

Wray Engineering

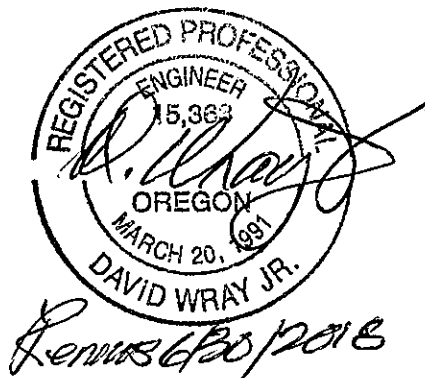
21085 Quail Lane  
Bend Or. 97703

Phone 541-385-6561  
Fax 541-385-6561  
Cell 480-0176  
e-mail: davewray80@outlook.com

Or. License 15,363

Outwest Plan 1646  
56039 Marsh Hawk  
Bend Or. 97707

OR 1746



Other Online Applications

# Deschutes County Property Information

## Development Summary for account #125750

The Deschutes County Community Development Department is responsible for land use and permits for properties in the County's jurisdiction. Contact this department if you need additional information or if you have questions.

### Account Information

**Mailing Name:** BROWN, GARYLEE AUGUST  
**Map and Taxlot:** 201118D008100  
**Account:** 125750  
**Situs Address:** 56039 MARSH HAWK RD, BEND, OR 97707  
**Tax Status:** Assessable

### Property Details

**Subdivision:** OREGON WATER WONDERLAND UNIT NO 2  
**Lot:** 11 **Block:** 35  
**Acres:** 0.48

### Jurisdiction

**Planning Jurisdiction:** Deschutes County  
**Urban Growth Boundary:** No  
**Urban Reserve Area:** No

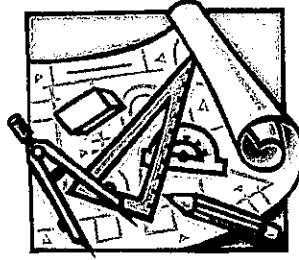
### Zoning Designation

County Zone	Description	Link to County Code
RR10	RURAL RESIDENTIAL - 10 ACRE MINIMUM	<a href="#">View Document</a>
WA	WILDLIFE AREA COMBINING ZONE	<a href="#">View Document</a>

### County Development Details

<b>Legal Lot of Record</b>	Contact Community Development Department for information
<b>Wetland (National or Local)</b>	Not Within a Mapped Wetland
<b>Conservation Easement</b>	No Conservation Easement Recorded
<b>FEMA 100 Year Flood Plain</b>	Not Within 100 Year Flood Plain
<b>TDC/PRC Restrictive Covenant</b>	No TDC/PRC Restrictive Covenant Found
<b>Ground Snow Load</b>	50 #/sq. ft.
<b>Is Historic Designated</b>	NO

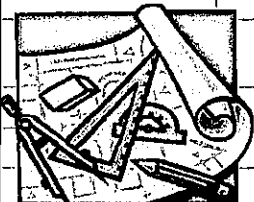
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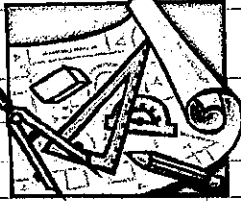
## Design Data..56039 Marsh Hawk Bend OR. 97707

FLOOR LOADING.....	40 PSF
ROOF LOADING SNOW(Pg)	50 PSF
LATERAL LOADING:	
WIND:	BASIC WIND SPEED 85 MPH EXPOSURE B
SEISMIC:	ZONE C
CODES:	2014 OREGON RESIDENTIAL SPECIALTY CODE ACI 530-5
CONCRETE:	F'c= 3000 PSI ( ABOVE GROUND) 2500 PSI ( BELOW GROUND)
GROUT:	FINE GROUT MIX WITH A 2500PSI MINIMUM DESIGN STRENGTH AND A 7"SLUMP
STEEL:	Fy= 60,000psi A-615 GRADE 60 #5 and smaller Fy=60,000psi GRADE 60 #6 and larger ASTM A 307 ASTM A 36 Fy=36,000 psi
WOOD:	DOUGLAS FIR/LARCH #1 DOUGLAS FIR/LARCH #1 DOUGLAS FIR 24F-V4 OR V8 DF/DF #2 LODGEPOLE PINE 5/8"CDXW/10d@ 6"OC BOUNDARY 6"OC FIELD 3/4"CDX OR OSB W/ 10d@ 4"OC BOUNDARY, 4"OC FIELD
SOIL BEARING PRESSURE	1500 PSF

A

	<b>WRAY ENGINEERING</b>				OR 1746
	21085 Quail Ln.		Bend	OR 97703	Date: 5/5/17
	541-385-6561 davewray80@outlook.com				
<b>CONTINUOUSLY SHEATHED WALL</b>					
Wall Location: <b>BRACE WALL LINE 1</b>					
Wall Level: <b>1 OF 1</b>					
Wind Speed: <b>85 mph</b>				Segment Lengths:	
Exposure: <b>B</b>					
Seismic <b>C</b>				S1	3.30 ft
Wall Length: <b>28 ft</b>				S2	2.50 ft
Unit Shear:				S3	2.50 ft
Plate Height: <b>8.1 ft</b>				S4	3.30 ft
Max Opening Height: <b>2.0 ft</b>				S5	
Braced Wall Line Spacing: <b>31 ft</b>				S6	
# Braced Wall Lines: <b>3</b>				S7	
Segment every 25' ? <b>Y</b>				S8	
Both corner panels ? <b>Y</b>				S9	
End Setback < 12.5' ? <b>Y</b>				S10	
Garage Portal Frame ? <b>N</b>				<b>CS-G</b>	
Wall Material: Shear Cap Nailing Pattern:					
1/2" SHRK 100 #6 Type S or W					
5/8" SHRK 140 Screws 1 1/4" Lg.					
2 - 1/2"SHRK 200 at 7"B, 12"F					
2 - 5/8"SHRK 280 at 7"B, 12"F					
7/16"T1-11 280 8d @ 6"&12"					
7/16"T1-11 420 8d @ 4"&12"					
> 7/16"OSB 335 8d @ 6"&12"					
7/16"OSB 630 8d @ 3"&12"					
1/2"CDX 365 8d @ 6"&12"					
1/2"CDX 533 8d @ 4"&12"					
5/8"CDX 475 10d @ 6"&12"					
5/8"CDX 715 10d@4"&12"					
Req'd Total Wall Panel Length (WIND):		<b>5.72'</b>	Prov'd Total Wall Panel Length:		11.60'
Req'd Total Wall Panel Length (SEISMIC):		<b>3.81'</b>			<b>OK</b>
Req'd Min. Segment Length:		<b>2.00'</b>	Prov'd Min. Segment:		2.50'
Maximum Opening Ratio:		<b>85%</b>	Prov'd Opening Ratio:		25%
					<b>OK</b>
<b>RESULTS SUMMARY</b>					
Hold Down Required:			<b>NONE</b>		
Wall Complies w/ R602.10.1.2			<b>YES</b>		
EXCEL-CONTINUOUSLY SHEATHED WALL - 2014 ORSC					

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# WRAY ENGINEERING

OR 1746

21085 Quail Ln. Bend OR 97703  
541-385-6561 davewray80@outlook.com

Date: 5/5/17

## CONTINUOUSLY SHEATHED WALL

Wall Location: **BRACE WALL LINE 2**

Wall Level: **1 OF 1**

Wind Speed: **85 mph** Segment Lengths:

Exposure: **B**

Seismic **C** S1 **8.00 ft**

Wall Length: **26 ft** S2 **13.00 ft**

Unit Shear: S3

Plate Height: **8.1 ft** S4

Max Opening Height: **4.5 ft** S5

Braced Wall Line Spacing: **31 ft** S6

# Braced Wall Lines: **3** S7

Segment every 25' ? **Y** S8

Both corner panels ? **Y** S9

End Setback < 12.5' ? **Y** S10

Garage Portal Frame ? **N CS-G**

Wall Material: Shear Cap Nailing Pattern:

	1/2" SHRK	100	#6 Type S or W
	5/8" SHRK	140	Screws 1 1/4" Lg.
>	2 - 1/2"SHRK	200	at 7"B, 12"F
	2 - 5/8"SHRK	280	at 7"B, 12"F
	7/16"T1-11	280	8d @ 6"&12"
	7/16"T1-11	420	8d @ 4"&12"
	7/16"OSB	335	8d @ 6"&12"
	7/16"OSB	630	8d @ 3"&12"
	1/2"CDX	365	8d @ 6"&12"
	1/2"CDX	533	8d @ 4"&12"
	5/8"CDX	475	10d @ 6"&12"
	5/8"CDX	715	10d@4"&12"

Req'd Total Wall Panel Length (WIND): **11.43 ' Prov'd Total Wall Panel Length: 21.00 ' OK**

Req'd Total Wall Panel Length (SEISMIC): **3.54 ' OK**

Req'd Min. Segment Length: **4.00 ' Prov'd Min. Segment: 8.00 ' OK**

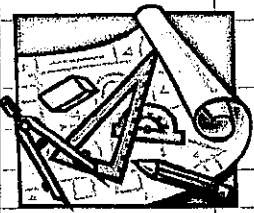
Maximum Opening Ratio: **85% Prov'd Opening Ratio: 56% OK**

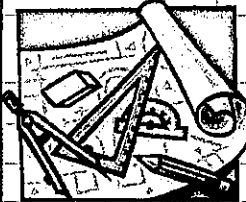
### RESULTS SUMMARY

Hold Down Required: **NONE**

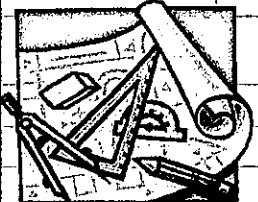
Wall Complies w/ R602.10.1.2 **YES**

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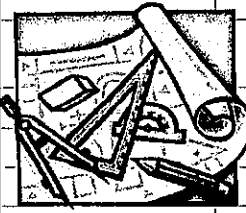
		<b>WRAY ENGINEERING</b>			OR 1746
		21085 Quail Ln.	Bend	OR 97703	Date: 5/5/17
		541-385-6561 davewray80@outlook.com			
<b>CONTINUOUSLY SHEATHED WALL</b>					
Wall Location:		BRACE WALL LINE 3			
Wall Level:	1	OF	1		
Wind Speed:	85 mph				Segment Lengths:
Exposure:	B				
Seismic	C			S1	25.00 ft
Wall Length:	52 ft			S2	3.00 ft
Unit Shear:				S3	6.20 ft
Plate Height:	8.1 ft			S4	4.00 ft
Max Opening Height:	6.7 ft			S5	
Braced Wall Line Spacing:	23 ft			S6	
# Braced Wall Lines:	3			S7	
Segment every 25' ?	Y			S8	
Both corner panels ?	Y			S9	
End Setback < 12.5' ?	Y			S10	
Garage Portal Frame ?	N	CS-G			
		Wall Material:	Shear Cap	Nailing Pattern:	
		1/2" SHRK	100	#6 Type S or W	
		5/8" SHRK	140	Screws 1 1/4" Lg.	
		2 - 1/2"SHRK	200	at 7"B, 12"F	
		2 - 5/8"SHRK	280	at 7"B, 12"F	
		7/16"T1-11	280	8d @ 6"&12"	
		7/16"T1-11	420	8d @ 4"&12"	
	>	7/16"OSB	335	8d @ 6"&12"	
		7/16"OSB	630	8d @ 3"&12"	
		1/2"CDX	365	8d @ 6"&12"	
		1/2"CDX	533	8d @ 4"&12"	
		5/8"CDX	475	10d @ 6"&12"	
		5/8"CDX	715	10d@4"&12"	
Req'd Total Wall Panel Length (WIND):		4.36'	Prov'd Total Wall Panel Length:		38.20' OK
Req'd Total Wall Panel Length (SEISMIC):		7.05'			
Req'd Min. Segment Length:		2.58'	Prov'd Min. Segment:		3.00' OK
Maximum Opening Ratio:		85%	Prov'd Opening Ratio:		83% OK
<b>RESULTS SUMMARY</b>					
Hold Down Required:			NONE		
Wall Complies w/ R602.10.1.2			YES		
EXCEL-CONTINUOUSLY SHEATHED WALL - 2014 ORSC					

	<b>WRAY ENGINEERING</b>				OR 1746
	21085 Quail Ln.		Bend	OR 97703	Date: 5/5/17
	541-385-6561 davewray80@outlook.com				
<b>CONTINUOUSLY SHEATHED WALL</b>					
Wall Location: <b>BRACE WALL LINE A</b>					
Wall Level:	1	OF	1		
Wind Speed:	85 mph				Segment Lengths:
Exposure:	B				
Seismic	C				S1 2.50 ft
Wall Length:	23 ft				S2 2.50 ft
Unit Shear:					S3
Plate Height:	8.1 ft				S4
Max Opening Height:	6.5 ft				S5
Braced Wall Line Spacing:	24 ft				S6
# Braced Wall Lines:	3				S7
Segment every 25' ?	Y				S8
Both corner panels ?	Y				S9
End Setback < 12.5' ?	Y				S10
Garage Portal Frame ?	N	CS-G			
Wall Material:		Shear Cap		Nailing Pattern:	
	1/2" SHRK	100		#6 Type S or W	
	5/8" SHRK	140		Screws 1 1/4" Lg.	
	2 - 1/2"SHRK	200		at 7"B, 12"F	
	2 - 5/8"SHRK	280		at 7"B, 12"F	
	7/16"T1-11	280		8d @ 6"&12"	
	7/16"T1-11	420		8d @ 4"&12"	
>	7/16"OSB	335		8d @ 6"&12"	
	7/16"OSB	630		8d @ 3"&12"	
	1/2"CDX	365		8d @ 6"&12"	
	1/2"CDX	533		8d @ 4"&12"	
	5/8"CDX	475		10d @ 6"&12"	
	5/8"CDX	715		10d@4"&12"	
Req'd Total Wall Panel Length (WIND):	4.53'	Prov'd Total Wall	5.00'	OK	
Req'd Total Wall Panel Length (SEISMIC):	3.14'	Panel Length:			
Req'd Min. Segment Length:	2.42'	Prov'd Min. Segment:	2.50'	OK	
Maximum Opening Ratio:	85%	Prov'd Opening Ratio:	80%	OK	
<b>RESULTS SUMMARY</b>					
Hold Down Required:			NONE		
Wall Complies w/ R602.10.1.2			YES		
EXCEL-CONTINUOUSLY SHEATHED WALL - 2014 ORSC					

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	<b>WRAY ENGINEERING</b>				OR 1746
	21085 Quail Ln.	Bend	OR 97703		Date: 5/5/17
	541-385-6561 davewray80@outlook.com				
<b>CONTINUOUSLY SHEATHED WALL</b>					
Wall Location:		<b>BRACE WALL LINE B</b>			
Wall Level:	<b>1</b>	<b>OF</b>	<b>1</b>		
Wind Speed:	<b>85 mph</b>				Segment Lengths:
Exposure:	<b>B</b>				
Seismic	<b>C</b>				S1 <b>3.30 ft OSB</b>
Wall Length:	<b>54 ft</b>				S2 <b>6.20 ft OSB</b>
Unit Shear:					S3 <b>3.30 ft OSB</b>
Plate Height:	<b>8.1 ft</b>				S4 <b>2.70 ft OSB</b>
Max Opening Height:	<b>6.7 ft</b>				S5 <b>16.50 ft</b>
Braced Wall Line Spacing:	<b>32 ft</b>				S6
# Braced Wall Lines:	<b>3</b>				S7
Segment every 25' ?	<b>Y</b>				S8
Both corner panels ?	<b>Y</b>				S9
End Setback < 12.5' ?	<b>Y</b>				S10
Garage Portal Frame ?	<b>N</b>	<b>CS-G</b>			
		Wall Material:	Shear Cap	Nailing Pattern:	
		1/2" SHRK	100	#6 Type S or W	
		5/8" SHRK	140	Screws 1 1/4" Lg.	
	>	2 - 1/2"SHRK	200	at 7"B, 12"F	
		2 - 5/8"SHRK	280	at 7"B, 12"F	
		7/16"T1-11	280	8d @ 6"&12"	
		7/16"T1-11	420	8d @ 4"&12"	
		7/16"OSB	335	8d @ 6"&12"	
		7/16"OSB	630	8d @ 3"&12"	
		1/2"CDX	365	8d @ 6"&12"	
		1/2"CDX	533	8d @ 4"&12"	
		5/8"CDX	475	10d @ 6"&12"	
		5/8"CDX	715	10d@4"&12"	
Req'd Total Wall Panel Length (WIND):		<b>11.77 '</b>	Prov'd Total Wall Panel Length:		<b>32.00 ' OK</b>
Req'd Total Wall Panel Length (SEISMIC):		<b>7.32 '</b>			
Req'd Min. Segment Length:		<b>4.00 '</b>	Prov'd Min. Segment:		<b>2.70 ' OK</b>
Maximum Opening Ratio:		<b>85%</b>	Prov'd Opening Ratio:		<b>83% OK</b>
<b>RESULTS SUMMARY</b>					
Hold Down Required:			<b>NONE</b>		
Wall Complies w/ R602.10.1.2			<b>YES</b>		
<b>EXCEL-CONTINUOUSLY SHEATHED WALL - 2014 ORSC</b>					



		<b>WRAY ENGINEERING</b>			OR 1746		
		21085 Quail Ln.		Bend	OR 97703		Date: 5/5/17
		541-385-6561 davewray80@outlook.com					
<b>CONTINUOUSLY SHEATHED WALL</b>							
Wall Location: <b>BRACE WALL LINE C</b>							
Wall Level:		<b>1</b>	OF	<b>1</b>			
Wind Speed:		<b>85 mph</b>				Segment Lengths:	
Exposure:		<b>B</b>					
Seismic		<b>C</b>				S1 <b>3.30 ft</b>	
Wall Length:		<b>54 ft</b>				S2 <b>7.60 ft</b>	
Unit Shear:						S3 <b>4.50 ft</b>	
Plate Height:		<b>8.1 ft</b>				S4 <b>4.50 ft</b>	
Max Opening Height:		<b>6.7 ft</b>				S5 <b>3.30 ft</b>	
Braced Wall Line Spacing:		<b>32 ft</b>				S6 <b>3.70 ft</b>	
# Braced Wall Lines:		<b>3</b>				S7	
Segment every 25' ?		<b>Y</b>				S8	
Both corner panels ?		<b>Y</b>				S9	
End Setback < 12.5' ?		<b>Y</b>				S10	
Garage Portal Frame ?		<b>N</b>	<b>CS-G</b>				
		Wall Material:		Shear Cap	Nailing Pattern:		
		1/2" SHRK		100	#6 Type S or W		
		5/8" SHRK		140	Screws 1 1/4" Lg.		
		2 - 1/2"SHRK		200	at 7"B, 12"F		
		2 - 5/8"SHRK		280	at 7"B, 12"F		
		7/16"T1-11		280	8d @ 6"&12"		
		7/16"T1-11		420	8d @ 4"&12"		
		>	7/16"OSB	335	8d @ 6"&12"		
		7/16"OSB		630	8d @ 3"&12"		
		1/2"CDX		365	8d @ 6"&12"		
		1/2"CDX		533	8d @ 4"&12"		
		5/8"CDX		475	10d @ 6"&12"		
		5/8"CDX		715	10d@4"&12"		
Req'd Total Wall Panel Length (WIND):		<b>5.88 '</b>	Prov'd Total Wall Panel Length:		<b>26.90 '</b>	<b>OK</b>	
Req'd Total Wall Panel Length (SEISMIC):		<b>7.32 '</b>					
Req'd Min. Segment Length:		<b>2.58 '</b>	Prov'd Min. Segment:		<b>3.30 '</b>	<b>OK</b>	
Maximum Opening Ratio:		<b>85%</b>	Prov'd Opening Ratio:		<b>83%</b>	<b>OK</b>	
<b>RESULTS SUMMARY</b>							
Hold Down Required:				<b>NONE</b>			
Wall Complies w/ R602.10.1.2				<b>YES</b>			
<b>EXCEL-CONTINUOUSLY SHEATHED WALL - 2014 ORSC</b>							



WRAY ENGINEERING  
21085 QUAIL LANE  
BEND OR 97703  
PHONE 541-385-6561  
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davewray80@outlook.com

Project Title: SAUER  
Engineer: DAVE  
Project Descr: RESIDENCE

Project ID: OR 1746

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Printed: 5 MAY 2017, 12:28PM

File = c:\Users\David\DOCUME~1\ENERCA~1\OR1746-1.EC6  
ENERCALC, INC. 1983-2017, Build:6.17.3.17, Ver:6.17.3.17

## Multiple Simple Beam

Lic. #: KW-06001607

Licensee: WRAY ENGINEERING

### Description: BEAMS AND HEADERS

#### Wood Beam Design: H-1

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-05

BEAM Size: **4x10, Sawn, Fully Unbraced**

Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending

Wood Species:	DouglasFir-Larch	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	31.20 pcf
Fb - Tension	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		
Fb - Compr	900.0 psi								

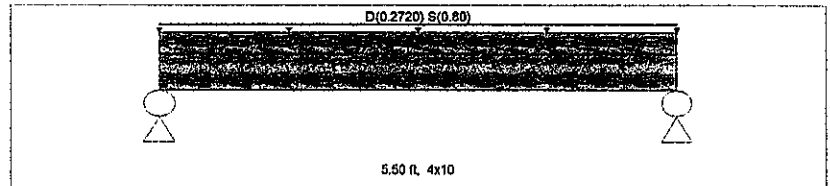
#### Applied Loads

Beam self weight calculated and added to loads  
Unif Load: D = 0.2720, S = 0.80 k/ft, Trib = 1.0 ft

#### Design Summary

Max fb/Fb Ratio = **0.787 : 1**  
fb : Actual : 1,468.05 psi at 2.750 ft in Span # 1  
Fb : Allowable : 1,866.24 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H

Max fv/FvRatio = **0.476 : 1**  
fv : Actual : 148.14 psi at 0.000 ft in Span # 1  
Fv : Allowable : 311.04 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.77			2.20			
Right Support	0.77			2.20			

Max Deflections			
Downward L+Lr+S	0.045 in	Downward Total	0.060 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1472 >360	Total Defl Ratio	1091 >240

#### Wood Beam Design: H-2

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-05

BEAM Size: **3.5x10.5, GLB, Fully Unbraced**

Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending

Wood Species:	DF/DF	Fc - Prll	1650 psi	Fv	265 psi	Ebend- xx	1800 ksi	Density	31.2 pcf
Fb - Tension	2400 psi	Fc - Perp	650 psi	Ft	1100 psi	Eminbend - xx	950 ksi		
Fb - Compr	1850 psi								

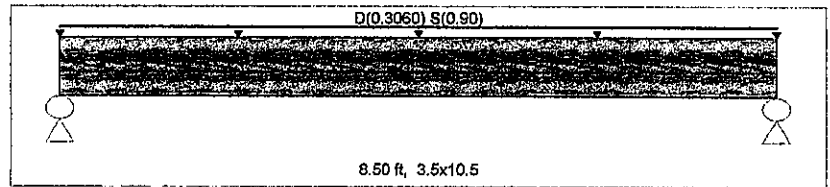
#### Applied Loads

Beam self weight calculated and added to loads  
Unif Load: D = 0.3060, S = 0.90 k/ft, Trib = 1.0 ft

#### Design Summary

Max fb/Fb Ratio = **0.738 : 1**  
fb : Actual : 3,061.47 psi at 4.250 ft in Span # 1  
Fb : Allowable : 4,147.20 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H

Max fv/FvRatio = **0.551 : 1**  
fv : Actual : 252.12 psi at 7.650 ft in Span # 1  
Fv : Allowable : 457.92 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.33			3.83			
Right Support	1.33			3.83			

Max Deflections			
Downward L+Lr+S	0.175 in	Downward Total	0.236 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	583 >360	Total Defl Ratio	432 >240

#### Wood Beam Design: H-3

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-05

BEAM Size: **4x8, Sawn, Fully Unbraced**

Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending

Wood Species:	Douglas Fir - Larch	Fc - Prll	1350 psi	Fv	180 psi	Ebend- xx	1600 ksi	Density	31.2 pcf
Fb - Tension	900 psi	Fc - Perp	625 psi	Ft	575 psi	Eminbend - xx	580 ksi		
Fb - Compr	900 psi								

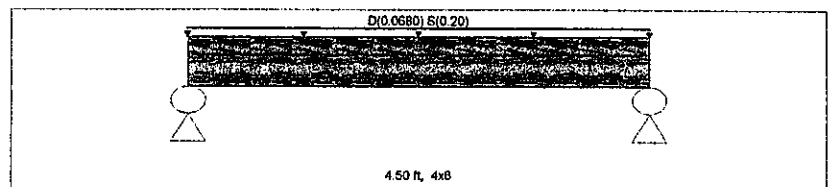
#### Applied Loads

Beam self weight calculated and added to loads  
Unif Load: D = 0.0680, S = 0.20 k/ft, Trib = 1.0 ft

#### Design Summary

Max fb/Fb Ratio = **0.200 : 1**  
fb : Actual : 404.38 psi at 2.250 ft in Span # 1  
Fb : Allowable : 2,021.76 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H

Max fv/FvRatio = **0.128 : 1**  
fv : Actual : 39.81 psi at 0.000 ft in Span # 1  
Fv : Allowable : 311.04 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.17			0.45			
Right Support	0.17			0.45			

Max Deflections			
Downward L+Lr+S	0.010 in	Downward Total	0.014 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	5176 >360	Total Defl Ratio	3785 >240



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Project Descr: RESIDENCE

Project ID: OR 1746

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ENERCALC, INC. 1983-2017, Build:6.17.3.17, Ver:6.17.3.17

## Multiple Simple Beam

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### Wood Beam Design : H-4

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-05

BEAM Size : **5.5x10.5, GLB, Fully Unbraced**

Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending

Wood Species : DF/DF

Wood Grade : 24F - V4

Fb - Tension	2400 psi	Fc - Prll	1650 psi	Fv	265 psi	Ebend- xx	1800 ksi	Density	31.2 pcf
Fb - Compr	1850 psi	Fc - Perp	650 psi	Ft	1100 psi	Eminbend - xx	950 ksi		

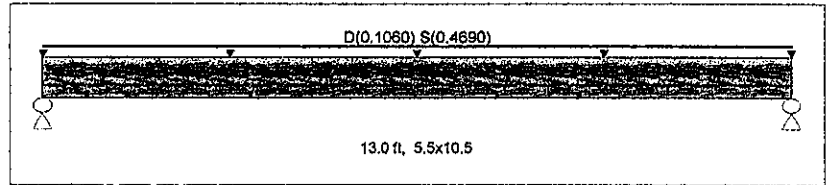
#### Applied Loads

Beam self weight calculated and added to loads  
Unif Load: D = 0.1060, S = 0.4690 k/ft, Trib= 1.0 ft

#### Design Summary

Max fb/Fb Ratio = **0.540 : 1**  
fb : Actual : 2,238.99 psi at 6.500 ft in Span # 1  
Fb : Allowable : 4,147.20 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H

Max fv/FvRatio = **0.285 : 1**  
fv : Actual : 130.61 psi at 0.000 ft in Span # 1  
Fv : Allowable : 457.92 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.77			3.05			
Right Support	0.77			3.05			

Max Deflections				
Downward L+Lr+S	0.317 in	Downward Total	0.397 in	
Upward L+Lr+S	0.000 in	Upward Total	0.000 in	
Live Load Defl Ratio	491 >360	Total Defl Ratio	392 >240	

### Wood Beam Design : H-5

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-05

BEAM Size : **6x12, Sawn, Fully Unbraced**

Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending

Wood Species : Douglas Fir - Larch

Wood Grade : No.1

Fb - Tension	1200 psi	Fc - Prll	1000 psi	Fv	170 psi	Ebend- xx	1600 ksi	Density	31.2 pcf
Fb - Compr	1200 psi	Fc - Perp	625 psi	Ft	825 psi	Eminbend - xx	580 ksi		

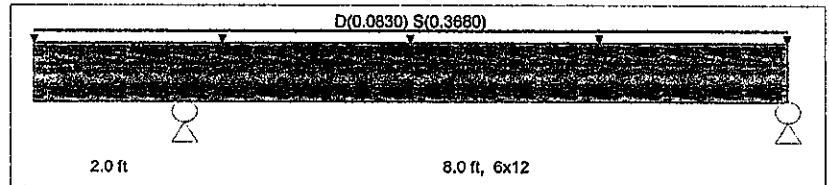
#### Applied Loads

Beam self weight calculated and added to loads  
Unif Load: D = 0.0830, S = 0.3680 k/ft, Trib= 1.0 ft

#### Design Summary

Max fb/Fb Ratio = **0.237 : 1**  
fb : Actual : 490.57 psi at 4.240 ft in Span # 2  
Fb : Allowable : 2,073.60 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H

Max fv/FvRatio = **0.189 : 1**  
fv : Actual : 55.66 psi at 2.000 ft in Span # 1  
Fv : Allowable : 293.76 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.60			2.30			
Right Support	0.36			1.38			

Max Deflections				
Downward L+Lr+S	0.026 in	Downward Total	0.033 in	
Upward L+Lr+S	-0.017 in	Upward Total	-0.022 in	
Live Load Defl Ratio	2806 >360	Total Defl Ratio	2222 >240	

### Wood Beam Design : H-6

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-05

BEAM Size : **6x12, Sawn, Fully Unbraced**

Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending

Wood Species : Douglas Fir - Larch

Wood Grade : No.1

Fb - Tension	1200 psi	Fc - Prll	1000 psi	Fv	170 psi	Ebend- xx	1600 ksi	Density	31.2 pcf
Fb - Compr	1200 psi	Fc - Perp	625 psi	Ft	825 psi	Eminbend - xx	580 ksi		

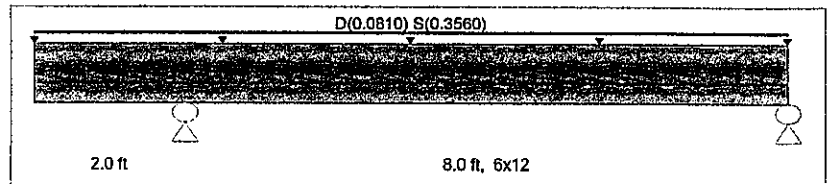
#### Applied Loads

Beam self weight calculated and added to loads  
Unif Load: D = 0.0810, S = 0.3560 k/ft, Trib= 1.0 ft

#### Design Summary

Max fb/Fb Ratio = **0.229 : 1**  
fb : Actual : 475.53 psi at 4.240 ft in Span # 2  
Fb : Allowable : 2,073.60 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H

Max fv/FvRatio = **0.184 : 1**  
fv : Actual : 53.96 psi at 2.000 ft in Span # 1  
Fv : Allowable : 293.76 psi  
Load Comb : +1.20D+0.50L+1.60S+1.60H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.59			2.23			
Right Support	0.36			1.34			

Max Deflections				
Downward L+Lr+S	0.025 in	Downward Total	0.032 in	
Upward L+Lr+S	-0.017 in	Upward Total	-0.021 in	
Live Load Defl Ratio	2900 >360	Total Defl Ratio	2290 >240	



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 Engineer: DAVE  
 Project Descr: RESIDENCE

Project ID: OR 1746

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**Multiple Simple Beam**

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**Wood Beam Design : H-5A**

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-05

BEAM Size : **6x12, Sawn, Fully Unbraced**

Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending

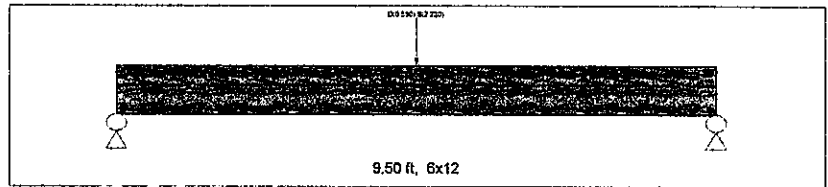
Wood Species : Douglas Fir - Larch Wood Grade : No.1  
 Fb - Tension 1200 psi Fc - Prll 1000 psi Fv 170 psi Ebend- xx 1600 ksi Density 31.2 pcf  
 Fb - Compr 1200 psi Fc - Perp 625 psi Ft 825 psi Eminbend - xx 580 ksi

Applied Loads

Beam self weight calculated and added to loads  
 Point: D = 0.590, S = 2.230 k @ 4.750 ft

Design Summary

Max fb/Fb Ratio = **0.494 : 1**  
 fb : Actual : 1,023.62 psi at 4.750 ft in Span # 1  
 Fb : Allowable : 2,073.60 psi  
 Load Comb : +1.20D+0.50L+1.60S+1.60H  
 Max fv/Fv Ratio = **0.178 : 1**  
 fv : Actual : 52.19 psi at 0.000 ft in Span # 1  
 Fv : Allowable : 293.76 psi  
 Load Comb : +1.20D+0.50L+1.60S+1.60H



Max Reactions (k) D L Lr S W E H  
 Left Support 0.36 1.12  
 Right Support 0.36 1.12

Max Deflections  
 Downward L+Lr+S 0.062 in Downward Total 0.081 in  
 Upward L+Lr+S 0.000 in Upward Total 0.000 in  
 Live Load Defl Ratio 1838 >360 Total Defl Ratio 1412 >240

**Wood Beam Design : H-7**

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-05

BEAM Size : **3.5x12, GLB, Fully Unbraced**

Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending

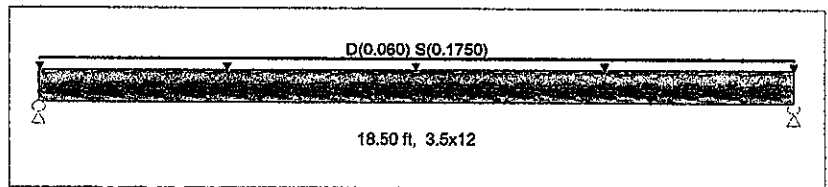
Wood Species : DF/DF Wood Grade : 24F - V4  
 Fb - Tension 2400 psi Fc - Prll 1650 psi Fv 265 psi Ebend- xx 1800 ksi Density 31.2 pcf  
 Fb - Compr 1850 psi Fc - Perp 650 psi Ft 1100 psi Eminbend - xx 950 ksi

Applied Loads

Beam self weight calculated and added to loads  
 Unif Load: D = 0.060, S = 0.1750 k/ft, Trib= 1.0 ft

Design Summary

Max fb/Fb Ratio = **0.535 : 1**  
 fb : Actual : 2,218.02 psi at 9.250 ft in Span # 1  
 Fb : Allowable : 4,147.20 psi  
 Load Comb : +1.20D+0.50L+1.60S+1.60H  
 Max fv/Fv Ratio = **0.234 : 1**  
 fv : Actual : 107.10 psi at 17.513 ft in Span # 1  
 Fv : Allowable : 457.92 psi  
 Load Comb : +1.20D+0.50L+1.60S+1.60H



Max Reactions (k) D L Lr S W E H  
 Left Support 0.64 1.62  
 Right Support 0.64 1.62

Max Deflections  
 Downward L+Lr+S 0.511 in Downward Total 0.713 in  
 Upward L+Lr+S 0.000 in Upward Total 0.000 in  
 Live Load Defl Ratio 434 >360 Total Defl Ratio 311 >240