Project: FnC plan 2800

07/30/2018 11:31:49 AM
#[18-02763]

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Location: DINING RM. WINDOW HEADER
Combination Roof And Floor Beam
[2015 International Building Code(2012 NDS)]
3.5 IN x 9.25 IN x 6.0 FT
#1 - Douglas-Fir-Larch - Dry Use
Section Adequate By: 1.6%
Controlling Factor: Moment

DEFLECTIONS	Center	
Live Load	0.06	IN L/1235
Dead Load	0.03	in
Total Load	0.09	IN L/772

Live Load Deflection Criteria: L/480   Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	2355	lb	2355	lb
Dead Load	1410	lb	1410	lb
Total Load	3765	lb	3765	lb
Bearing Length	1.72	in	1.72	in

BEAM DATA	Center
Span Length	6 ft
Unbraced Length-Top	0 ft
Roof Pitch	6 :12
Floor Duration Factor	1.00
Roof Duration Factor	1.15
Notch Depth	0.00

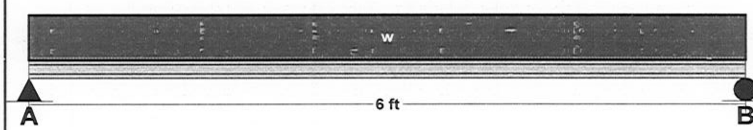
MATERIAL PROPERTIES
#1 - Douglas-Fir-Larch

	Base Values		Adjusted	
Bending Stress:	Fb =	1000 psi	Fb' =	1380 psi
	Cd=1.15 CF=1.20			
Shear Stress:	Fv =	180 psi	Fv' =	207 psi
	Cd=1.15			
Modulus of Elasticity:	E =	1700 ksi	E' =	1700 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625 psi	Fc - ⊥' =	625 psi

Controlling Moment: 5648 ft-lb
3.0 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -3765 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	49.11 in3	49.91 in3
Area (Shear):	27.28 in2	32.38 in2
Moment of Inertia (deflection):	89.75 in4	230.84 in4
Moment:	5648 ft-lb	5740 ft-lb
Shear:	-3765 lb	4468 lb

LOADING DIAGRAM



ROOF LOADING

		Side 1	Side 2
Roof Live Load	RLL =	25 psf	25 psf
Roof Dead Load	RDL =	12 psf	12 psf
Roof Tributary Width	RTW =	2 ft	15 ft

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 =	2 ft	7 ft

Wall Load   WALL =   100 plf

BEAM LOADING

Roof Uniform Live Load:	wL-roof =	425	plf
Roof Uniform Dead Load:	wD-roof =	228	plf
Floor Uniform Live Load:	wL-floor =	360	plf
Floor Uniform Dead Load:	wD-floor =	135	plf
Beam Self Weight:	BSW =	7	plf
Combined Uniform Live Load:	wL =	785	plf
Combined Uniform Dead Load:	wD =	470	plf
Combined Uniform Total Load:	wT =	1255	plf
Controlling Total Design Load:	wT-cont =	1255	plf

NOTES

Project: FnC plan 2800

Location: FLOOR BEAM AT DINING / LIVING
Uniformly Loaded Floor Beam
[2015 International Building Code(2012 NDS)]
5.5 IN x 9.5 IN x 8.5 FT
#1 - Douglas-Fir-Larch - Dry Use
Section Adequate By: 31.9%
Controlling Factor: Moment

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DEFLECTIONS

	Center	
Live Load	0.10	IN L/975
Dead Load	0.04	in
Total Load	0.15	IN L/699

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

REACTIONS

	A		B	
Live Load	2380	lb	2380	lb
Dead Load	941	lb	941	lb
Total Load	3321	lb	3321	lb
Bearing Length	0.97	in	0.97	in

BEAM DATA

	Center	
Span Length	8.5	ft
Unbraced Length-Top	0	ft
Floor Duration Factor	1.00	
Notch Depth	0.00	

MATERIAL PROPERTIES

#1 - Douglas-Fir-Larch

	Base Values			Adjusted		
Bending Stress:	Fb =	1350	psi	Fb' =	1350	psi
	Cd=1.00 CF=1.00					
Shear Stress:	Fv =	170	psi	Fv' =	170	psi
	Cd=1.00					
Modulus of Elasticity:	E =	1600	ksi	E' =	1600	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625	psi	Fc - ⊥' =	625	psi

Controlling Moment: 7056 ft-lb
4.25 ft from left support
Created by combining all dead and live loads.

Controlling Shear: -3321 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	62.72 in3	82.73 in3
Area (Shear):	29.3 in2	52.25 in2
Moment of Inertia (deflection):	145.06 in4	392.96 in4
Moment:	7056 ft-lb	9307 ft-lb
Shear:	-3321 lb	5922 lb

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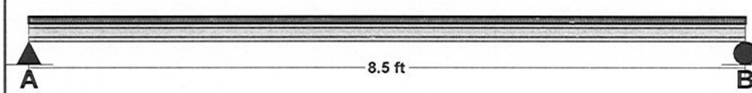

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	40	psf	40	psf
Floor Dead Load	FDL =	15	psf	15	psf
Floor Tributary Width	FTW =	7	ft	7	ft
Wall Load	WALL =	0	plf		

BEAM LOADING

Beam Total Live Load:	wL =	560	plf
Beam Total Dead Load:	wD =	210	plf
Beam Self Weight:	BSW =	11	plf
Total Maximum Load:	wT =	781	plf

NOTES

Permit Number: 20-01955

Project: FnC plan 2800

Location: FRONT PORCH ROOF BEAM
Roof Beam
[2015 International Building Code(2012 NDS)]
5.5 IN x 7.25 IN x 14.25 FT
#1 - Douglas-Fir-Larch - Dry Use
Section Adequate By: 2.6%
Controlling Factor: Moment

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DEFLECTIONS Center

Live Load	0.41	IN L/412
Dead Load	0.29	in
Total Load	0.71	IN L/242

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

REACTIONS

	A		B	
Live Load	891	lb	891	lb
Dead Load	625	lb	625	lb
Total Load	1516	lb	1516	lb
Bearing Length	0.44	in	0.44	in

BEAM DATA

Span Length	14.3	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	0	ft
Roof Pitch	4	:12
Roof Duration Factor	1.15	

MATERIAL PROPERTIES
#1 - Douglas-Fir-Larch

	Base Values			Adjusted		
Bending Stress:	Fb =	1200	psi	Fb' =	1380	psi
	Cd=1.15 CF=1.00					
Shear Stress:	Fv =	170	psi	Fv' =	196	psi
	Cd=1.15					
Modulus of Elasticity:	E =	1600	ksi	E' =	1600	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625	psi	Fc - ⊥' =	625	psi

Controlling Moment: 5399 ft-lb
7.125 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -1515 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	46.95	in3	48.18	in3
Area (Shear):	11.63	in2	39.88	in2
Moment of Inertia (deflection):	129.81	in4	174.66	in4
Moment:	5399	ft-lb	5541	ft-lb
Shear:	-1515	lb	5197	lb

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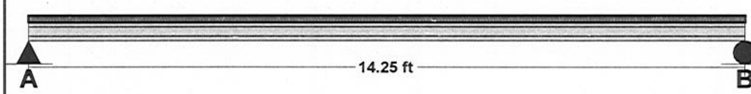

ROOF LOADING

Side One:			
Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	2	ft
Side Two:			
Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	3	ft
Wall Load:	WALL =	0	plf

SLOPE/PITCH ADJUSTED LENGTHS AND LOADS

Adjusted Beam Length:	Ladj =	14.25	ft
Beam Self Weight:	BSW =	9	plf
Beam Uniform Live Load:	wL =	125	plf
Beam Uniform Dead Load:	wD_adj =	88	plf
Total Uniform Load:	wT =	213	plf

NOTES

Permit Number: 20-01955

Project: FnC plan 2800

Location: FRONT PORCH ROOF BEAM 'B'
Roof Beam
[2015 International Building Code(2012 NDS)]
5.5 IN x 7.25 IN x 8.0 FT
#2 - Douglas-Fir-Larch - Dry Use
Section Adequate By: 70.8%
Controlling Factor: Moment

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DEFLECTIONS

	Center	
Live Load	0.06	IN L/1577
Dead Load	0.04	in
Total Load	0.10	IN L/933

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

REACTIONS

	A		B	
Live Load	600	lb	600	lb
Dead Load	414	lb	414	lb
Total Load	1014	lb	1014	lb
Bearing Length	0.29	in	0.29	in

BEAM DATA

Span Length	8	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	0	ft
Roof Pitch	4	:12
Roof Duration Factor	1.15	

MATERIAL PROPERTIES

#2 - Douglas-Fir-Larch

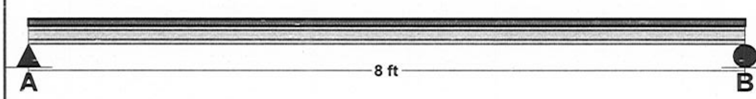
	Base Values			Adjusted		
Bending Stress:	Fb =	750	psi	Fb' =	863	psi
	Cd=1.15 CF=1.00					
Shear Stress:	Fv =	170	psi	Fv' =	196	psi
	Cd=1.15					
Modulus of Elasticity:	E =	1300	ksi	E' =	1300	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625	psi	Fc - ⊥' =	625	psi

Controlling Moment: 2028 ft-lb
4.0 ft from left support
Created by combining all dead and live loads.

Controlling Shear: 1014 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	28.22	in3	48.18	in3
Area (Shear):	7.78	in2	39.88	in2
Moment of Inertia (deflection):	33.69	in4	174.66	in4
Moment:	2028	ft-lb	3463	ft-lb
Shear:	1014	lb	5197	lb

LOADING DIAGRAM



ROOF LOADING

Side One:			
Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	2	ft
Side Two:			
Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	4	ft
Wall Load:	WALL =	0	plf

SLOPE/PITCH ADJUSTED LENGTHS AND LOADS

Adjusted Beam Length:	Ladj =	8	ft
Beam Self Weight:	BSW =	9	plf
Beam Uniform Live Load:	wL =	150	plf
Beam Uniform Dead Load:	wD_adj =	104	plf
Total Uniform Load:	wT =	254	plf

NOTES

Project: FnC plan 2800

Location: GIRDER TRUSS 'A' AT GARAGE
Footing
[2015 International Building Code(2012 NDS)]
Footing Size: 3.0 FT x 3.0 FT x 10.00 IN
Reinforcement: #4 Bars @ 9.00 IN. O.C. E/W / (4) min.
Section Footing Design Adequate

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FOOTING PROPERTIES

Allowable Soil Bearing Pressure:	Qs =	1500 psf
Concrete Compressive Strength:	F'c =	2500 psi
Reinforcing Steel Yield Strength:	Fy =	40000 psi
Concrete Reinforcement Cover:	c =	3 in

FOOTING SIZE

Width:	W =	3 ft
Length:	L =	3 ft
Depth:	Depth =	10 in
Effective Depth to Top Layer of Steel:	d =	6.25 in

COLUMN AND BASEPLATE SIZE

Column Type:	Wood	
Column Width:	m =	6 in
Column Depth:	n =	6 in

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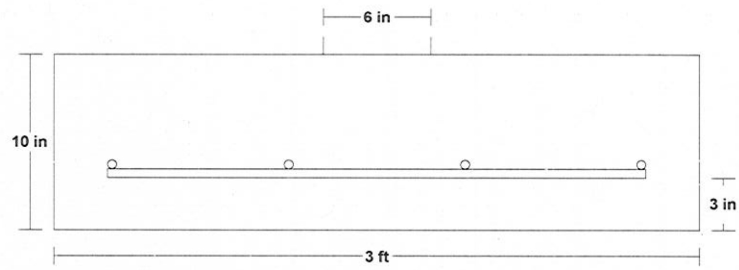

FOOTING LOADING

Live Load:	PL =	9946 lb
Dead Load:	PD =	0 lb
Total Load:	PT =	9946 lb
Ultimate Factored Load:	Pu =	15914 lb
Weight to resist uplift w/ 1.5 F.S.:	U.R. =	725 lb

FOOTING CALCULATIONS

Bearing Calculations:		
Ultimate Bearing Pressure:	Qu =	1105 psf
Effective Allowable Soil Bearing Pressure:	Qe =	1375 psf
Required Footing Area:	Areq =	7.23 sf
Area Provided:	A =	9.00 sf
Baseplate Bearing:		
Bearing Required:	Bear =	15914 lb
Allowable Bearing:	Bear-A =	99450 lb
Beam Shear Calculations (One Way Shear):		
Beam Shear:	Vu1 =	5194 lb
Allowable Beam Shear:	Vc1 =	16875 lb
Punching Shear Calculations (Two Way Shear):		
Critical Perimeter:	Bo =	49 in
Punching Shear:	Vu2 =	14071 lb
Allowable Punching Shear (ACI 11-35):	vc2-a =	68906 lb
Allowable Punching Shear (ACI 11-36):	vc2-b =	81563 lb
Allowable Punching Shear (ACI 11-37):	vc2-c =	45938 lb
Controlling Allowable Punching Shear:	vc2 =	45938 lb
Bending Calculations:		
Factored Moment:	Mu =	71611 in-lb
Nominal Moment Strength:	Mn =	170825 in-lb
Reinforcement Calculations:		
Concrete Compressive Block Depth:	a =	0.41 in
Steel Required Based on Moment:	As(1) =	0.32 in2
Min. Code Req'd Reinf. Shrink./Temp. (ACI-10.5.4):	As(2) =	0.72 in2
Controlling Reinforcing Steel:	As-reqd =	0.72 in2
Selected Reinforcement:	#4's @ 9.0 in. o.c. e/w (4) Min.	
Reinforcement Area Provided:	As =	0.79 in2
Development Length Calculations:		
Development Length Required:	Ld =	15 in
Development Length Supplied:	Ld-sup =	15 in

NOTES

Permit Number: 20-01955

Project: FnC plan 2800

Location: MAIN LEVEL 5' WINDOW HEADER
Combination Roof And Floor Beam
[2015 International Building Code(2012 NDS)]
3.5 IN x 9.25 IN x 5.0 FT
#2 - Douglas-Fir-Larch - Dry Use
Section Adequate By: 18.4%
Controlling Factor: Moment

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DEFLECTIONS	Center	
Live Load	0.03	IN L/1888
Dead Load	0.02	in
Total Load	0.05	IN L/1129

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

REACTIONS	A		B	
Live Load	2088	lb	2088	lb
Dead Load	1402	lb	1402	lb
Total Load	3490	lb	3490	lb
Bearing Length	1.60	in	1.60	in

BEAM DATA	Center	
Span Length	5	ft
Unbraced Length-Top	0	ft
Roof Pitch	6	:12
Floor Duration Factor	1.00	
Roof Duration Factor	1.15	
Notch Depth	0.00	

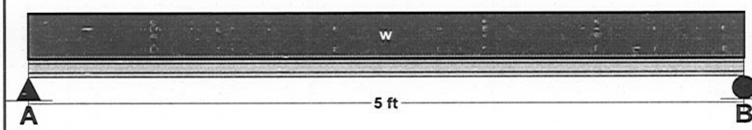
MATERIAL PROPERTIES
#2 - Douglas-Fir-Larch

	Base Values			Adjusted		
Bending Stress:	Fb =	900	psi	Fb' =	1242	psi
	Cd=1.15 CF=1.20					
Shear Stress:	Fv =	180	psi	Fv' =	207	psi
	Cd=1.15					
Modulus of Elasticity:	E =	1600	ksi	E' =	1600	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625	psi	Fc - ⊥' =	625	psi

Controlling Moment: 4361 ft-lb
2.5 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -3489 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	42.14 in3	49.91 in3
Area (Shear):	25.28 in2	32.38 in2
Moment of Inertia (deflection):	49.06 in4	230.84 in4
Moment:	4361 ft-lb	5166 ft-lb
Shear:	-3489 lb	4468 lb

LOADING DIAGRAM



ROOF LOADING

		Side 1	Side 2
Roof Live Load	RLL =	25 psf	25 psf
Roof Dead Load	RDL =	15 psf	15 psf
Roof Tributary Width	RTW =	4 ft	15 ft

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 =	2 ft	7 ft

Wall Load WALL = 100 plf

BEAM LOADING

Roof Uniform Live Load:	wL-roof =	475	plf
Roof Uniform Dead Load:	wD-roof =	319	plf
Floor Uniform Live Load:	wL-floor =	360	plf
Floor Uniform Dead Load:	wD-floor =	135	plf
Beam Self Weight:	BSW =	7	plf
Combined Uniform Live Load:	wL =	835	plf
Combined Uniform Dead Load:	wD =	561	plf
Combined Uniform Total Load:	wT =	1396	plf
Controlling Total Design Load:	wT-cont =	1396	plf

NOTES

Permit Number: 20-01955

Project: FnC plan 2800

Location: UPPER LEVEL 6' WINDOW HEADER
Roof Beam
[2015 International Building Code(2012 NDS)]
3.5 IN x 7.25 IN x 6.0 FT
#2 - Douglas-Fir-Larch - Dry Use
Section Adequate By: 6.8%
Controlling Factor: Moment

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DEFLECTIONS

DEFLECTIONS	Center	
Live Load	0.07	IN L/1033
Dead Load	0.05	in
Total Load	0.12	IN L/614

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

REACTIONS

REACTIONS	A		B	
Live Load	1275	lb	1275	lb
Dead Load	872	lb	872	lb
Total Load	2147	lb	2147	lb
Bearing Length	0.98	in	0.98	in

BEAM DATA

Span Length	6	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	0	ft
Roof Pitch	6	:12
Roof Duration Factor	1.15	

MATERIAL PROPERTIES

#2 - Douglas-Fir-Larch

	Base Values			Adjusted		
Bending Stress:	Fb =	900	psi	Fb' =	1346	psi
	Cd=1.15 CF=1.30					
Shear Stress:	Fv =	180	psi	Fv' =	207	psi
	Cd=1.15					
Modulus of Elasticity:	E =	1600	ksi	E' =	1600	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625	psi	Fc - ⊥' =	625	psi

Controlling Moment: 3220 ft-lb
3.0 ft from left support
Created by combining all dead and live loads.
Controlling Shear: 2147 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	28.72 in3	30.66 in3
Area (Shear):	15.56 in2	25.38 in2
Moment of Inertia (deflection):	32.6 in4	111.15 in4
Moment:	3220 ft-lb	3438 ft-lb
Shear:	2147 lb	3502 lb

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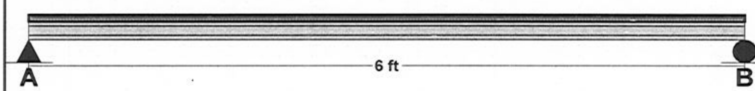

ROOF LOADING

Side One:

Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	2	ft

Side Two:

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

Wall Load: WALL = 0 plf

SLOPE/PITCH ADJUSTED LENGTHS AND LOADS

Adjusted Beam Length:	Ladj =	6	ft
Beam Self Weight:	BSW =	6	plf
Beam Uniform Live Load:	wL =	425	plf
Beam Uniform Dead Load:	wD_adj =	291	plf
Total Uniform Load:	wT =	716	plf

NOTES

Permit Number: 20-01955