Zarosinski Engineering & Design, Inc.
1400 NW 155th Circle
Vancouver, WA 98685
Phone: (360) 513-2746
Email: dzaro@zaroeng.com

ZAROSINSKI
ENGINEERING & DESIGN
STRUCTURAL • CIVIL • DESIGN

Structural Calculations
For
Shed Dormer
At
8734 N Fiske Ave.
By
Dean P. Zarosinski PE

July 15, 2013

The dormer adds 8 square feet of exposure to the east and west elevations which equal an additional 120 pounds of wind load (at 15 psf)

The dormer does not add any additional wind load to the north or south elevation,

The dormer is constructed over an existing interior bearing wall and the exterior wall. No additional vertical load is created by the proposed dormer.

REGISTERED PROFESSIONAL ENGINEER
16476
OREGON
JAN 16, 1993
DEAN P. ZAROSINSKI
EXPIRES: 6-30-14

City of Portland
REVIEWED FOR CODE COMPLIANCE
AUG 01 2013
Permit Number

Zarosinski Engineering and Design
1400 NW 155th Circle
Vancouver, WA 98685
360-513-2746
Email: dzaro@zaroeng.com
By Dean P. Zarosinski PE

Project Information

Project Title : Shed Dormer

Description : Dormer from pony wall to outside bearing wall

I.D. : K0277-2

Address : 8734 N Fiske, Portland, OR 97203

Project Leader : Dean P. Zarosinski PE

Phone : 360-513-2746 **Fax** : **eMail** : dpzski@hotmail.com

Project Notes

City of Portland
REVIEWED FOR CODE COMPLIANCE
AUG 01 2013
Permit Number

Zarosinski Engineering and Design
1400 NW 155th Circle
Vancouver, WA 98685
360-513-2746
Email: dzaro@zaroeng.com
By Dean P. Zarosinski PE

Project Title: Shed Dormer
Engineer: Dean P. Zarosinski PE
Project ID: K0277-2
Project Descr: Dormer from pony wall to outside bearing wall

Wood Beam

File: C:\AA WORK\2013 Projects\K0277-2 Innovision N Fiske\Calculations\k02771-2 calcs.ec6
ENERCALC, INC. 1983-2012, Build:6.12.10.31, Ver:6.12.11.30

Lic. # : KW-06009383 Licensee : Zarosinski Engineering and Design, Inc.

Description : ROOF RAFTER

CODE REFERENCES

Calculations per NDS 2005, IBC 2006, CBC 2007, ASCE 7-05
Load Combination Set : ASCE 7-05

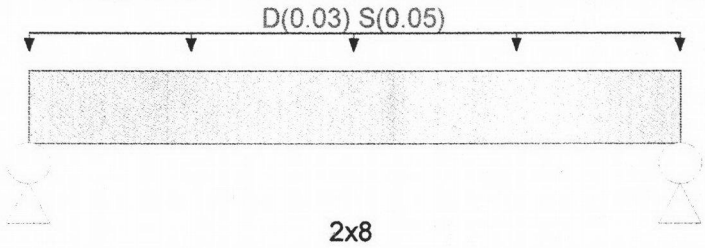
Material Properties

Analysis Method : Allowable Stress Design
Load Combination ASCE 7-05

Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	900 psi	*E : Modulus of Elasticity*	
Fb - Compr	900 psi	Ebend- xx	1600 ksi
Fc - Prll	1350 psi	Eminbend - xx	580 ksi
Fc - Perp	625 psi		
Fv	180 psi		
Ft	575 psi	Density	32.21 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0150, S = 0.0250 ksf, Tributary Width = 2.0 ft, (rOOF)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.211: 1	Maximum Shear Stress Ratio	=	0.116 : 1
Section used for this span		2x8	Section used for this span		2x8
fb : Actual	=	228.30 psi	fv : Actual	=	20.94 psi
FB : Allowable	=	1,080.00 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+S+H	Load Combination		+D+S+H
Location of maximum on span	=	2.500 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs		Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.009 in	Ratio =	6466
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.015 in	Ratio =	4041
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

City of Portland
REVIEWED FOR CODE COMPLIANCE
AUG 01 2013
Permit Number

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios									Moment Values			Shear Values		
Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	M	fb	F'b	V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.079	0.044	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.09	85.61	1080.00	0.06	7.85	180.00
+D+L+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.079	0.044	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.09	85.61	1080.00	0.06	7.85	180.00
+D+Lr+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.079	0.044	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.09	85.61	1080.00	0.06	7.85	180.00
+D+S+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.211	0.116	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.25	228.30	1080.00	0.15	20.94	180.00
+D+0.750Lr+0.750L+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.079	0.044	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.09	85.61	1080.00	0.06	7.85	180.00
+D+0.750L+0.750S+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.178	0.098	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.21	192.63	1080.00	0.13	17.67	180.00

Zarosinski Engineering and Design
1400 NW 155th Circle
Vancouver, WA 98685
360-513-2746
Email: dzaro@zaroeng.com
By Dean P. Zarosinski PE

Project Title: Shed Dormer
Engineer: Dean P. Zarosinski PE
Project ID: K0277-2
Project Descr: Dormer from pony wall to outside bearing wall

Wood Beam

File: C:\AA WORK\2013 Projects\K0277-2 Innovision N Fiske\Calculations\k02771-2 calcs.ec6
ENERCALC, INC. 1983-2012, Build:6.12.10.31, Ver:6.12.11.30

Lic. # : KW-06009383 — Licensee : Zarosinski Engineering and Design, Inc.

Description : ROOF RAFTER

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+W+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.079	0.044	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.09	85.61	1080.00	0.06	7.85	180.00
+D+0.70E+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.079	0.044	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.09	85.61	1080.00	0.06	7.85	180.00
+D+0.750Lr+0.750L+0.750W+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.079	0.044	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.09	85.61	1080.00	0.06	7.85	180.00
+D+0.750L+0.750S+0.750W+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.178	0.098	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.21	192.63	1080.00	0.13	17.67	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.079	0.044	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.09	85.61	1080.00	0.06	7.85	180.00
+D+0.750L+0.750S+0.5250E+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.178	0.098	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.21	192.63	1080.00	0.13	17.67	180.00
+0.60D+W+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.048	0.026	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.06	51.37	1080.00	0.03	4.71	180.00
+0.60D+0.70E+H					1.20	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.048	0.026	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.06	51.37	1080.00	0.03	4.71	180.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+S	1	0.0148	2.518		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.200	0.200
D Only	0.075	0.075
S Only	0.125	0.125
D+S	0.200	0.200

City of Portland
REVIEWED FOR CODE COMPLIANCE
AUG 01 2013
Permit Number

Zarosinski Engineering & Design, Inc.
1400 NW 155th Circle
Vancouver, WA 98685
Phone: (360) 513-2746
Email: dzaro@zaroeng.com

ZAROSINSKI ENGINEERING & DESIGN
STRUCTURAL • CIVIL • DESIGN

Calculations for Dormer and Attic Conversion At 8734 N Fiske Ave. Portland, Oregon 97203
By Dean P. Zarosinski PE July 30, 2013 Page

LOAD ON FLOOR FRAMING

MID WALL @ ROOF = 5' TRIB ROOF LOAD

= 5x15 + 25 = 75 PLF DL & 125 PLF LL

WALL = 7' x 10 PSF = 70 PLF DL

TOTAL = 145 PLF DL & 125 PLF LSR $\left(\frac{16}{12}\right)$

= 194 PLF DL & 167 PLF LS

CHECK 2ND FLOOR ~~BEAM~~ JOISTS WITH THIS LOADING

THEY ARE OK

City of Portland
REVIEWED FOR CODE COMPLIANCE
AUG 01 2013
Permit Number

CHECK 1ST FLOOR

R FROM 2ND FLOOR MID. = 370 lb DL 610 lb LL & 90 lb SL @ 16" O.C.

FOR 2' SPAN JOIST LOAD = 555 lb DL, 915 lb LL 135 lb SL

FLOOR JOIST ARE OK PER EXPERCALC

REACTION @ N. WALL = 170 lb DL + 340 lb WAL + 20 lb

S. WALL 60 lb DL 220 lb LL & 10 lb SL

MID WALL 170 lb DL, 340 lb LL 20 lb SL (2'

+ OUTER WALL = 4' ROOF & 17 OF WALL = 17x10 = 170 PLF & 60 PLF DL & 100 PLF

~~SL~~ OUTER WALL (N) 415 PLF DL, 250 PLF LL & 120 PLF SL

TL = $1^2(415) + 1^6(250) + 0^2(120)$ 1273

=

Zarosinski Engineering & Design, Inc.
1400 NW 155th Circle
Vancouver, WA 98685
Phone: (360) 513-2746
Email: dzaro@zaroeng.com

ZAROSINSKI
ENGINEERING & DESIGN
STRUCTURAL • CIVIL • DESIGN

Calculations for Dormer and Attic Conversion At 8734 N Fiske Ave. Portland, Oregon 97203
By Dean P. Zarosinski PE July 30, 2013 Page

THE EXTERIOR WALL SUPPORTS 1273 lb TL
+ 8" x 3' x 150 PCF = 300 lb = 1573 lb/FT

IF SOIL 3' DOWN HAS BEARING OF 2500 PSF

$2500 \times \frac{8}{12} = 1667$ lb ALLOWABLE W/O INCREASE

FOR 1500 PSF x 1.5 = 2250 PSF ALLOWED
THIS IS OK FOR LOAD AS INTERIOR SUPPORTS
OF 1ST FLOOR JOISTS REDUCE ACTUAL LOAD

City of Portland
REVIEWED FOR CODE
COMPLIANCE
AUG 01 2013
Permit Number

Zarosinski Engineering and Design
1400 NW 155th Circle
Vancouver, WA 98685
360-513-2746
Email: dzaro@zaroeng.com
By Dean P. Zarosinski PE

Project Title: Shed Dormer
Engineer: Dean P. Zarosinski PE
Project ID: K0277-2
Project Descr: Dormer from pony wall to outside bearing wall

Wood Beam

File: C:\AA WORK\2013 Projects\K0277-2 Innovision N Fiske\Calculations\k02771-2 calcs.ec6
ENERCALC, INC. 1983-2012, Build:6.12.10.31, Ver:6.12.11.30

Lic. # : KW-06009383
Licensee : Zarosinski Engineering and Design, Inc.

Description : 2ND FLOOR FLOOR JOISTS

CODE REFERENCES

Calculations per NDS 2005, IBC 2006, CBC 2007, ASCE 7-05
Load Combination Set : ASCE 7-05

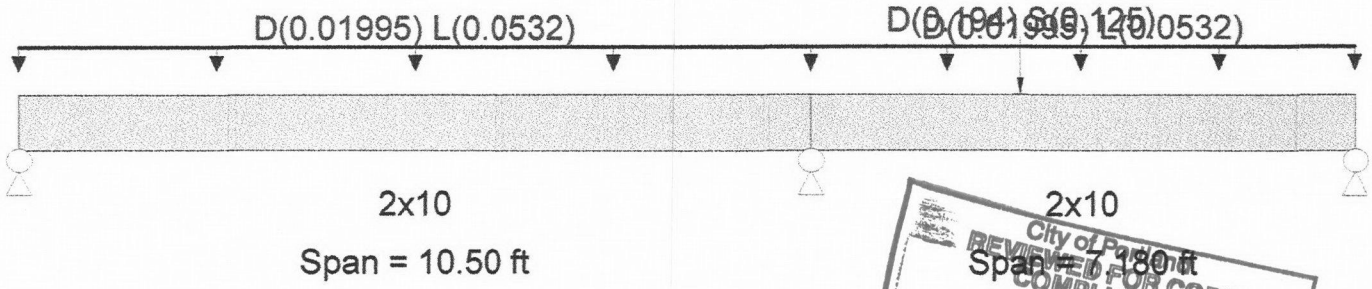
Material Properties

Analysis Method : Allowable Stress Design
Load Combination ASCE 7-05

Wood Species :
Wood Grade :

Fb - Tension	1,000.0 psi	*E : Modulus of Elasticity*	
Fb - Compr	1,000.0 psi	Ebend- xx	1,300.0 ksi
Fc - Prll	1,000.0 psi	Eminbend - xx	1,300.0 ksi
Fc - Perp	1,000.0 psi		
Fv	65.0 psi		
Ft	65.0 psi	Density	34.0 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsion buckling



City of Portland
REVIEWED FOR CODE COMPLIANCE
AUG 01 2013
Permit Number

Applied Loads

Service loads entered. Load factors will be applied for calculations.

Load for Span Number 1
Uniform Load : D = 0.0150, L = 0.040 ksf, Tributary Width = 1.330 ft
Load for Span Number 2
Uniform Load : D = 0.0150, L = 0.040 ksf, Tributary Width = 1.330 ft
Point Load : D = 0.1940, S = 0.1250 k @ 2.750 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.504 : 1	Maximum Shear Stress Ratio	=	0.764 : 1
Section used for this span		2x10	Section used for this span		2x10
fb : Actual	=	503.89 psi	fv : Actual	=	49.64 psi
FB : Allowable	=	1,000.00 psi	Fv : Allowable	=	65.00 psi
Load Combination		+D+L+H	Load Combination		+D+0.750L+0.750S+H
Location of maximum on span	=	10.500 ft	Location of maximum on span	=	10.500 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.061 in	Ratio =	2049
Max Upward L+Lr+S Deflection	-0.005 in	Ratio =	18841
Max Downward Total Deflection	0.075 in	Ratio =	1680
Max Upward Total Deflection	-0.005 in	Ratio =	18841

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios									Moment Values			Shear Values		
Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	M	fb	F'b	V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.182	0.368	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.32	181.52	1000.00	0.22	23.91	65.00
Length = 7.180 ft	2	0.182	0.368	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.32	181.52	1000.00	0.22	23.91	65.00
+D+L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.504	0.751	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	503.89	1000.00	0.45	48.83	65.00
Length = 7.180 ft	2	0.504	0.751	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	503.89	1000.00	0.45	48.83	65.00
+D+Lr+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.182	0.368	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.32	181.52	1000.00	0.22	23.91	65.00

Zarosinski Engineering and Design
1400 NW 155th Circle
Vancouver, WA 98685
360-513-2746
Email: dzaro@zaroeng.com
By Dean P. Zarosinski PE

Project Title: Shed Dormer
Engineer: Dean P. Zarosinski PE
Project ID: K0277-2
Project Descr: Dormer from pony wall to outside bearing wall

Wood Beam

File: C:\AA WORK\2013 Projects\K0277-2 Innovision N Fiske\Calculations\k02771-2 calcs.ec6
ENERCALC, INC. 1983-2012, Build:6.12.10.31, Ver:6.12.11.30

Lic. # : KW-06009383
Licensee : Zarosinski Engineering and Design, Inc.

Description : 2ND FLOOR FLOOR JOISTS

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
Length = 7.180 ft	2	0.182	0.368	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.32	181.52	1000.00	0.22	23.91	65.00
+D+S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.221	0.512	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.39	220.59	1000.00	0.31	33.30	65.00
Length = 7.180 ft	2	0.235	0.512	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.42	235.21	1000.00	0.31	33.30	65.00
+D+0.750Lr+0.750L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.423	0.655	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	423.30	1000.00	0.39	42.60	65.00
Length = 7.180 ft	2	0.423	0.655	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	423.30	1000.00	0.39	42.60	65.00
+D+0.750L+0.750S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.453	0.764	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	452.60	1000.00	0.46	49.64	65.00
Length = 7.180 ft	2	0.453	0.764	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	452.60	1000.00	0.46	49.64	65.00
+D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.182	0.368	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.32	181.52	1000.00	0.22	23.91	65.00
Length = 7.180 ft	2	0.182	0.368	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.32	181.52	1000.00	0.22	23.91	65.00
+D+0.70E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.182	0.368	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.32	181.52	1000.00	0.22	23.91	65.00
Length = 7.180 ft	2	0.182	0.368	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.32	181.52	1000.00	0.22	23.91	65.00
+D+0.750Lr+0.750L+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.423	0.655	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	423.30	1000.00	0.39	42.60	65.00
Length = 7.180 ft	2	0.423	0.655	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	423.30	1000.00	0.39	42.60	65.00
+D+0.750L+0.750S+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.453	0.764	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	452.60	1000.00	0.46	49.64	65.00
Length = 7.180 ft	2	0.453	0.764	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	452.60	1000.00	0.46	49.64	65.00
+D+0.750Lr+0.750L+0.5250E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.423	0.655	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	423.30	1000.00	0.39	42.60	65.00
Length = 7.180 ft	2	0.423	0.655	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	423.30	1000.00	0.39	42.60	65.00
+D+0.750L+0.750S+0.5250E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.453	0.764	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	452.60	1000.00	0.46	49.64	65.00
Length = 7.180 ft	2	0.453	0.764	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	452.60	1000.00	0.46	49.64	65.00
+0.60D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.109	0.221	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.19	108.91	1000.00	0.13	14.35	65.00
Length = 7.180 ft	2	0.109	0.221	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.19	108.91	1000.00	0.13	14.35	65.00
+0.60D+0.70E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.50 ft	1	0.109	0.221	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.19	108.91	1000.00	0.13	14.35	65.00
Length = 7.180 ft	2	0.109	0.221	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.19	108.91	1000.00	0.13	14.35	65.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L	1	0.0750	4.575		0.0000	0.000
D+L+S	2	0.0231	4.051	L Only	-0.0021	0.321

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	0.298	1.070	0.250
D Only	0.074	0.372	0.101
L Only	0.225	0.605	0.111
S Only	-0.007	0.093	0.038
L+S	0.218	0.699	0.149
D+L	0.298	0.977	0.212
D+S	0.067	0.465	0.139
D+L+S	0.292	1.070	0.250

City of Portland
REVIEWED FOR CODE COMPLIANCE
AUG 01 2013
Permit Number

Zarosinski Engineering and Design
1400 NW 155th Circle
Vancouver, WA 98685
360-513-2746
Email: dzaro@zaroeng.com
By Dean P. Zarosinski PE

Project Title: Shed Dormer
Engineer: Dean P. Zarosinski PE
Project ID: K0277-2
Project Descr: Dormer from pony wall to outside bearing wall

Wood Beam

File: C:\AA WORK\2013 Projects\K0277-2 Innovision N Fiske\Calculations\k02771-2 calcs.ec6
ENERCALC, INC. 1983-2012, Build:6.12.10.31, Ver:6.12.11.30

Lic. # : KW-06009383
Licensee : Zarosinski Engineering and Design, Inc.

Description : 1ST FLOOR FLOOR JOISTS

CODE REFERENCES

Calculations per NDS 2005, IBC 2006, CBC 2007, ASCE 7-05
Load Combination Set : ASCE 7-05

Material Properties

Analysis Method : Allowable Stress Design
Load Combination ASCE 7-05

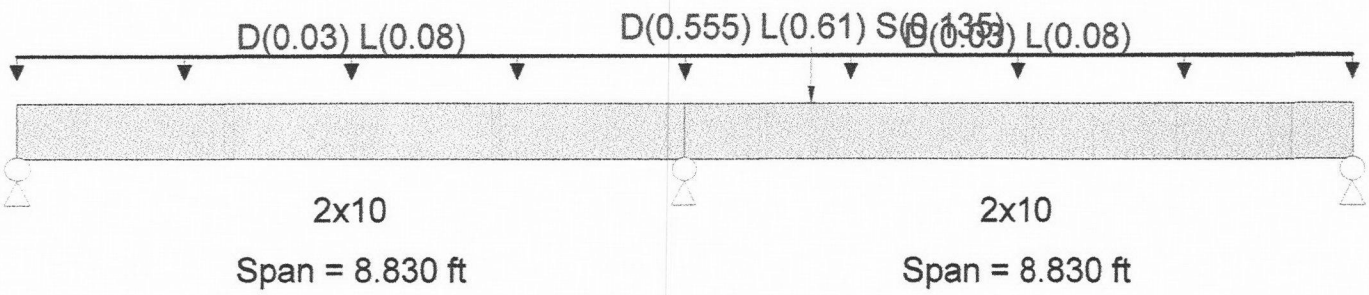
Wood Species : Douglas Fir - Larch (North)
Wood Grade : No. 1 & Btr

Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	1,150.0 psi
Fb - Compr	1,150.0 psi
Fc - Prll	1,800.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	750.0 psi

E : Modulus of Elasticity

Ebend- xx	1,800.0 ksi
Eminbend - xx	660.0 ksi
Density	31.570 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Load for Span Number 1
Uniform Load : D = 0.0150, L = 0.040 ksf, Tributary Width = 2.0 ft
Load for Span Number 2
Uniform Load : D = 0.0150, L = 0.040 ksf, Tributary Width = 2.0 ft
Point Load : D = 0.5550, L = 0.610, S = 0.1350 k @ 1.690 ft

City of Portland
REVIEWED FOR CODE COMPLIANCE
AUG 01 2013
Permit Number

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.795 : 1	Maximum Shear Stress Ratio		0.930 : 1
Section used for this span		2x10	Section used for this span		2x10
fb : Actual	=	1,005.25 psi	fv : Actual	=	167.48 psi
FB : Allowable	=	1,265.00 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	8.830 ft	Location of maximum on span	=	8.830 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.060 in	Ratio =	1772
Max Upward L+Lr+S Deflection	-0.009 in	Ratio =	12322
Max Downward Total Deflection	0.095 in	Ratio =	1113
Max Upward Total Deflection	-0.018 in	Ratio =	5941

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios									Moment Values			Shear Values		
Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	M	fb	F'b	V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.282	0.379	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.64	356.40	1265.00	0.63	68.21	180.00
Length = 8.830 ft	2	0.282	0.379	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.64	356.40	1265.00	0.63	68.21	180.00
+D+L+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.795	0.930	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.79	1,005.25	1265.00	1.55	167.48	180.00
Length = 8.830 ft	2	0.795	0.930	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.79	1,005.25	1265.00	1.55	167.48	180.00
+D+Lr+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.282	0.379	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.64	356.40	1265.00	0.63	68.21	180.00

Zarosinski Engineering and Design
1400 NW 155th Circle
Vancouver, WA 98685
360-513-2746
Email: dzaro@zaroeng.com
By Dean P. Zarosinski PE

Project Title: Shed Dormer
Engineer: Dean P. Zarosinski PE
Project ID: K0277-2
Project Descr: Dormer from pony wall to outside bearing wall

File: C:\AA WORK\2013 Projects\K0277-2 Innovision N Fiske\Calculations\k02771-2 calcs.ec6
ENERCALC, INC. 1983-2012, Build:6.12.10.31, Ver:6.12.11.30

Wood Beam

Lic. # : KW-06009383 — Licensee : Zarosinski Engineering and Design, Inc.

Description : 1ST FLOOR FLOOR JOISTS

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
Length = 8.830 ft	2	0.282	0.379	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.64	356.40	1265.00	0.63	68.21	180.00
+D+S+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.319	0.450	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.72	403.20	1265.00	0.75	81.04	180.00
Length = 8.830 ft	2	0.319	0.450	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.72	403.20	1265.00	0.75	81.04	180.00
+D+0.750Lr+0.750L+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.666	0.793	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.50	843.04	1265.00	1.32	142.67	180.00
Length = 8.830 ft	2	0.666	0.793	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.50	843.04	1265.00	1.32	142.67	180.00
+D+0.750L+0.750S+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.694	0.846	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.57	878.13	1265.00	1.41	152.28	180.00
Length = 8.830 ft	2	0.694	0.846	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.57	878.13	1265.00	1.41	152.28	180.00
+D+W+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.282	0.379	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.64	356.40	1265.00	0.63	68.21	180.00
Length = 8.830 ft	2	0.282	0.379	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.64	356.40	1265.00	0.63	68.21	180.00
+D+0.70E+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.282	0.379	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.64	356.40	1265.00	0.63	68.21	180.00
Length = 8.830 ft	2	0.282	0.379	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.64	356.40	1265.00	0.63	68.21	180.00
+D+0.750Lr+0.750L+0.750W+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.666	0.793	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.50	843.04	1265.00	1.32	142.67	180.00
Length = 8.830 ft	2	0.666	0.793	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.50	843.04	1265.00	1.32	142.67	180.00
+D+0.750L+0.750S+0.750W+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.694	0.846	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.57	878.13	1265.00	1.41	152.28	180.00
Length = 8.830 ft	2	0.694	0.846	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.57	878.13	1265.00	1.41	152.28	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.666	0.793	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.50	843.04	1265.00	1.32	142.67	180.00
Length = 8.830 ft	2	0.666	0.793	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.50	843.04	1265.00	1.32	142.67	180.00
+D+0.750L+0.750S+0.5250E+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.694	0.846	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.57	878.13	1265.00	1.41	152.28	180.00
Length = 8.830 ft	2	0.694	0.846	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.57	878.13	1265.00	1.41	152.28	180.00
+0.60D+W+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.169	0.227	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.38	213.84	1265.00	0.38	40.93	180.00
Length = 8.830 ft	2	0.169	0.227	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.38	213.84	1265.00	0.38	40.93	180.00
+0.60D+0.70E+H					1.10	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 8.830 ft	1	0.169	0.227	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.38	213.84	1265.00	0.38	40.93	180.00
Length = 8.830 ft	2	0.169	0.227	1.00	1.10	1.00	1.00	1.00	1.00	1.00	0.38	213.84	1265.00	0.38	40.93	180.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
L Only	1	0.0104	2.861	D+L+S	-0.0178	7.054
D+L+S	2	0.0952	4.440		0.0000	7.054

Vertical Reactions - Unfactored

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	0.283	2.447	0.522
D Only	0.061	0.858	0.167
L Only	0.222	1.462	0.339
S Only	-0.009	0.128	0.016
L+S	0.213	1.590	0.355
D+L	0.283	2.319	0.506
D+S	0.051	0.986	0.183
D+L+S	0.273	2.447	0.522

City of Portland
REVIEWED FOR CODE COMPLIANCE
AUG 01 2013
Permit Number