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Location: ROOF- Hip st Bedroom 2
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 20.75 FT (4.1 + 16.7) (Actual 25.2 FT)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 99.9%
Controlling Factor: Moment

Location: ROOF- Valley over Dining
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 16.91 FT (4.1 + 12.8)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 40.4%
Controlling Factor: Moment

Location: ROOF- Hip over Family
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
1.5 IN x 9.25 IN x 3.83 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 111.6%
Controlling Factor: Shear

Location: ROOF-Valley at Master Bath
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 11.25 IN x 13.17 FT (5.7 + 7.5) (Actual 15.7 FT)
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 37.1%
Controlling Factor: Moment

Location: ROOF- Hip at laundry
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 11.25 IN x 9.0 FT (Actual 10.6 FT)
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 14.3%
Controlling Factor: Moment

Location: ROOF-Valley at Playroom
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 11.875 IN x 19.08 FT (4.3 + 14.8) (Actual 22.7 FT)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 5.5%
Controlling Factor: Moment

Location: FL2- Roof beam at Foyer
Combination Roof And Floor Beam
[2015 International Building Code(2015 NDS)]
(3) 1.5 IN x 9.25 IN x 11.0 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 17.1%
Controlling Factor: Moment

Location: FL1-Beam at Rear of garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 12.0 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 44.7%
Controlling Factor: Deflection

Location: FL1-Beam between Dining and Family
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 10.0 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 19.6%
Controlling Factor: Shear

Location: FL1- Beam at Dining
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
1.75 IN x 16.0 IN x 10.33 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 6.1%
Controlling Factor: Shear

Location: FL1-Front porch header
Combination Roof And Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 11.0 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 28.0%
Controlling Factor: Moment

Location: FL1-Garage beam
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(3) 1.75 IN x 24.0 IN x 24.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 116.7%
Controlling Factor: Moment

Location: FL1- header at side load garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 24.0 IN x 18.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 19.2%
Controlling Factor: Moment

Location: FL1- Ceiling joists at breakfast room
Floor Joist
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 15.0 FT @ 16 O.C.
#2 - Southern Pine - Dry Use
Section Adequate By: 22.9%
Controlling Factor: Moment

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Location: FL2- Roof beam at Bedroom 4
Roof Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 13.33 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 120.5%
Controlling Factor: Deflection

Location: Fl1- Ceiling joists above Family room
Floor Joist
[2015 International Building Code(2015 NDS)]
1.5 IN x 9.25 IN x 17.83 FT @ 12 O.C.
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 29.7%
Controlling Factor: Moment

Location: Fl1- Beam at family room ceiling
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 16.0 IN x 18.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 25.8%
Controlling Factor: Deflection

Location: FL1- Beam at breakfast room
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(3) 1.75 IN x 9.25 IN x 15.0 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 38.7%
Controlling Factor: Deflection

Location: FL1- Header at bedroom hallway
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 4.25 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 97.9%
Controlling Factor: Shear

Location: FL1-Beam between Kitchen and Family
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 16.0 IN x 17.83 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 11.5%
Controlling Factor: Shear

Location: FL2- Beam at fl2 bath
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 9.67 FT
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 3.3%
Controlling Factor: Moment

Location: FL1- beam at master entry
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(3) 1.5 IN x 9.25 IN x 5.0 FT
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 35.8%
Controlling Factor: Shear

Location: FL1- Header at Breakfast rooom door
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 6.0 FT
#2 - Southern Pine - Dry Use
Section Adequate By: 23.4%
Controlling Factor: Moment

Location: FL1- Beam at stairs in garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 11.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 68.1%
Controlling Factor: Deflection

Location: Fl1- Beam between garages
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 3.67 FT
#2 - Southern Pine - Dry Use
Section Adequate By: 36.1%
Controlling Factor: Shear

Project: 250304B Fletcher

Location: ROOF- Hip st Bedroom 2
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 20.75 FT (4.1 + 16.7) (Actual 25.2 FT)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 99.9%
Controlling Factor: Moment

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Left		Center	
Live Load	-0.02	IN L/3637	0.25	IN L/964
Dead Load	-0.01	in	0.26	in
Total Load	-0.03	IN L/1986	0.51	IN L/476

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS	A	B	C
Live Load	389 lb	2196 lb	334 lb
Dead Load	-291 lb	2221 lb	379 lb
Total Load	98 lb	4417 lb	713 lb
Uplift (1.5 F.S)	**-936 lb**	0 **lb**	0 **lb**
Bearing Length	0.04 in	1.68 in	0.27 in

BEAM DATA	Left	Center
Span Length	4.08 ft	16.67 ft
Unbraced Length-Top	0 ft	0 ft
Unbraced Length-Bottom	4.08 ft	16.67 ft
Beam End Elevation Difference	14.25 ft	
Live Load Duration Factor	1.15	
Notch Depth	0.00	

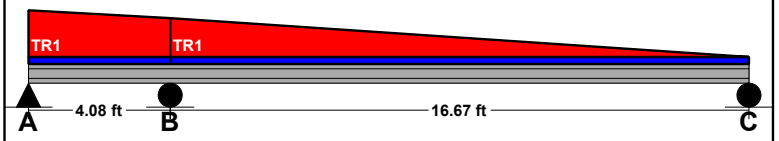
MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

	Base Values		Adjusted	
Bending Stress:	Fb = 2600 psi		Fb' = 2651 psi	
	Cd=1.15 Cl=0.86 CF=1.04			
Shear Stress:	Fv = 285 psi		Fv' = 328 psi	
	Cd=1.15			
Modulus of Elasticity:	E = 1900 ksi		E' = 1900 ksi	
Comp. ⊥ to Grain:	Fc - ⊥ = 750 psi		Fc - ⊥' = 750 psi	

Controlling Moment: -5516 ft-lb
Over left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2
Controlling Shear: 1901 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	24.97 in3	49.91 in3
Area (Shear):	8.7 in2	32.38 in2
Moment of Inertia (deflection):	87.22 in4	230.84 in4
Moment:	-5516 ft-lb	11026 ft-lb
Shear:	1901 lb	7074 lb

LOADING DIAGRAM



UNIFORM LOADS	Left	Center
Uniform Live Load	0 plf	0 plf
Uniform Dead Load	0 plf	0 plf
Beam Self Weight	10 plf	10 plf
Total Uniform Load	10 plf	10 plf

TRAPEZOIDAL LOADS - LEFT SPAN

Load Number	One
Left Live Load	212 plf
Left Dead Load	159 plf
Right Live Load	177 plf
Right Dead Load	132 plf
Load Start	0 ft
Load End	4.08 ft
Load Length	4.08 ft

CENTER SPAN

Load Number	One
Left Live Load	177 plf
Left Dead Load	132 plf
Right Live Load	0 plf
Right Dead Load	0 plf
Load Start	0 ft
Load End	16.67 ft
Load Length	16.67 ft

Project: 250304B Fletcher

Location: ROOF- Valley over Dining
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 16.91 FT (4.1 + 12.8)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 40.4%
Controlling Factor: Moment

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS		Left		Center
Live Load	-0.02	IN L/2408	0.26	IN L/593
Dead Load	-0.02	in	0.20	in
Total Load	-0.04	IN L/1374	0.46	IN L/334

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS	A	B	C
Live Load	69 lb	3345 lb	2151 lb
Dead Load	-855 lb	2646 lb	1663 lb
Total Load	-786 lb	5991 lb	3814 lb
Uplift (1.5 F.S)	**-2039 lb**	**0 lb**	**0 lb**
Bearing Length	0.00 in	2.28 in	1.45 in

BEAM DATA	Left	Center
Span Length	4.08 ft	12.83 ft
Unbraced Length-Top	0 ft	0 ft
Unbraced Length-Bottom	4.08 ft	12.83 ft
Live Load Duration Factor	1.15	
Notch Depth	0.00	

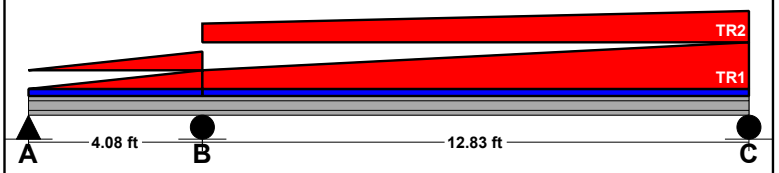
MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

	Base Values		Adjusted	
Bending Stress:	Fb = 2600	psi	Fb' = 2926	psi
	Cd=1.15 Cl=0.94 CF=1.04			
Shear Stress:	Fv = 285	psi	Fv' = 328	psi
	Cd=1.15			
Modulus of Elasticity:	E = 1900	ksi	E' = 1900	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: -8667 ft-lb
Over left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2
Controlling Shear: -3814 lb
13.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	35.54 in3	49.91 in3
Area (Shear):	17.45 in2	32.38 in2
Moment of Inertia (deflection):	124.49 in4	230.84 in4
Moment:	-8667 ft-lb	12170 ft-lb
Shear:	-3814 lb	7074 lb

LOADING DIAGRAM



UNIFORM LOADS	Left	Center
Uniform Live Load	0 plf	0 plf
Uniform Dead Load	0 plf	0 plf
Beam Self Weight	10 plf	10 plf
Total Uniform Load	10 plf	10 plf

TRAPEZOIDAL LOADS - LEFT SPAN

Load Number	One	Two
Left Live Load	0 plf	0 plf
Left Dead Load	0 plf	0 plf
Right Live Load	60 plf	52 plf
Right Dead Load	45 plf	39 plf
Load Start	0 ft	0 ft
Load End	4.08 ft	4.08 ft
Load Length	4.08 ft	4.08 ft

CENTER SPAN

Load Number	One	Two
Left Live Load	60 plf	52 plf
Left Dead Load	45 plf	39 plf
Right Live Load	320 plf	215 plf
Right Dead Load	240 plf	161 plf
Load Start	0 ft	0 ft
Load End	12.83 ft	12.83 ft
Load Length	12.83 ft	12.83 ft

Project: 250304B Fletcher

Location: ROOF- Hip over Family
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
1.5 IN x 9.25 IN x 3.83 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 111.6%
Controlling Factor: Shear

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DEFLECTIONS Center

Live Load	0.01	IN L/6418
Dead Load	0.01	in
Total Load	0.01	IN L/3642

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS A B

Live Load	335	lb	282	lb
Dead Load	255	lb	215	lb
Total Load	590	lb	497	lb
Bearing Length	1.17	in	0.99	in

BEAM DATA Center

Span Length	3.83	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	3.83	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir (South)

	Base Values		Adjusted	
Bending Stress:	Fb = 775	psi	Fb' = 853	psi
	Cd=1.00 CF=1.10			
Shear Stress:	Fv = 135	psi	Fv' = 135	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1100	ksi	E' = 1100	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 335	psi	Fc - ⊥' = 335	psi

Controlling Moment: 521 ft-lb
1.84 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 590 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	7.34 in3	21.39 in3
Area (Shear):	6.56 in2	13.88 in2
Moment of Inertia (deflection):	6.52 in4	98.93 in4
Moment:	521 ft-lb	1520 ft-lb
Shear:	590 lb	1249 lb

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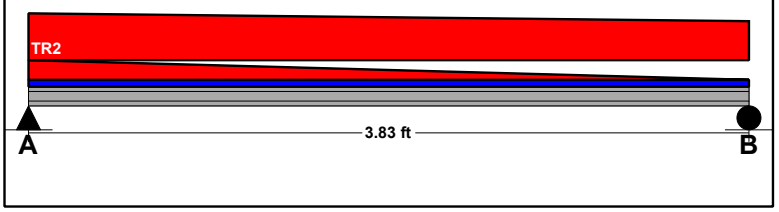

UNIFORM LOADS Center

Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	2	plf
Total Uniform Load	2	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One	Two
Left Live Load	60 plf	143 plf
Left Dead Load	45 plf	107 plf
Right Live Load	0 plf	119 plf
Right Dead Load	0 plf	89 plf
Load Start	0 ft	0 ft
Load End	3.83 ft	3.83 ft
Load Length	3.83 ft	3.83 ft

Project: 250304B Fletcher

Location: ROOF-Valley at Master Bath
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 11.25 IN x 13.17 FT (5.7 + 7.5) (Actual 15.7 FT)
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 37.1%
Controlling Factor: Moment

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS		Left		Center	
Live Load	-0.02	IN L/4842	0.06	IN L/1831	
Dead Load	-0.01	in	0.05	in	
Total Load	-0.03	IN L/2959	0.11	IN L/985	

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS	A		B		C	
Live Load	126	lb	1792	lb	1303	lb
Dead Load	-80	lb	1652	lb	1163	lb
Total Load	46	lb	3444	lb	2466	lb
Uplift (1.5 F.S)	**-309**	**lb**	0	**lb**	0	**lb**
Bearing Length	0.05	in	3.43	in	2.45	in

BEAM DATA	Left		Center	
Span Length	5.67	ft	7.5	ft
Unbraced Length-Top	0	ft	0	ft
Unbraced Length-Bottom	5.67	ft	7.5	ft
Beam End Elevation Difference	8.5	ft		
Live Load Duration Factor	1.15			
Notch Depth	0.00			

MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir (South)

	Base Values		Adjusted	
Bending Stress:	Fb = 775 psi		Fb' = 891	psi
	Cd=1.15 CF=1.00			
Shear Stress:	Fv = 135 psi		Fv' = 155	psi
	Cd=1.15			
Modulus of Elasticity:	E = 1100 ksi		E' = 1100	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 335 psi		Fc - ⊥' = 335	psi

Controlling Moment: 3429 ft-lb
4.579 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: -2073 lb
7.562 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	46.16 in3	63.28 in3
Area (Shear):	20.02 in2	33.75 in2
Moment of Inertia (deflection):	65.03 in4	355.96 in4
Moment:	3429 ft-lb	4700 ft-lb
Shear:	-2073 lb	3493 lb

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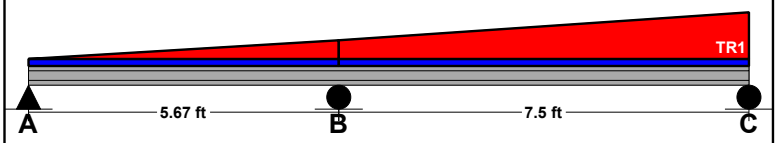

UNIFORM LOADS	Left		Center	
Uniform Live Load	0	plf	0	plf
Uniform Dead Load	0	plf	0	plf
Beam Self Weight	5	plf	5	plf
Total Uniform Load	5	plf	5	plf

TRAPEZOIDAL LOADS - LEFT SPAN

Load Number	One
Left Live Load	0 plf
Left Dead Load	0 plf
Right Live Load	161 plf
Right Dead Load	121 plf
Load Start	0 ft
Load End	5.67 ft
Load Length	5.67 ft

CENTER SPAN

Load Number	One
Left Live Load	161 plf
Left Dead Load	121 plf
Right Live Load	510 plf
Right Dead Load	382 plf
Load Start	0 ft
Load End	7.5 ft
Load Length	7.5 ft

Project: 250304B Fletcher

Location: ROOF- Hip at laundry
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 11.25 IN x 9.0 FT (Actual 10.6 FT)
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 14.3%
Controlling Factor: Moment

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M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.10	IN L/1328
Dead Load	0.09	in
Total Load	0.18	IN L/691

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	968	lb	675	lb
Dead Load	886	lb	627	lb
Total Load	1854	lb	1302	lb
Bearing Length	1.84	in	1.30	in

BEAM DATA	Center	
Span Length	9	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	9	ft
Beam End Elevation Difference	5.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

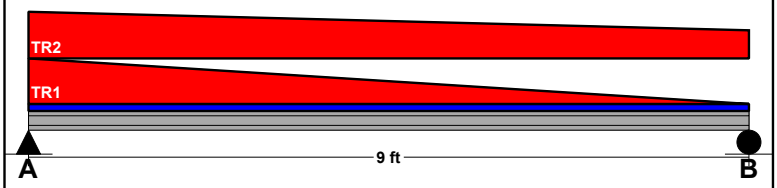
MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir (South)

	Base Values		Adjusted	
Bending Stress:	Fb = 775	psi	Fb' = 775	psi
	Cd=1.00 CF=1.00			
Shear Stress:	Fv = 135	psi	Fv' = 135	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1100	ksi	E' = 1100	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 335	psi	Fc - ⊥' = 335	psi

Controlling Moment: 3577 ft-lb
4.137 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 1568 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	55.38	in3	63.28	in3
Area (Shear):	17.43	in2	33.75	in2
Moment of Inertia (deflection):	123.64	in4	355.96	in4
Moment:	3577	ft-lb	4087	ft-lb
Shear:	1568	lb	3038	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	5	plf
Total Uniform Load	5	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two	
Left Live Load	138	plf	142	plf
Left Dead Load	104	plf	106	plf
Right Live Load	0	plf	85	plf
Right Dead Load	0	plf	64	plf
Load Start	0	ft	0	ft
Load End	9	ft	9	ft
Load Length	9	ft	9	ft

Project: 250304B Fletcher

Location: ROOF-Valley at Playroom
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 11.875 IN x 19.08 FT (4.3 + 14.8) (Actual 22.7 FT)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 5.5%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS		Left		Center
Live Load	-0.02	IN L/2559	0.35	IN L/609
Dead Load	-0.02	in	0.32	in
Total Load	-0.05	IN L/1345	0.66	IN L/317

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS	A	B	C
Live Load	90 lb	4791 lb	2767 lb
Dead Load	-1532 lb	4509 lb	2553 lb
Total Load	-1442 lb	9300 lb	5320 lb
Uplift (1.5 F.S)	**-3293 lb**	**0 lb**	**0 lb**
Bearing Length	0.00 in	3.54 in	2.03 in

BEAM DATA	Left	Center
Span Length	4.33 ft	14.75 ft
Unbraced Length-Top	0 ft	0 ft
Unbraced Length-Bottom	4.33 ft	14.75 ft
Beam End Elevation Difference	12.25 ft	
Live Load Duration Factor	1.00	
Notch Depth	0.00	

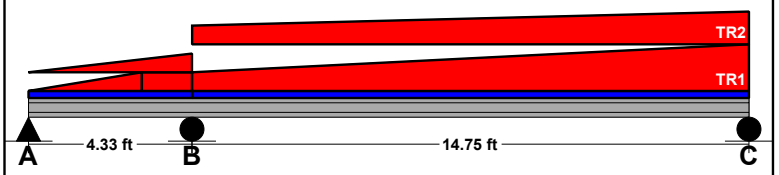
MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

	Base Values	Adjusted
Bending Stress:	Fb = 2600 psi	Fb' = 2281 psi
	Cd=1.00 Cl=0.88 CF=1.00	
Shear Stress:	Fv = 285 psi	Fv' = 285 psi
	Cd=1.00	
Modulus of Elasticity:	E = 1900 ksi	E' = 1900 ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750 psi	Fc - ⊥' = 750 psi

Controlling Moment: -14825 ft-lb
Over left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2
Controlling Shear: 4550 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	77.98 in3	82.26 in3
Area (Shear):	23.95 in2	41.56 in2
Moment of Inertia (deflection):	277.7 in4	488.41 in4
Moment:	-14825 ft-lb	15639 ft-lb
Shear:	4550 lb	7897 lb

LOADING DIAGRAM



UNIFORM LOADS	Left	Center
Uniform Live Load	0 plf	0 plf
Uniform Dead Load	0 plf	0 plf
Beam Self Weight	13 plf	13 plf
Total Uniform Load	13 plf	13 plf

TRAPEZOIDAL LOADS - LEFT SPAN

Load Number	One	Two	Three
Left Live Load	0 plf	93 plf	0 plf
Left Dead Load	0 plf	70 plf	0 plf
Right Live Load	47 plf	113 plf	57 plf
Right Dead Load	35 plf	85 plf	42 plf
Load Start	0 ft	3 ft	0 ft
Load End	3 ft	4.33 ft	4.33 ft
Load Length	3 ft	1.33 ft	4.33 ft

CENTER SPAN

Load Number	One	Two
Left Live Load	113 plf	57 plf
Left Dead Load	85 plf	42 plf
Right Live Load	343 plf	240 plf
Right Dead Load	257 plf	180 plf
Load Start	0 ft	0 ft
Load End	14.75 ft	14.75 ft
Load Length	14.75 ft	14.75 ft

Project: 250304B Fletcher

Location: FL2- Roof beam at Foyer
Combination Roof And Floor Beam
[2015 International Building Code(2015 NDS)]
(3) 1.5 IN x 9.25 IN x 11.0 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 17.1%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.19	IN L/698
Dead Load	0.15	in
Total Load	0.34	IN L/384

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	1031	lb	1031	lb
Dead Load	841	lb	841	lb
Total Load	1872	lb	1872	lb
Bearing Length	1.24	in	1.24	in

BEAM DATA	Center	
Span Length	11	ft
Unbraced Length-Top	0	ft
Roof Pitch	10	:12
Floor Duration Factor	1.00	
Roof Duration Factor	1.15	
Notch Depth	0.00	

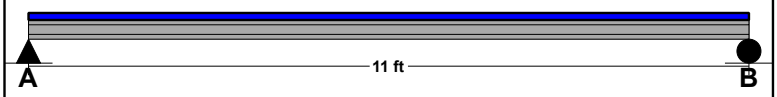
MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir (South)

	Base Values		Adjusted	
Bending Stress:	Fb = 775	psi	Fb' = 1127	psi
	Cd=1.15 CF=1.10 Cr=1.15			
Shear Stress:	Fv = 135	psi	Fv' = 155	psi
	Cd=1.15			
Modulus of Elasticity:	E = 1100	ksi	E' = 1100	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 335	psi	Fc - ⊥' = 335	psi

Controlling Moment: 5149 ft-lb
5.5 ft from left support
Created by combining all dead and live loads.
Controlling Shear: 1872 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	54.81	in3	64.17	in3
Area (Shear):	18.09	in2	41.63	in2
Moment of Inertia (deflection):	185.34	in4	296.79	in4
Moment:	5149	ft-lb	6029	ft-lb
Shear:	1872	lb	4308	lb

LOADING DIAGRAM



ROOF LOADING

		Side 1		Side 2	
Roof Live Load	RLL =	25	psf	0	psf
Roof Dead Load	RDL =	15	psf	0	psf
Roof Tributary Width	RTW =	7.5	ft	0	ft

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	0	psf	0	psf
Floor Dead Load	FDL =	0	psf	0	psf
Floor Tributary Width	FTW =	0	ft	0	ft

Wall Load WALL = 0 plf

BEAM LOADING

Roof Uniform Live Load:	wL-roof =	188	plf
Roof Uniform Dead Load:	wD-roof =	146	plf
Floor Uniform Live Load:	wL-floor =	0	plf
Floor Uniform Dead Load:	wD-floor =	0	plf
Beam Self Weight:	BSW =	6	plf
Combined Uniform Live Load:	wL =	188	plf
Combined Uniform Dead Load:	wD =	153	plf
Combined Uniform Total Load:	wT =	340	plf

Project: 250304B Fletcher

Location: FL1-Beam at Rear of garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 12.0 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 44.7%
Controlling Factor: Deflection

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.28	IN L/521
Dead Load	0.08	in
Total Load	0.36	IN L/404

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	1694	lb	1457	lb
Dead Load	486	lb	426	lb
Total Load	2180	lb	1883	lb
Bearing Length	0.83	in	0.72	in

BEAM DATA	Center	
Span Length	12	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	12	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

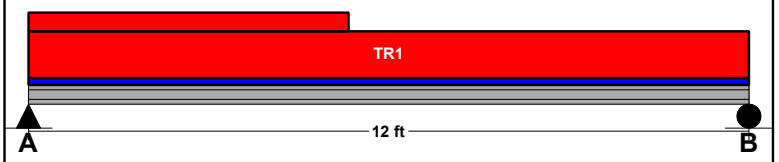
MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

	Base Values		Adjusted	
Bending Stress:	Fb = 2600	psi	Fb' = 2694	psi
	Cd=1.00 CF=1.04			
Shear Stress:	Fv = 285	psi	Fv' = 285	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1900	ksi	E' = 1900	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: 6028 ft-lb
5.64 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 2179 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	26.85	in3	49.91	in3
Area (Shear):	11.47	in2	32.38	in2
Moment of Inertia (deflection):	159.54	in4	230.84	in4
Moment:	6028	ft-lb	11204	ft-lb
Shear:	2179	lb	6151	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	10	plf
Total Uniform Load	10	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two	
Left Live Load	227	plf	80	plf
Left Dead Load	57	plf	20	plf
Right Live Load	227	plf	80	plf
Right Dead Load	57	plf	20	plf
Load Start	0	ft	0	ft
Load End	12	ft	5.33	ft
Load Length	12	ft	5.33	ft

Project: 250304B Fletcher

Location: FL1-Beam between Dining and Family
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 10.0 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 19.6%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

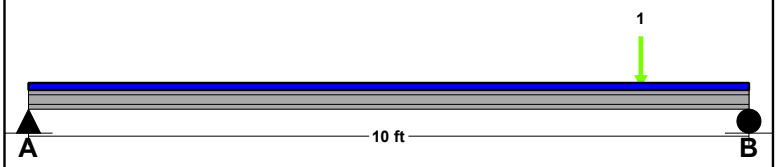
DEFLECTIONS	Center	
Live Load	0.12	IN L/979
Dead Load	0.10	in
Total Load	0.22	IN L/534

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	502	lb	2843	lb
Dead Load	447	lb	2300	lb
Total Load	949	lb	5143	lb
Bearing Length	0.36	in	1.96	in

BEAM DATA	Center	
Span Length	10	ft
Unbraced Length-Top	0	ft
Floor Duration Factor	1.00	
Notch Depth	0.00	

LOADING DIAGRAM



MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

	Base Values		Adjusted	
Bending Stress:	Fb = 2600	psi	Fb' = 2694	psi
	Cd=1.00 CF=1.04			
Shear Stress:	Fv = 285	psi	Fv' = 285	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1900	ksi	E' = 1900	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: 7703 ft-lb
5.0 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -5143 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	34.32	in3	49.91	in3
Area (Shear):	27.07	in2	32.38	in2
Moment of Inertia (deflection):	103.67	in4	230.84	in4
Moment:	7703	ft-lb	11204	ft-lb
Shear:	-5143	lb	6151	lb

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	0	psf	0	psf
Floor Dead Load	FDL =	0	psf	0	psf
Floor Tributary Width	FTW =	0	ft	0	ft
Wall Load	WALL =	0	plf		

BEAM LOADING

Beam Total Live Load:	wL =	0	plf
Beam Total Dead Load:	wD =	0	plf
Beam Self Weight:	BSW =	10	plf
Total Maximum Load:	wT =	10	plf

POINT LOADS - CENTER SPAN

Load Number	One *
Live Load	3345 lb
Dead Load	2646 lb
Location	8.5 ft

* Load obtained from Load Tracker. See Summary Report for details.

Project: 250304B Fletcher

Location: FL1- Beam at Dining
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
1.75 IN x 16.0 IN x 10.33 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 6.1%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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DEFLECTIONS	Center	
Live Load	0.12	IN L/1066
Dead Load	0.07	in
Total Load	0.19	IN L/656

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	3037	lb	2469	lb
Dead Load	1977	lb	1504	lb
Total Load	5014	lb	3973	lb
Bearing Length	3.82	in	3.03	in

BEAM DATA	Center	
Span Length	10.33	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	10.33	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

MATERIAL PROPERTIES

1.9E Microllam - iLevel Trus Joist

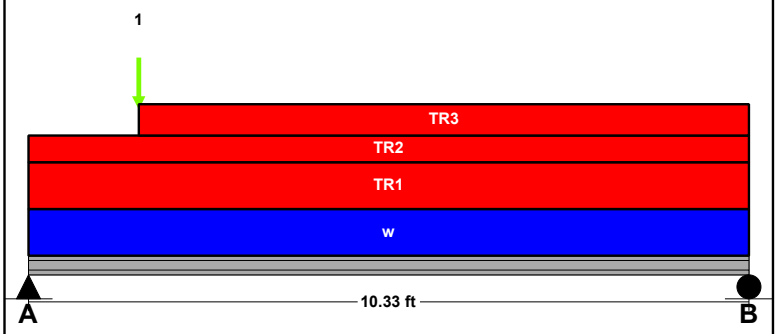
	Base Values		Adjusted	
Bending Stress:	Fb = 2600	psi	Fb' = 2500	psi
	Cd=1.00 CF=0.96			
Shear Stress:	Fv = 285	psi	Fv' = 285	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1900	ksi	E' = 1900	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: 10987 ft-lb
4.75 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Controlling Shear: 5015 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	52.73 in3	74.67 in3
Area (Shear):	26.39 in2	28 in2
Moment of Inertia (deflection):	218.44 in4	597.33 in4
Moment:	10987 ft-lb	15557 ft-lb
Shear:	5015 lb	5320 lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	64	plf
Beam Self Weight	9	plf
Total Uniform Load	73	plf

POINT LOADS - CENTER SPAN

Load Number	One *	
Live Load	1031	lb
Dead Load	841	lb
Location	1.58	ft

* Load obtained from Load Tracker. See Summary Report for details.

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two		Three	
Left Live Load	230	plf	110	plf	110	plf
Left Dead Load	58	plf	55	plf	82.5	plf
Right Live Load	230	plf	110	plf	110	plf
Right Dead Load	58	plf	55	plf	82.5	plf
Load Start	0	ft	0	ft	1.58	ft
Load End	10.33	ft	10.33	ft	10.33	ft
Load Length	10.33	ft	10.33	ft	8.75	ft

Project: 250304B Fletcher

Location: FL1-Front porch header
Combination Roof And Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 11.0 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 28.0%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center		
Live Load	0.17	IN	L/775
Dead Load	0.10	in	
Total Load	0.27	IN	L/483

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	619	lb	619	lb
Dead Load	374	lb	374	lb
Total Load	993	lb	993	lb
Bearing Length	0.99	in	0.99	in

BEAM DATA	Center	
Span Length	11	ft
Unbraced Length-Top	0	ft
Roof Pitch	3	:12
Floor Duration Factor	1.00	
Roof Duration Factor	1.15	
Notch Depth	0.00	

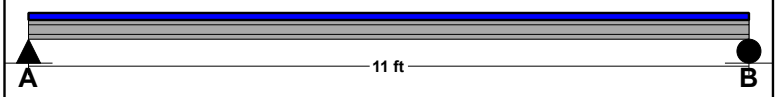
MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir (South)

	Base Values		Adjusted	
Bending Stress:	Fb = 775	psi	Fb' = 980	psi
	Cd=1.15 CF=1.10			
Shear Stress:	Fv = 135	psi	Fv' = 155	psi
	Cd=1.15			
Modulus of Elasticity:	E = 1100	ksi	E' = 1100	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 335	psi	Fc - ⊥' = 335	psi

Controlling Moment: 2730 ft-lb
5.5 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -993 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	33.41	in3	42.78	in3
Area (Shear):	9.59	in2	27.75	in2
Moment of Inertia (deflection):	98.26	in4	197.86	in4
Moment:	2730	ft-lb	3495	ft-lb
Shear:	-993	lb	2872	lb

LOADING DIAGRAM



ROOF LOADING

		Side 1		Side 2	
Roof Live Load	RLL =	25	psf	0	psf
Roof Dead Load	RDL =	15	psf	0	psf
Roof Tributary Width	RTW =	2.5	ft	0	ft

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	20	psf	0	psf
Floor Dead Load	FDL =	10	psf	0	psf
Floor Tributary Width	FTW =	2.5	ft	0	ft

Wall Load WALL = 0 plf

BEAM LOADING

Roof Uniform Live Load:	wL-roof =	63	plf
Roof Uniform Dead Load:	wD-roof =	39	plf
Floor Uniform Live Load:	wL-floor =	50	plf
Floor Uniform Dead Load:	wD-floor =	25	plf
Beam Self Weight:	BSW =	4	plf
Combined Uniform Live Load:	wL =	113	plf
Combined Uniform Dead Load:	wD =	68	plf
Combined Uniform Total Load:	wT =	180	plf

Project: 250304B Fletcher

Location: FL1-Garage beam
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(3) 1.75 IN x 24.0 IN x 24.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 116.7%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS Center

Live Load	0.31	IN L/947
Dead Load	0.14	in
Total Load	0.45	IN L/651

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS

	A		B	
Live Load	5595	lb	5595	lb
Dead Load	2551	lb	2551	lb
Total Load	8146	lb	8146	lb
Bearing Length	2.07	in	2.07	in

BEAM DATA Center

Span Length	24.67	ft
Unbraced Length-Top	0	ft
Floor Duration Factor	1.00	
Notch Depth	0.00	

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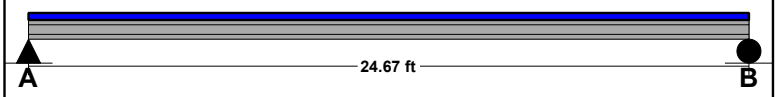


MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

		Base Values			Adjusted	
Bending Stress:	Fb =	2800	psi	Fb' =	2592	psi
	Cd=1.00 CF=0.93					
Shear Stress:	Fv =	285	psi	Fv' =	285	psi
	Cd=1.00					
Modulus of Elasticity:	E =	2000	ksi	E' =	2000	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750	psi

Controlling Moment: 50244 ft-lb
12.335 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -8147 lb
At support.
Created by combining all dead and live loads.

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	40	psf	40	psf
Floor Dead Load	FDL =	15	psf	15	psf
Floor Tributary Width	FTW =	5.7	ft	5.7	ft
Wall Load	WALL =	0	plf		

BEAM LOADING

Beam Total Live Load:	wL =	454	plf
Beam Total Dead Load:	wD =	170	plf
Beam Self Weight:	BSW =	37	plf
Total Maximum Load:	wT =	660	plf

Comparisons with required sections:

	Req'd		Provided	
Section Modulus:	232.57	in3	504	in3
Area (Shear):	42.88	in2	126	in2
Moment of Inertia (deflection):	2298.18	in4	6048	in4
Moment:	50244	ft-lb	108883	ft-lb
Shear:	-8147	lb	23940	lb

Project: 250304B Fletcher

Location: FL1- header at side load garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 24.0 IN x 18.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 19.2%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

StruCalc Version 10.0.1.6 4/17/2025 7:59:07 AM

CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.28	IN L/811
Dead Load	0.14	in
Total Load	0.42	IN L/539

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	6143	lb	5871	lb
Dead Load	3180	lb	3045	lb
Total Load	9323	lb	8916	lb
Bearing Length	3.55	in	3.40	in

BEAM DATA	Center	
Span Length	18.67	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	18.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

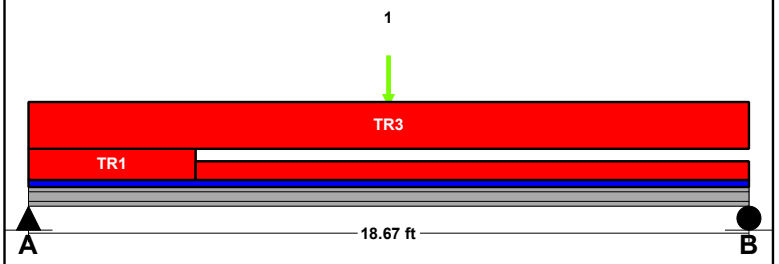
MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values		Adjusted	
Bending Stress:	Fb = 2800	psi	Fb' = 2592	psi
	Cd=1.00 CF=0.93			
Shear Stress:	Fv = 285	psi	Fv' = 285	psi
	Cd=1.00			
Modulus of Elasticity:	E = 2000	ksi	E' = 2000	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: 60896 ft-lb
9.34 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 9323 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	281.88	in3	336	in3
Area (Shear):	49.07	in2	84	in2
Moment of Inertia (deflection):	1794.34	in4	4032	in4
Moment:	60896	ft-lb	72589	ft-lb
Shear:	9323	lb	15960	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	25	plf
Total Uniform Load	25	plf

POINT LOADS - CENTER SPAN

Load Number	One *	
Live Load	5595	lb
Dead Load	2551	lb
Location	9.33	ft

* Load obtained from Load Tracker. See Summary Report for details.

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two		Three	
Left Live Load	163	plf	82	plf	243	plf
Left Dead Load	81	plf	41	plf	122	plf
Right Live Load	163	plf	82	plf	243	plf
Right Dead Load	81	plf	41	plf	122	plf
Load Start	0	ft	4.33	ft	0	ft
Load End	4.33	ft	18.67	ft	18.67	ft
Load Length	4.33	ft	14.34	ft	18.67	ft

Project: 250304B Fletcher

Location: FL1- Ceiling joists at breakfast room
Floor Joist
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 15.0 FT @ 16 O.C.
#2 - Southern Pine - Dry Use
Section Adequate By: 22.9%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Properly connect sheathing to double joists/rafters or fully laminate to transfer diaphragm forces.

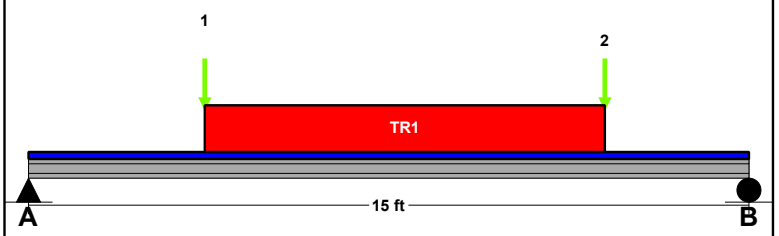
DEFLECTIONS	Center	
Live Load	0.29	IN L/629
Dead Load	0.12	in
Total Load	0.40	IN L/447

Live Load Deflection Criteria: L/480 Total Load Deflection Criteria: L/360

REACTIONS	A		B	
Live Load	468	lb	493	lb
Dead Load	208	lb	218	lb
Total Load	676	lb	711	lb
Bearing Length	0.40	in	0.42	in

SUPPORT LOADS	A		B	
Live Load	351	plf	370	plf
Dead Load	156	plf	164	plf
Total Load	507	plf	533	plf

LOADING DIAGRAM



MATERIAL PROPERTIES
#2 - Southern Pine

	Base Values			Adjusted		
Bending Stress:	Fb =	800	psi	Fb' =	920	psi
	Cd=1.00 CF=1.00 Cr=1.15					
Shear Stress:	Fv =	175	psi	Fv' =	175	psi
	Cd=1.00					
Modulus of Elasticity:	E =	1400	ksi	E' =	1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	565	psi	Fc - ⊥' =	565	psi

Controlling Moment: 2668 ft-lb
7.35 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: -711 lb
At right support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	34.81 in3	42.78 in3
Area (Shear):	6.1 in2	27.75 in2
Moment of Inertia (deflection):	159.42 in4	197.86 in4
Moment:	2668 ft-lb	3280 ft-lb
Shear:	-711 lb	3238 lb

JOIST DATA	Center	
Span Length	15	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	0	ft

Floor sheathing applied to top of joists-top of joists fully braced.
Floor Duration Factor 1.00

JOIST LOADING

Uniform Floor Loading		Center	
Live Load	LL =	20	psf
Dead Load	DL =	10	psf
Total Load	TL =	30	psf
TL Adj. For Joist Spacing	wT =	40	plf
Wall Loading			
Wall One			
Live Load (⊥ to Joists):	L1 =	127	plf
Dead Load (⊥ to Joists):	D1 =	85	plf
Load Location	X1 =	3.67	ft
Wall Two			
Live Load (⊥ to Joists):	L2 =	127	plf
Dead Load (⊥ to Joists):	D2 =	85	plf
Load Location	X2 =	12	ft
Partially Distributed Loading			
Live Load	LL =	20	psf
Dead Load	DL =	0	psf
Load Start	A =	3.67	ft
Load End	B =	12	ft
Load Length	C =	8.33	ft

Project: 250304B Fletcher

Location: FL2- Roof beam at Bedroom 4
Roof Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 13.33 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 120.5%
Controlling Factor: Deflection

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS Center

Live Load	0.22	IN L/733
Dead Load	0.18	in
Total Load	0.40	IN L/397

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS A B

	A		B	
Live Load	945	lb	945	lb
Dead Load	801	lb	801	lb
Total Load	1746	lb	1746	lb
Bearing Length	0.66	in	0.66	in

BEAM DATA

Span Length	13.3	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	0	ft
Roof Pitch	10	:12
Roof Duration Factor	1.15	

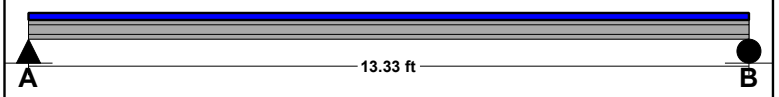
MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values			Adjusted		
Bending Stress:	Fb =	2800	psi	Fb' =	3314	psi
	Cd=1.15 CF=1.03					
Shear Stress:	Fv =	285	psi	Fv' =	328	psi
	Cd=1.15					
Modulus of Elasticity:	E =	2000	ksi	E' =	2000	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750	psi

Controlling Moment: 5817 ft-lb
6.665 ft from left support
Created by combining all dead and live loads.
Controlling Shear: 1746 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	21.06	in3	49.91	in3
Area (Shear):	7.99	in2	32.38	in2
Moment of Inertia (deflection):	104.67	in4	230.84	in4
Moment:	5817	ft-lb	13786	ft-lb
Shear:	1746	lb	7074	lb

LOADING DIAGRAM



ROOF LOADING
Side One:

Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	5.7	ft

Side Two:

Roof Live Load:	LL =	0	psf
Roof Dead Load:	DL =	0	psf
Tributary Width:	TW =	0	ft
Wall Load:	WALL =	0	plf

SLOPE/PITCH ADJUSTED LENGTHS AND LOADS

Adjusted Beam Length:	Ladj =	13.33	ft
Beam Self Weight:	BSW =	9	plf
Beam Uniform Live Load:	wL =	142	plf
Beam Uniform Dead Load:	wD_adj =	120	plf
Total Uniform Load:	wT =	262	plf

Project: 250304B Fletcher

Location: Fl1- Ceiling joists above Family room
Floor Joist
[2015 International Building Code(2015 NDS)]
1.5 IN x 9.25 IN x 17.83 FT @ 12 O.C.
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 29.7%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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DEFLECTIONS Center

Live Load	0.55	IN L/390
Dead Load	0.16	in
Total Load	0.71	IN L/300

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS

	A		B	
Live Load	244	lb	329	lb
Dead Load	89	lb	89	lb
Total Load	333	lb	418	lb
Bearing Length	0.52	in	0.66	in

SUPPORT LOADS

	A		B	
Live Load	244	plf	329	plf
Dead Load	89	plf	89	plf
Total Load	333	plf	418	plf

MATERIAL PROPERTIES

#2 - Spruce-Pine-Fir

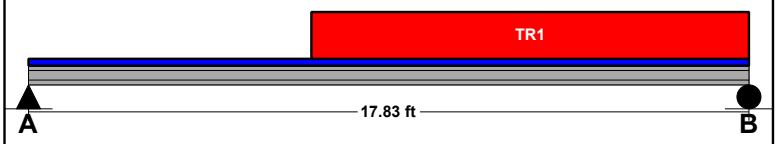
	Base Values		Adjusted	
Bending Stress:	Fb = 875	psi	Fb' = 1273	psi
	Cd=1.15 CF=1.10 Cr=1.15			
Shear Stress:	Fv = 135	psi	Fv' = 155	psi
	Cd=1.15			
Modulus of Elasticity:	E = 1400	ksi	E' = 1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 425	psi	Fc - ⊥' = 425	psi

Controlling Moment: 1749 ft-lb
9.45 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Controlling Shear: -418 lb
18.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	16.49 in3	21.39 in3
Area (Shear):	4.04 in2	13.88 in2
Moment of Inertia (deflection):	60.81 in4	98.93 in4
Moment:	1749 ft-lb	2269 ft-lb
Shear:	-418 lb	1436 lb

LOADING DIAGRAM



JOIST DATA Center

Span Length	17.83	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	0	ft

Floor sheathing applied to top of joists-top of joists fully braced.
Floor Duration Factor 1.15

JOIST LOADING

Uniform Floor Loading Center

Live Load	LL =	20	psf
Dead Load	DL =	10	psf
Total Load	TL =	30	psf
TL Adj. For Joist Spacing	wT =	30	plf

Partially Distributed Loading

Live Load	LL =	20	psf
Dead Load	DL =	0	psf
Load Start	A =	7	ft
Load End	B =	17.83	ft
Load Length	C =	10.83	ft

Project: 250304B Fletcher

Location: Fl1- Beam at family room ceiling
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 16.0 IN x 18.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 25.8%
Controlling Factor: Deflection

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.49	IN L/453
Dead Load	0.16	in
Total Load	0.65	IN L/344

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	3919	lb	4231	lb
Dead Load	1220	lb	1376	lb
Total Load	5139	lb	5607	lb
Bearing Length	1.96	in	2.14	in

BEAM DATA	Center	
Span Length	18.67	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	18.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

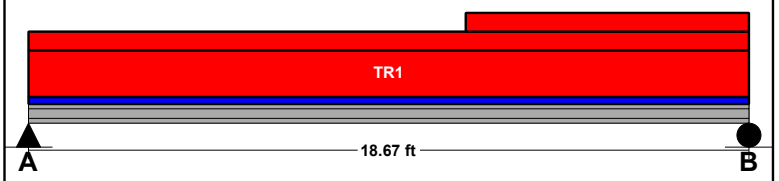
MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values			Adjusted	
Bending Stress:	Fb =	2800	psi	Fb' =	2712 psi
	Cd=1.00 CF=0.97				
Shear Stress:	Fv =	285	psi	Fv' =	285 psi
	Cd=1.00				
Modulus of Elasticity:	E =	2000	ksi	E' =	2000 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750 psi

Controlling Moment: 24715 ft-lb
9.71 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: -5607 lb
19.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	109.36	in3	149.33	in3
Area (Shear):	29.51	in2	56	in2
Moment of Inertia (deflection):	949.32	in4	1194.67	in4
Moment:	24715	ft-lb	33748	ft-lb
Shear:	-5607	lb	10640	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	16	plf
Total Uniform Load	16	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One *		Two *		Three *	
Left Live Load	329	plf	80	plf	70	plf
Left Dead Load	89	plf	20	plf	35	plf
Right Live Load	329	plf	80	plf	70	plf
Right Dead Load	89	plf	20	plf	35	plf
Load Start	0	ft	0	ft	11.33	ft
Load End	18.67	ft	18.67	ft	18.67	ft
Load Length	18.67	ft	18.67	ft	7.34	ft

* Load obtained from Load Tracker. See Summary Report for details.

Project: 250304B Fletcher

Location: FL1- Beam at breakfast room
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(3) 1.75 IN x 9.25 IN x 15.0 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 38.7%
Controlling Factor: Deflection

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.36	IN L/499
Dead Load	0.13	in
Total Load	0.49	IN L/366

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	2759	lb	730	lb
Dead Load	920	lb	327	lb
Total Load	3679	lb	1057	lb
Bearing Length	0.93	in	0.27	in

BEAM DATA	Center	
Span Length	15	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	15	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values			Adjusted	
Bending Stress:	Fb =	2800	psi	Fb' =	2882 psi
	Cd=1.00 CF=1.03				
Shear Stress:	Fv =	285	psi	Fv' =	285 psi
	Cd=1.00				
Modulus of Elasticity:	E =	2000	ksi	E' =	2000 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750 psi

Controlling Moment: 10858 ft-lb
3.9 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 3679 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	45.21 in3	74.87 in3
Area (Shear):	19.37 in2	48.56 in2
Moment of Inertia (deflection):	249.6 in4	346.26 in4
Moment:	10858 ft-lb	17982 ft-lb
Shear:	3679 lb	9227 lb

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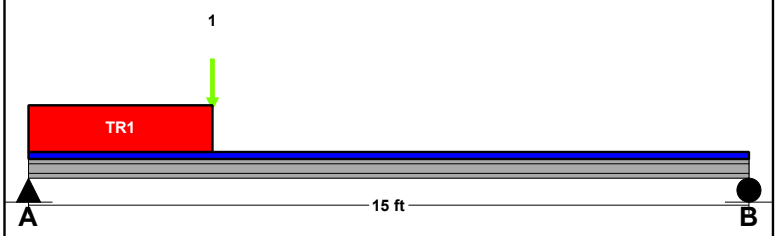

UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	14	plf
Total Uniform Load	14	plf

POINT LOADS - CENTER SPAN

Load Number	One *	
Live Load	2229	lb
Dead Load	694	lb
Location	3.83	ft

* Load obtained from Load Tracker. See Summary Report for details.

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One *	
Left Live Load	329	plf
Left Dead Load	89	plf
Right Live Load	329	plf
Right Dead Load	89	plf
Load Start	0	ft
Load End	3.83	ft
Load Length	3.83	ft

* Load obtained from Load Tracker. See Summary Report for details.

Project: 250304B Fletcher

Location: FL1- Header at bedroom hallway
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 4.25 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 97.9%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.03	IN L/2026
Dead Load	0.01	in
Total Load	0.03	IN L/1522

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	2319	lb	2089	lb
Dead Load	789	lb	717	lb
Total Load	3108	lb	2806	lb
Bearing Length	1.18	in	1.07	in

BEAM DATA	Center	
Span Length	4.25	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	4.25	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values			Adjusted	
Bending Stress:	Fb =	2800	psi	Fb' =	2882 psi
	Cd=1.00 CF=1.03				
Shear Stress:	Fv =	285	psi	Fv' =	285 psi
	Cd=1.00				
Modulus of Elasticity:	E =	2000	ksi	E' =	2000 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750 psi

Controlling Moment: 5845 ft-lb
2.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 3108 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	24.34 in3	49.91 in3
Area (Shear):	16.36 in2	32.38 in2
Moment of Inertia (deflection):	41.02 in4	230.84 in4
Moment:	5845 ft-lb	11988 ft-lb
Shear:	3108 lb	6151 lb

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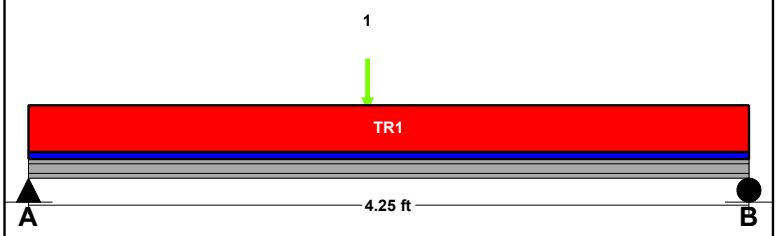

UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	9	plf
Total Uniform Load	9	plf

POINT LOADS - CENTER SPAN

Load Number	One *	
Live Load	3919	lb
Dead Load	1220	lb
Location	2	ft

* Load obtained from Load Tracker. See Summary Report for details.

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One	
Left Live Load	115	plf
Left Dead Load	58	plf
Right Live Load	115	plf
Right Dead Load	58	plf
Load Start	0	ft
Load End	4.25	ft
Load Length	4.25	ft

Project: 250304B Fletcher

Location: FL1-Beam between Kitchen and Family
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 16.0 IN x 17.83 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 11.5%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS Center

Live Load	0.33	IN L/642
Dead Load	0.15	in
Total Load	0.48	IN L/443

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS

	A		B	
Live Load	2635	lb	6998	lb
Dead Load	1058	lb	2546	lb
Total Load	3693	lb	9544	lb
Bearing Length	1.41	in	3.64	in

BEAM DATA Center

Span Length	17.83	ft
Unbraced Length-Top	0	ft
Floor Duration Factor	1.00	
Notch Depth	0.00	

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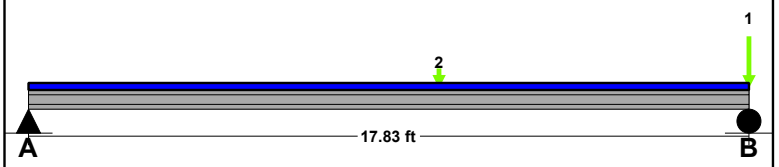

MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

		Base Values			Adjusted	
Bending Stress:	Fb =	2600	psi	Fb' =	2500	psi
	Cd=1.00 CF=0.96					
Shear Stress:	Fv =	285	psi	Fv' =	285	psi
	Cd=1.00					
Modulus of Elasticity:	E =	1900	ksi	E' =	1900	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750	psi

Controlling Moment: 20485 ft-lb
8.915 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -9544 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	98.32	in3	149.33	in3
Area (Shear):	50.23	in2	56	in2
Moment of Inertia (deflection):	669.39	in4	1194.67	in4
Moment:	20485	ft-lb	31114	ft-lb
Shear:	-9544	lb	10640	lb

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	0	psf	40	psf
Floor Dead Load	FDL =	0	psf	10	psf
Floor Tributary Width	FTW =	0	ft	6.3	ft
Wall Load	WALL =	0	plf		

BEAM LOADING

Beam Total Live Load:	wL =	250	plf
Beam Total Dead Load:	wD =	63	plf
Beam Self Weight:	BSW =	18	plf
Total Maximum Load:	wT =	330	plf

POINT LOADS - CENTER SPAN

Load Number	One *		Two *	
Live Load	4231	lb	945	lb
Dead Load	1376	lb	801	lb
Location	17.83	ft	10.16	ft

* Load obtained from Load Tracker. See Summary Report for details.

Project: 250304B Fletcher

Location: FL2- Beam at fl2 bath
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 9.67 FT
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 3.3%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.13	IN L/881
Dead Load	0.07	in
Total Load	0.20	IN L/578

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	927	lb	848	lb
Dead Load	485	lb	446	lb
Total Load	1412	lb	1294	lb
Bearing Length	1.11	in	1.01	in

BEAM DATA	Center	
Span Length	9.67	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	9.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

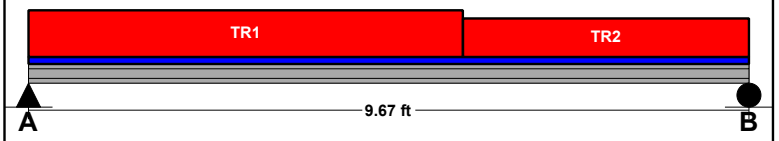
MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir

	Base Values		Adjusted	
Bending Stress:	Fb = 875	psi	Fb' = 963	psi
	Cd=1.00 CF=1.10			
Shear Stress:	Fv = 135	psi	Fv' = 135	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1400	ksi	E' = 1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 425	psi	Fc - ⊥' = 425	psi

Controlling Moment: 3322 ft-lb
4.74 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 1412 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	41.41	in3	42.78	in3
Area (Shear):	15.69	in2	27.75	in2
Moment of Inertia (deflection):	82.17	in4	197.86	in4
Moment:	3322	ft-lb	3431	ft-lb
Shear:	1412	lb	2498	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	5	plf
Total Uniform Load	5	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two	
Left Live Load	197	plf	163	plf
Left Dead Load	98	plf	81	plf
Right Live Load	197	plf	163	plf
Right Dead Load	98	plf	81	plf
Load Start	0	ft	5.83	ft
Load End	5.83	ft	9.67	ft
Load Length	5.83	ft	3.84	ft

Project: 250304B Fletcher

Location: FL1- beam at master entry
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(3) 1.5 IN x 9.25 IN x 5.0 FT
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 35.8%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.03	IN L/2152
Dead Load	0.01	in
Total Load	0.04	IN L/1607

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	2060	lb	2060	lb
Dead Load	699	lb	699	lb
Total Load	2759	lb	2759	lb
Bearing Length	1.44	in	1.44	in

BEAM DATA	Center	
Span Length	5	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	5	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

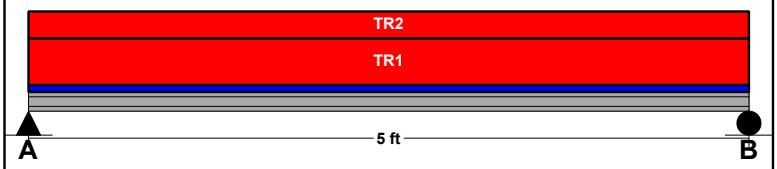
MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir

	Base Values		Adjusted	
Bending Stress:	Fb = 875	psi	Fb' = 1107	psi
	Cd=1.00 CF=1.10 Cr=1.15			
Shear Stress:	Fv = 135	psi	Fv' = 135	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1400	ksi	E' = 1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 425	psi	Fc - ⊥' = 425	psi

Controlling Moment: 3449 ft-lb
2.5 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 2759 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	37.39	in3	64.17	in3
Area (Shear):	30.65	in2	41.63	in2
Moment of Inertia (deflection):	49.65	in4	296.79	in4
Moment:	3449	ft-lb	5919	ft-lb
Shear:	2759	lb	3746	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	8	plf
Total Uniform Load	8	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two	
Left Live Load	557	plf	267	plf
Left Dead Load	139	plf	133	plf
Right Live Load	557	plf	267	plf
Right Dead Load	139	plf	133	plf
Load Start	0	ft	0	ft
Load End	5	ft	5	ft
Load Length	5	ft	5	ft

Project: 250304B Fletcher

Location: FL1- Header at Breakfast rooom door
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 6.0 FT
#2 - Southern Pine - Dry Use
Section Adequate By: 23.4%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center		
Live Load	0.04	IN	L/1949
Dead Load	0.02	in	
Total Load	0.05	IN	L/1332

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	1053	lb	1053	lb
Dead Load	488	lb	488	lb
Total Load	1541	lb	1541	lb
Bearing Length	0.91	in	0.91	in

BEAM DATA	Center	
Span Length	6	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	6	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

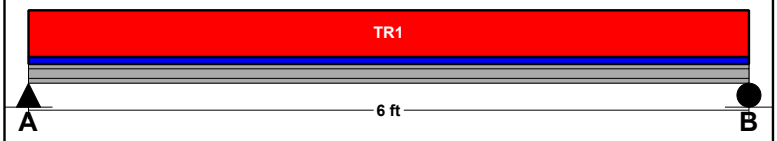
MATERIAL PROPERTIES
#2 - Southern Pine

	Base Values			Adjusted		
Bending Stress:	Fb =	800	psi	Fb' =	800	psi
	Cd=1.00 CF=1.00					
Shear Stress:	Fv =	175	psi	Fv' =	175	psi
	Cd=1.00					
Modulus of Elasticity:	E =	1400	ksi	E' =	1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	565	psi	Fc - ⊥' =	565	psi

Controlling Moment: 2311 ft-lb
3.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 1541 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	34.67	in3	42.78	in3
Area (Shear):	13.21	in2	27.75	in2
Moment of Inertia (deflection):	36.55	in4	197.86	in4
Moment:	2311	ft-lb	2852	ft-lb
Shear:	1541	lb	3238	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	7	plf
Total Uniform Load	7	plf

TRAPEZOIDAL LOADS - CENTER SPAN	
Load Number	One *
Left Live Load	351 plf
Left Dead Load	156 plf
Right Live Load	351 plf
Right Dead Load	156 plf
Load Start	0 ft
Load End	6 ft
Load Length	6 ft

* Load obtained from Load Tracker. See Summary Report for details.

Project: 250304B Fletcher

Location: FL1- Beam at stairs in garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 11.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 68.1%
Controlling Factor: Deflection

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.23	IN L/605
Dead Load	0.07	in
Total Load	0.30	IN L/469

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	1406	lb	1615	lb
Dead Load	409	lb	463	lb
Total Load	1815	lb	2078	lb
Bearing Length	0.69	in	0.79	in

BEAM DATA	Center	
Span Length	11.67	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	11.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

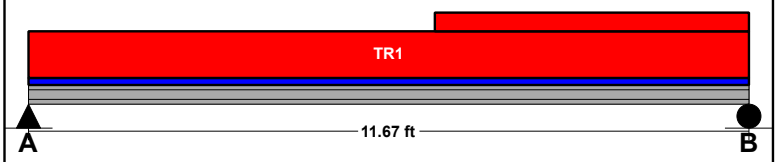
MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values			Adjusted	
Bending Stress:	Fb =	2800	psi	Fb' =	2882 psi
	Cd=1.00 CF=1.03				
Shear Stress:	Fv =	285	psi	Fv' =	285 psi
	Cd=1.00				
Modulus of Elasticity:	E =	2000	ksi	E' =	2000 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750 psi

Controlling Moment: 5609 ft-lb
6.19 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: -2078 lb
12.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	23.35	in3	49.91	in3
Area (Shear):	10.94	in2	32.38	in2
Moment of Inertia (deflection):	137.36	in4	230.84	in4
Moment:	5609	ft-lb	11988	ft-lb
Shear:	-2078	lb	6151	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	9	plf
Total Uniform Load	9	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two	
Left Live Load	227	plf	73	plf
Left Dead Load	57	plf	19	plf
Right Live Load	227	plf	73	plf
Right Dead Load	57	plf	19	plf
Load Start	0	ft	6.58	ft
Load End	11.67	ft	11.67	ft
Load Length	11.67	ft	5.09	ft

Project: 250304B Fletcher

Location: Fl1- Beam between garages
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 3.67 FT
#2 - Southern Pine - Dry Use
Section Adequate By: 36.1%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.00	IN L/MAX
Dead Load	0.00	in
Total Load	0.01	IN L/8709

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	332	lb	1797	lb
Dead Load	162	lb	582	lb
Total Load	494	lb	2379	lb
Bearing Length	0.29	in	1.40	in

BEAM DATA	Center	
Span Length	3.67	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	3.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

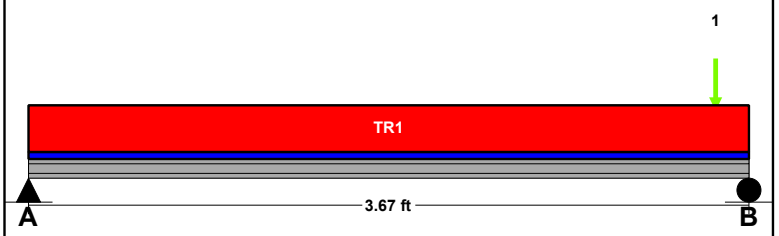
MATERIAL PROPERTIES
#2 - Southern Pine

	Base Values		Adjusted	
Bending Stress:	Fb = 800	psi	Fb' = 800	psi
	Cd=1.00 CF=1.00			
Shear Stress:	Fv = 175	psi	Fv' = 175	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1400	ksi	E' = 1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 565	psi	Fc - ⊥' = 565	psi

Controlling Moment: 563 ft-lb
2.28 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: -2379 lb
4.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	8.44	in3	42.78	in3
Area (Shear):	20.39	in2	27.75	in2
Moment of Inertia (deflection):	5.68	in4	197.86	in4
Moment:	563	ft-lb	2852	ft-lb
Shear:	-2379	lb	3238	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	7	plf
Total Uniform Load	7	plf

POINT LOADS - CENTER SPAN

Load Number	One *	
Live Load	1615	lb
Dead Load	463	lb
Location	3.5	ft

* Load obtained from Load Tracker. See Summary Report for details.

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One	
Left Live Load	140	plf
Left Dead Load	70	plf
Right Live Load	140	plf
Right Dead Load	70	plf
Load Start	0	ft
Load End	3.67	ft
Load Length	3.67	ft