BYKONEN
CARTER
QUINN

STRUCTURAL
ENGINEERING

STRUCTURAL CALCULATIONS

Vaney Shinde Residence
4207 W Mercer Way,
Mercer Island, WA 98040

Studio Ectypos
4212 W Mercer Way,
Mercer Island, WA 98040

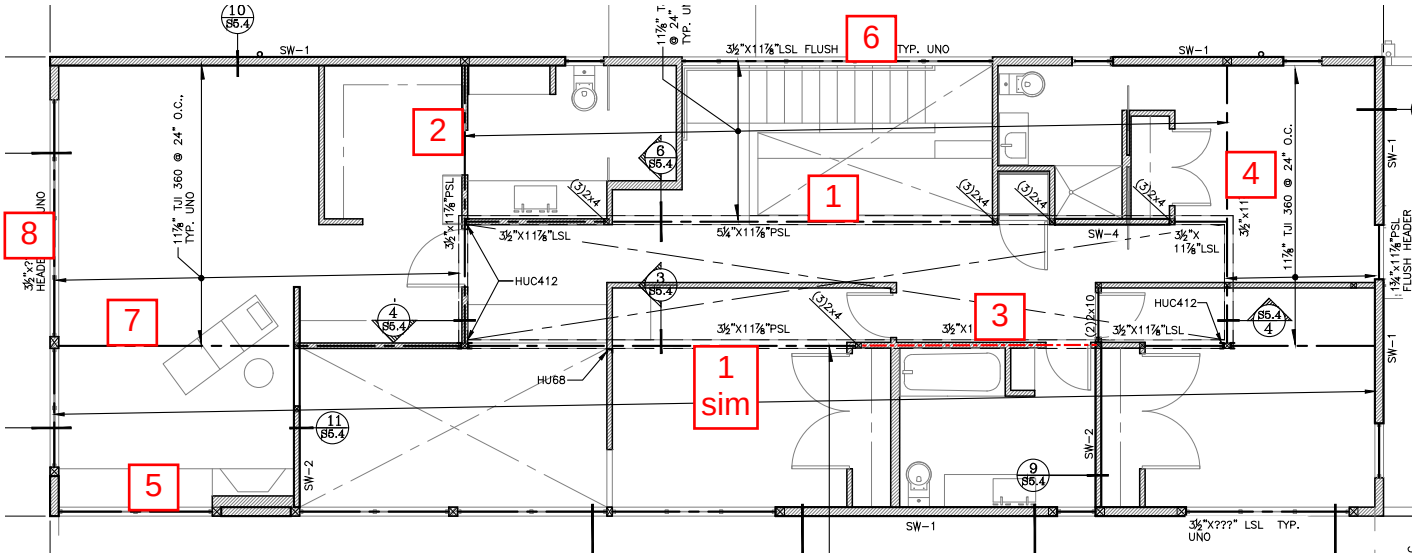
November 2, 2020

Supplemental Calculations – Wood Design Permit Corrections

2033 Sixth Avenue #995 Seattle, WA 98121 206-264-7784 www.BCQ-SE.com

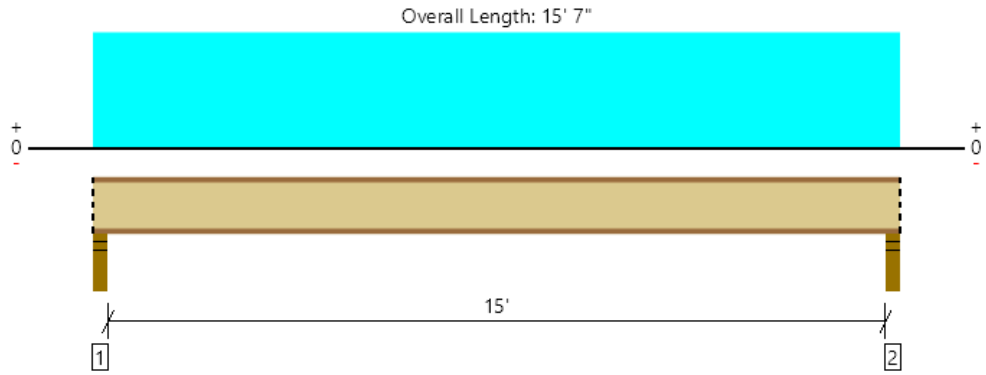
ROOF FRAMING KEY

LOADS
DL=15 PSF
SL=30 PSF (Includes 5 psf for low slope roofs)



nts

Roof, Roof: Joist, 15' span
1 piece(s) 11 7/8" TJI® 110 @ 24" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	701 @ 2 1/2"	1581 (3.50")	Passed (44%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	675 @ 3 1/2"	1794	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2588 @ 7' 9 1/2"	3634	Passed (71%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.299 @ 7' 9 1/2"	0.758	Passed (L/610)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.448 @ 7' 9 1/2"	1.011	Passed (L/406)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

- 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	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.75"	234	467	701	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.75"	234	467	701	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 6" o/c	
Bottom Edge (Lu)	15' 7" o/c	

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

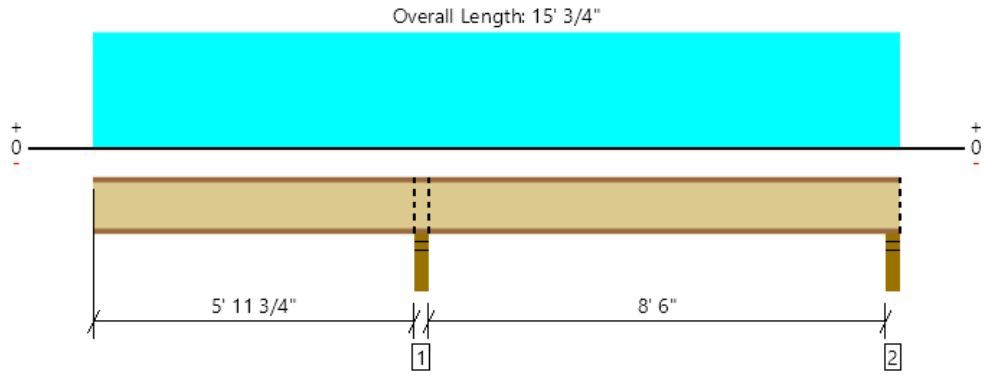
Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 15' 7"	24"	15.0	30.0	Default Load

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

Roof, Roof: Joist, overhang
1 piece(s) 11 7/8" TJI® 360 @ 24" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1138 @ 6' 1 1/2"	2830 (3.50")	Passed (40%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	543 @ 6' 3 1/4"	1961	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1688 @ 6' 1 1/2"	7107	Passed (24%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.126 @ 0	0.613	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.178 @ 0	0.817	Passed (2L/828)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - SPF	3.50"	3.50"	3.50"	379	758	1137	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.75"	73	210	283	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' 7" o/c	
Bottom Edge (Lu)	7' 4" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 15' 3/4"	24"	15.0	30.0	Default Load

Weyerhaeuser Notes

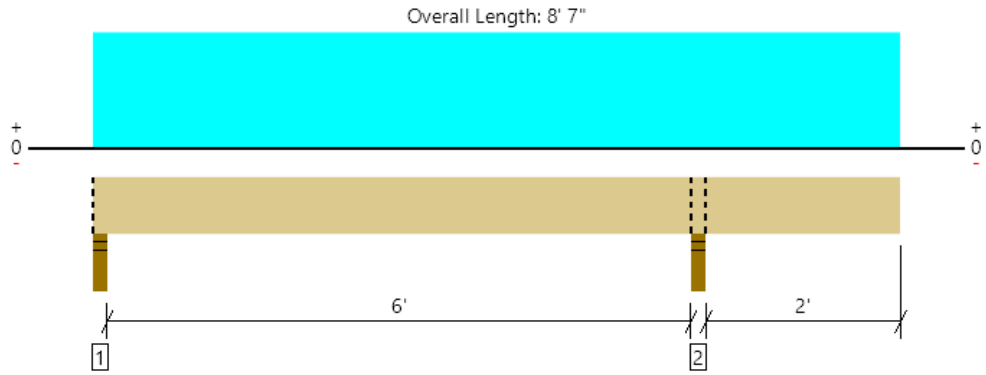
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional 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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, Roof: Joist, Clerestory
1 piece(s) 2 x 8 Hem-Fir No. 2 @ 24" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	507 @ 6' 5 1/4"	2127 (3.50")	Passed (24%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	246 @ 5' 8 1/4"	1251	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	370 @ 3' 15/16"	1477	Passed (25%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.028 @ 3' 3"	0.312	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.040 @ 3' 2 5/8"	0.415	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

- 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	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	89	188	277	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	169	338	507	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 7" o/c	
Bottom Edge (Lu)	8' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 8' 7"	24"	15.0	30.0	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.

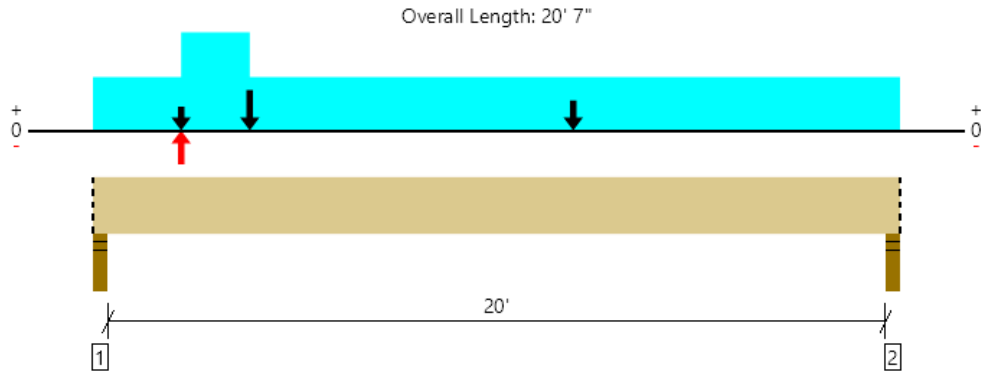
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 1/ Flush Beam

1 piece(s) 5 1/4" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4462 @ 2"	11484 (3.50")	Passed (39%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4178 @ 1' 3 3/8"	13861	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	20606 @ 11' 10 7/16"	34332	Passed (60%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.674 @ 10' 3 1/4"	1.013	Passed (L/361)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.064 @ 10' 3 3/16"	1.350	Passed (L/228)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Seismic	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	1632	2830	173/-173	4635/-173	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	1290	2174	173/-173	3637/-173	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	20' 7" o/c	
Bottom Edge (Lu)	20' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 20' 7"	N/A	19.5	--	--	
1 - Uniform (PSF)	0 to 20' 7" (Front)	4' 6"	15.0	30.0	-	Roof
2 - Point (lb)	2' 3" (Front)	N/A	-	-	-2000	Hold down, omega = 2.5
3 - Point (lb)	4' (Front)	N/A	-	-	2000	Hold down, omega = 2.5
4 - Uniform (PSF)	2' 3" to 4' (Front)	4' 3"	15.0	25.0	-	Wall above
5 - Point (lb)	2' 3" (Front)	N/A	255	510	-	Post above
6 - Point (lb)	4' (Front)	N/A	255	510	-	Post above
7 - Point (lb)	12' 3" (Front)	N/A	510	1020	-	Post above

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.

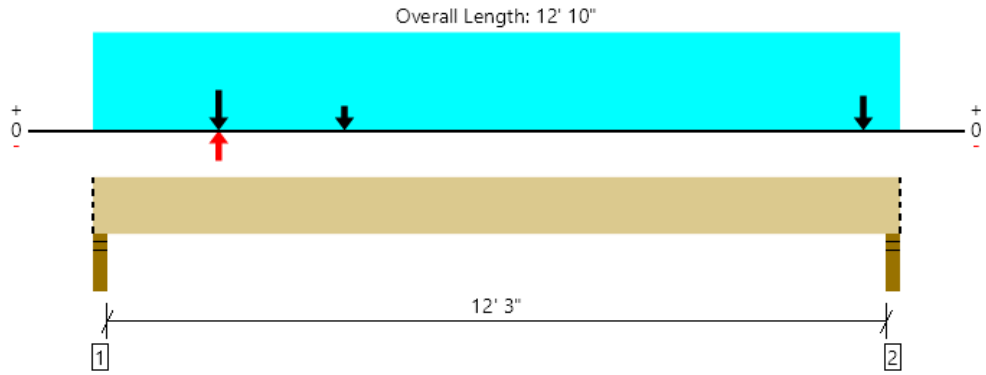
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 1-sim/ Flush Beam

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3967 @ 12' 8"	7656 (3.50")	Passed (52%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2962 @ 1' 3 3/8"	9878	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	9296 @ 5' 7 7/16"	18346	Passed (51%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.249 @ 6' 3 1/2"	0.625	Passed (L/603)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.383 @ 6' 3 9/16"	0.833	Passed (L/391)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	3.50"	3.50"	1.56"	1192	2218	3410	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.81"	1378	2589	3967	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 10" o/c	
Bottom Edge (Lu)	12' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 12' 10"	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 12' 10" (Front)	7' 6"	15.0	30.0	-	Roof
2 - Point (lb)	2' (Front)	N/A	240	480	-	Clerestory post above
3 - Point (lb)	4' (Front)	N/A	240	480	-	Clerestory post above
4 - Point (lb)	12' 3" (Front)	N/A	480	960	-	Clerestory post above
5 - Point (lb)	2' (Front)	N/A	-	-	-1140	Clerestory post above - omega
6 - Point (lb)	2' (Front)	N/A	-	-	1140	Clerestory post above - omega

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.

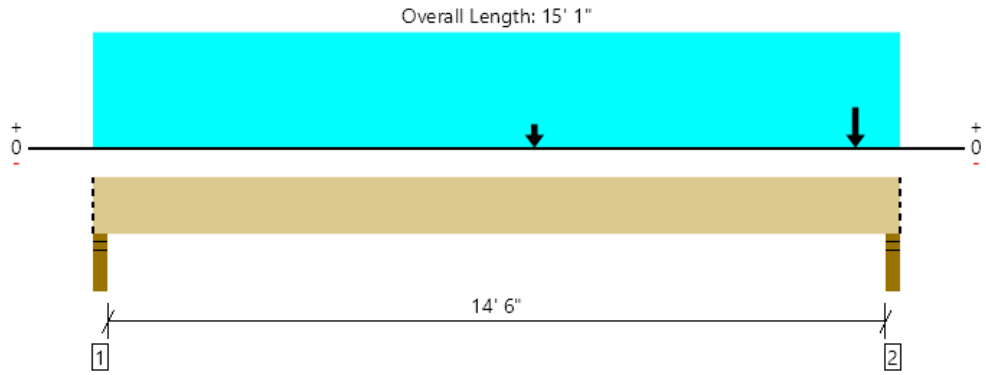
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 2/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4953 @ 14' 11"	7656 (3.50")	Passed (65%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3169 @ 13' 9 5/8"	9241	Passed (34%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	8712 @ 8' 3"	22888	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.216 @ 7' 9 13/16"	0.492	Passed (L/819)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.342 @ 7' 9 3/4"	0.738	Passed (L/518)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- 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	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	573	938	1511	Blocking
2 - Stud wall - DF	3.50"	3.50"	2.26"	1802	3151	4953	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 1"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 15' 1" (Front)	2'	15.0	30.0	Roof
2 - Point (lb)	8' 3" (Front)	N/A	420	840	
3 - Point (lb)	14' 3" (Front)	N/A	1307	2344	

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.

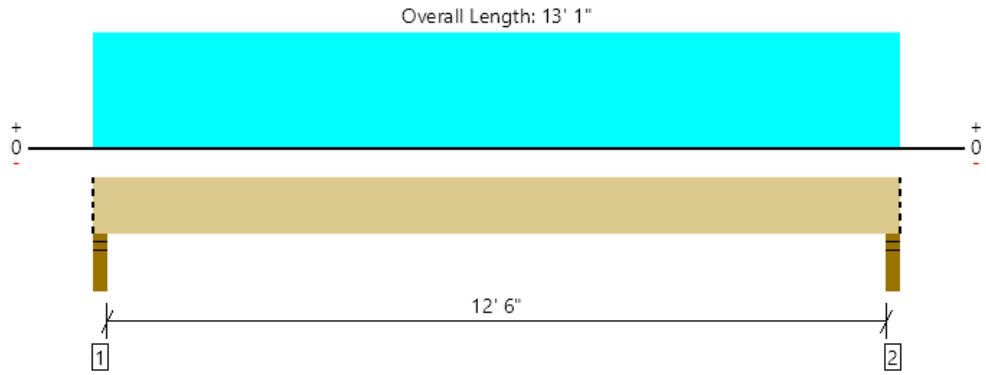
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 3/ Flush Beam

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2293 @ 2"	7656 (3.50")	Passed (30%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1844 @ 1' 3 3/8"	9878	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	7122 @ 6' 6 1/2"	18346	Passed (39%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.193 @ 6' 6 1/2"	0.637	Passed (L/792)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.301 @ 6' 6 1/2"	0.850	Passed (L/509)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
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	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	821	1472	2293	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	821	1472	2293	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 1" o/c	
Bottom Edge (Lu)	13' 1" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13' 1"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 13' 1" (Front)	7' 6"	15.0	30.0	Roof

Weyerhaeuser Notes

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

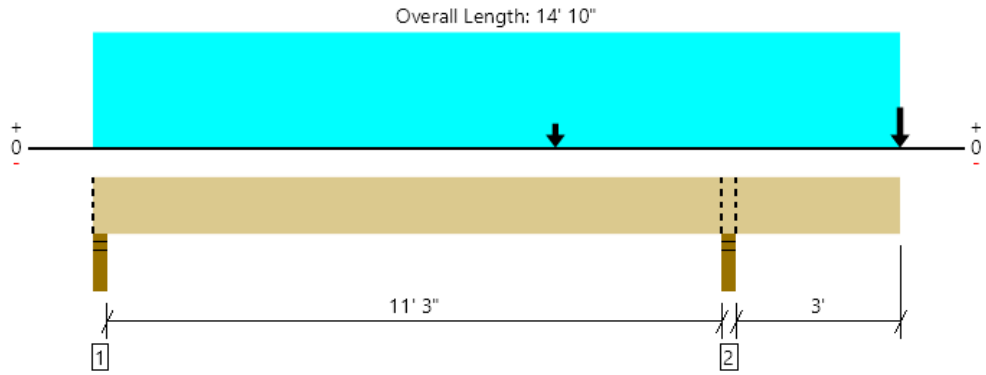
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 4/ Flush Beam

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6487 @ 11' 8 1/4"	7656 (3.50")	Passed (85%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3934 @ 12' 9 7/8"	9878	Passed (40%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-12234 @ 11' 8 1/4"	18346	Passed (67%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.280 @ 14' 10"	0.315	Passed (2L/270)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.399 @ 14' 10"	0.419	Passed (2L/190)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- 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.
- -430 lbs uplift at support located at 2". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	-3	203/-427	203/-430	Blocking
2 - Stud wall - DF	3.50"	3.50"	2.97"	2243	4244	6487	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14' 10"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 14' 10" (Front)	2'	15.0	30.0	Roof
2 - Point (lb)	8' 6" (Front)	N/A	360	720	
3 - Point (lb)	14' 10" (Front)	N/A	1242	2485	

Weyerhaeuser Notes

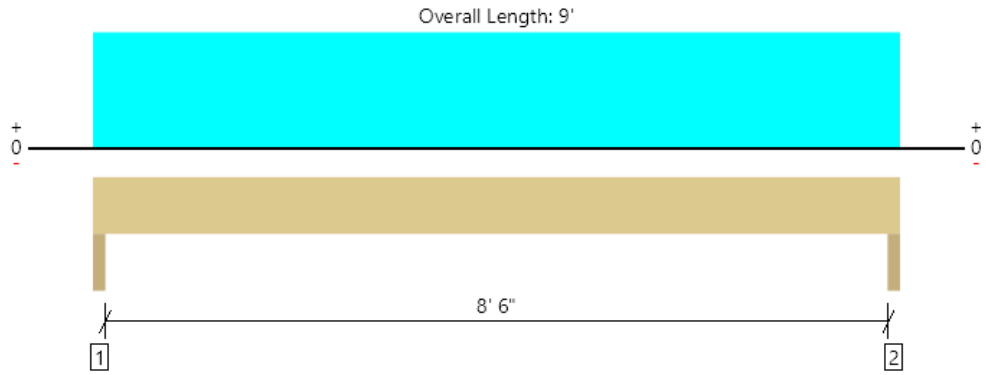
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional 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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 5/ Header, typ. @ south elevation
2 piece(s) 2 x 12 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2063 @ 1 1/2"	3645 (3.00")	Passed (57%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1519 @ 1' 2 1/4"	3881	Passed (39%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4388 @ 4' 6"	5155	Passed (85%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.086 @ 4' 6"	0.292	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.131 @ 4' 6"	0.438	Passed (L/803)	--	1.0 D + 1.0 S (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.70"	713	1350	2063	None
2 - Trimmer - DF	3.00"	3.00"	1.70"	713	1350	2063	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 10" o/c	
Bottom Edge (Lu)	9' o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9'	N/A	8.6	--	
1 - Uniform (PSF)	0 to 9'	10'	15.0	30.0	Snow

Weyerhaeuser Notes

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

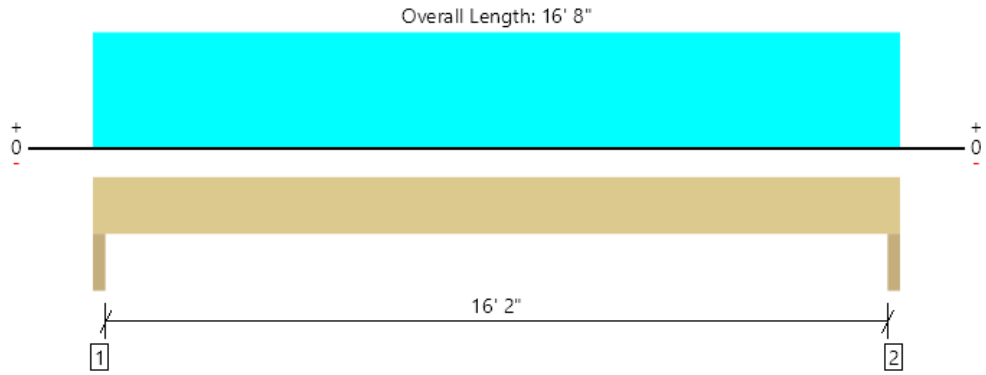
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 6/ Header

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1702 @ 1 1/2"	8138 (3.00")	Passed (21%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1449 @ 1' 2 7/8"	9878	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6881 @ 8' 4"	18346	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Vert Live Load Defl. (in)	0.291 @ 8' 4"	0.547	Passed (L/678)	--	1.0 D + 1.0 S (All Spans)
Vert Total Load Defl. (in)	0.466 @ 8' 4"	0.821	Passed (L/423)	--	1.0 D + 1.0 S (All Spans)
Lat Member Reaction (lbs)	711 @ 16' 6 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	675 @ 6 1/2"	6650	Passed (10%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	2919 @ mid-span	8453	Passed (35%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	1.514 @ mid-span	1.642	Passed (L/130)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.63	1.00	Passed (63%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 S

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Lateral deflection criteria: Wind (L/120)

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	640	1063	1703	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	640	1063	1703	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	16' 8" o/c	
Bottom Edge (Lu)	16' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Lateral Connections						
Supports	Plate Size	Plate Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Douglas Fir-Larch	Nails	10d x 3" Box (End)	8	
Right	2X	Douglas Fir-Larch	Nails	10d x 3" Box (End)	8	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 8"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 16' 8"	4' 3"	15.0	30.0	Snow

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	4'	36.1	

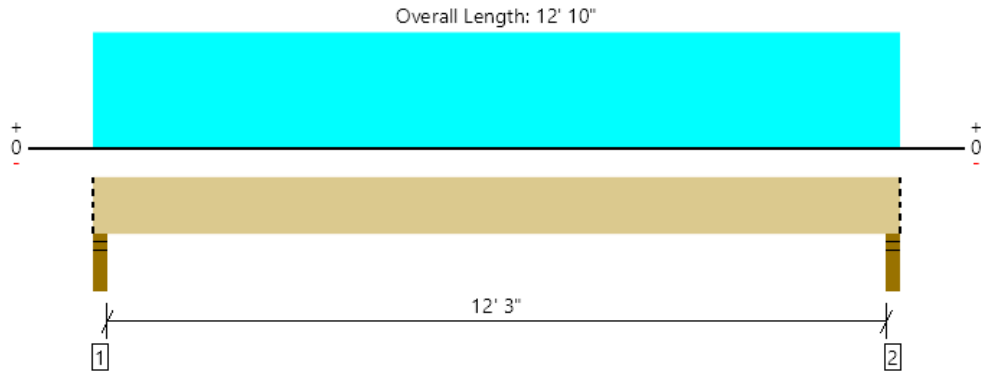
• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 7/ Flush Beam

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3404 @ 2"	5206 (3.50")	Passed (65%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2724 @ 1' 3 3/8"	9878	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	10361 @ 6' 5"	18346	Passed (56%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.274 @ 6' 5"	0.417	Passed (L/547)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.422 @ 6' 5"	0.625	Passed (L/355)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- 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	Total	
1 - Stud wall - SPF	3.50"	3.50"	2.29"	1190	2214	3404	Blocking
2 - Stud wall - SPF	3.50"	3.50"	2.29"	1190	2214	3404	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 10" o/c	
Bottom Edge (Lu)	12' 10" 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 12' 10"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 12' 10" (Front)	11' 6"	15.0	30.0	

Weyerhaeuser Notes

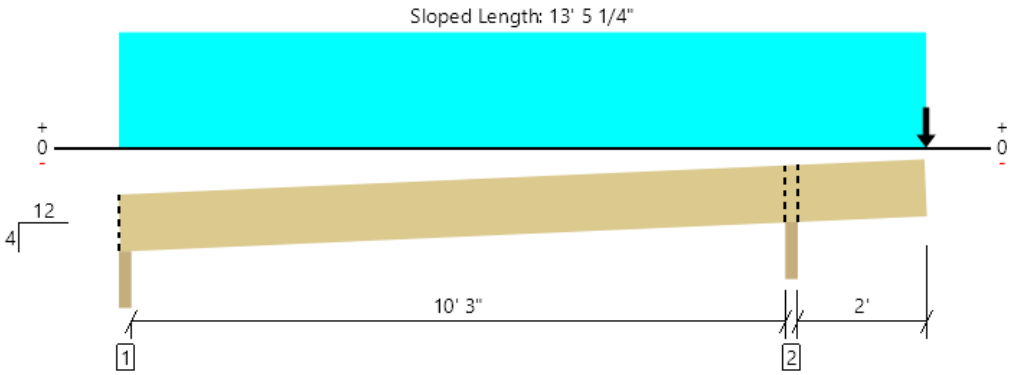
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional 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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, Clerestory Cantilever beam
2 piece(s) 2 x 8 Hem-Fir No. 2



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

Member Length : 13' 7 11/16"

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 4/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1255 @ 10' 7 1/2"	3842 (3.00")	Passed (33%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	568 @ 11' 3 7/8"	2501	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1132 @ 10' 7 1/2"	2569	Passed (44%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.055 @ 12' 9"	0.224	Passed (2L/986)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.159 @ 5' 9/16"	0.738	Passed (L/837)	--	1.0 D + 1.0 S (Alt Spans)

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - DF	3.00"	3.00"	1.50"	164	287	451	Blocking
2 - Beveled Plate - DF	3.00"	3.00"	1.50"	456	799	1255	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 5" o/c	
Bottom Edge (Lu)	13' 5" 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 12' 9"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 12' 9"	2'	15.0	30.0	Roof
2 - Point (lb)	12' 9"	N/A	143	286	

Weyerhaeuser Notes

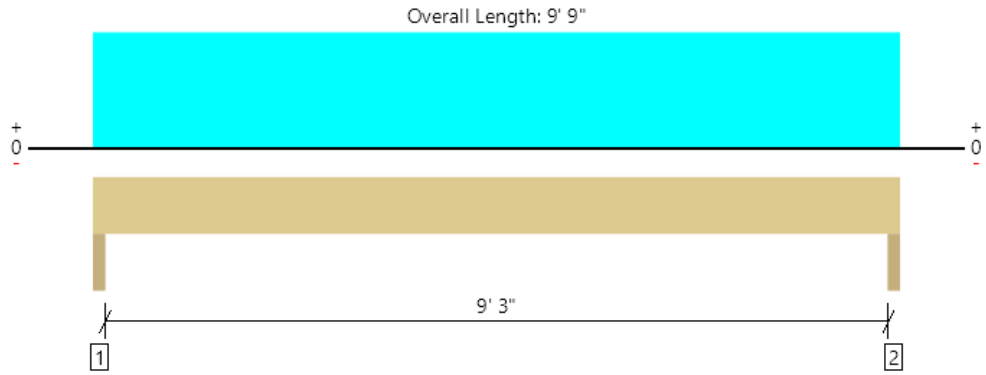
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional 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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, Clerestory Header
2 piece(s) 2 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	941 @ 1 1/2"	3645 (3.00")	Passed (26%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	776 @ 10 1/4"	2501	Passed (31%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2177 @ 4' 10 1/2"	2569	Passed (85%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.185 @ 4' 10 9/16"	0.317	Passed (L/616)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.286 @ 4' 10 9/16"	0.313	Passed (L/399)	--	1.0 D + 1.0 S (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/5/16").
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Software only analyzes holes in TJI® Joists, Microllam® LVL, Parallam® PSL and TimberStrand® LSL.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	332	609	941	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	332	609	941	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 9"	N/A	5.5	--	
1 - Uniform (PSF)	0 to 9' 9"	4' 2"	15.0	30.0	Snow

Weyerhaeuser Notes

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

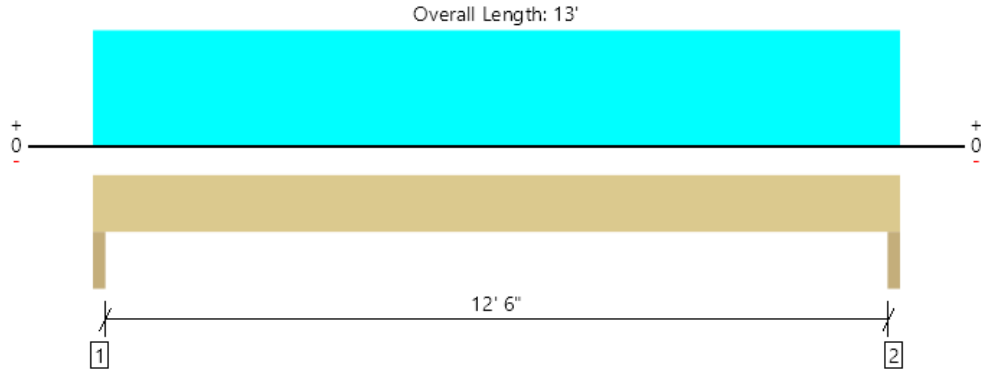
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, 8/ Header

1 piece(s) 4 x 10 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	346 @ 1 1/2"	4253 (3.00")	Passed (8%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	292 @ 1' 1/4"	3723	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1081 @ 6' 6"	4879	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Vert Live Load Defl. (in)	0.059 @ 6' 6"	0.425	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Vert Total Load Defl. (in)	0.105 @ 6' 6"	0.637	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Lat Member Reaction (lbs)	690 @ 12' 10 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	645 @ 6 1/2"	5180	Passed (12%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	2201 @ mid-span	2825	Passed (78%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	1.049 @ mid-span	1.275	Passed (L/146)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.85	1.00	Passed (85%)	1.60	1.0 D + 0.6 W

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Lateral deflection criteria: Wind (L/120)
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	151	195	346	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	151	195	346	None

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

•Maximum allowable bracing intervals based on applied load.

Lateral Connections						
Supports	Plate Size	Plate Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Douglas Fir-Larch	Nails	16d x 3.5" Box (End)	8	
Right	2X	Douglas Fir-Larch	Nails	16d x 3.5" Box (End)	8	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13'	N/A	8.2	--	
1 - Uniform (PSF)	0 to 13'	1'	15.0	30.0	Snow

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	5'	36.1	

• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

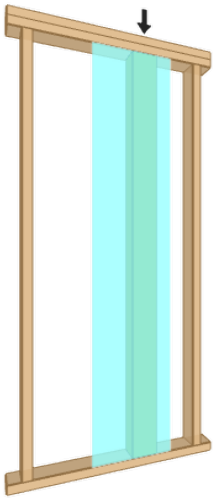
ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Roof, Wall: Double height Column - South Elevation

1 piece(s) 5 1/4" x 7" 1.8E Parallam® PSL (Plank)

Wall Height: 17' 4" | Member Height: 16' 11 1/2" | Tributary Width: 8'



Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	33	50	Passed (66%)	--	--
Compression (lbs)	1317	24705	Passed (5%)	1.15	1.0 D + 1.0 S
Plate Bearing (lbs)	1317	14884	Passed (9%)	--	1.0 D + 1.0 S
Lateral Reaction (lbs)	1469	--	--	1.60	1.0 D + 0.6 W
Lateral Shear (lbs)	1393	7448	Passed (19%)	1.60	1.0 D + 0.6 W
Lateral Moment (ft-lbs)	6229 @ mid-span	11279	Passed (55%)	1.60	1.0 D + 0.6 W
Total Deflection (in)	1.50 @ mid-span	1.70	Passed (L/136)	--	1.0 D + 0.6 W
Bending/Compression	0.56	1	Passed (56%)	1.60	1.0 D + 0.6 W

- Lateral deflection criteria: Wind (L/120)
- Input axial load eccentricity for the design is zero
- Applicable calculations are based on NDS.
- Member has been designed in flat (plank) orientation with lateral (wind) loads applied to wide strand face.

Supports	Type	Material
Top	Dbl 2X	Hem Fir
Base	2X	Hem Fir

System : Wall
Member Type : Column
Building Code : IBC 2015
Design Methodology : ASD

Max Unbraced Length	Comments
8'	

Lateral Connections: Simpson Strong-Tie

Supports	Connector	Type/Model	Quantity	Connector Nailing
Top	Angle Connectors	A34	4	(8) - 8d x 1 1/2"
Base	Angle Connectors	A34	4	(8) - 8d x 1 1/2"

Vertical Load	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Point (lb)	N/A	494	80	823	Default Load

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	8'	36.1	

• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

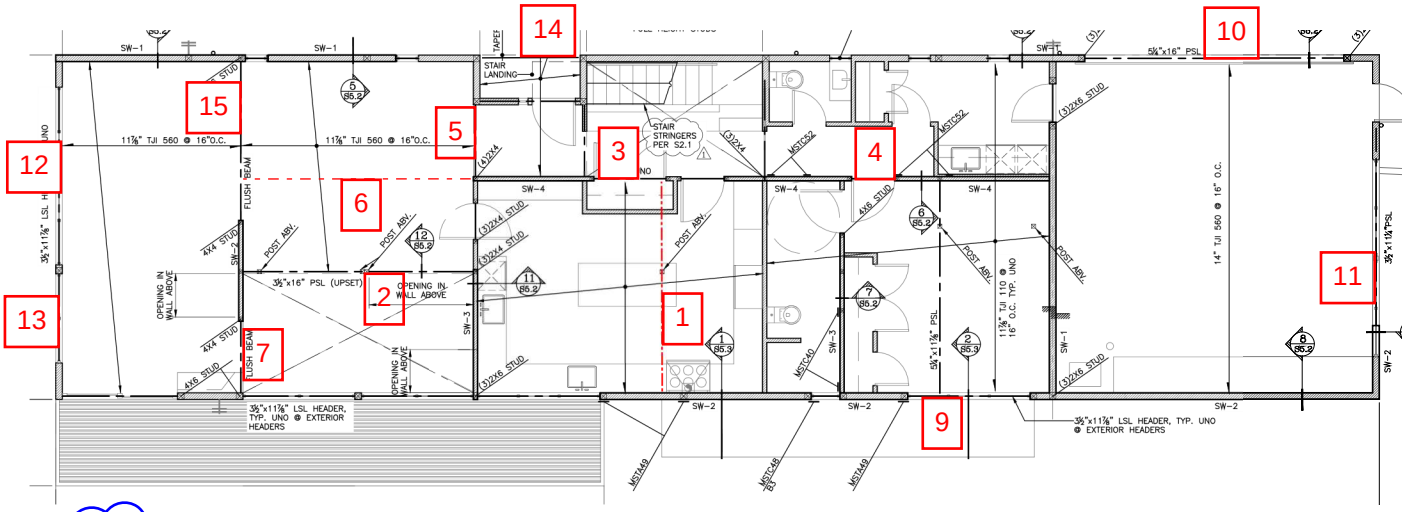
Weyerhaeuser Notes

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

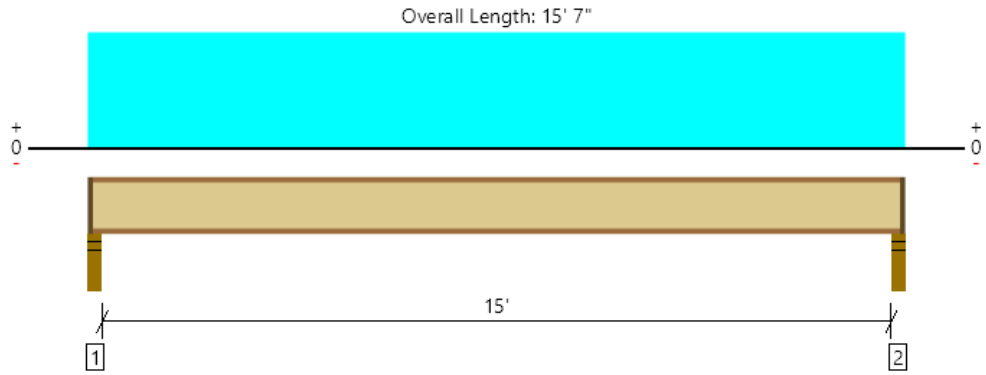
UPPER FLOOR FRAMING KEY

LOADS
DL=15 PSF
LL=40 PSF (FLOOR)
LL=60 PSF (DECK)



nts

Upper, Floor: Joist, 15' span
1 piece(s) 11 7/8" TJI® 110 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	564 @ 2 1/2"	1041 (2.25")	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	550 @ 3 1/2"	1560	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2109 @ 7' 9 1/2"	3160	Passed (67%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.217 @ 7' 9 1/2"	0.379	Passed (L/840)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.298 @ 7' 9 1/2"	0.758	Passed (L/611)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	46	40	Passed	--	--

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - SPF	3.50"	2.25"	1.75"	156	416	572	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.75"	156	416	572	1 1/4" Rim Board

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 10" o/c	
Bottom Edge (Lu)	15' 5" o/c	

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

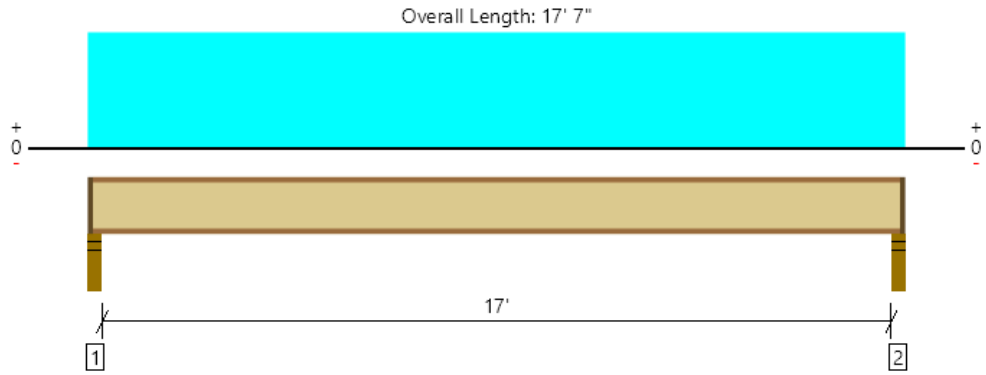
Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 15' 7"	16"	15.0	40.0	Default Load

Weyerhaeuser Notes

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

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

Upper, Floor: Joist, 17' span
1 piece(s) 11 7/8" TJI® 210 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	637 @ 2 1/2"	1134 (2.25")	Passed (56%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	623 @ 3 1/2"	1655	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2701 @ 8' 9 1/2"	3795	Passed (71%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.304 @ 8' 9 1/2"	0.429	Passed (L/677)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.419 @ 8' 9 1/2"	0.858	Passed (L/492)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	42	40	Passed	--	--

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - SPF	3.50"	2.25"	1.75"	176	469	645	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.75"	176	469	645	1 1/4" Rim Board

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 5" o/c	
Bottom Edge (Lu)	17' 5" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•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 17' 7"	16"	15.0	40.0	Default Load

Weyerhaeuser Notes

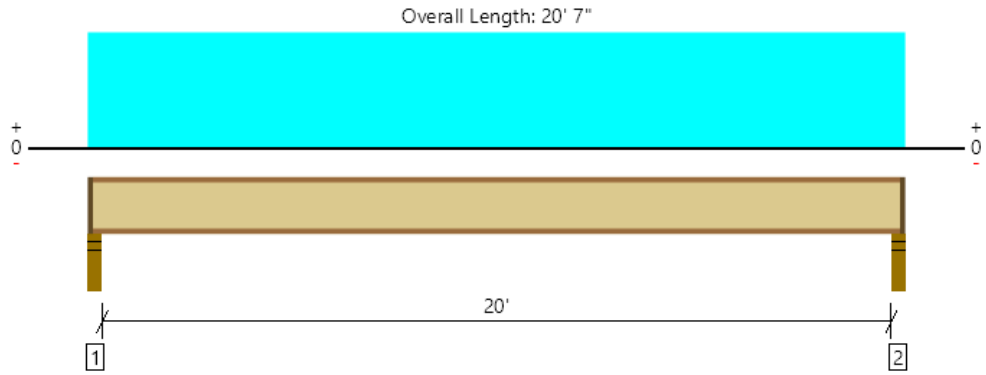
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional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

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

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, Floor: Joist, 20' span
1 piece(s) 11 7/8" TJI® 560 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	747 @ 2 1/2"	1396 (2.25")	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	733 @ 3 1/2"	2050	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3728 @ 10' 3 1/2"	9500	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.317 @ 10' 3 1/2"	0.504	Passed (L/764)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.436 @ 10' 3 1/2"	1.008	Passed (L/555)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	43	40	Passed	--	--

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - SPF	3.50"	2.25"	1.75"	206	549	755	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.75"	206	549	755	1 1/4" Rim Board

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 2" o/c	
Bottom Edge (Lu)	20' 5" o/c	

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

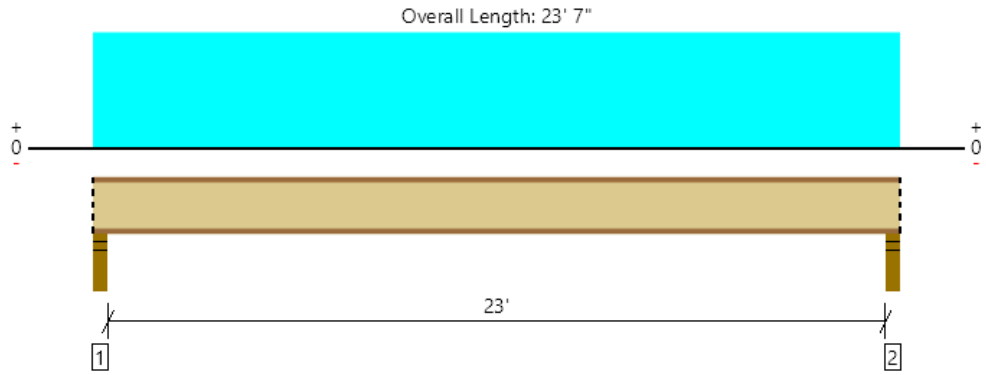
Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 20' 7"	16"	15.0	40.0	Default Load

Weyerhaeuser Notes

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

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

Upper, Roof: Joist, 23' span
1 piece(s) 11 7/8" TJI® 360 @ 24" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	943 @ 2 1/2"	1731 (3.50")	Passed (55%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	920 @ 3 1/2"	1961	Passed (47%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5367 @ 11' 9 1/2"	7107	Passed (76%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.834 @ 11' 9 1/2"	1.159	Passed (L/333)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.334 @ 11' 9 1/2"	1.545	Passed (L/208)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

- 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	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.75"	354	590	944	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.75"	354	590	944	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 11" o/c	
Bottom Edge (Lu)	23' 7" o/c	

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 23' 7"	24"	15.0	25.0	Default Load

Weyerhaeuser Notes

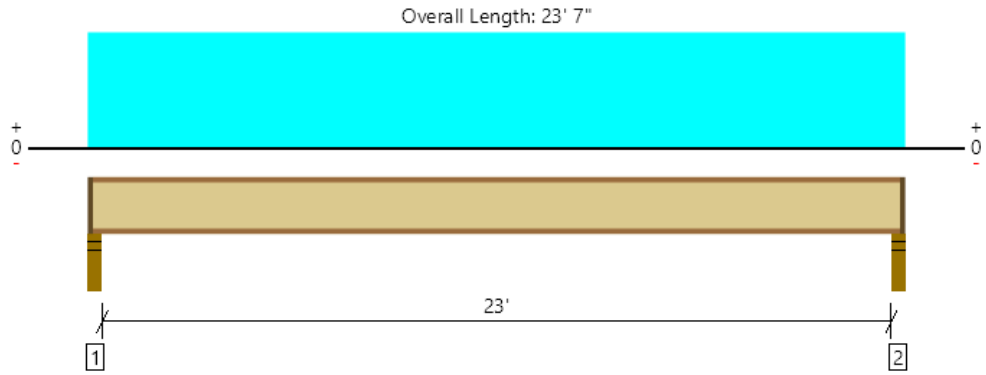
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional 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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, Deck: Joist, 23' span (not is current scope)
1 piece(s) 16" TJI® 560 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1169 @ 2 1/2"	1396 (2.25")	Passed (84%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1150 @ 3 1/2"	2710	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6709 @ 11' 9 1/2"	12925	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.431 @ 11' 9 1/2"	0.579	Passed (L/646)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.538 @ 11' 9 1/2"	1.158	Passed (L/516)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	45	35	Passed	--	--

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - SPF	3.50"	2.25"	1.75"	236	943	1179	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.75"	236	943	1179	1 1/4" Rim Board

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' o/c	
Bottom Edge (Lu)	23' 5" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•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 23' 7"	16"	15.0	60.0	Default Load

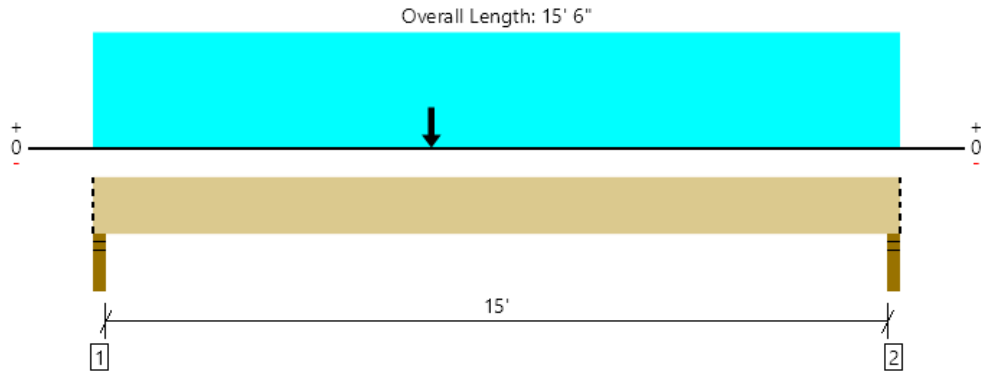
Weyerhaeuser Notes

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

Upper, 1/ Flush Beam

1 piece(s) 5 1/4" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4074 @ 1 1/2"	6379 (3.00")	Passed (64%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4025 @ 1' 2 7/8"	13861	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	25140 @ 6' 6"	34332	Passed (73%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.348 @ 7' 5 1/8"	0.381	Passed (L/527)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.619 @ 7' 5 5/16"	0.762	Passed (L/296)	--	1.0 D + 1.0 S (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.00"	3.00"	1.92"	1833	413	2242	4488	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	1403	413	1610	3426	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 6"	N/A	19.5	--	--	
1 - Uniform (PSF)	0 to 15' 6" (Front)	1' 4"	15.0	40.0	-	Default Load
2 - Point (lb)	6' 6" (Front)	N/A	2623	-	3852	Post abv

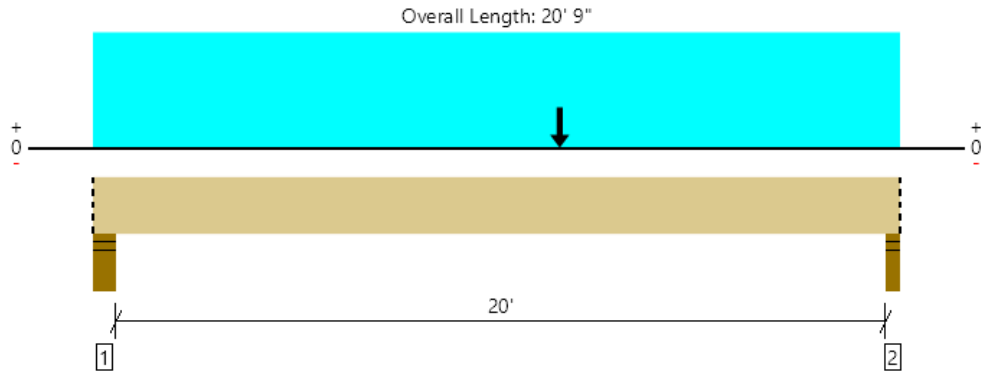
Weyerhaeuser Notes

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

Upper, 2/ Flush Beam

1 piece(s) 3 1/2" x 16" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4680 @ 20' 7"	5206 (3.50")	Passed (90%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4392 @ 19' 1 1/2"	12451	Passed (35%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	33379 @ 12'	40198	Passed (83%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.411 @ 10' 10 11/16"	0.506	Passed (L/591)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.945 @ 10' 9 1/4"	1.013	Passed (L/257)	--	1.0 D + 1.0 S (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - SPF	5.50"	5.50"	2.66"	2620	279	1336	4235	Blocking
2 - Stud wall - SPF	3.50"	3.50"	3.15"	2865	274	1815	4954	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)	11' 5" o/c	
Bottom Edge (Lu)	20' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 20' 9"	N/A	17.5	--	--	
1 - Uniform (PSF)	0 to 20' 9" (Front)	8"	15.0	40.0	-	Default Load
2 - Uniform (PLF)	0 to 20' 9" (Front)	N/A	150.0	-	-	Wall weight
3 - Point (lb)	12' (Top)	N/A	1802	-	3151	Linked from: Copy of 2/ Flush Beam, Support 2

Weyerhaeuser Notes

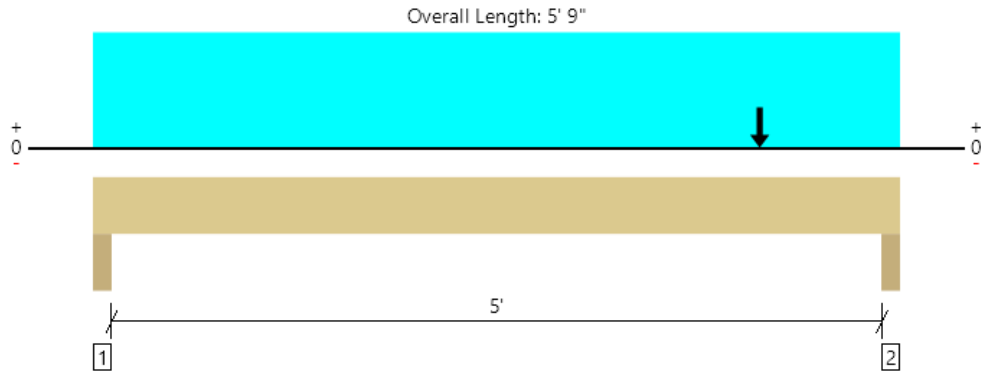
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional 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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 3/ Header
2 piece(s) 2 x 10 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4268 @ 5' 6"	5468 (4.50")	Passed (78%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	3150 @ 4' 7 1/4"	3191	Passed (99%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	3054 @ 4' 5 1/2"	3833	Passed (80%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Live Load Defl. (in)	0.032 @ 3' 1/2"	0.175	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.056 @ 3' 3/4"	0.262	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - DF	4.50"	4.50"	1.50"	606	922	320	1848	None
2 - Trimmer - DF	4.50"	4.50"	3.51"	1915	1217	1922	5054	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 9"	N/A	7.0	--	--	
1 - Uniform (PSF)	0 to 5' 9"	7' 6"	15.0	40.0	-	Floor
2 - Point (lb)	4' 9"	N/A	1833	413	2242	Linked from: 1/ Flush Beam, Support 1

Weyerhaeuser Notes

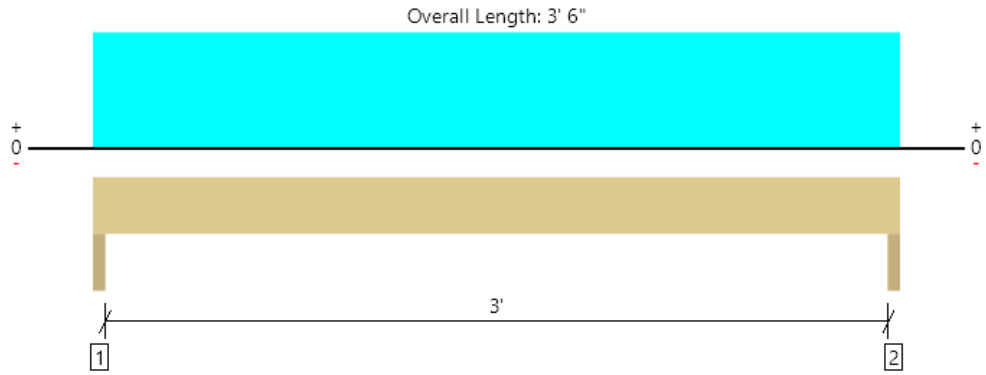
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional 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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 4/ Header
2 piece(s) 2 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1667 @ 1 1/2"	3645 (3.00")	Passed (46%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	818 @ 10 1/4"	2175	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1205 @ 1' 9"	2234	Passed (54%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.011 @ 1' 9"	0.108	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.019 @ 1' 9"	0.162	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	758	840	372	1970	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	758	840	372	1970	None

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 6"	N/A	5.5	--	--	
1 - Uniform (PSF)	0 to 3' 6"	12'	15.0	40.0	-	Floor
2 - Uniform (PSF)	0 to 3' 6"	8' 6"	15.0	-	25.0	Roof
3 - Uniform (PLF)	0 to 3' 6"	N/A	120.0	-	-	Wall weight

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.

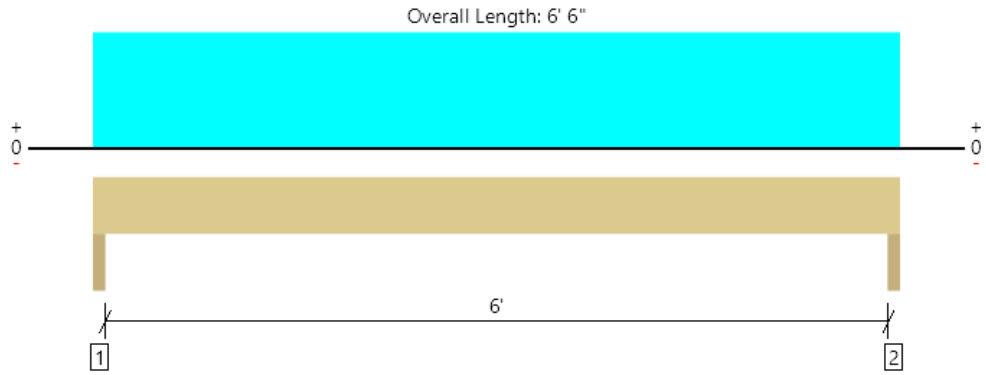
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 5/ Header

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1830 @ 1 1/2"	8138 (3.00")	Passed (22%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1132 @ 1' 2 7/8"	8590	Passed (13%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2749 @ 3' 3"	15953	Passed (17%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.025 @ 3' 3"	0.208	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.035 @ 3' 3"	0.313	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	530	1300	1830	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	530	1300	1830	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 (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 6' 6"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 6' 6"	10'	15.0	40.0	Floor

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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

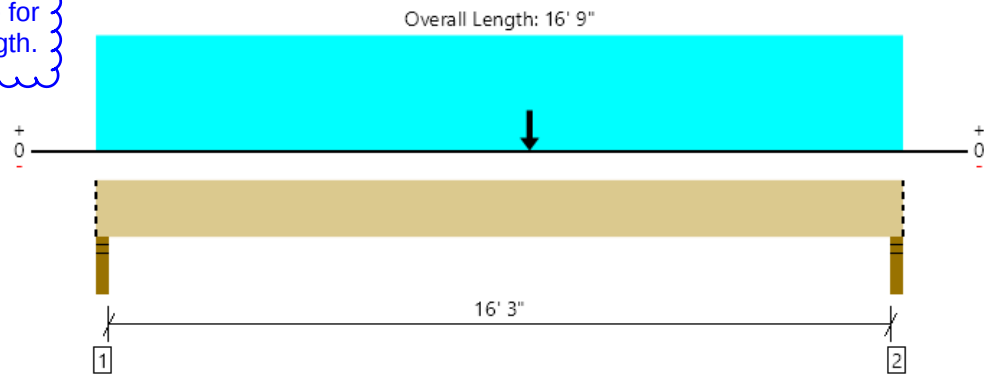
Upper, 6/ Flush Beam - SW above - omega

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL

An excessive uplift of -2260 lbs at support located at 1 1/2" failed this product.

An excessive uplift of -2658 lbs at support located at 16' 7 1/2" failed this product.

Structurally acceptable for seismic with overstrength.



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3100 @ 16' 7 1/2"	4253 (3.00")	Passed (73%)	--	1.0 D + 0.7 E (All Spans)
Shear (lbs)	3059 @ 15' 6 1/8"	13743	Passed (22%)	1.60	1.0 D + 0.7 E (All Spans)
Moment (Ft-lbs)	22648 @ 9'	25525	Passed (89%)	1.60	1.0 D + 0.7 E (All Spans)
Live Load Defl. (in)	-1.186 @ 8' 6 7/16"	0.412	Failed (L/167)	--	0.6 D - 0.7 E (All Spans)
Total Load Defl. (in)	1.263 @ 8' 6 5/16"	0.825	Failed (L/157)	--	1.0 D + 0.7 E (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Seismic	Total	
1 - Stud wall - HF	3.00"	3.00"	1.91"	276	447	3466/-3466	4189/-3466	Blocking
2 - Stud wall - HF	3.00"	3.00"	2.19"	276	447	4034/-4034	4757/-4034	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)	11' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 16' 9"	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 16' 9" (Front)	1' 4"	15.0	40.0	-	Default Load
2 - Point (lb)	9' (Front)	N/A	-	-	7500	Omega = 2.5

Weyerhaeuser Notes

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

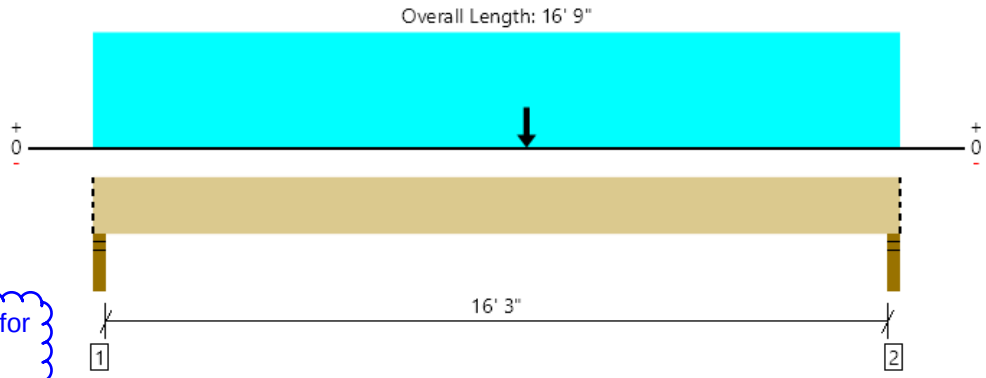
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 6/ Flush Beam - SW above - strength

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



Structurally acceptable for seismic.

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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1458 @ 16' 7 1/2"	4253 (3.00")	Passed (34%)	--	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	1368 @ 15' 6 1/8"	13743	Passed (10%)	1.60	1.0 D + 0.525 E + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	9729 @ 9'	25525	Passed (38%)	1.60	1.0 D + 0.7 E (All Spans)
Live Load Defl. (in)	-0.474 @ 8' 6 7/16"	0.412	Failed (L/417)	--	0.6 D - 0.7 E (All Spans)
Total Load Defl. (in)	0.551 @ 8' 6 3/16"	0.825	Passed (L/359)	--	1.0 D + 0.7 E (All Spans)

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

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- -805 lbs uplift at support located at 1 1/2". Strapping or other restraint may be required.
- -964 lbs uplift at support located at 16' 7 1/2". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Seismic	Total	
1 - Stud wall - HF	3.00"	3.00"	1.50"	276	447	1386/-1386	2109/-1386	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	276	447	1614/-1614	2337/-1614	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	16' 9" o/c	
Bottom Edge (Lu)	16' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 16' 9"	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 16' 9" (Front)	1' 4"	15.0	40.0	-	Default Load
2 - Point (lb)	9' (Front)	N/A	-	-	3000	

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.

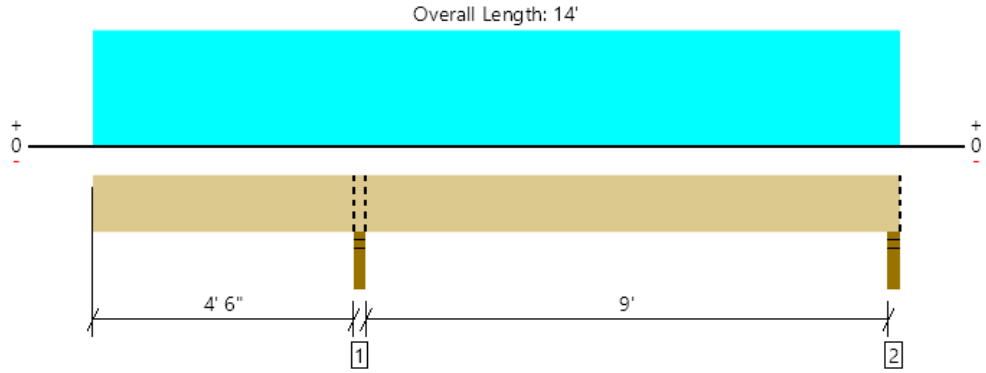
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 7/ Deck Cantilever

1 piece(s) 6 x 10 Douglas Fir-Larch No. 1



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3455 @ 4' 7 1/2"	6683 (3.00")	Passed (52%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1615 @ 5' 6 1/2"	5922	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-3551 @ 4' 7 1/2"	9307	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.163 @ 0	0.231	Passed (2L/680)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.177 @ 0	0.463	Passed (2L/628)	--	1.0 D + 1.0 L (Alt Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.00"	3.00"	1.55"	801	2654	3455	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	277	1211/-295	1488/-295	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

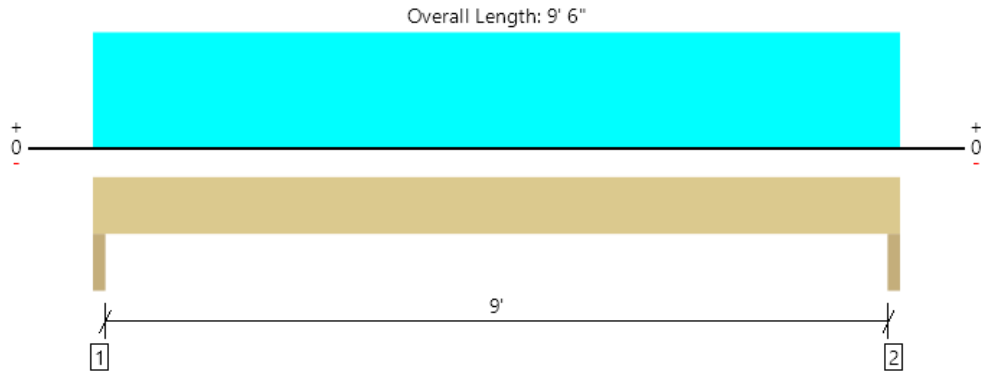
Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 14'	N/A	13.2	--	
1 - Uniform (PSF)	0 to 14' (Front)	4' 3"	15.0	60.0	Deck

Weyerhaeuser Notes

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

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

Upper, 9/ Header, typ. @ south elevation
3 piece(s) 2 x 12 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2020 @ 1 1/2"	5468 (3.00")	Passed (37%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1515 @ 1' 2 1/4"	5063	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4549 @ 4' 9"	6724	Passed (68%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.071 @ 4' 9"	0.308	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.101 @ 4' 9"	0.463	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	595	1425	2020	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	595	1425	2020	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 6" o/c	
Bottom Edge (Lu)	9' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 6"	N/A	12.8	--	
1 - Uniform (PSF)	0 to 9' 6"	7' 6"	15.0	40.0	Floor

Weyerhaeuser Notes

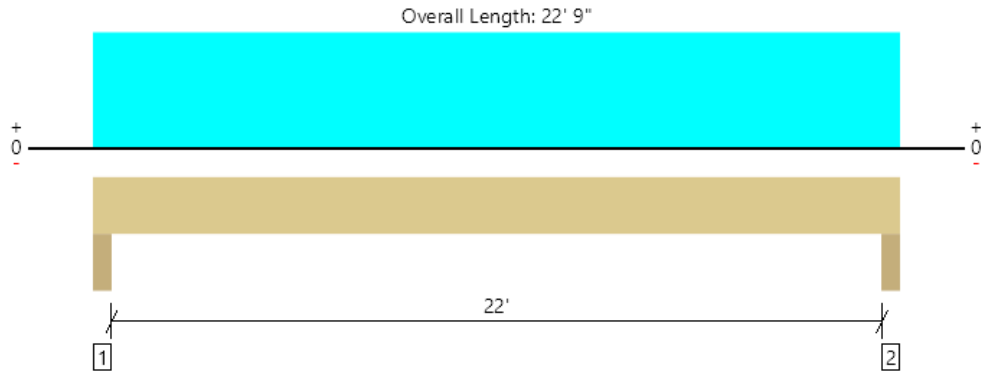
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional 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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 10/ Header Garage
1 piece(s) 5 1/4" x 18" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	10360 @ 3"	14766 (4.50")	Passed (70%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	8652 @ 1' 10 1/2"	18270	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	56362 @ 11' 4 1/2"	65497	Passed (86%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.741 @ 11' 4 1/2"	0.742	Passed (L/360)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.957 @ 11' 4 1/2"	1.112	Passed (L/279)	--	1.0 D + 1.0 L (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	4.50"	4.50"	3.16"	2341	8019	10360	None
2 - Trimmer - DF	4.50"	4.50"	3.16"	2341	8019	10360	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	22' 9" o/c	
Bottom Edge (Lu)	22' 9" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 22' 9"	N/A	29.5	--	
1 - Uniform (PSF)	0 to 22' 9"	11' 9"	15.0	60.0	Deck

Weyerhaeuser Notes

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

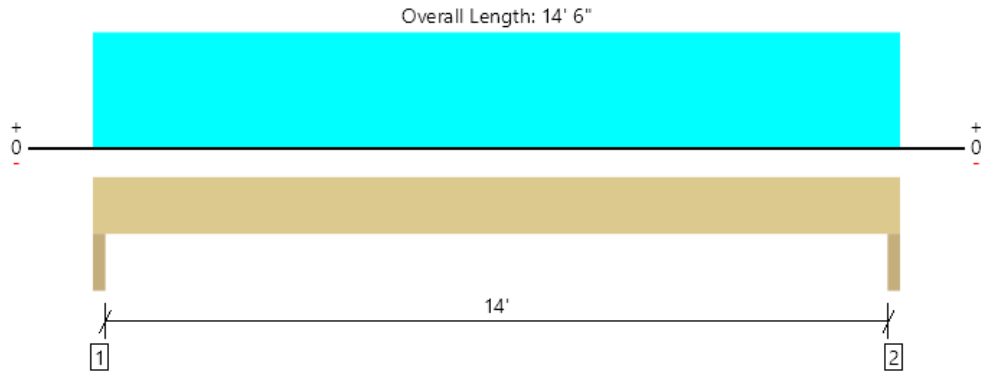
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 11/ Header Garage

1 piece(s) 3 1/2" x 11 1/4" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	452 @ 1 1/2"	6563 (3.00")	Passed (7%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	378 @ 1' 2 1/4"	7613	Passed (5%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1581 @ 7' 3"	17970	Passed (9%)	1.00	1.0 D + 1.0 L (All Spans)
Vert Live Load Defl. (in)	0.048 @ 7' 3"	0.475	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Vert Total Load Defl. (in)	0.074 @ 7' 3"	0.712	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Lat Member Reaction (lbs)	1235 @ 14' 4 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	1162 @ 6 1/2"	8820	Passed (13%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	4398 @ mid-span	9305	Passed (47%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	1.409 @ mid-span	1.425	Passed (L/121)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.50	1.00	Passed (50%)	1.60	1.0 D + 0.6 W

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	162	290	452	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	162	290	452	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 6" o/c	
Bottom Edge (Lu)	14' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 14' 6"	N/A	12.3	--	
1 - Uniform (PSF)	0 to 14' 6"	8"	15.0	60.0	Deck

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	8'	36.1	

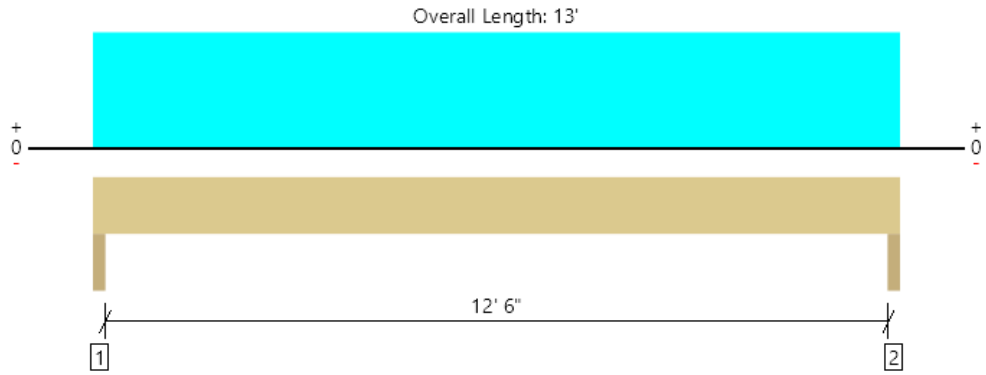
• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 12/ Header

1 piece(s) 3 1/2" x 9 1/2" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2391 @ 1 1/2"	8138 (3.00")	Passed (29%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2008 @ 1' 1/2"	6872	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	7476 @ 6' 6"	10422	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Vert Live Load Defl. (in)	0.422 @ 6' 6"	0.425	Passed (L/362)	--	1.0 D + 1.0 L (All Spans)
Vert Total Load Defl. (in)	0.598 @ 6' 6"	0.637	Passed (L/256)	--	1.0 D + 1.0 L (All Spans)
Lat Member Reaction (lbs)	690 @ 12' 10 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	645 @ 6 1/2"	5320	Passed (12%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	2201 @ mid-span	6763	Passed (33%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	0.864 @ mid-span	1.275	Passed (L/177)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.70	1.00	Passed (70%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 Lr

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Lateral deflection criteria: Wind (L/120)

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	701	1690	2391	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	701	1690	2391	None

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

•Maximum allowable bracing intervals based on applied load.

Lateral Connections						
Supports	Plate Size	Plate Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Douglas Fir-Larch	Nails	10d x 3" Box (End)	7	
Right	2X	Douglas Fir-Larch	Nails	10d x 3" Box (End)	7	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 13'	N/A	10.4	--	
1 - Uniform (PSF)	0 to 13'	6' 6"	15.0	40.0	Floor

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	5'	36.1	

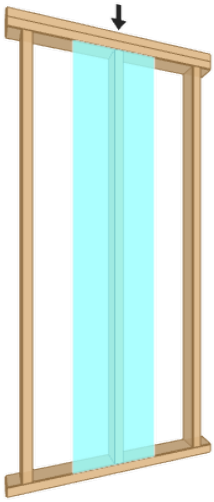
• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, Wall: Double height Stud at stair
1 piece(s) 1 3/4" x 5 1/2" 1.55E TimberStrand® LSL @ 16" OC

Wall Height: 17' 6" | Member Height: 17' 1 1/2" | O. C. Spacing: 16.00"



Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	32	50	Passed (64%)	--	--
Compression (lbs)	73	5943	Passed (1%)	1.00	1.0 D + 1.0 L
Plate Bearing (lbs)	73	4967	Passed (1%)	--	1.0 D + 1.0 L
Lateral Reaction (lbs)	247	--	--	1.60	1.0 D + 0.6 W
Lateral Shear (lbs)	234	3183	Passed (7%)	1.60	1.0 D + 0.6 W
Lateral Moment (ft-lbs)	1059 @ mid-span	3020	Passed (35%)	1.60	1.0 D + 0.6 W
Total Deflection (in)	1.05 @ mid-span	1.71	Passed (L/195)	--	1.0 D + 0.6 W
Bending/Compression	0.35	1	Passed (35%)	1.60	1.0 D + 0.6 W

- Lateral deflection criteria: Wind (L/120)
- Input axial load eccentricity for this design is 16.67% of applicable member side dimension.
- Applicable calculations are based on NDS.
- A bearing area factor of 1.214286 has been applied to base plate bearing capacity.
- A 4% increase in the moment capacity has been added to account for repetitive member usage.

Supports	Type	Material
Top	Dbl 2X	Spruce-Pine-Fir
Base	2X	Spruce-Pine-Fir

System : Wall
Member Type : Stud
Building Code : IBC 2015
Design Methodology : ASD

Max Unbraced Length	Comments
1'	

Lateral Connections

Supports	Connector	Type/Model	Quantity	Connector Nailing
Top	Nails	8d x 2.5" Box (Toe)	4	N/A
Base	Nails	8d x 2.5" Box (Toe)	4	N/A

- Nailed connection at the top of the member is assumed to be nailed through the bottom 2x plate prior to placement of the top 2x of the double top plate assembly.

Vertical Load	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Point (lb)	N/A	20	53	Floor

Lateral Load	Location	Spacing	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	16.00"	36.1	

- IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

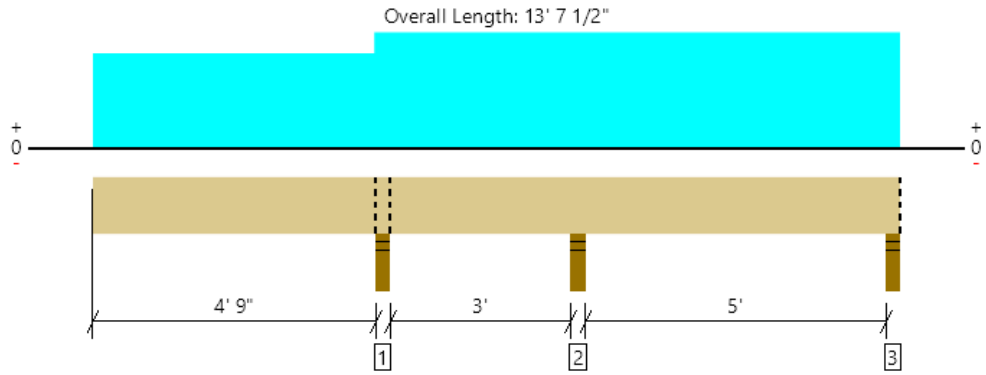
Weyerhaeuser Notes

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

Upper, Entry canopy joist

1 piece(s) 1 3/4" x 6 1/2" 2.0E Microllam® LVL @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	565 @ 4' 10 3/4"	2603 (3.50")	Passed (22%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	264 @ 5' 7"	2485	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-719 @ 4' 10 3/4"	3471	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.117 @ 0	0.490	Passed (2L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.175 @ 0	0.653	Passed (2L/670)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 4% increase in the moment capacity has been added to account for repetitive member usage.
- Resawn products must maintain manufacturing stamps.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	202	87/-26	364	653/-26	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	15	296	-191	311/-191	None
3 - Stud wall - SPF	3.50"	3.50"	1.50"	55	129/-5	18	202/-5	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 8" o/c	
Bottom Edge (Lu)	13' 8" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 4' 9"	16"	15.0	-	30.0	Default Load
2 - Uniform (PSF)	4' 9" to 13' 7 1/2"	16"	15.0	40.0	-	Default Load

Weyerhaeuser Notes

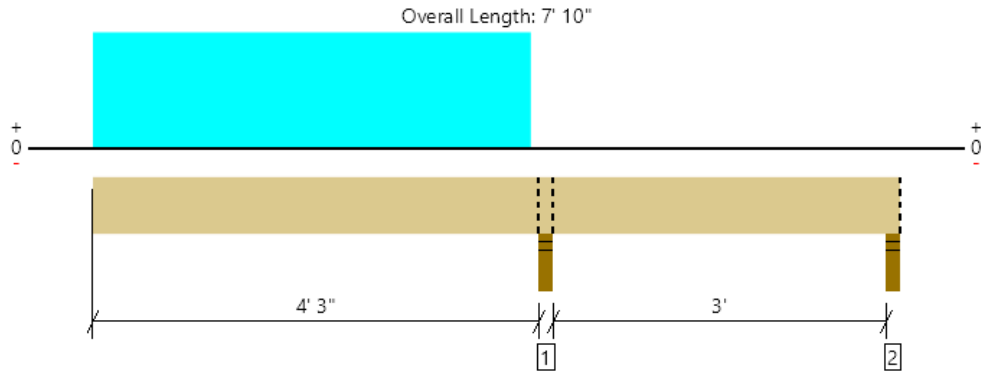
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional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

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

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, Entry canopy cantilever
3 piece(s) 1 3/4" x 5 1/2" 2.0E Microllam® LVL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1228 @ 4' 4 3/4"	11484 (3.50")	Passed (11%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	639 @ 3' 9 1/2"	6309	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-1626 @ 4' 4 3/4"	7333	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.114 @ 0	0.440	Passed (2L/924)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.192 @ 0	0.586	Passed (2L/550)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- -482 lbs uplift at support located at 7' 8". Strapping or other restraint may be required.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.50"	3.50"	1.50"	508	720	1228	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	-187	-295	-482	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 10" o/c	
Bottom Edge (Lu)	7' 10" 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' 10"	N/A	8.4	--	
1 - Uniform (PSF)	0 to 4' 3" (Front)	4'	15.0	25.0	Roof
2 - Uniform (PSF)	4' 3" to 7' 10" (Front)	1'	-	-	

Weyerhaeuser Notes

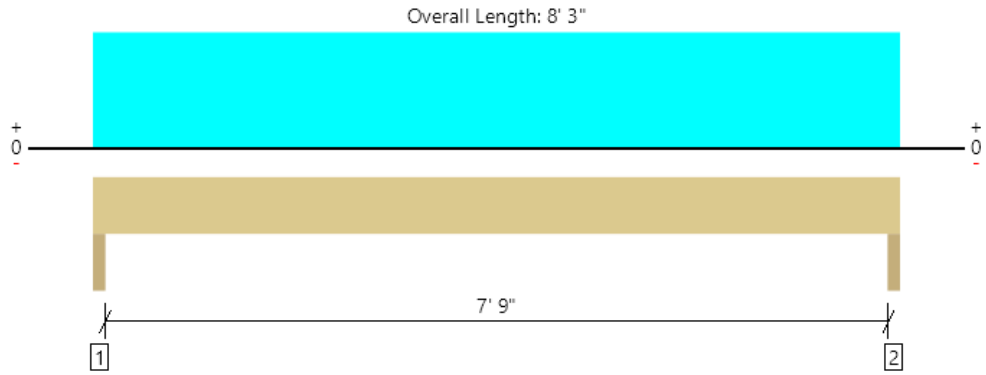
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional 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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 12/ Header at two-story space/ window wash
1 piece(s) 3 1/2" x 16" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1279 @ 1 1/2"	8138 (3.00")	Passed (16%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	788 @ 1' 7"	13309	Passed (6%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Moment (Ft-lbs)	2480 @ 4' 1 1/2"	32404	Passed (8%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Vert Live Load Defl. (in)	0.012 @ 4' 1 1/2"	0.267	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Vert Total Load Defl. (in)	0.022 @ 4' 1 1/2"	0.400	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Lat Member Reaction (lbs)	944 @ 8' 1 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	846 @ 6 1/2"	8960	Passed (9%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	1888 @ mid-span	11390	Passed (17%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	0.175 @ mid-span	0.800	Passed (L/548)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.20	1.00	Passed (20%)	1.60	1.0 D + 0.6 W

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Lateral deflection criteria: Wind (L/120)

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	567	330	619	1516	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	567	330	619	1516	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 3" o/c	
Bottom Edge (Lu)	8' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Lateral Connections: Simpson Strong-Tie						
Supports	Plate Size	Plate Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Douglas Fir-Larch	Angle Connectors	A23	2	(8) - 10d x 1 1/2"
Right	2X	Douglas Fir-Larch	Angle Connectors	A23	2	(8) - 10d x 1 1/2"

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 3"	N/A	17.5	--	--	
1 - Uniform (PSF)	0 to 8' 3"	2'	15.0	40.0	-	Floor
2 - Uniform (PSF)	0 to 8' 3"	6'	15.0	-	25.0	Roof + Canopy

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	9'	43.7	C&C

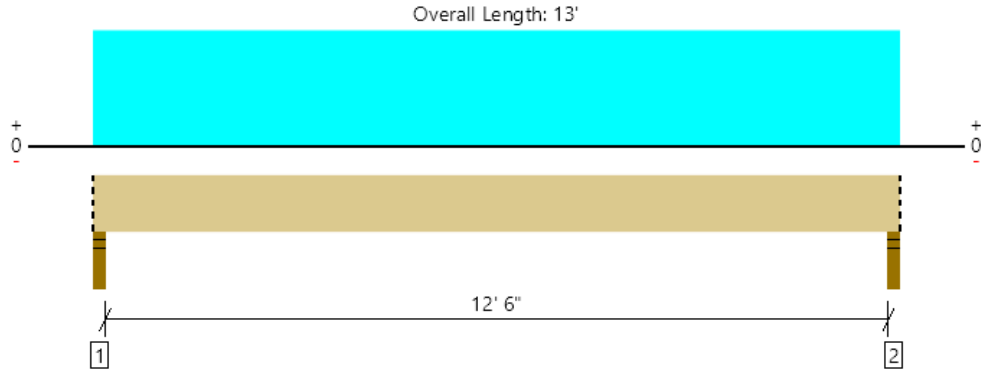
• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 13/ Flush header

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1279 @ 1 1/2"	4253 (3.00")	Passed (30%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	971 @ 1' 2 7/8"	8590	Passed (11%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3752 @ 6' 6"	15953	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.033 @ 6' 6"	0.319	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.169 @ 6' 6"	0.637	Passed (L/906)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.00"	3.00"	1.50"	1027	173	163	1363	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	1027	173	163	1363	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13'	N/A	13.0	--	--	
1 - Uniform (PSF)	0 to 13' (Front)	8"	15.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 13' (Front)	1'	15.0	-	25.0	
3 - Uniform (PLF)	0 to 13' (Front)	N/A	120.0	-	-	

Weyerhaeuser Notes

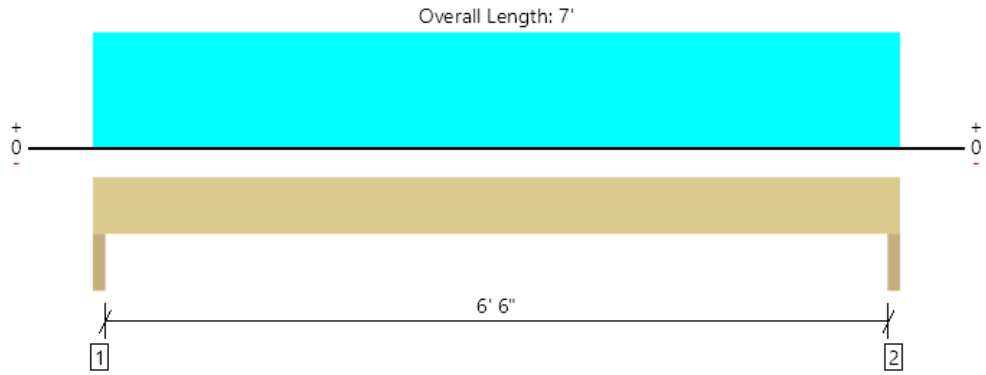
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional 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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 13/ Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1274 @ 1 1/2"	4253 (3.00")	Passed (30%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	963 @ 10 1/4"	2538	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2073 @ 3' 6"	2823	Passed (73%)	1.00	1.0 D + 1.0 L (All Spans)
Vert Live Load Defl. (in)	0.084 @ 3' 6"	0.225	Passed (L/964)	--	1.0 D + 1.0 L (All Spans)
Vert Total Load Defl. (in)	0.118 @ 3' 6"	0.313	Passed (L/689)	--	1.0 D + 1.0 L (All Spans)
Lat Member Reaction (lbs)	366 @ 6' 10 1/2"	N/A	Passed (N/A)	1.60	1.0 D + 0.6 W
Lat Shear (lbs)	320 @ 6 1/2"	4060	Passed (8%)	1.60	1.0 D + 0.6 W
Lat Moment (Ft-lbs)	617 @ mid-span	2290	Passed (27%)	1.60	1.0 D + 0.6 W
Lat Deflection (in)	0.105 @ mid-span	0.675	Passed (L/770)	--	1.0 D + 0.6 W
Bi-Axial Bending	0.59	1.00	Passed (59%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 Lr

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

- Deflection criteria: LL (L/360) and TL (L/5/16").
- Lateral deflection criteria: Wind (L/120)
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - DF	3.00"	3.00"	1.50"	364	910	1274	None
2 - Trimmer - DF	3.00"	3.00"	1.50"	364	910	1274	None

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

•Maximum allowable bracing intervals based on applied load.

Lateral Connections						
Supports	Plate Size	Plate Material	Connector	Type/Model	Quantity	Nailing
Left	2X	Douglas Fir-Larch	Nails	10d x 3" Box (End)	5	
Right	2X	Douglas Fir-Larch	Nails	10d x 3" Box (End)	5	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 7'	N/A	6.4	--	
1 - Uniform (PSF)	0 to 7'	6' 6"	15.0	40.0	Floor

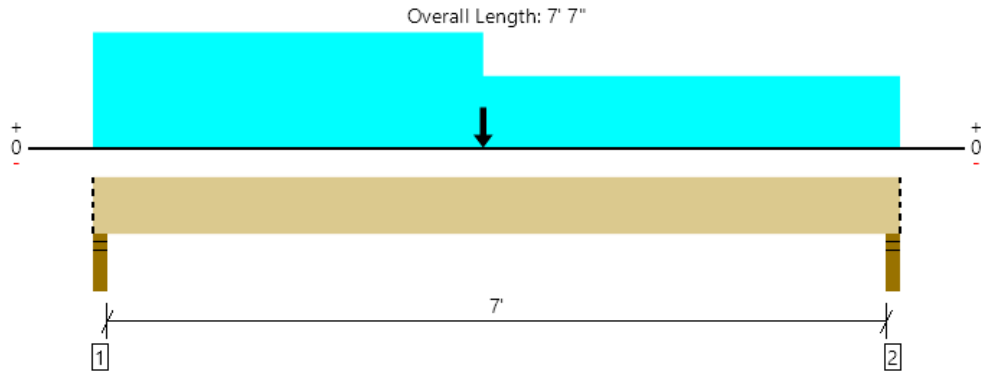
Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	5'	36.1	

• IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 14/ Upset beam at entry
1 piece(s) 5 1/4" x 9 1/4" 2.2E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2250 @ 2"	7809 (3.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1792 @ 1' 3/4"	10797	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4981 @ 3' 8"	21417	Passed (23%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.038 @ 3' 8"	0.242	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.066 @ 3' 8"	0.363	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	913	227	1337	2477	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	773	227	1069	2069	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 7' 7"	N/A	15.2	--	--	
1 - Uniform (PSF)	0 to 7' 7" (Front)	1' 6"	15.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 7' 7" (Front)	4' 9"	15.0	-	30.0	Entry roof
3 - Uniform (PSF)	0 to 3' 8" (Front)	4'	15.0	-	30.0	Roof
4 - Point (lb)	3' 8" (Front)	N/A	640	-	885	Post above

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.

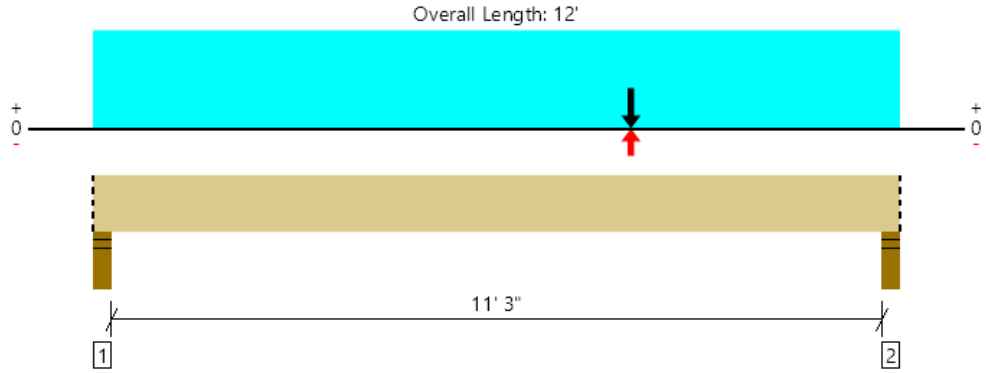
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Upper, 15/ Flush Beam

1 piece(s) 5 1/4" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern) [Group]
Member Reaction (lbs)	5389 @ 11' 9"	9568 (4.50")	Passed (56%)	--	1.0 D + 1.0 L (All Spans) [1]
Shear (lbs)	4274 @ 10' 7 5/8"	12053	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Moment (Ft-lbs)	14896 @ 6' 3 7/16"	29854	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans) [1]
Live Load Defl. (in)	0.189 @ 6' 7/16"	0.287	Passed (L/730)	--	1.0 D + 1.0 L (All Spans) [1]
Total Load Defl. (in)	0.270 @ 6' 1/2"	0.575	Passed (L/512)	--	1.0 D + 1.0 L (All Spans) [1]

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

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

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Seismic	Total	
1 - Stud wall - HF	4.50"	4.50"	2.42"	1512	3626	452/-452	5590/-452	Blocking
2 - Stud wall - HF	4.50"	4.50"	2.53"	1608	3781	934/-934	6323/-934	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Seismic (1.60)	Comments
0 - Self Weight (PLF)	0 to 12'	N/A	19.5	--	--	
1 - Uniform (PSF)	0 to 12' (Front)	14' 6"	15.0	40.0	-	Default Load
2 - Point (lb)	8' (Front)	N/A	276	447	1386/-1386	Linked from: 6/ Flush Beam - SW above - strength, 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.

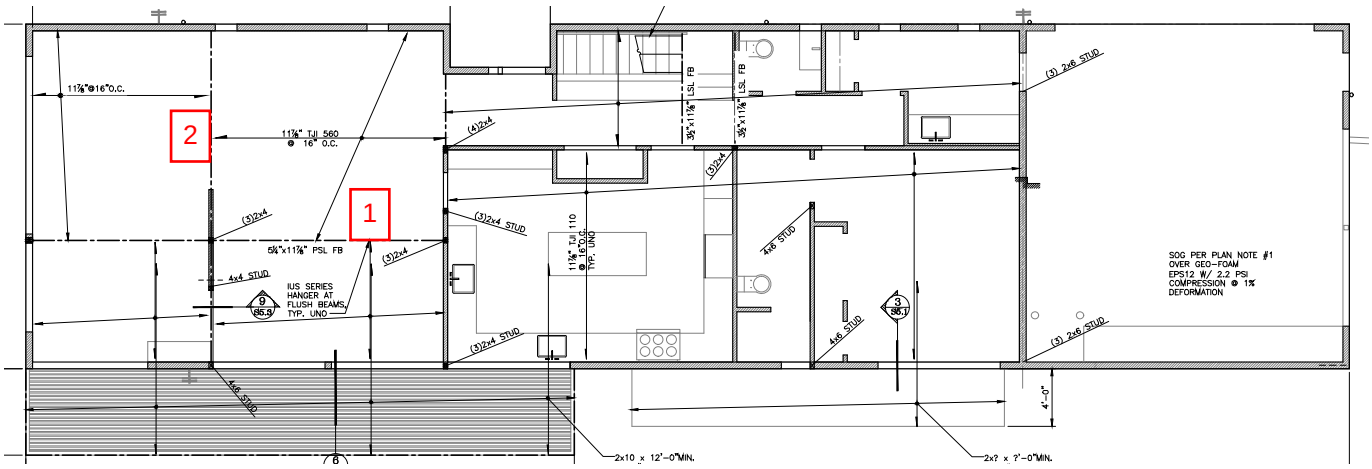
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

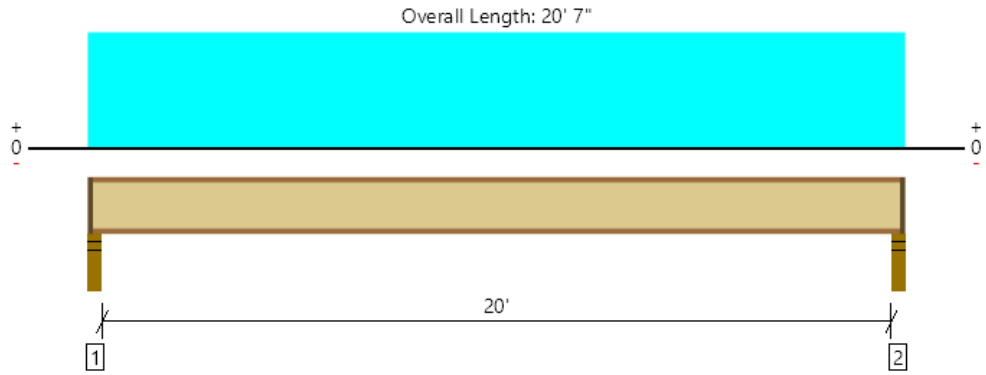
MAIN FLOOR FRAMING KEY

LOADS
DL=15 PSF
LL=40 PSF
LL=60 PSF (DECK)



nts

Main, Floor: Joist, 20' span
1 piece(s) 11 7/8" TJI® 560 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	747 @ 2 1/2"	1396 (2.25")	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	733 @ 3 1/2"	2050	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3728 @ 10' 3 1/2"	9500	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.317 @ 10' 3 1/2"	0.504	Passed (L/764)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.436 @ 10' 3 1/2"	1.008	Passed (L/555)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	43	40	Passed	--	--

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - SPF	3.50"	2.25"	1.75"	206	549	755	1 1/4" Rim Board
2 - Stud wall - SPF	3.50"	2.25"	1.75"	206	549	755	1 1/4" Rim Board

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 2" o/c	
Bottom Edge (Lu)	20' 5" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•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 20' 7"	16"	15.0	40.0	Default Load

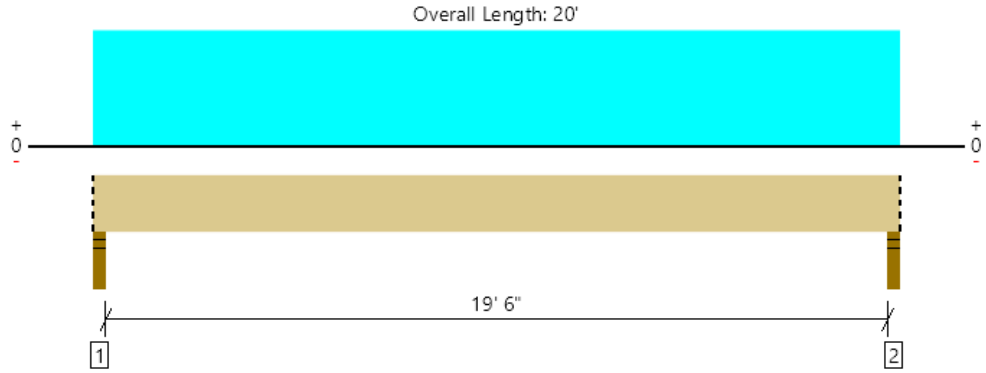
Weyerhaeuser Notes

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

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

Main, 1/ Flush Beam

1 piece(s) 5 1/4" x 11 7/8" 2.0E Parallam® PSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2670 @ 1 1/2"	6379 (3.00")	Passed (42%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2339 @ 1' 2 7/8"	12053	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	13018 @ 10'	29854	Passed (44%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.437 @ 10'	0.494	Passed (L/543)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.648 @ 10'	0.988	Passed (L/366)	--	1.0 D + 1.0 L (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.00"	3.00"	1.50"	870	1800	2670	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	870	1800	2670	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	20' o/c	
Bottom Edge (Lu)	20' o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 20'	N/A	19.5	--	
1 - Uniform (PSF)	0 to 20' (Front)	4' 6"	15.0	40.0	Default Load

Weyerhaeuser Notes

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

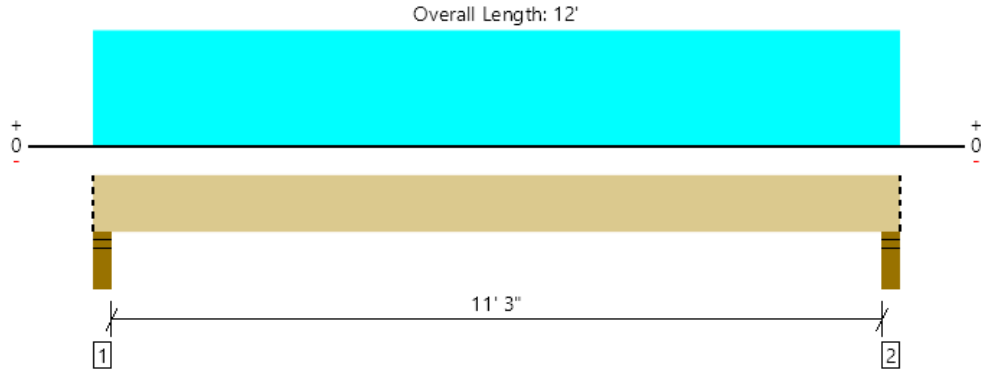
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Main, 2/ Flush Beam

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



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4863 @ 3"	6379 (4.50")	Passed (76%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3757 @ 1' 4 3/8"	8035	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	13398 @ 6'	19902	Passed (67%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.260 @ 6'	0.287	Passed (L/530)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.364 @ 6'	0.575	Passed (L/379)	--	1.0 D + 1.0 L (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	4.50"	4.50"	3.43"	1383	3480	4863	Blocking
2 - Stud wall - HF	4.50"	4.50"	3.43"	1383	3480	4863	Blocking

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

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

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 12'	N/A	13.0	--	
1 - Uniform (PSF)	0 to 12' (Front)	14' 6"	15.0	40.0	Default Load

Weyerhaeuser Notes

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

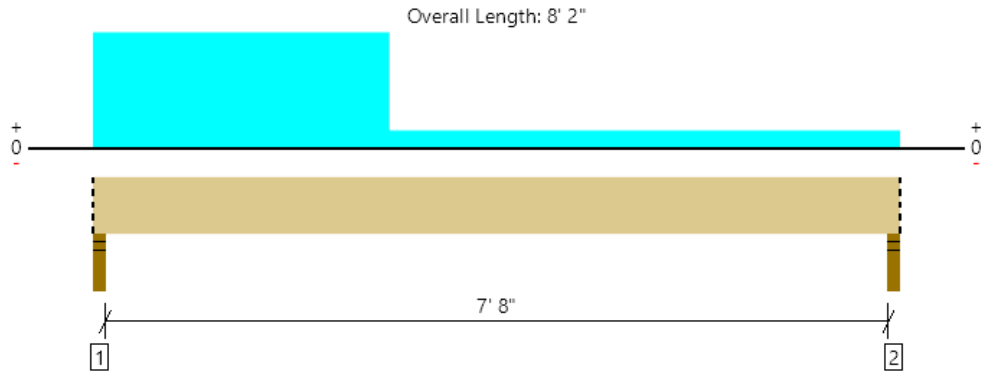
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Main, Floor: Flush Beam at stair above

1 piece(s) 3 1/2" x 11 7/8" 1.55E TimberStrand® LSL



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1375 @ 1 1/2"	4253 (3.00")	Passed (32%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	756 @ 1' 2 7/8"	8590	Passed (9%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1726 @ 2' 9 1/16"	15953	Passed (11%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.020 @ 3' 9 7/8"	0.198	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.030 @ 3' 10 1/16"	0.396	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.00"	3.00"	1.50"	413	961	1374	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	193	374	567	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 2" o/c	
Bottom Edge (Lu)	8' 2" o/c	

•Maximum allowable bracing intervals based on applied load.

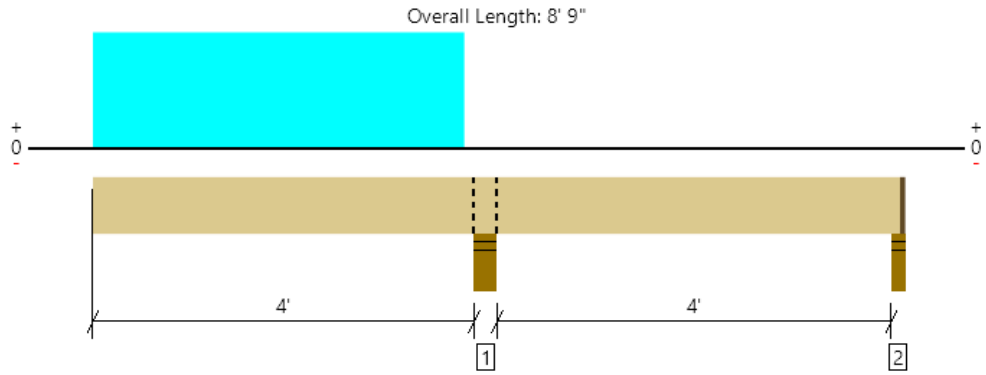
Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 8' 2"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 3' (Front)	7' 6"	15.0	40.0	Default Load
2 - Uniform (PSF)	0 to 8' 2" (Front)	1' 4"	15.0	40.0	

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

Main, Cantilevered WW Joist
1 piece(s) 2 x 8 Hem-Fir No. 2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	445 @ 4' 2 3/4"	3341 (5.50")	Passed (13%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	249 @ 3' 4 3/4"	1088	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-654 @ 4' 2 3/4"	1284	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.140 @ 0	0.282	Passed (2L/724)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.193 @ 0	0.423	Passed (2L/526)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- 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	Total	
1 - Stud wall - SPF	5.50"	5.50"	1.50"	121	324	445	Blocking
2 - Stud wall - SPF	3.50"	2.25"	1.50"	-41	-110	-151	1 1/4" Rim Board

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 8" o/c	
Bottom Edge (Lu)	8' 8" 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 4'	16"	15.0	40.0	Default Load

Weyerhaeuser Notes

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

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

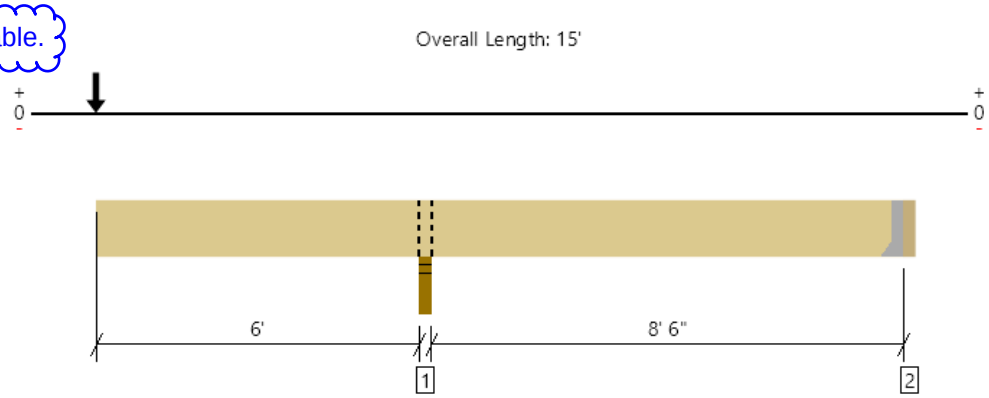
ForteWEB Software Operator	Job Notes
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

Main, Deck cantilever 6x10 - @4ft
1 piece(s) 6 x 10 Douglas Fir-Larch No. 1

Left cantilever exceeds the maximum braced cantilever length of 5'.

Structurally acceptable.



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1706 @ 6' 1 1/2"	6683 (3.00")	Passed (26%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	969 @ 5' 2 1/2"	5922	Passed (16%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-5761 @ 6' 1 1/2"	6980	Passed (83%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.406 @ 0	0.408	Passed (2L/362)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.521 @ 0	0.613	Passed (2L/282)	--	1.0 D + 1.0 L (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Moment capacity over cantilever support 1 has been reduced by 25% to lessen the effects of buckling.
- -611 lbs uplift at support located at 14' 9". Strapping or other restraint may be required.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.00"	3.00"	1.50"	475	1231	1706	Blocking
2 - Hanger on 9 1/2" HF beam	3.00"	Hanger[1]	1.50"	-100	-511	-611	See note [1]

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 9" o/c	
Bottom Edge (Lu)	14' 9" o/c	

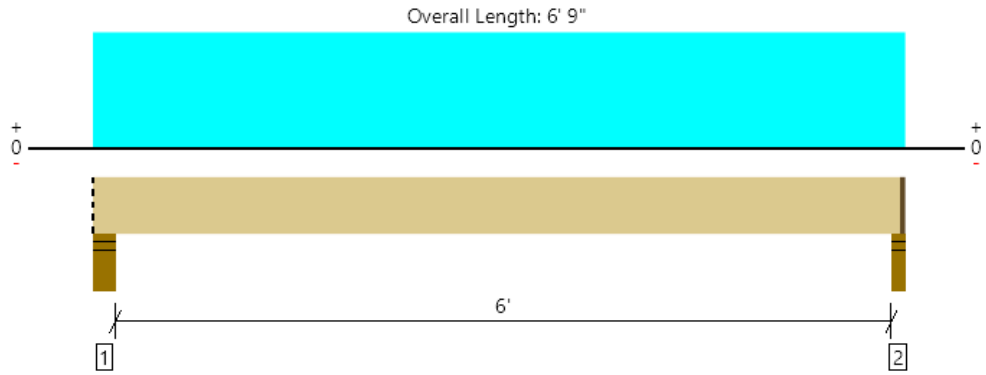
•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	HU68	2.50"	N/A	14-10dx1.5	6-10d	

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 14' 9"	N/A	13.2	--	
1 - Point (lb)	0 (Front)	N/A	180	720	Deck

Main, Deck Joist
1 piece(s) 2 x 8 Hem-Fir No. 2 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	319 @ 6' 6 1/2"	1367 (2.25")	Passed (23%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	240 @ 1' 3/4"	1088	Passed (22%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	475 @ 3' 5 1/2"	1284	Passed (37%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.042 @ 3' 5 1/2"	0.206	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.053 @ 3' 5 1/2"	0.308	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- 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	Total	
1 - Stud wall - SPF	5.50"	5.50"	1.50"	69	277	346	Blocking
2 - Stud wall - SPF	3.50"	2.25"	1.50"	66	263	329	1 1/4" Rim Board

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

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

•Maximum allowable bracing intervals based on applied load.

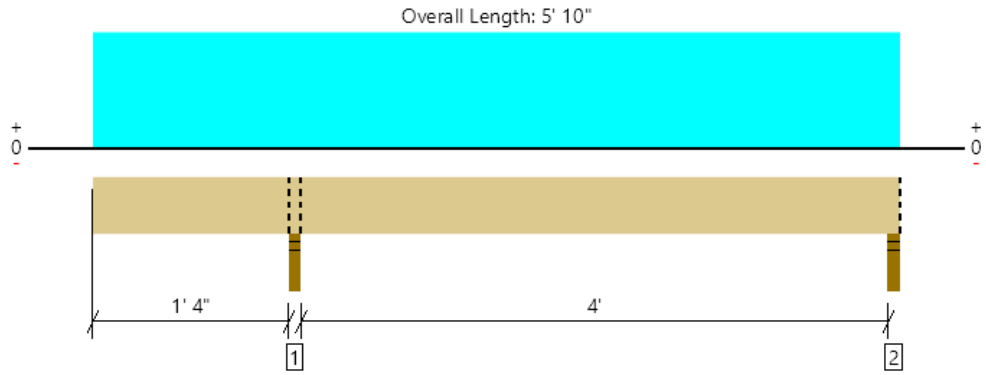
Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 6' 9"	16"	15.0	60.0	Deck

Weyerhaeuser Notes

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

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

Main, Deck Rim at overhang
2 piece(s) 2 x 10 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	889 @ 1' 5 1/2"	3645 (3.00")	Passed (24%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	343 @ 2' 4 1/4"	2775	Passed (12%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	497 @ 3' 7 11/16"	3333	Passed (15%)	1.00	1.0 D + 1.0 L (Alt Spans)
Live Load Defl. (in)	0.005 @ 3' 7"	0.106	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.006 @ 3' 7 3/16"	0.213	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)

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

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

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.00"	3.00"	1.50"	199	690	889	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	104	405/-45	509/-45	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' 10" o/c	
Bottom Edge (Lu)	5' 10" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 5' 10"	N/A	7.0	--	
1 - Uniform (PSF)	0 to 5' 10" (Front)	3'	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
Jane Johnson Bykonen Carter Quinn (206) 264-7784 jaj@bcq-se.com	

Weyerhaeuser

BYKONEN CARTER QUINN STRUCTURAL ENGINEERING

SEISMIC	Horizontal	Vertical
Level	F_{px} (k)	F_x (k)
ROOF	8.3	8.3
UPPER	10.4	8.2

Shear wall Deflection per IBC 2015 equation 23-2

Δ_s =	$8vh^3/(EAb)$	+	$vh/(Gt)$	+	$0.75he_n$	+	d_ah/b
	Bending		***Shear***		***Nail Slip***		***Hold downs***

UPPER STRUCTURE

Shear wall Grid-A **R=6.5**

Level	V (k)	h (ft)	b (ft)	v (plf)	A (in^2)	E (10^6 psi)	Gt (lb/in)	e_N (in)	d_a (in)
ROOF	1.9	9.4	5.2	366	10.5	1.6	49500	0.003	0.1
UPPER	3.8	8.9	6.5	586	10.5	1.6	49500	0.004	0.1
BASE	3.8								

Δs =	8vh3/(EAb)	vh/(Gt)	0.75hen	dah/b	δ_{xe} (in)	δ_x (in)	Stiffness (k/in)
ROOF	0.027	0.069	0.022	0.206	0.33	0.33	
UPPER	0.030	0.105	0.026	0.157	0.32	0.32	
∑ =					0.64	0.64	5.9

LOWER STRUCTURE

Shear wall Grid-A **R=5**

Level	V (k)	h (ft)	b (ft)	v (plf)	A (in^2)	E (10^6 psi)	Gt (lb/in)	e_N (in)	d_a (in)
WOOD PONY WALLS	8.0	5.0	23.9	336	10.5	1.6	49500	0.004	0.1
CONCRETE STEM WALL	8.0	5.0	23.9	336					

Δs =	8vh3/(EAb)	vh/(Gt)	0.75hen	dah/b	δ_{xe} (in)	δ_x (in)	Stiffness (k/in)
WOOD PONY WALLS	0.001	0.034	0.014	0.024	0.0733	0.07	
CONCRETE STEM WALL					0.0004	0.00	
∑ =					0.0737	0.07	109.1

Ratio of stiffness (Lower/Upper) =	18.4

OK

Calculation demonstrates 2 stage analysis is appropriate for this structure.

SEISMIC	Vertical
Level	**F_x (k)**
ROOF	8.3
UPPER	8.2
0	0.0
0	0.0
MAIN	8.0

g= 386.1 *in/s* ^{2}

C_u= 1.40

T_a= 0.263 *s*

Shear wall Grid-A

Level	F_i (k)	δ_x (in)	w_i (k)
ROOF	8.3	0.33	43.8
UPPER	8.2	0.32	73.1
MAIN	8.0	0.07	73.1

(Ultimate)

$w_i x \delta^2$	$F_i x \delta$	T_{calc} (s)	$C_u T_a$ (s)	T (s)	
4.6	2.7				
7.4	2.6				
12.0	5.3	0.480	0.368	**0.368**	*PERIOD OF UPPER STRUCTURE*
0.4	0.6				
12.4	5.9	0.463	0.368	**0.368**	*PERIOD OF ENTIRE STRUCTURE*

1.0 *OK*

Calculation demonstrates 2 stage analysis is appropriate for this structure.

BYKONEN CARTER QUINN STRUCTURAL ENGINEERING

MASSING

Uniform Loads (PSF)

ROOF

Misc	*Partitions*
15	6.0

Uniform Loads (PSF)

FLOORS

Misc	*Partitions*
15	12

Additional (PSF)

GARAGE ROOF

Misc	*Partitions*
25	12

SEISMIC

DESIGN PARAMETERS

Site Class =	D	**S_S =**	1.380
Risk Cat. =	II	**S_1 =**	0.531
S_{DS} =	0.920	**f_a =**	1.00
R =	6.50	**f_v =**	1.50
Cs =	0.142	k =	1.0

ASCE 7-10 Equivalent Lateral Force Prcedure, 18.5

									ASD	DIAPHRAGM		
Level	**Area (SF)**	**Unit DL (PSF)**	**w (k)**	**h^k (ft)**	**$(w)(h^k)$**	**C_{vx}**	**F_x (k)**	**0.7E (k)**	**F_{px} (k)**	**$(0.4)S_{DS}$ w**	**0.7E**
ROOF	2085	21.0	43.8	24.5	1073	50%	8.3	5.8	8.3		5.8
UPPER	2540	27.0	73.1	14.5	1060	50%	8.2	5.8	10.4	26.9	7.2
Base Shear							**16.5**		**18.7**	**26.9**	

WIND

DESIGN PARAMETERS

V (mph) =	110	**G =**	0.85	**L/B =**	2.90		**L/B =**	0.35	
Exposure Cat. =	C	**Gcpi =**	0.18	**Cp =**	*Windward Wall*	0.80	**Cp =**	*Windward Wall*	0.80
K_{zt} =	1.60	**K_z=**	0.98		*Leeward Wall*	-0.12		*Leeward Wall*	-0.50
K_d =	0.85	**q_z=**	41.3		*Side Wall*	-0.70		*Side Wall*	-0.70
Roof Slope (in/ft) =	5				*Roof*	-0.90		*Roof*	-0.90

ASCE 7-10 MWFRS Directional Procedure, 27.4-1

									ASD
ROOF	**h (ft)**	**Direction**	**Wall Area**	**K_h**	**q_h**	**Wall (PSF)**	**Roof (k)**	**F_x (k)**	**06W (k)**
HORIZONTAL PROJECTION	24.5	*PARALLEL TO WL-A*	348	0.98	41.3	32.3	0.0	11.2	6.7
		PARALLEL TO WL-1	120	0.98	41.3	45.6	0.0	5.5	3.3
UPPER	**h (ft)**	**Direction**	**Wall Area**		**q_h**	**Wall (PSF)**	**Roof (k)**	**F_x (k)**	**06W (k)**
HORIZONTAL PROJECTION	14.5	*PARALLEL TO WL-A*	897	0.90	37.9	32.0	0.0	28.7	17.2
		PARALLEL TO WL-1	234	0.90	37.9	44.2	0.0	10.3	6.2
Base Shear - Parallel to Grid A								**39.9**	
Base Shear - Parallel to Grid 1								**15.8**	

BYKONEN CARTER QUINN STRUCTURAL ENGINEERING

WALL LINE A

ROOF		**WIND TRIB =**	23%		**ΣL =**	5.23							
		0.6W (k) =	1.55										
		SEISMIC TRIB =	23%										
		0.7E (k) =	1.34										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	9.4	5.2	1.79	1.00	212	256	SW 2	355	2.78	2.40	2.78	0.29	2.63
UPPER		**WIND TRIB =**	23%		**ΣL =**	6.50							
		0.6W (k) =	5.51										
		SEISMIC TRIB =	23%										
		0.7E (k) =	2.66										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	8.9	6.5	1.37	1.00	605	410	SW 4	595	7.52	3.64	7.52	0.35	7.35

WALL LINE B

ROOF		**WIND TRIB =**	23%		**ΣL =**	5.17							
		0.6W (k) =	1.55										
		SEISMIC TRIB =	23%										
		0.7E (k) =	1.34										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	9.4	5.2	1.81	1.00	214	259	SW 2	355	2.01	2.43	2.43	0.29	2.29
UPPER		**WIND TRIB =**	23%		**ΣL =**	10.50							
		0.6W (k) =	5.51										
		SEISMIC TRIB =	23%										
		0.7E (k) =	2.66										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	8.9	10.5	0.85	1.00	375	254	SW 3	455	4.65	2.25	4.65	0.56	4.37

WALL LINE C

ROOF		**WIND TRIB =**	46%		**ΣL =**	8.75							
		0.6W (k) =	3.10										
		SEISMIC TRIB =	46%										
		0.7E (k) =	2.68										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	9.4	8.8	1.07	1.00	253	306	SW 2	355	3.32	2.87	3.32	0.49	3.07
UPPER		**WIND TRIB =**	22%		**ΣL =**	11.00							
		0.6W (k) =	6.88										
		SEISMIC TRIB =	22%										
		0.7E (k) =	3.95										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	8.9	11.0	0.81	1.00	447	359	SW 3	455	5.55	3.18	5.55	0.59	5.26

WALL LINE D

ROOF		**WIND TRIB =**	10%		**ΣL =**	15.25							
		0.6W (k) =	0.67										
		SEISMIC TRIB =	10%										
		0.7E (k) =	0.58										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	9.4	8.3	1.14	1.00	32	38	SW 1	240	0.41	0.36	0.41	0.46	0.18
1	9.4	7.0	1.34	1.00	32	38	SW 1	240	0.41	0.36	0.41	0.4	0.22
UPPER		**WIND TRIB =**	20%		**ΣL =**	18.50							
		0.6W (k) =	4.11										
		SEISMIC TRIB =	20%										
		0.7E (k) =	1.73										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	8.9	18.5	0.48	1.00	159	94	SW 1	240	1.97	0.83	1.97	0.99	1.48

BYKONEN CARTER QUINN STRUCTURAL ENGINEERING

WALL LINE E

UPPER		**WIND TRIB =**	11%		**ΣL =**	3.00							
		0.6W (k) =	1.89										
		SEISMIC TRIB =	11%										
		0.7E (k) =	0.63										
Segment Count	HT (ft)	LENGTH (ft)	h/L	$2/(h/L)^1$	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	8.9	3.0	2.96	0.68	451	312	SW 3	455	5.60	1.87	5.60	0.16	5.52

BYKONEN CARTER QUINN STRUCTURAL ENGINEERING

WALL LINE 1

ROOF		**WIND TRIB =**	15%		**ΣL =**	34.67							
		0.6W (k) =	0.49										
		SEISMIC TRIB =	15%										
		0.7E (k) =	0.87										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	9.4	26.3	0.36	1.00	10	25	SW 1	240	0.13	0.24	0.24	1.48	0.00
1	9.4	8.3	1.13	1.00	10	25	SW 1	240	0.13	0.24	0.24	0.5	0.00
UPPER		**WIND TRIB =**	15%		**ΣL =**	32.69							
		0.6W (k) =	1.42										
		SEISMIC TRIB =	15%										
		0.7E (k) =	1.74										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	8.9	12.7	0.70	1.00	31	53	SW 1	240	0.39	0.47	0.47	0.67	0.13
1	8.9	8.4	1.06	1.00	31	53	SW 1	240	0.39	0.47	0.47	0.4	0.25
2	8.9	3.5	2.54	0.79	31	67	SW 1	240	0.39	0.47	0.47	0.2	0.38
1	8.9	4.7	1.90	1.00	31	53	SW 1	240	0.39	0.47	0.47	0.2	0.35

WALL LINE 2

CLERE		**WIND TRIB =**	24%		**ΣL =**	15.19							
		0.6W (k) =	0.78										
		SEISMIC TRIB =	24%										
		0.7E (k) =	1.38										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
2	4.0	2.0	2.00	1.00	37	91	SW 1	240	0.20	0.36	0.36	0.05	0.34
ROOF		**WIND TRIB =**	43%		**ΣL =**	11.19							
		0.6W (k) =	1.41										
		SEISMIC TRIB =	43%										
		0.7E (k) =	2.50										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	9.4	7.2	1.30	1.00	90	224	SW 2	355	1.18	2.10	2.10	0.40	1.90
1	9.4	4.0	2.34	0.85	90	262	SW 2	355	1.18	2.10	2.10	0.2	1.99
UPPER		**WIND TRIB =**	43%		**ΣL =**	25.50							
		0.6W (k) =	4.08										
		SEISMIC TRIB =	43%										
		0.7E (k) =	4.98										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
2	8.9	7.7	1.16	1.00	114	195	SW 2	355	1.42	1.73	1.73	0.41	1.53
1	8.9	10.2	0.87	1.00	114	195	SW 2	355	1.42	1.73	1.73	0.54	1.46
							at stacked hold-downs		2.8	4.2			

WALL LINE 3

ROOF		**WIND TRIB =**	42%		**ΣL =**	22.17							
		0.6W (k) =	1.38										
		SEISMIC TRIB =	42%										
		0.7E (k) =	2.45										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	9.4	14.2	0.66	1.00	44	110	SW 1	240	0.58	1.03	1.03	0.80	0.64
2	9.4	4.0	2.34	0.85	44	129	SW 1	240	0.58	1.03	1.03	0.2	0.92
UPPER		**WIND TRIB =**	42%		**ΣL =**	36.17							
		0.6W (k) =	3.99										
		SEISMIC TRIB =	42%										
		0.7E (k) =	4.87										
Segment Count	HT (ft)	LENGTH (ft)	h/L	2/(h/L)[1]	0.6W (plf)	0.7E (plf)	SW	SW Cap (plf)	Tw (k, ASD)	Te (k, ASD)	Tension (k)	0.6 D (k)	Net T (k)
1	8.9	14.2	0.63	1.00	79	135	SW 2	355	1.53	1.87	1.87	0.75	1.49
1	8.9	22.0	0.40	1.00	79	135	SW 2	355	1.53	1.87	1.87	1.17	1.28