2

17-188547RS

CONCEPT DESIGN & ASSOCIATES

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May 21, 2017

RE:	**BEAM CALCULATIONS**
PROJECT ADDRESS:	**Parcel 1, SE Raymond, Portland, OR**
PLAN NAME:	**P1980**
BUILDER/OWNERS:	**DK Homes LLC**
Project Description:	**2 level structure single family dwelling**

Note: Permit for this NSFR shall be apply to one project only – Kym Nguyen

Project: P1980

Location: M1 - BEAM ABOVE STAIR WAY
Uniformly Loaded Floor Beam
[2009 International Building Code(2005 NDS)]
(2) 1.5 IN x 11.25 IN x 4.5 FT
#2 - Douglas-Fir-Larch (North) - Dry Use
Section Adequate By: 814.4%
Controlling Factor: Moment

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

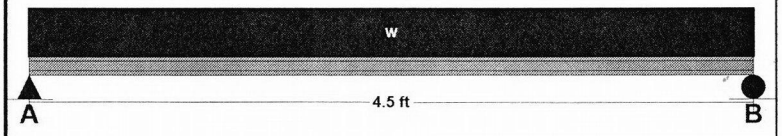
DEFLECTIONS	Center	
Live Load	0.00	IN L/MAX
Dead Load	0.00	in
Total Load	0.00	IN L/MAX

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

REACTIONS	A	B
Live Load	225 lb	225 lb
Dead Load	211 lb	211 lb
Total Load	436 lb	436 lb
Bearing Length	0.23 in	0.23 in

BEAM DATA	Center
Span Length	4.5 ft
Unbraced Length-Top	0 ft
Floor Duration Factor	1.00
Notch Depth	0.00

LOADING DIAGRAM



MATERIAL PROPERTIES
#2 - Douglas-Fir-Larch (North)

	Base Values		Adjusted	
Bending Stress:	Fb =	850 psi	Fb' =	850 psi
	Cd=1.00 CF=1.00			
Shear Stress:	Fv =	180 psi	Fv' =	180 psi
	Cd=1.00			
Modulus of Elasticity:	E =	1600 ksi	E' =	1600 ksi
Min. Mod. of Elasticity:	E_min =	580 ksi	E_min' =	580 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625 psi	Fc - ⊥' =	625 psi

Controlling Moment: 490 ft-lb
2.25 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -436 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 =	2.5 ft	0 ft
Wall Load	WALL =	49 plf	

BEAM LOADING		
Beam Total Live Load:	wL =	100 plf
Beam Total Dead Load:	wD =	87 plf
Beam Self Weight:	BSW =	7 plf
Total Maximum Load:	wT =	194 plf

Comparisons with required sections:	Req'd	Provided
Section Modulus:	6.92 in3	63.28 in3
Area (Shear):	3.63 in2	33.75 in2
Moment of Inertia (deflection):	4.96 in4	355.96 in4
Moment:	490 ft-lb	4482 ft-lb
Shear:	-436 lb	4050 lb

Project: P1980

Location: M2 - BEAM ABOVE HALL WAY & STAIR WAY
Multi-Loaded Multi-Span Beam
[2009 International Building Code(2005 NDS)]
3.5 IN x 7.25 IN x 9.6 FT
#2 - Douglas-Fir-Larch (North) - Dry Use
Section Adequate By: 52.6%
Controlling Factor: Moment

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DEFLECTIONS	Center	
Live Load	0.10	IN L/1199
Dead Load	0.06	in
Total Load	0.16	IN L/741

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

REACTIONS	A	B
Live Load	387 lb	350 lb
Dead Load	226 lb	191 lb
Total Load	613 lb	540 lb
Bearing Length	0.28 in	0.25 in

BEAM DATA	Center
Span Length	9.6 ft
Unbraced Length-Top	0 ft
Unbraced Length-Bottom	9.6 ft
Live Load Duration Factor	1.00
Notch Depth	0.00

MATERIAL PROPERTIES

#2 - Douglas-Fir-Larch (North)

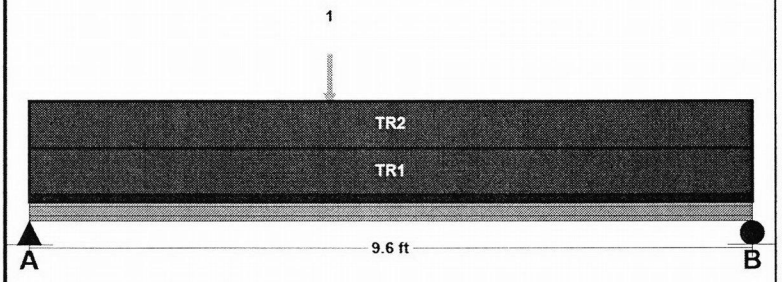
	Base Values		Adjusted	
Bending Stress:	Fb =	850 psi	Fb' =	1105 psi
	Cd=1.00 CF=1.30			
Shear Stress:	Fv =	180 psi	Fv' =	180 psi
	Cd=1.00			
Modulus of Elasticity:	E =	1600 ksi	E' =	1600 ksi
Min. Mod. of Elasticity:	E_min =	580 ksi	E_min' =	580 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625 psi	Fc - ⊥' =	625 psi

Controlling Moment: 1850 ft-lb
4.03 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Controlling Shear: 613 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:	20.09 in3	30.66 in3
Area (Shear):	5.11 in2	25.38 in2
Moment of Inertia (deflection):	35.98 in4	111.15 in4
Moment:	1850 ft-lb	2823 ft-lb
Shear:	613 lb	3045 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

POINT LOADS - CENTER SPAN	
Load Number	One
Live Load	225 lb
Dead Load	211 lb
Location	4 ft

TRAPEZOIDAL LOADS - CENTER SPAN		
Load Number	One	Two
Left Live Load	26.7 plf	26.7 plf
Left Dead Load	8 plf	8 plf
Right Live Load	26.66plf	26.66plf
Right Dead Load	8 plf	8 plf
Load Start	0 ft	0 ft
Load End	9.6 ft	9.6 ft
Load Length	9.6 ft	9.6 ft

Project: P1980

Location: M3 - BEAM ABOVE HALLWAY
Uniformly Loaded Floor Beam
[2009 International Building Code(2005 NDS)]
3.5 IN x 9.25 IN x 4.0 FT
#2 - Douglas-Fir-Larch (North) - Dry Use
Section Adequate By: 287.0%
Controlling Factor: Shear

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DEFLECTIONS Center

Live Load	0.01	IN L/8551
Dead Load	0.00	in
Total Load	0.01	IN L/6134

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

REACTIONS

	A	B
Live Load	720 lb	720 lb
Dead Load	284 lb	284 lb
Total Load	1004 lb	1004 lb
Bearing Length	0.46 in	0.46 in

BEAM DATA

	Center
Span Length	4 ft
Unbraced Length-Top	0 ft
Floor Duration Factor	1.00
Notch Depth	0.00

MATERIAL PROPERTIES

#2 - Douglas-Fir-Larch (North)

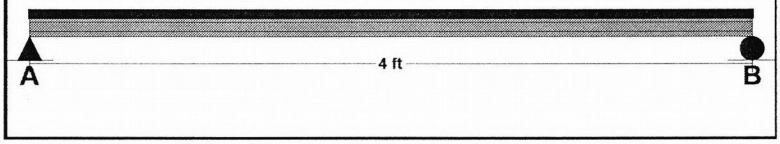
	Base Values		Adjusted	
Bending Stress:	Fb =	850 psi	Fb' =	1020 psi
	Cd=1.00 CF=1.20			
Shear Stress:	Fv =	180 psi	Fv' =	180 psi
	Cd=1.00			
Modulus of Elasticity:	E =	1600 ksi	E' =	1600 ksi
Min. Mod. of Elasticity:	E_min =	580 ksi	E_min' =	580 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625 psi	Fc - ⊥' =	625 psi

Controlling Moment: 1004 ft-lb
2.0 ft from left support
Created by combining all dead and live loads.

Controlling Shear: 1004 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	11.81 in3	49.91 in3
Area (Shear):	8.36 in2	32.38 in2
Moment of Inertia (deflection):	9.72 in4	230.84 in4
Moment:	1004 ft-lb	4242 ft-lb
Shear:	1004 lb	3885 lb

LOADING DIAGRAM



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 =	3 ft	6 ft
Wall Load	WALL =	0 plf	

BEAM LOADING

Beam Total Live Load:	wL =	360 plf
Beam Total Dead Load:	wD =	135 plf
Beam Self Weight:	BSW =	7 plf
Total Maximum Load:	wT =	502 plf

Project: P1980

Location: M4 - BEAM ABOVE HALL WAY
Uniformly Loaded Floor Beam
[2009 International Building Code(2005 NDS)]
3.5 IN x 9.25 IN x 6.25 FT
#2 - Douglas-Fir-Larch (North) - Dry Use
Section Adequate By: 98.5%
Controlling Factor: Moment

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DEFLECTIONS	Center	
Live Load	0.03	IN L/2575
Dead Load	0.01	in
Total Load	0.04	IN L/1844

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

REACTIONS	A	B
Live Load	979 lb	979 lb
Dead Load	389 lb	389 lb
Total Load	1368 lb	1368 lb
Bearing Length	0.63 in	0.63 in

BEAM DATA	Center
Span Length	6.25 ft
Unbraced Length-Top	0 ft
Floor Duration Factor	1.00
Notch Depth	0.00

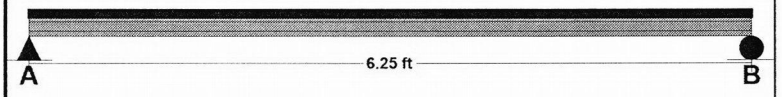
MATERIAL PROPERTIES
#2 - Douglas-Fir-Larch (North)

	Base Values		Adjusted	
Bending Stress:	Fb =	850 psi	Fb' =	1020 psi
	Cd=1.00 CF=1.20			
Shear Stress:	Fv =	180 psi	Fv' =	180 psi
	Cd=1.00			
Modulus of Elasticity:	E =	1600 ksi	E' =	1600 ksi
Min. Mod. of Elasticity:	E_min =	580 ksi	E_min' =	580 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625 psi	Fc - ⊥' =	625 psi

Controlling Moment: 2137 ft-lb
3.125 ft from left support
Created by combining all dead and live loads.
Controlling Shear: 1368 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	25.14 in3	49.91 in3
Area (Shear):	11.4 in2	32.38 in2
Moment of Inertia (deflection):	32.27 in4	230.84 in4
Moment:	2137 ft-lb	4242 ft-lb
Shear:	1368 lb	3885 lb

LOADING DIAGRAM



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 =	0.7 ft	7.2 ft
Wall Load	WALL =	0 plf	

BEAM LOADING

Beam Total Live Load:	wL =	313 plf
Beam Total Dead Load:	wD =	117 plf
Beam Self Weight:	BSW =	7 plf
Total Maximum Load:	wT =	438 plf

Project: P1980

Location: M5 - BEAM ABOVE DINING & GREAT ROOM
Uniformly Loaded Floor Beam
[2009 International Building Code(2005 NDS)]
5.5 IN x 11.5 IN x 12.0 FT
#2 - Douglas-Fir-Larch (North) - Dry Use
Section Adequate By: 10.5%
Controlling Factor: Moment

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DEFLECTIONS Center

Live Load	0.16	IN L/893
Dead Load	0.07	in
Total Load	0.23	IN L/630

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

REACTIONS

	A	B
Live Load	1880 lb	1880 lb
Dead Load	786 lb	786 lb
Total Load	2666 lb	2666 lb
Bearing Length	0.78 in	0.78 in

BEAM DATA Center

Span Length	12 ft
Unbraced Length-Top	0 ft
Floor Duration Factor	1.00
Notch Depth	0.00

MATERIAL PROPERTIES
#2 - Douglas-Fir-Larch (North)

	Base Values		Adjusted	
Bending Stress:	Fb =	875 psi	Fb' =	875 psi
	Cd=1.00 CF=1.00			
Shear Stress:	Fv =	170 psi	Fv' =	170 psi
	Cd=1.00			
Modulus of Elasticity:	E =	1300 ksi	E' =	1300 ksi
Min. Mod. of Elasticity:	E_min =	470 ksi	E_min' =	470 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625 psi	Fc - ⊥' =	625 psi

Controlling Moment: 7997 ft-lb
6.0 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -2666 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	109.67 in3	121.23 in3
Area (Shear):	23.52 in2	63.25 in2
Moment of Inertia (deflection):	281.08 in4	697.07 in4
Moment:	7997 ft-lb	8840 ft-lb
Shear:	-2666 lb	7168 lb

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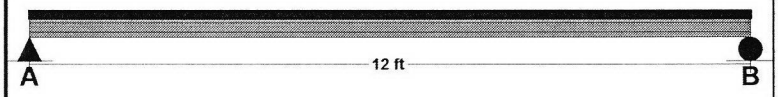

FLOOR LOADING

		Side 1	Side 2
Floor Live Load	FLL =	40 psf	40 psf
Floor Dead Load	FDL =	15 psf	15 psf
Floor Tributary Width	FTW =	0.7 ft	7.2 ft
Wall Load	WALL =	0 plf	

BEAM LOADING

Beam Total Live Load:	wL =	313 plf
Beam Total Dead Load:	wD =	117 plf
Beam Self Weight:	BSW =	13 plf
Total Maximum Load:	wT =	444 plf

Project: P1980

Location: M6 - BEAM ABOVE KITCHEN
Uniformly Loaded Floor Beam
[2009 International Building Code(2005 NDS)]
5.5 IN x 9.5 IN x 10.833 FT
#2 - Douglas-Fir-Larch (North) - Dry Use
Section Adequate By: 8.9%
Controlling Factor: Moment

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DEFLECTIONS Center

Live Load	0.16	IN L/804
Dead Load	0.07	in
Total Load	0.23	IN L/567

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

REACTIONS

	A	B
Live Load	1444 lb	1444 lb
Dead Load	602 lb	602 lb
Total Load	2046 lb	2046 lb
Bearing Length	0.60 in	0.60 in

BEAM DATA Center

Span Length	10.83 ft
Unbraced Length-Top	0 ft
Floor Duration Factor	1.00
Notch Depth	0.00

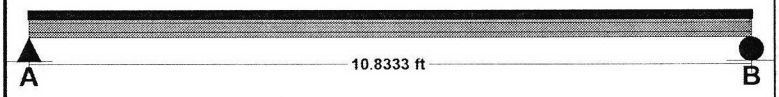
MATERIAL PROPERTIES
#2 - Douglas-Fir-Larch (North)

	Base Values	Adjusted
Bending Stress:	Fb = 875 psi	Fb' = 875 psi
	Cd=1.00 CF=1.00	
Shear Stress:	Fv = 170 psi	Fv' = 170 psi
	Cd=1.00	
Modulus of Elasticity:	E = 1300 ksi	E' = 1300 ksi
Min. Mod. of Elasticity:	E_min = 470 ksi	E_min' = 470 ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 625 psi	Fc - ⊥' = 625 psi

Controlling Moment: 5542 ft-lb
5.417 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -2046 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	76 in3	82.73 in3
Area (Shear):	18.06 in2	52.25 in2
Moment of Inertia (deflection):	176.01 in4	392.96 in4
Moment:	5542 ft-lb	6032 ft-lb
Shear:	-2046 lb	5922 lb

LOADING DIAGRAM



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 =	0.7 ft	6 ft
Wall Load	WALL =	0 plf	

BEAM LOADING

Beam Total Live Load:	wL =	267 plf
Beam Total Dead Load:	wD =	100 plf
Beam Self Weight:	BSW =	11 plf
Total Maximum Load:	wT =	378 plf

Project: P1980

Location: M7 - BEAM ABOVE MIDDLE OF GARAGE
Uniformly Loaded Floor Beam
[2009 International Building Code(2005 NDS)]
5.5 IN x 11.5 IN x 12.5 FT
#2 - Douglas-Fir-Larch (North) - Dry Use
Section Adequate By: 45.4%
Controlling Factor: Moment

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DEFLECTIONS	Center	
Live Load	0.13	IN L/1142
Dead Load	0.06	in
Total Load	0.19	IN L/795

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

REACTIONS	A	B
Live Load	1354 lb	1354 lb
Dead Load	592 lb	592 lb
Total Load	1946 lb	1946 lb
Bearing Length	0.57 in	0.57 in

BEAM DATA	Center
Span Length	12.5 ft
Unbraced Length-Top	0 ft
Floor Duration Factor	1.00
Notch Depth	0.00

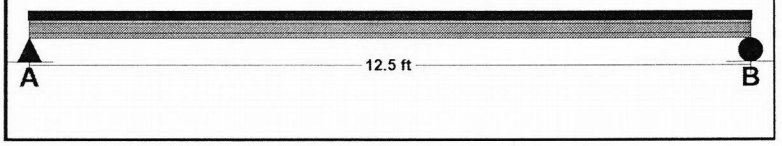
MATERIAL PROPERTIES
#2 - Douglas-Fir-Larch (North)

	Base Values	Adjusted
Bending Stress:	Fb = 875 psi	Fb' = 875 psi
	Cd=1.00 CF=1.00	
Shear Stress:	Fv = 170 psi	Fv' = 170 psi
	Cd=1.00	
Modulus of Elasticity:	E = 1300 ksi	E' = 1300 ksi
Min. Mod. of Elasticity:	E_min = 470 ksi	E_min' = 470 ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 625 psi	Fc - ⊥' = 625 psi

Controlling Moment: 6081 ft-lb
6.25 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -1946 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	83.4 in3	121.23 in3
Area (Shear):	17.17 in2	63.25 in2
Moment of Inertia (deflection):	219.69 in4	697.07 in4
Moment:	6081 ft-lb	8840 ft-lb
Shear:	-1946 lb	7168 lb

LOADING DIAGRAM



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 =	0.7 ft	4.8 ft
Wall Load	WALL =	0 plf	

BEAM LOADING

Beam Total Live Load:	wL =	217 plf
Beam Total Dead Load:	wD =	81 plf
Beam Self Weight:	BSW =	13 plf
Total Maximum Load:	wT =	311 plf

Project: P1980

Location: M8 - GARAGE DOOR HEADER
Uniformly Loaded Floor Beam
[2009 International Building Code(2005 NDS)]
3.5 IN x 11.25 IN x 8.5 FT
#2 - Douglas-Fir-Larch (North) - Dry Use
Section Adequate By: 96.2%
Controlling Factor: Moment

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DEFLECTIONS

	Center	
Live Load	0.04	IN L/2509
Dead Load	0.02	in
Total Load	0.06	IN L/1778

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

REACTIONS

	A		B	
Live Load	978	lb	978	lb
Dead Load	402	lb	402	lb
Total Load	1380	lb	1380	lb
Bearing Length	0.63	in	0.63	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

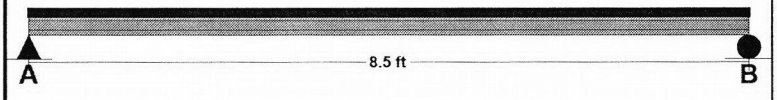
#2 - Douglas-Fir-Larch (North)

		Base Values		Adjusted	
Bending Stress:	Fb =	850	psi	Fb' =	935 psi
	Cd=1.00 CF=1.10				
Shear Stress:	Fv =	180	psi	Fv' =	180 psi
	Cd=1.00				
Modulus of Elasticity:	E =	1600	ksi	E' =	1600 ksi
Min. Mod. of Elasticity:	E_min =	580	ksi	E_min' =	580 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625	psi	Fc - ⊥' =	625 psi

Controlling Moment: 2932 ft-lb
4.25 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -1380 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	37.63 in3	73.83 in3
Area (Shear):	11.5 in2	39.38 in2
Moment of Inertia (deflection):	59.58 in4	415.28 in4
Moment:	2932 ft-lb	5752 ft-lb
Shear:	-1380 lb	4725 lb

LOADING DIAGRAM



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 =	1	ft	4.8	ft
Wall Load	WALL =	0	plf		

BEAM LOADING

Beam Total Live Load:	wL =	230	plf
Beam Total Dead Load:	wD =	86	plf
Beam Self Weight:	BSW =	8	plf
Total Maximum Load:	wT =	325	plf

Project: P1980

Location: M9 - BEAM ABOVE COVERED FRONT PORCH
Combination Roof And Floor Beam
[2009 International Building Code(2005 NDS)]
3.5 IN x 5.5 IN x 11.0 FT
#2 - Douglas-Fir-Larch (North) - Dry Use
Section Adequate By: 0.9%
Controlling Factor: Moment

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DEFLECTIONS	Center	
Live Load	0.29	IN L/453
Dead Load	0.23	in
Total Load	0.52	IN L/254

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

REACTIONS	A	B
Live Load	378 lb	378 lb
Dead Load	295 lb	295 lb
Total Load	673 lb	673 lb
Bearing Length	0.31 in	0.31 in

BEAM DATA	Center
Span Length	11 ft
Unbraced Length-Top	0 ft
Roof Pitch	8 :12
Floor Duration Factor	1.00
Roof Duration Factor	1.15
Notch Depth	0.00

MATERIAL PROPERTIES

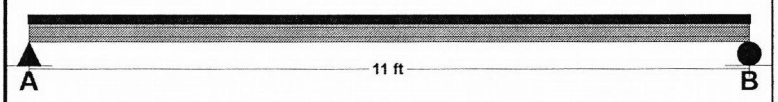
#2 - Douglas-Fir-Larch (North)

	Base Values		Adjusted	
Bending Stress:	Fb =	850 psi	Fb' =	1271 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
Min. Mod. of Elasticity:	E_min =	580 ksi	E_min' =	580 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	625 psi	Fc - ⊥' =	625 psi

Controlling Moment: 1852 ft-lb
5.5 ft from left support
Created by combining all dead and live loads.
Controlling Shear: 673 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	17.48 in3	17.65 in3
Area (Shear):	4.88 in2	19.25 in2
Moment of Inertia (deflection):	45.82 in4	48.53 in4
Moment:	1852 ft-lb	1869 ft-lb
Shear:	673 lb	2657 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 =	1 ft	1.8 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 =	0 ft	0 ft
Wall Load	WALL =	0 plf	

BEAM LOADING

Roof Uniform Live Load:	wL-roof =	69 plf
Roof Uniform Dead Load:	wD-roof =	50 plf
Floor Uniform Live Load:	wL-floor =	0 plf
Floor Uniform Dead Load:	wD-floor =	0 plf
Beam Self Weight:	BSW =	4 plf
Combined Uniform Live Load:	wL =	69 plf
Combined Uniform Dead Load:	wD =	54 plf
Combined Uniform Total Load:	wT =	122 plf
Controlling Total Design Load:	wT-cont =	122 plf

Project: P1980

Location: Footing 1
Footing
[2009 International Building Code(2005 NDS)]
Footing Size: 1.87 FT x 1.87 FT x 12.00 IN
Section Footing Design Adequate

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CAUTIONS
* Footing has been designed without reinforcement

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 = 1.87	ft
Length:	L = 1.87	ft
Depth:	Depth = 12	in
Effective Depth to Top Layer of Steel:	d = 10	in

COLUMN AND BASEPLATE SIZE

Column Type:	Wood
Column Width:	m = 4 in
Column Depth:	n = 6 in

FOOTING CALCULATIONS

Bearing Calculations:

Ultimate Bearing Pressure:	Qu =	1347	psf
Effective Allowable Soil Bearing Pressure:	Qe =	1350	psf
Required Footing Area:	Areq =	3.49	sf
Area Provided:	A =	3.50	sf

Baseplate Bearing:

Bearing Required:	Bear =	6984	lb
Allowable Bearing:	Bear-A =	56100	lb

Beam Shear Calculations (One Way Shear):

Beam Shear:	Vu1 =	380	lb
Allowable Beam Shear:	Vc1 =	8228	lb

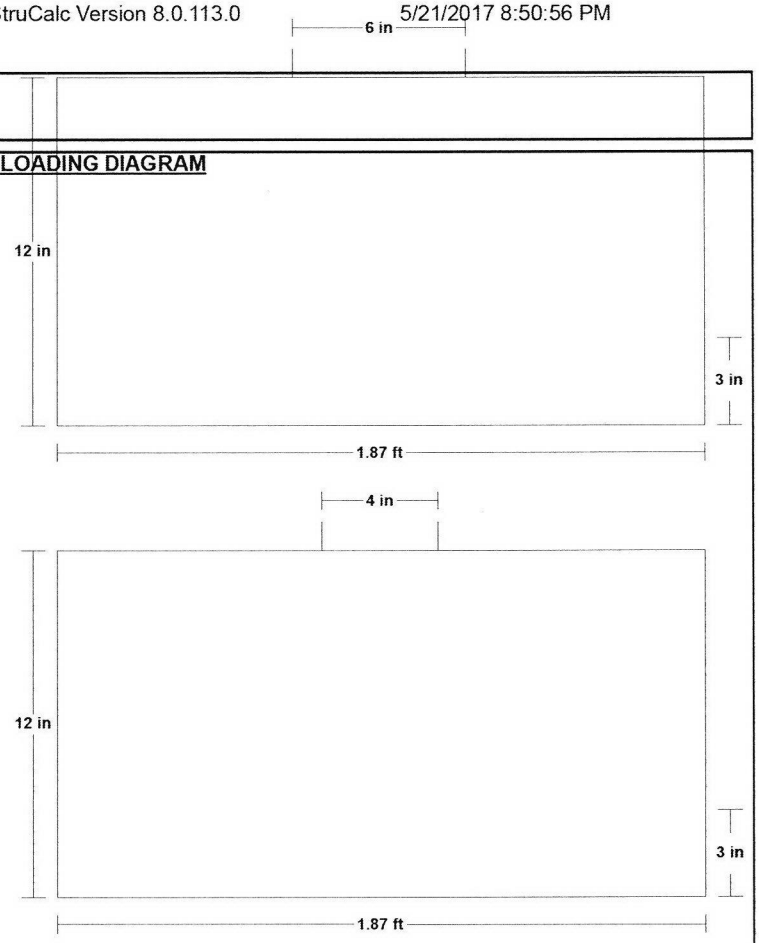
Punching Shear Calculations (Two Way Shear):

Critical Perimeter:	Bo =	60	in
Punching Shear:	Vu2 =	3877	lb
Controlling Allowable Punching Shear:	vc2 =	43890	lb

Bending Calculations:

Factored Moment:	Mu =	19590	in-lb
Nominal Moment Strength:	Mn =	51425	in-lb

LOADING DIAGRAM



FOOTING LOADING

Live Load:	PL =	3324	lb
Dead Load:	PD =	1388	lb
Total Load:	PT =	4712	lb
Ultimate Factored Load:	Pu =	6984	lb
Weight to resist uplift w/ 1.5 F.S.:	U.R. =	338	lb