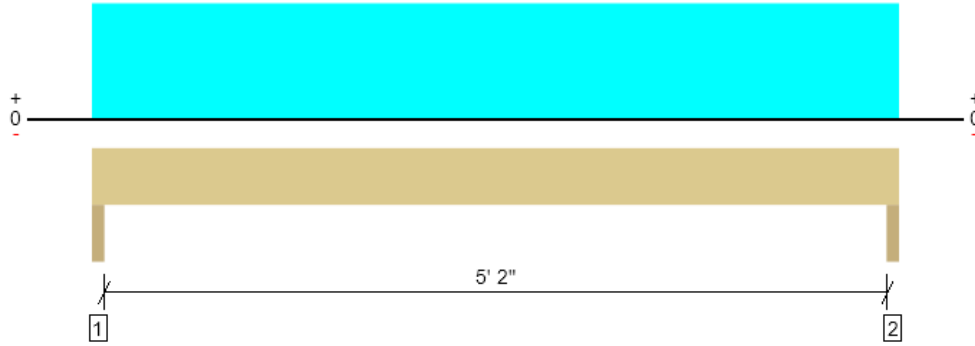


12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B10

2 piece(s) 2 x 8 HF No.2

Overall Length: 5' 8"



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1999 @ 1 1/2"	3645 (3.00")	Passed (55%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1396 @ 10 1/4"	2501	Passed (56%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2587 @ 2' 10"	2569	Passed (101%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.068 @ 2' 10"	0.181	Passed (L/950)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.110 @ 2' 10"	0.271	Passed (L/589)	--	1.0 D + 1.0 S (All Spans)

Member Length : 5' 8"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	3.00"	3.00"	1.65"	759	1240	1999	None
2 - Trimmer - SPF	3.00"	3.00"	1.65"	759	1240	1999	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6" o/c	
Bottom Edge (Lu)	5' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 8"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 5' 8"	17' 6"	15.0	25.0	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
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	

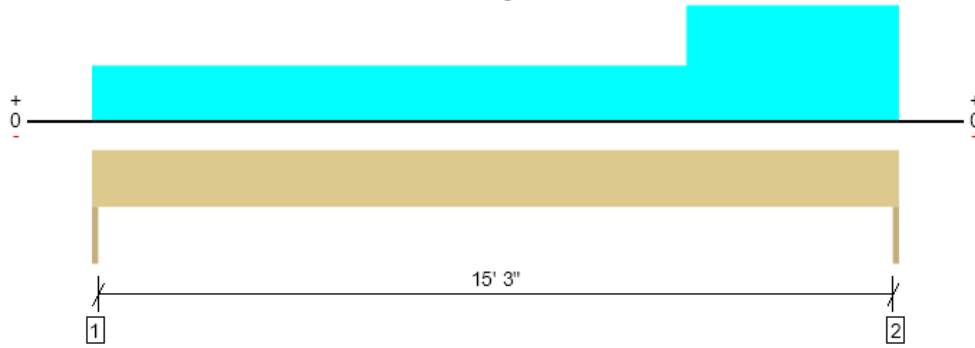


12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, b11

2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL

Overall Length: 15' 6"



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3785 @ 15' 6"	3806 (1.50")	Passed (99%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3030 @ 14' 4 5/8"	9081	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	11388 @ 8' 3 13/16"	20525	Passed (55%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.321 @ 7' 11"	0.517	Passed (L/580)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.543 @ 7' 10 5/8"	0.775	Passed (L/343)	--	1.0 D + 1.0 S (All Spans)

Member Length : 15' 6"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	1150	1588	2738	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	1445	2339	3785	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 8" o/c	
Bottom Edge (Lu)	15' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 6"	N/A	12.1	--	
1 - Uniform (PSF)	0 to 11' 5"	5'	20.0	25.0	Default Load
2 - Uniform (PLF)	0 to 11' 5"	N/A	29.5	62.5	Linked from: B12, Support 1
3 - Uniform (PSF)	11' 5" to 15' 6"	17' 6"	13.0	25.0	

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

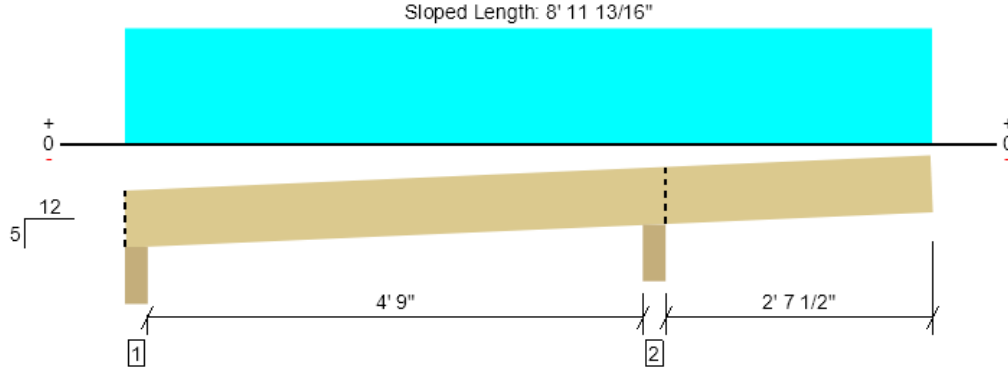
ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B12

1 piece(s) 2 x 4 HF No.2 @ 24" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	484 @ 5' 5 1/4"	3620 (5.50")	Passed (13%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	222 @ 4' 11 1/4"	604	Passed (37%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-318 @ 5' 5 1/4"	430	Passed (74%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.294 @ 8' 3 1/2"	0.309	Passed (2L/252)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.396 @ 8' 3 1/2"	0.412	Passed (2L/188)	--	1.0 D + 1.0 S (Alt Spans)

Member Length : 9' 1 1/4"
 System : Roof
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD
 Member Pitch : 5/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Beveled Plate - SPF	5.50"	5.50"	1.50"	59	125	184	Blocking
2 - Beveled Plate - SPF	5.50"	5.50"	1.50"	174	309	484	Blocking

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

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

- Maximum allowable bracing intervals based on applied load.
- Dimensions for lateral bracing intervals are measured along the length of the member for sloped conditions.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 8' 3 1/2"	24"	13.0	25.0	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

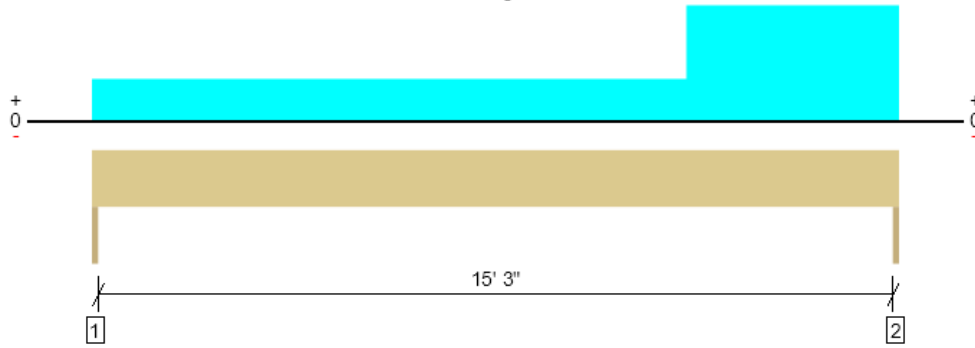
ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



Roof, B13

1 piece(s) 6 x 12 DF No.1

Overall Length: 15' 6"



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3497 @ 15' 6"	5156 (1.50")	Passed (68%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2760 @ 14' 5"	8244	Passed (33%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	9600 @ 8' 7 5/8"	15684	Passed (61%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.232 @ 7' 11 5/8"	0.517	Passed (L/800)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.379 @ 7' 11 7/16"	0.775	Passed (L/491)	--	1.0 D + 1.0 S (All Spans)

Member Length : 15' 6"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	874	1350	2224	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	1297	2201	3497	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.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 6"	N/A	16.0	--	
1 - Uniform (PSF)	11' 5" to 15' 6"	17' 6"	13.0	25.0	
2 - Uniform (PLF)	0 to 11' 5"	N/A	87.0	154.5	Linked from: B12, 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.

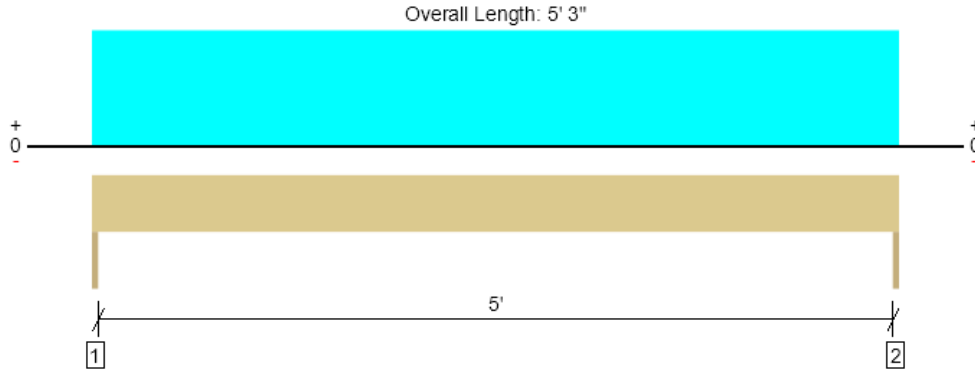
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B14
2 piece(s) 2 x 6 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	645 @ 0	1823 (1.50")	Passed (35%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	502 @ 7"	1898	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	846 @ 2' 7 1/2"	1602	Passed (53%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.049 @ 2' 7 1/2"	0.175	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.078 @ 2' 7 1/2"	0.262	Passed (L/811)	--	1.0 D + 1.0 S (All Spans)

Member Length : 5' 3"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	239	406	645	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	239	406	645	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	4.2	--	
1 - Uniform (PLF)	0 to 5' 3"	N/A	87.0	154.5	Linked from: B12, 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.

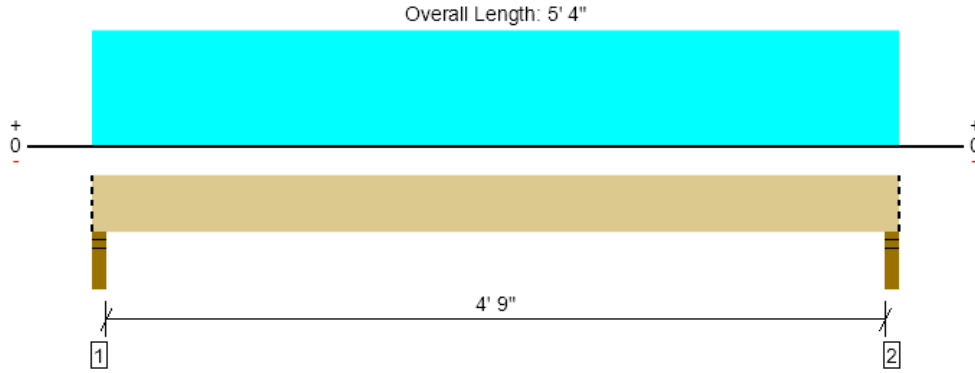
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island
 20 of 39

Roof, B15
1 piece(s) 2 x 12 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	438 @ 2"	2126 (3.50")	Passed (21%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	236 @ 1' 2 3/4"	1941	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	513 @ 2' 8"	2577	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.006 @ 2' 8"	0.250	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.010 @ 2' 8"	0.333	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 5' 4"
 System : Roof
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD
 Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	171	267	438	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	171	267	438	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 4" o/c	
Bottom Edge (Lu)	5' 4" 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' 4"	N/A	4.3	--	
1 - Uniform (PSF)	0 to 5' 4" (Front)	4'	15.0	25.0	Default Load

• Side loads are assumed to not induce cross-grain tension.

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

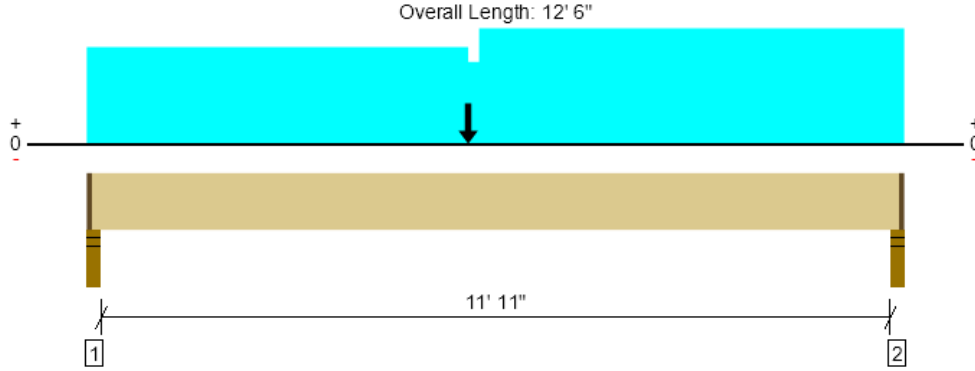
ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B16

2 piece(s) 1 3/4" x 9 1/2" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2136 @ 12' 4"	3347 (2.25")	Passed (64%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1816 @ 11' 5"	7265	Passed (25%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6851 @ 5' 10"	13541	Passed (51%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.215 @ 6' 3 5/16"	0.608	Passed (L/679)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.377 @ 6' 3 3/16"	0.811	Passed (L/387)	--	1.0 D + 1.0 S (All Spans)

Member Length : 12' 3 1/2"
 System : Roof
 Member Type : Flush Beam
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD
 Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - SPF	3.50"	2.25"	1.50"	892	1140	2032	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.50"	927	1242	2169	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)	12' 4" o/c	
Bottom Edge (Lu)	12' 4" 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 12' 4 3/4"	N/A	9.7	--	
1 - Uniform (PSF)	0 to 12' 6" (Front)	5'	20.0	25.0	Default Load
2 - Uniform (PLF)	6' to 12' 6" (Front)	N/A	29.5	62.5	Linked from: B12, Support 1
3 - Point (lb)	5' 10" (Front)	N/A	171	267	Linked from: B15, Support 1
4 - Uniform (PSF)	0 to 5' 10" (Front)	1'	15.0	25.0	

• Side loads are assumed to not induce cross-grain tension.

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
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	

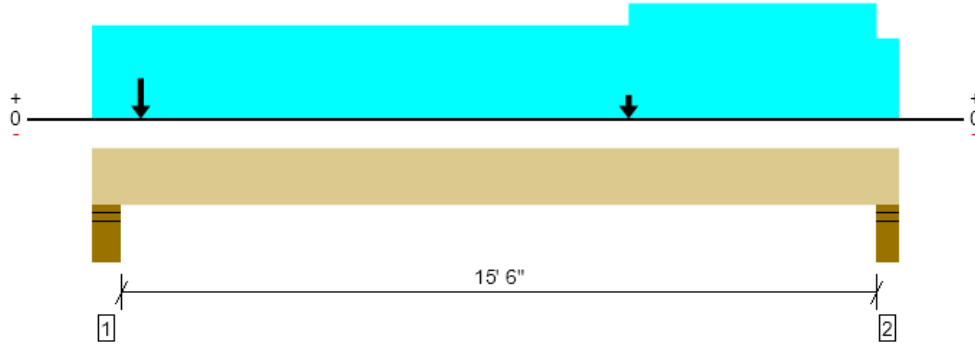


12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer_Island

Roof, B17

1 piece(s) 3 1/2" x 14" 2.0E Parallam® PSL

Overall Length: 16' 6 1/2"



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	9476 @ 5 1/2"	10413 (7.00")	Passed (91%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	5221 @ 1' 9"	10894	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	19501 @ 9' 9 3/8"	31236	Passed (62%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.339 @ 8' 5 1/4"	0.788	Passed (L/558)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.592 @ 8' 5 7/16"	1.050	Passed (L/319)	--	1.0 D + 1.0 S (All Spans)

Member Length : 16' 6 1/2"
 System : Roof
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD
 Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - SPF	7.00"	7.00"	6.37"	3786	5690	9476	None
2 - Stud wall - SPF	5.50"	5.50"	3.35"	2160	2824	4984	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	16' 7" o/c	
Bottom Edge (Lu)	16' 7" 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 16' 6 1/2"	N/A	15.3	--	
1 - Uniform (PLF)	0 to 16' 6 1/2" (Front)	N/A	127.0	184.0	Default Load
2 - Uniform (PSF)	0 to 11' (Front)	1' 3"	15.0	25.0	
3 - Uniform (PSF)	11' to 16' 1" (Front)	3'	20.0	25.0	
4 - Point (lb)	1' (Front)	N/A	2189	3606	Linked from: B3, Support 1
5 - Point (lb)	11' (Front)	N/A	892	1140	Linked from: B16, Support 1

• Side loads are assumed to not induce cross-grain tension.

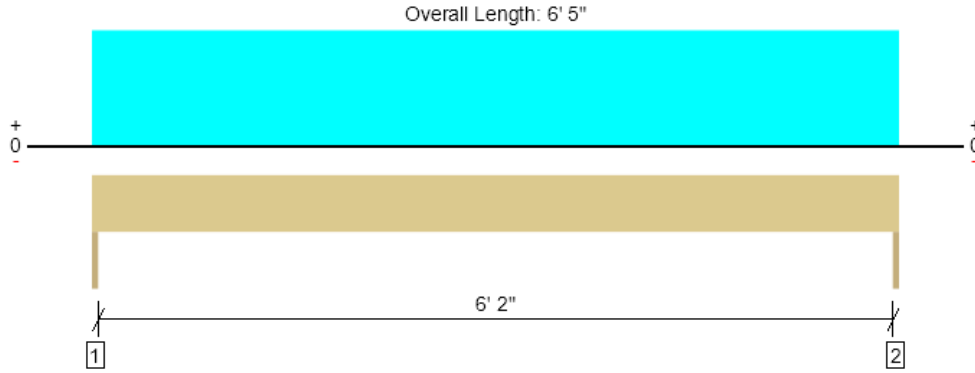
Weyerhaeuser Notes
 Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the 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
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer_Island

Roof, B18
2 piece(s) 2 x 10 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1126 @ 0	1823 (1.50")	Passed (62%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	812 @ 10 3/4"	3191	Passed (25%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1807 @ 3' 2 1/2"	3833	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.027 @ 3' 2 1/2"	0.214	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.052 @ 3' 2 1/2"	0.321	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 6' 5"
System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	536	590	1126	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	536	590	1126	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 5"	N/A	7.0	--	
1 - Uniform (PLF)	0 to 6' 5"	N/A	160.0	184.0	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.

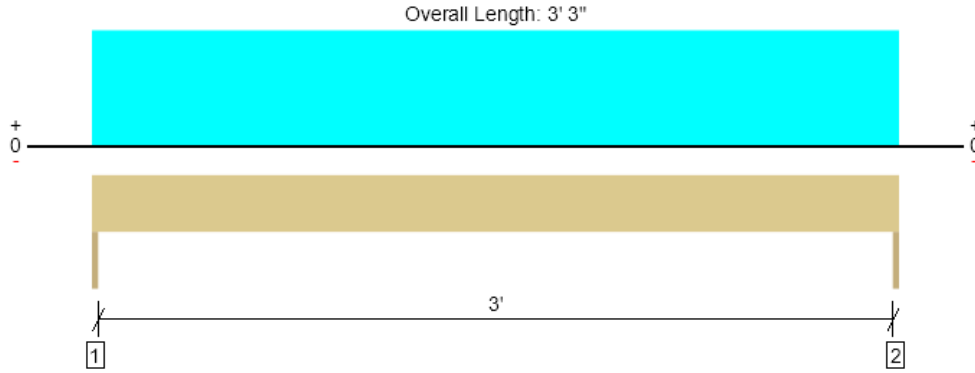
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



Roof, B19

2 piece(s) 2 x 6 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1131 @ 0	1823 (1.50")	Passed (62%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	725 @ 7"	1898	Passed (38%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	919 @ 1' 7 1/2"	1602	Passed (57%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.019 @ 1' 7 1/2"	0.108	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.032 @ 1' 7 1/2"	0.162	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

Member Length : 3' 3"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	464	477	413	1131	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	464	477	413	1131	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	4.2	--	--	
1 - Uniform (PLF)	0 to 3' 3"	N/A	208.0	-	254.0	Default Load
2 - Uniform (PLF)	0 to 3' 3"	N/A	73.5	293.3	-	Linked from: LOFT FLOOR, 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

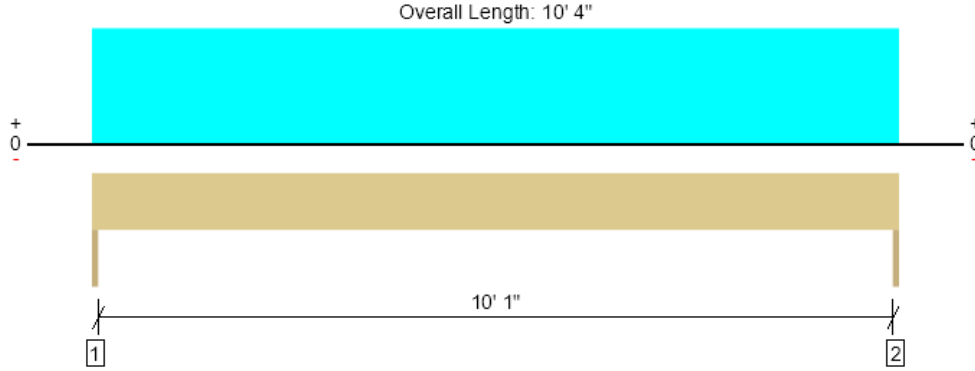
ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B20

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2596 @ 0	3806 (1.50")	Passed (68%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2062 @ 1' 3/4"	8603	Passed (24%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6707 @ 5' 2"	18558	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.106 @ 5' 2"	0.344	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.175 @ 5' 2"	0.517	Passed (L/709)	--	1.0 D + 1.0 S (All Spans)

Member Length : 10' 4"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	1026	1571	2596	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	1026	1571	2596	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 4" o/c	
Bottom Edge (Lu)	10' 4" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 4"	N/A	11.5	--	
1 - Uniform (PLF)	0 to 10' 4"	N/A	157.0	254.0	Default Load
2 - Uniform (PSF)	0 to 10' 4"	2'	15.0	25.0	

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
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	

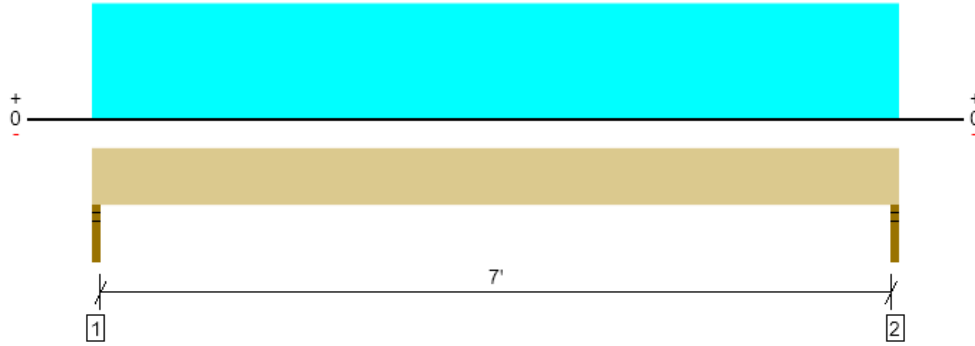


12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

Roof, B21

1 piece(s) 1 3/4" x 14" 2.OE Microllam® LVL

Overall Length: 7' 4"



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1350 @ 1/2"	1488 (2.00")	Passed (91%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	859 @ 1' 4"	5353	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2419 @ 3' 8"	13949	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.023 @ 3' 8"	0.363	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.040 @ 3' 8"	0.483	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

Member Length : 7' 4"
 System : Roof
 Member Type : Drop Beam
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD
 Member Pitch : 0/12

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - SPF	2.00"	2.00"	1.81"	561	789	1350	None
2 - Stud wall - SPF	2.00"	2.00"	1.81"	561	789	1350	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 4" o/c	
Bottom Edge (Lu)	7' 4" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 7' 4"	N/A	7.2	--	
1 - Uniform (PLF)	0 to 7' 4" (Front)	N/A	127.0	184.0	Default Load
2 - Uniform (PSF)	0 to 7' 4" (Front)	1' 3"	15.0	25.0	

• Side loads are assumed to not induce cross-grain tension.

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

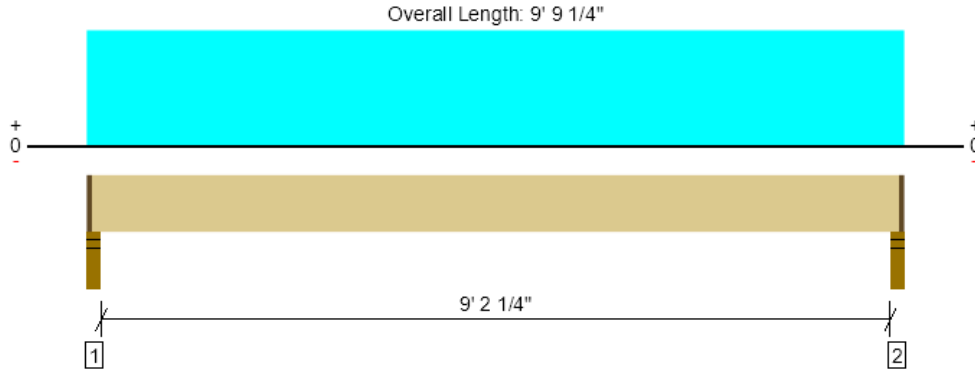
ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

LOFT, L1

1 piece(s) 2 x 8 HF No.2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	478 @ 2 1/2"	1367 (2.25")	Passed (35%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	399 @ 10 3/4"	1088	Passed (37%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1094 @ 4' 10 5/8"	1284	Passed (85%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.223 @ 4' 10 5/8"	0.312	Passed (L/504)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.278 @ 4' 10 5/8"	0.468	Passed (L/404)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 9' 6 3/4"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - SPF	3.50"	2.25"	1.50"	98	391	489	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.50"	98	391	489	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)	5' 10" o/c	
Bottom Edge (Lu)	9' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 9' 9 1/4"	16"	15.0	60.0	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.

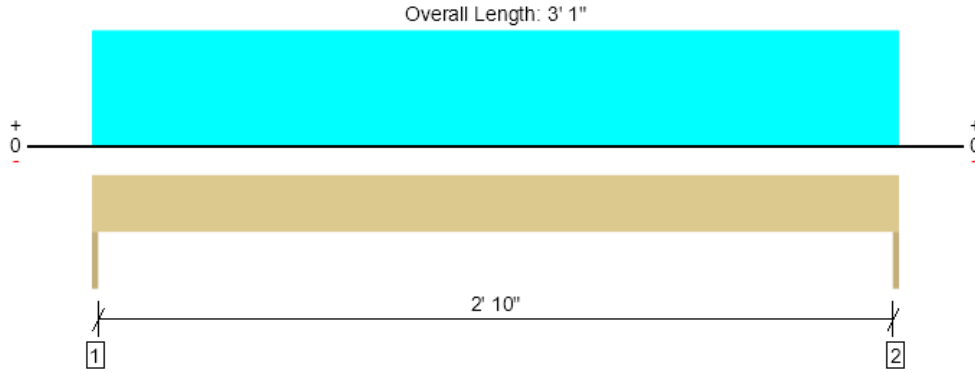
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



LOFT, L2

2 piece(s) 2 x 4 HF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	570 @ 0	1823 (1.50")	Passed (31%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	416 @ 5"	1050	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	439 @ 1' 6 1/2"	651	Passed (67%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.043 @ 1' 6 1/2"	0.103	Passed (L/865)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.054 @ 1' 6 1/2"	0.154	Passed (L/686)	--	1.0 D + 1.0 L (All Spans)

Member Length : 3' 1"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	117	452	570	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	117	452	570	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 1" o/c	
Bottom Edge (Lu)	3' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 1"	N/A	2.7	--	
1 - Uniform (PLF)	0 to 3' 1"	N/A	73.5	293.3	Linked from: L1, 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

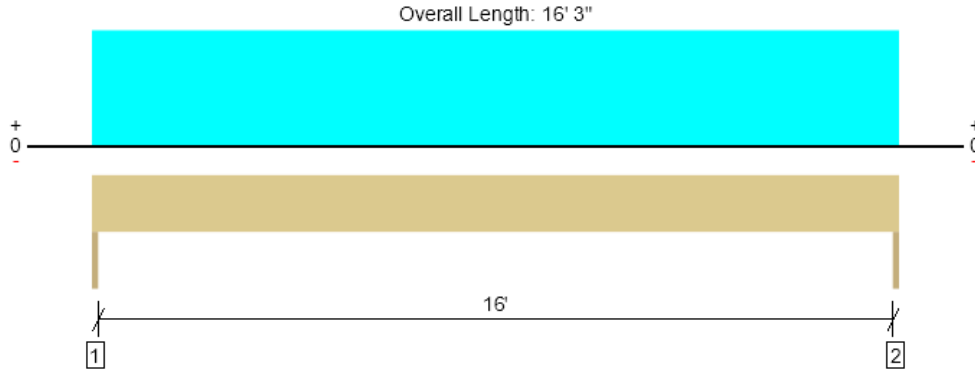
ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

LOFT, L3

1 piece(s) 3 1/2" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3085 @ 0	3281 (1.50")	Passed (94%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2662 @ 1' 1 3/8"	8035	Passed (33%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	12534 @ 8' 1 1/2"	19902	Passed (63%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.498 @ 8' 1 1/2"	0.542	Passed (L/392)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.645 @ 8' 1 1/2"	0.813	Passed (L/303)	--	1.0 D + 1.0 L (All Spans)

Member Length : 16' 3"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	703	2383	3085	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	703	2383	3085	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	16' 3" o/c	
Bottom Edge (Lu)	16' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 16' 3"	N/A	13.0	--	
1 - Uniform (PLF)	0 to 16' 3"	N/A	73.5	293.3	Linked from: L1, 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.

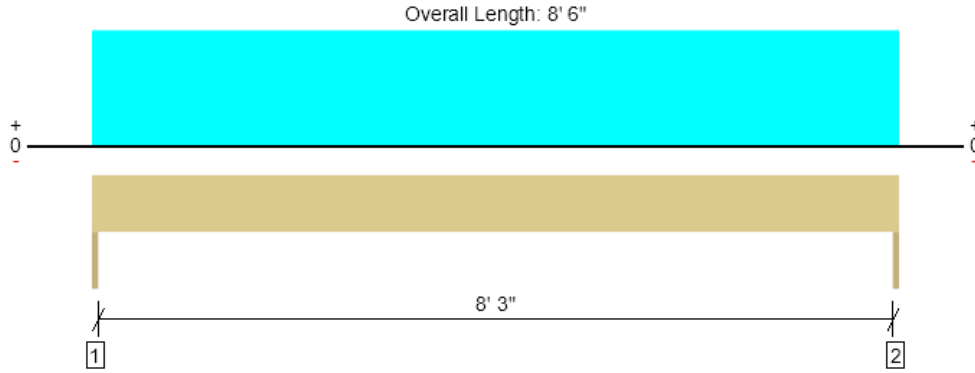
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



LOFT, L4

2 piece(s) 1 3/4" x 7 1/4" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1590 @ 0	3806 (1.50")	Passed (42%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1317 @ 8' 3/4"	4821	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3379 @ 4' 3"	7115	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.167 @ 4' 3"	0.283	Passed (L/611)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.213 @ 4' 3"	0.313	Passed (L/479)	--	1.0 D + 1.0 L (All Spans)

Member Length : 8' 6"
 System : Wall
 Member Type : Header
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Trimmer - SPF	1.50"	1.50"	1.50"	344	1246	1590	None
2 - Trimmer - SPF	1.50"	1.50"	1.50"	344	1246	1590	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 6" o/c	
Bottom Edge (Lu)	8' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 8' 6"	N/A	7.4	--	
1 - Uniform (PLF)	0 to 8' 6"	N/A	73.5	293.3	Linked from: L1, 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.

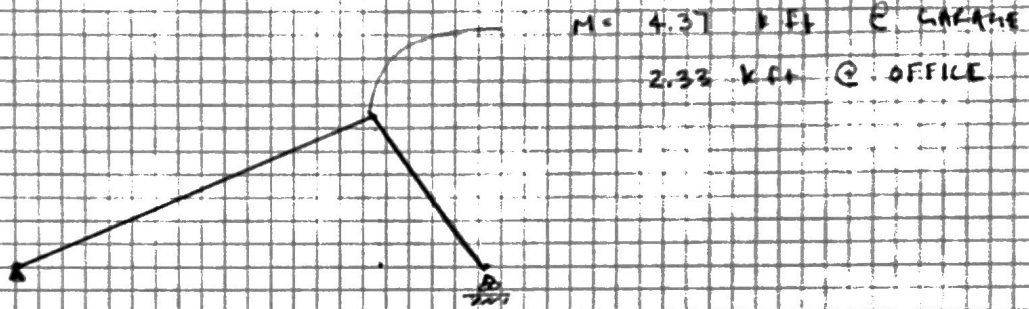
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Julie Smith Lubke Smith Lubke Structural Design (206) 852-1536 julie@smithlubke.com	



12/17/2024 7:28:19 PM UTC
 ForteWEB v3.8, Engine: V8.4.1.24, Data: V8.1.6.3
 File Name: Spurlock_Shed_Mercer Island

SPURLOCK



Moment arm = 6.75"

$$2.33 \text{ k-ft} \left(\frac{12''}{12} \right) = 28.0 \text{ kip-in}$$

$$T = C = \frac{28.0 \text{ kip-in}}{6.75} = 4.15 \text{ kips}$$

TRAY $\frac{1}{4}'' \phi$ $1\frac{1}{2}''$ edge SDS $Z = 250$

$$\text{SNOW } C_d = 1.15 \rightarrow 287.5 \text{ lbs}$$

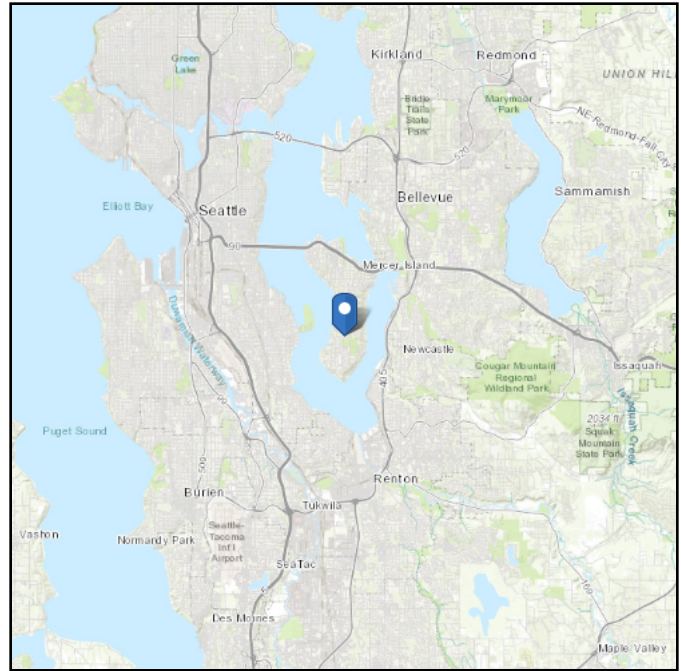
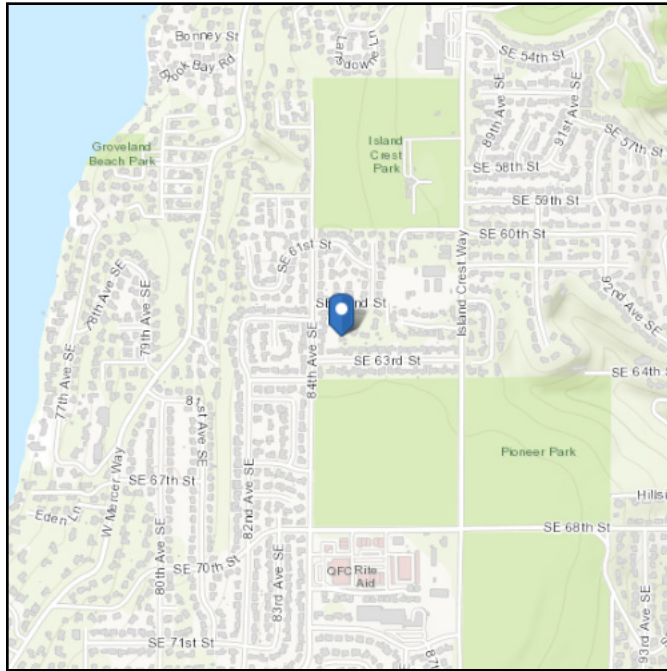
$$\frac{4150 \text{ lbs}}{287.5} = 14.43$$

ASCE Hazards Report

Address:
8427 SE 62nd St
Mercer Island, Washington
98040

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 47.546675
Longitude: -122.225965
Elevation: 308.2804390546063 ft (NAVD 88)



Wind

Results:

Wind Speed	98 Vmph
10-year MRI	67 Vmph
25-year MRI	74 Vmph
50-year MRI	78 Vmph
100-year MRI	83 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Tue Oct 15 2024

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_s :	1.462	S_{D1} :	N/A
S_1 :	0.506	T_L :	6
F_a :	1.2	PGA :	0.626
F_v :	N/A	PGA _M :	0.751
S_{MS} :	1.754	F_{PGA} :	1.2
S_{M1} :	N/A	I_e :	1
S_{DS} :	1.169	C_v :	1.392

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

Data Accessed: Tue Oct 15 2024

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

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE Hazard Tool.

SEISMIC DESIGN

ASCE 7-16

Equivalent Lateral Force Procedure

Risk Category	II	Table 1.5-1
Seismic Design Category	D	More severe, Table 11.6-1 or Table 11.6-2*
Importance Factor	1.00	Table 1.5-2
Site Class	D	Table 20.3-1
S _s	146.20 %g	(from USGS Seismic Hazard Curves)
S ₁	50.60 %g	(from USGS Seismic Hazard Curves)
F _a	1.20	Table 11.4-1
F _v	1.79	Table 11.4-2
C _t	0.02	Table 12.8-2
x	0.75	Table 12.8-2
h _n	14.00 feet	(height to highest level)
S _M = F _a *S _s	1.7544	Eq. 11.4-1
S _{M1} = F _v *S ₁	0.9057	Eq. 11.4-2
S _D = (2/3)*S _M	1.1696 g	Eq. 11.4-3
S _{D1} = (2/3)*S _{M1}	0.6038 g	Eq. 11.4-4
Period T _a = C _t *h _n ^x	0.1448 s	Eq. 12.8-7
T _o	0.1033 s	Eq. 11.4-5
T _s	0.5163 s	Eq. 11.4-6
1.5T _s	0.7744	
T _L	6.0000	per figure 22-14
S _a	1.1696 g	Eq. 11.4-7
R	6.5	Table 12.2-1
Ω _o	3	Table 12.2-1
C _d	4	Table 12.2-1
Section 12.6 ok?	Yes	Table 12.6-1

Site Class	D
Is T ≤ 1.5T _s	yes - use eq. 12.8-2
Ground Motion Hazard Analysis Required?	no, exception 2 section 11.4.8

Equivalent Lateral Force Procedure (section 12.8)

C _s	0.1799	Eq. 12.8-2
W, weight	46,134 lb	per table below
Q _E	8,301 lb	Eq. 12.8-1

Vertical Force Distribution (section 12.8.3)

k = 1.00

Level	Hx (ft)	Floor Area (ft ²)	Floor Wt. (psf)	Floor Wt. (k)	Wall Length (ft)	Wall Wt. (k)	Total Wt. (k)	WxHx (k-ft)	Cvx (%)	(LRFD) Q _E (k)	(ASD) 0.7Q _E (k)
north roof	13.00	1490	13	19.4	115.7	4.9	24.2	315.0	52.5	4.36	3.05
south 5:12	13.00	1320	13	17.2	113	4.7	21.9	284.8	47.5	3.94	2.76
south 18:12	13.00	340	20	6.8	71	3.0	9.8	127.2	21.2	1.76	1.23
							46.1	599.7	100.0	10.06	7.04

Wind Design

Asce7-16

Envelope Procedure, Part 2: Enclosed Simple Diaphragm Low Rise Buildings

$$p_s = \lambda K_{zt} p_{s30}$$

Risk Category = **II**
 ATC Council Wind Load = **98**
 Exposure (26.7) = **B**
 λ (adjustment factor) = **1.00**
 K_{zt} (topographic factor) = **1.60**

Partial Figure 28.6-1

Adjustment Factor for Building Height and Exposure, λ

Mean Roof	Exposure		
	B	C	D
15	1.00	1.21	1.47
20	1.00	1.29	1.55
25	1.00	1.35	1.61
30	1.00	1.40	1.66
35	1.00	1.45	1.70

$$p_s = 1.60 p_{s30}$$

Partial Figure 28.6-1

Simplified Design Wind Pressure, p_{s30} (psf)

Basic Wind Speed	Roof Angle	Roof Pitch	Horizontal Pressures			
			A (end wall)	B (end roof)	C (wall)	D (roof)
98	0 to 5	flat	14.9	-7.7	9.9	-4.6
	10	2	16.8	-7.0	11.2	-4.1
	15	3	18.8	-6.2	12.5	-3.6
	20	4	20.7	-5.4	13.8	-3.0
	25	6	18.8	3.0	13.6	3.1
	30 to 45	7 to 12	16.8	11.5	13.4	9.2

ASD Design Wind Pressures, p_s

Basic Wind Speed	Roof Angle	Roof Pitch	Horizontal Pressures			
			A (end wall)	B (end roof)	C (wall)	D (roof)
98	0 to 5	flat	14.3	-7.4	9.5	-4.4
	10	2	16.1	-6.7	10.8	-3.9
	15	3	18.0	-6.0	12.0	-3.5
	20	4	19.9	-5.2	13.2	-2.9
	25	6	18.0	2.9	13.1	3.0
	30 to 45	7 to 12	16.1	11.0	12.9	8.8

<= Use this row
<= Use this row

End Zone Computation (Figure 28.6-1, footnote 9)

Least horizontal dimension (W_L) = **30.0 ft**

Mean roof height (H) = **12.0 ft**

a =>	0.1 W_L	3.00		
	0.4H	4.80	a =	3.0 ft
	0.04 W_L	1.20	End Zone (2a) =	6.0 ft
	>= 3'	3.00		

Spurlock - lateral force distribution

wind/seismic - used worse case at each line

Shearwall Schedule

SW1 241 lbs/ft
SW2 353 lbs/ft

(CDX)HEM-FIR, 15/32" SHEATHING, 1-1/2" NAIL PEN., 8D @ 6"OC
(CDX)HEM-FIR, 15/32" SHEATHING, 1-1/2" NAIL PEN., 8D @ 4"OC

max shearwall aspect ratio w/out reduction = 2.0
max shearwall aspect ratio with reduction = 3.5

WALLS BELOW OUTDOOR ROOM AND BILLARDS ROOF (R = 6.5)

WALL ENDS; BOTTOM(1)TOP(2), LEFT(1)RIGHT(2)

	V (lb)	V (above)	V (total)	L (ft)	h (ft)	Aspect ratio	rho	(rho)v (plf)	SW	M _{ot} (lbft)	M _{ot} (total)	OT (lb)	Wall w/dead	D1 (lb)	L1 (lb)	Cmax POST	Tmax	HD	D2	L2	Cmax POST	Tmax	HD			
NW1	3610	0	3610	30	8	0.267	1	120	SW1	28880	0	28880	963	148	0	963	(2)2x4	-369	none	0	963	(2)2x4	-369	none		
MW1	1830	0	1830	6	9.67	1.612	1	305	SW2	17694	0	17694	2949	219	860	5313	(3)2x4	2038	HDU2	561	789	4299	(3)2x4	2218	HDU2	
MW2	3150	0	3150	10.33	7.42	0.718	1	305	SW2	23375	0	23375	2263	253	0	2263	(2)2x4	1477	DTTZZ	1026	1571	4860	(3)2x4	862	DTTZZ	
W1	920	0	920.3	29.83	7	0.235	1	31	SW1	6442	0	6442	216	91	0	216	(2)2x6	-598	none	267	299	782	(2)2x4	-759	none	
W2	339	0	339.3	11	7	0.636	1	31	SW1	2375	0	2375	216	218	267	299	782	(2)2x4	-664	none	464	890	1570	(2)2x4	-782	none
W3	740	0	740.4	24	7	0.292	1	31	SW1	5183	0	5183	216	299	464	890	1570	(2)2x4	-2215	none	0	0	216	(2)2x4	-1937	none
WW1	1385	0	1385	6	8	1.333	1	231	SW1	11080	0	11080	1847	367	1242	5067	(3)2x4	442	DTTZZ	1242	1978	5067	(3)2x4	442	DTTZZ	
WW2	1385	0	1385	6	8.7	1.45	1	231	SW1	12050	0	12050	2008	194	860	4372	(3)2x4	1144	DTTZZ	1429	2353	5790	4x6	802	DTTZZ	
WW3	416	0	416.3	5.42	9.5	1.753	1	77	SW1	3954	0	3954	730	139	412	1371	(2)2x6	257	none	942	1656	3328	(2)2x6	-61	none	
WW4	544	0	543.7	7.08	10.4	1.469	1	77	SW1	5655	0	5655	799	150	0	799	(2)2x6	480	none	1089	1396	3284	(2)2x6	-174	none	
EW1	718	0	718	3.5	8	2.286	0.88	205	SW1	5744	0	5744	1641	164	876	3939	(2)2x4	943	DTTZZ	0	0	1641	(2)2x4	1469	DTTZZ	
EW2	786	0	785.7	3.83	8	2.089	0.96	205	SW1	6286	0	6286	1641	367	726	3552	(2)2x4	784	DTTZZ	876	1422	3939	(2)2x4	694	DTTZZ	
EW3	702	0	701.6	3.42	8	2.339	0.86	205	SW1	5613	0	5613	1641	367	1297	5139	(3)2x4	487	DTTZZ	726	1185	3552	(2)2x4	830	DTTZZ	
EW4	1145	0	1145	5.58	8.7	1.559	1	205	SW1	9959	0	9959	1785	100	2179	6788	4x6	311	DTTZZ	239	406	2430	(2)2x6	1475	DTTZZ	
EW5	1730	0	1730	21.25	11.33	0.533	1	81	SW1	19601	0	19601	922	162	0	922	(2)2x4	-112	none	0	0	922	(2)2x4	-112	none	