Paul Zacher Structural Engr's, Inc.
4701 Lakeside Way
Fair Oaks, CA 95628

Title :
Dsgnr:
Description :

Scope :

Job #
Date: 11:59AM, 4 JUN 05

Timber Beam & Joist

Description RAFTERS AND BEAMS

Timber Member Information

Code Ref: 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000. Base allowables are user defined

		rafter	B1	B2	B3	B4
Timber Section		2x6	4x12	4x8	4x10	6x16
Beam Width	in	1.500	3.500	3.500	3.500	5.500
Beam Depth	in	5.500	11.250	7.250	9.250	15.500
Le: Unbraced Length	ft	0.00	0.00	0.00	0.00	0.00
Timber Grade		Douglas Fir - Larch, No.2	Douglas Fir - Larch, No.2	Douglas Fir - Larch, No.1	Douglas Fir - Larch, No.1	Douglas Fir - Larch, No.1
Fb - Basic Allow	psi	875.0	875.0	1,000.0	1,000.0	1,350.0
Fv - Basic Allow	psi	95.0	95.0	95.0	95.0	85.0
Elastic Modulus	ksi	1,600.0	1,600.0	1,700.0	1,700.0	1,600.0
Load Duration Factor		1.250	1.250	1.250	1.250	1.250
Member Type		Sawn	Sawn	Sawn	Sawn	Sawn
Repetitive Status		Repetitive	No	No	No	No

Center Span Data

Span	ft	12.00	16.00	12.50	13.50	18.50
Dead Load	#/ft	24.60	86.00	37.00	62.00	172.00
Live Load	#/ft	32.00	112.00	48.00	80.00	224.00

Results

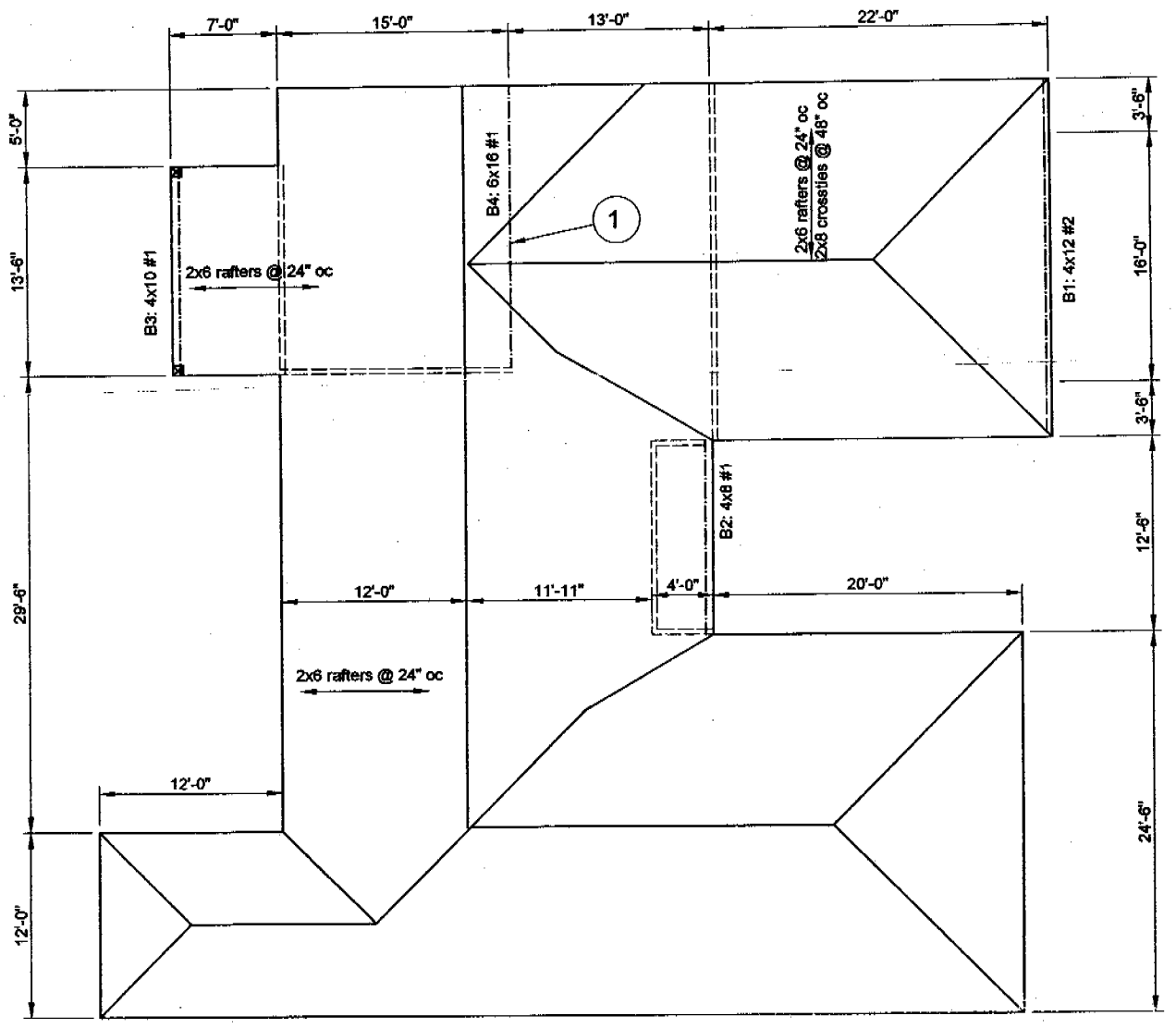
Ratio =		0.9887	0.8560	0.3998	0.5185	0.5628
Mmax @ Center	in-k	12.23	76.03	19.92	38.82	203.30
@ X =	ft	6.00	8.00	6.25	6.75	9.25
fb : Actual	psi	1,616.6	1,029.9	649.7	777.8	923.1
Fb : Allowable	psi	1,635.2	1,203.1	1,625.0	1,500.0	1,640.2
		Bending OK	Bending OK	Bending OK	Bending OK	Bending OK
fv : Actual	psi	57.3	53.6	28.4	39.4	55.7
Fv : Allowable	psi	118.8	118.8	118.8	118.8	106.3
		Shear OK	Shear OK	Shear OK	Shear OK	Shear OK

Reactions

@ Left End	DL	lbs	147.60	688.00	231.25	418.50	1,591.00
	LL	lbs	192.00	896.00	300.00	540.00	2,072.00
	Max. DL+LL	lbs	339.60	1,584.00	531.25	958.50	3,663.00
@ Right End	DL	lbs	147.60	688.00	231.25	418.50	1,591.00
	LL	lbs	192.00	896.00	300.00	540.00	2,072.00
	Max. DL+LL	lbs	339.60	1,584.00	531.25	958.50	3,663.00

Deflections

		Ratio OK	Deflection OK	Deflection OK	Deflection OK	Deflection OK
Center DL Defl	in	-0.345	-0.191	-0.108	-0.118	-0.166
L/Defl Ratio		417.5	1,006.0	1,394.5	1,372.1	1,337.4
Center LL Defl	in	-0.449	-0.249	-0.140	-0.152	-0.216
L/Defl Ratio		320.9	772.5	1,075.0	1,063.4	1,026.9
Center Total Defl	in	-0.794	-0.439	-0.247	-0.270	-0.382
Location	ft	6.000	8.000	6.250	6.750	9.250
L/Defl Ratio		181.5	437.0	607.0	599.1	580.9



FRAMING NOTES:

1. Existing deflection of 1 (one) inch in existing beam.

NOTES:

A. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.3 psf.
B. All framing members including rafters, purlins, joists and beams are existing unless otherwise noted in the framing notes above.
C. All rafters are 2x6 DF#2 and hips and valleys are 2x8 DF#2 unless otherwise noted.
D. All existing rafter, hips, valleys, rafter ties, and purlins are braced per UBC Section 2320.1 "Roof and Ceiling Framing" unless otherwise shown.
E. All structural wood members that were observed appear to be in sound condition and without structural defect.

REGISTERED PROFESSIONAL ENGINEER
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No. S3878
Exp. 3-31-07
STRUCTURAL
STATE OF CALIFORNIA

1 ROOF PLAN - JANG

Not to Scale

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