

CITY OF SACRAMENTO  
1231 I Street, Sacramento, CA 95814

Permit No: 0106968  
Insp Area: 2

Site Address: 6 EASTWIND CT SAC  
Parcel No: 031-0700-036

Sub-Type: RES  
Housing (Y/N): N

**CONTRACTOR**  
ZIMMERMAN ROOFING INC  
3675 R STREET  
SACRAMENTO, CA 95816

**OWNER**  
PAYNE HOWARD L/BETTY LOU  
6 EASTWIND CT  
SACRAMENTO CA 95831

**ARCHITECT**

Nature of Work: TO REROOF WITH TILE

**CONSTRUCTION LENDING AGENCY:** I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 2097, C.W.C.)

Lender's Name \_\_\_\_\_ Lender's Address \_\_\_\_\_

**LICENSED CONTRACTORS DECLARATION:** I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class C39 License Number 551559 Date 4/4/01 Contractor Signature Silly Coy

**OWNER-BUILDER DECLARATION:** I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code: any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.00).

\_\_\_\_ I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code. The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

\_\_\_\_ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code. The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law).

\_\_\_\_ I am exempt under Sec. \_\_\_\_\_ B & PC for this reason: \_\_\_\_\_

Date \_\_\_\_\_ Owner Signature \_\_\_\_\_

**IN ISSUING THIS BUILDING PERMIT,** the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and hereby authorize representative(s) of this city to enter upon the above-mentioned property for inspection purposes.

Date 4/4/01 Applicant/Agent Signature Silly Coy

**WORKER'S COMPENSATION DECLARATION:** I hereby affirm under penalty of perjury one of the following declarations:

\_\_\_\_ I have and will maintain a certificate of coverage to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.

I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier STATE FUND Insurance Number 713-00-2021 Exp Date 10/01/2001

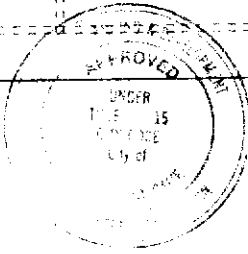
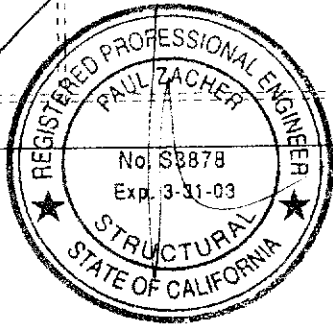
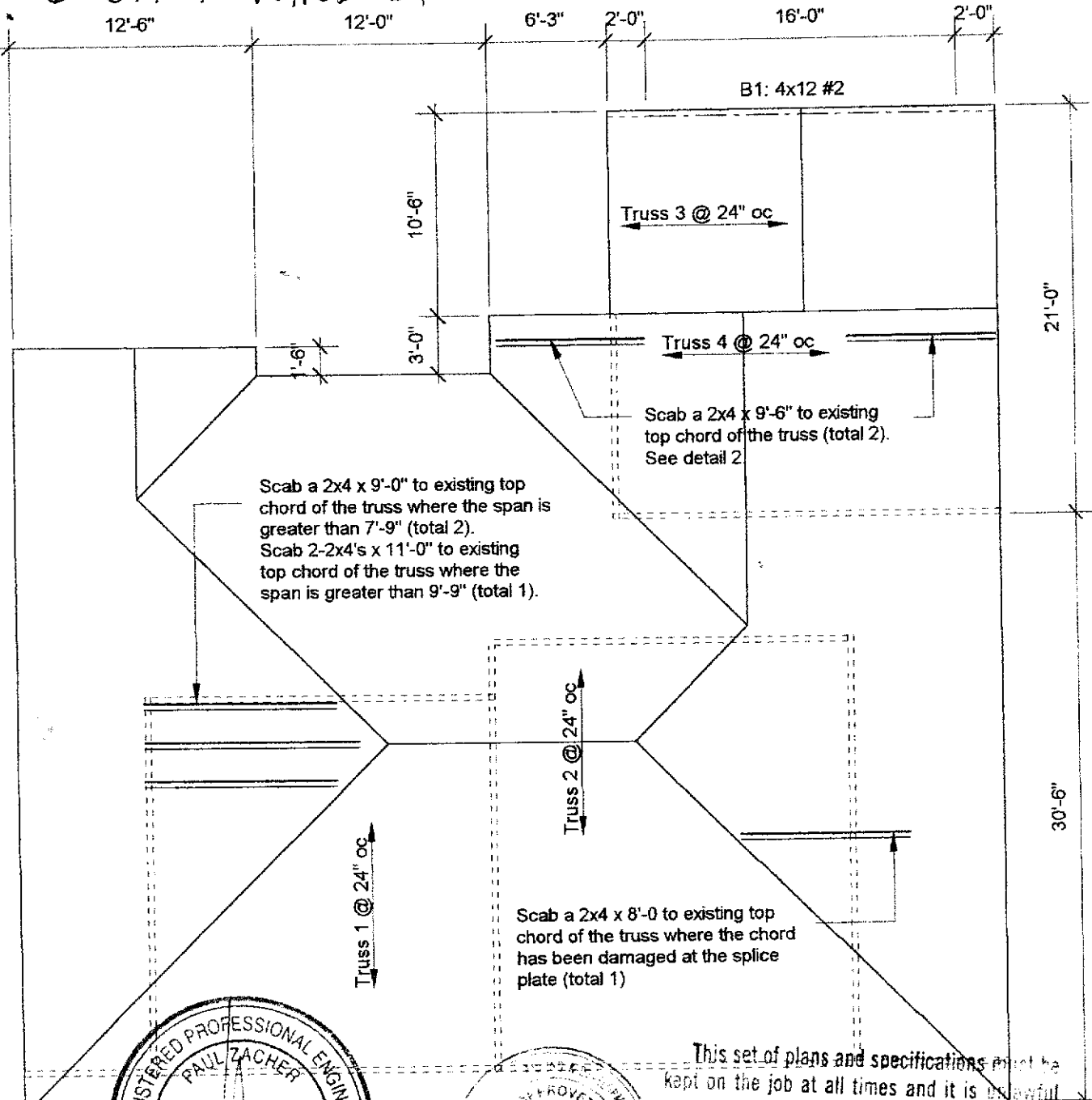
(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date 4/4/01 Applicant Signature Silly Coy

**WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.**

**THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.**

6 EAST WIND CT.



This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the Building Inspection Division.

The approval of this plan and specification shall NOT be held to permit or approve the violation of any City Ordinance or State Law.

*Paul Zacher 6/4/01*

Notes:

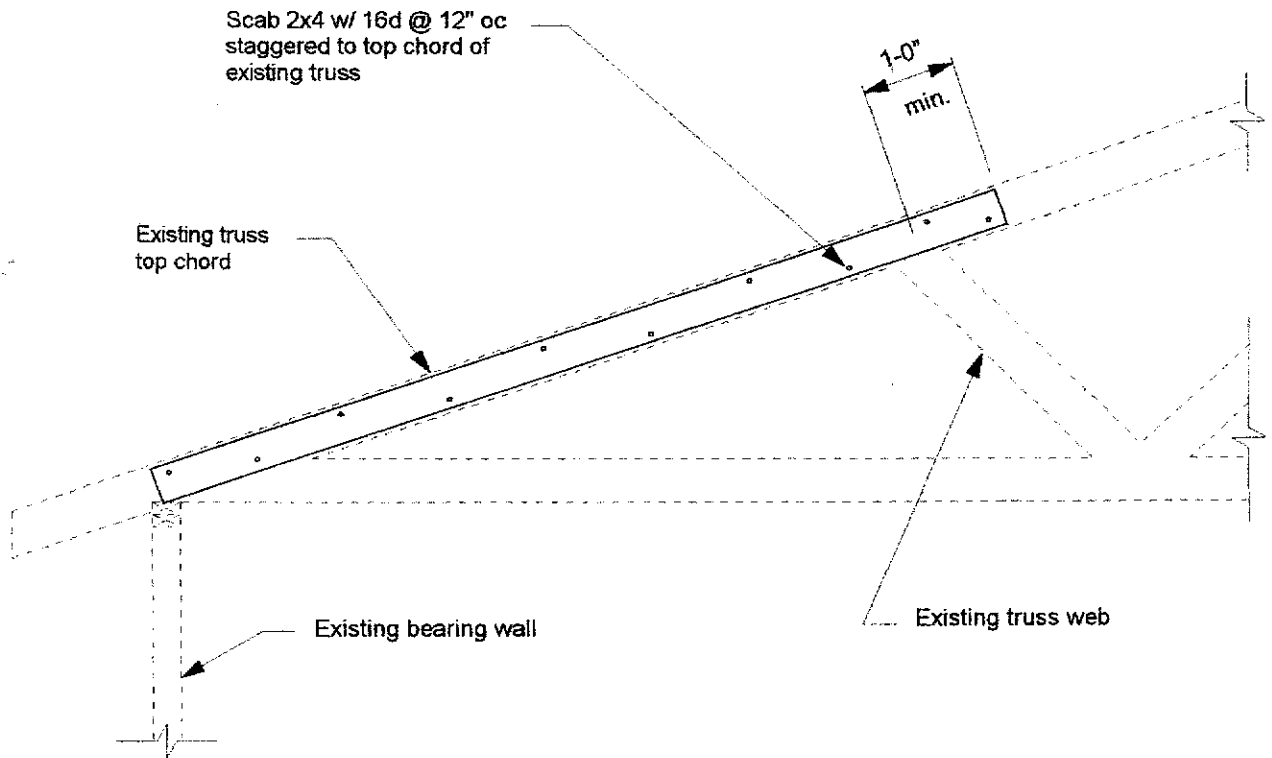
1. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.0 psf.
2. All structural wood members that were observed appear to be in sound condition and without structural defect.

1

ROOF PLAN - PAYNE

Not to Scale

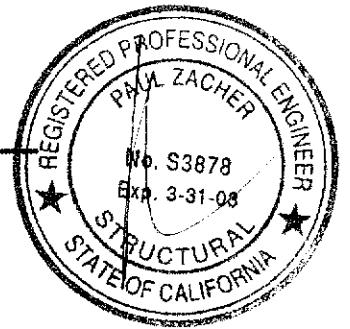




2

TRUSS REINFORCEMENT DETAIL

scale: 1/2" = 1'-0"



Payne



Paul Zacher - Structural Engineers  
4701 Lakeside Way  
Fair Oaks, CA 95628

TEL: 916.961.3960  
FAX: 916.961.6552

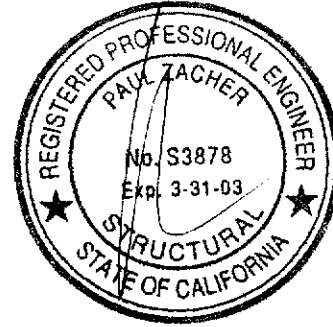
May 25, 2001

Zimmerman Roofing  
3675 R Street  
Sacramento, CA 95816  
TEL: 916.454.3667  
FAX: 916.455.3784

Attn.: Mr. Jeff Tucker,

re: Job 2001\_139: PAYNE

Subject: Structural Investigation Report of the Roof for the Residence located at 6 Eastwind Court, Sacramento, CA 95831.



As requested by Mr. Jeff Tucker, this is a report to determine what needs should be addressed to correct any structural deficiencies of the roof. Paul Zacher visited the site May 25, 2001. The investigation was made to determine the existing condition of the structure. All information, data and analysis contained within this report are based on the 1997 Uniform Building Code.

The following is based on visual observations with no subsurface investigation being made.

**DESCRIPTION:**

Type of Facility: Residence.  
Year Built: Estimated 1980's vintage.  
Occupancy: Residential.  
No. of Stories: One.  
Dimensions: Approximately 2000 square feet with a first story plate height of 8 feet.

**CONSTRUCTION:**

Roof:  
The roof covering will consist of a Light Weight Concrete Tile over 1/2" solid sheathing. The living and garage areas are framed with pre-engineered wood trusses spaced at 24" on center.

**CONCLUSIONS:**

Roof:  
The living and garage areas currently lack sufficient structural capacity for the applied live and dead loads. See "Recommendations" for location and repair to bring the living and garage areas up to the required capacity.

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Payne



Paul Zacher - Structural Engineers  
4701 Lakeside Way  
Fair Oaks, CA 95628

TEL: 916.961.3960  
FAX: 916.961.6552

### RECOMMENDATIONS:

If any of the following recommendations do not correspond to actual field conditions, the engineer of record shall be notified for further investigation and evaluation before continuing work.

Living Area:

1. Scab a 2x4 DF#2 x 9'-0" long rafter to the top chord of the existing truss. Scab 2-2x4 x 11'-0" long rafters to the top chord of the existing truss. See detail 1.
2. Scab a 2x4 DF#2 x 8'-0" long rafter to the top chord of the existing truss that has been damaged at the splice plate. See detail 1.

Garage:

3. Scab a 2x4 DF#2 x 9'-6" long rafter to the top chord of the existing truss. See details 1 and 2.


It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and are not an indication of a structural hazard or failure.

It shall be noted that some deflection of the rafters may be evident after installation of the tile. The existing roof framing has deflected but this may not be readily evident due to the uneven nature of the existing roofing material. Concrete tile is a very consistent and uniform product and when installed in an even plane, even small deflections can become apparent. This is only a cosmetic issue and not a structural concern.

The inspection consisted of visual observation only, made solely to determine the structural capacity of the existing roof. Analysis does not determine any effects on the overall structure under lateral forces or effects on the foundation unless specifically noted in the calculations and in this document. No warranties, expressed or implied, are made or intended in conjunction with this report. The inspection was made only to the portions that were accessible. The specific items noted were those that were observable and there may be defects that are not observable, or are hidden by architectural and structural materials.

If you have any questions on the above, do not hesitate to call.

Sincerely,

  
Paul Zacher, P.E., S.E.  
file

**DESIGN LOADING:**

Roof Pitch	4	in 12
Pitch Adjustment Factor	1.05	

**LOCATION: ROOF**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.00	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
1/2" OSB/ plywood	1.50	psf
2x4 rafters @ 24" oc	<u>0.64</u>	psf
	Load	10.5 psf
	Roof Pitch Adjustment	<u>0.57</u> psf
	Total Load	11.1 psf

**LOCATION: TOP CHORD**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.00	psf
Roofing felt	0.30	psf
1/2" OSB/ plywood	1.50	psf
1x4 skip sht'g	1.09	psf
2x4 truss @ 24" oc	<u>0.64</u>	psf
	Load	10.5 psf
	Roof Pitch Adjustment	<u>0.57</u> psf
	Total Load	11.1 psf

**LOCATION: BOTTOM CHORD**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Batt/blown insul	0.50	psf
2x4 truss @ 24" oc	1.28	psf
1/2" Gypboard	<u>2.50</u>	psf
	Load	4.3 psf

Job #: 01-139

Date: 5/25/01

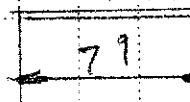
LOADING

ROOF

$OP = 11.1 \text{ pWF} \times 2^\circ = 22.2 \text{ pWF} \quad 2 \times 4^\# 2$

$LP = 16.0 \quad \dots \quad = 32$

22.2/32

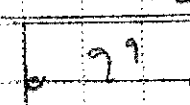


RAFTER

$OP = 11.1 \text{ pWF} \times 2^\circ = 22.2 \text{ pWF} \quad 2 \times 2 \times 4^\# 2$

$LP = 16.0 \quad \dots \quad = 32$

22.2/32

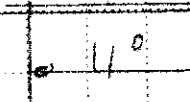


RAFTER

$OP = 11.1 \text{ pWF} \times 2^\circ = 22.2 \text{ pWF} \quad 3 \times 2 \times 4^\# 2$

$LP = 16.0 \quad \dots \quad = 32$

22.2/32

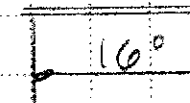


SI

$OP = 15.4 \times 4^\circ = 62 \text{ pWF} \quad 4 \times 12^\# 2$

$LP = 16.0 \quad \dots \quad = 64$

62/64



Paul Zacher - Structural Engineers  
 4791 Lakeside Way  
 Fair Oaks  
 TEL: (916) 961-3960  
 FAX: (916) 961-6552

Title :  
 Usgnr:  
 Description :

Job #  
 Date: 12:05PM, 25 MAY 01

Scope :

Rev: 510201  
 User: RW 0602844, Ver: 5.1.3, 27 Jun 1999, Win32  
 (c) 1985-99 ENERCALC

### Timber Beam & Joist

c:\enercalc\test.ecw\Calculations

#### Description RAFTERS AND BEAMS

#### Timber Member Information Calculations are designed to 1997 NDS and 1997 UBC Requirements

Timber Section		rafter 2x4	rafter 2-2x4	rafter 3-2x4	B1 4x12
Beam Width	in	1.500	3.000	4.500	3.500
Beam Depth	in	3.500	3.500	3.500	11.250
Le: Unbraced Length	ft	0.00	0.00	0.00	0.00
Timber Grade		Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch
Fb - Basic Allow	psi	875.0	875.0	875.0	875.0
Fv - Basic Allow	psi	95.0	95.0	95.0	95.0
Elastic Modulus	ksi	1,600.0	1,600.0	1,600.0	1,600.0
Load Duration Factor		1.250	1.250	1.250	1.250
Member Type		Sawn	Sawn	Sawn	Sawn
Repetitive Status		Repetitive	Repetitive	No	No

#### Center Span Data

		7.75	9.75	11.00	16.00
Span	ft				
Dead Load	#/ft	22.20	22.20	22.20	62.00
Live Load	#/ft	32.00	32.00	32.00	64.00

#### Results

Ratio = 0.8451 0.6688 0.6526 0.5447

Mmax @ Center	in-k	4.86	7.73	9.84	46.36
@ X =	ft	3.87	4.87	5.50	8.00
f <sub>b</sub> : Actual	psi	1,594.5	1,261.8	1,070.7	655.4
F <sub>b</sub> : Allowable	psi	1,886.7	1,886.7	1,640.6	1,203.1
		Bending OK	Bending OK	Bending OK	Bending OK
f <sub>v</sub> : Actual	psi	55.7	35.6	27.0	34.1
F <sub>v</sub> : Allowable	psi	118.8	118.8	118.8	118.8
		Shear OK	Shear OK	Shear OK	Shear OK

#### Reactions

@ Left End	DL	lbs	86.02	108.22	122.10	496.00
	LL	lbs	124.00	156.00	176.00	512.00
	Max. DL+LL	lbs	210.02	264.22	298.10	1,008.00
@ Right End	DL	lbs	86.02	108.22	122.10	496.00
	LL	lbs	124.00	156.00	176.00	512.00
	Max. DL+LL	lbs	210.02	264.22	298.10	1,008.00

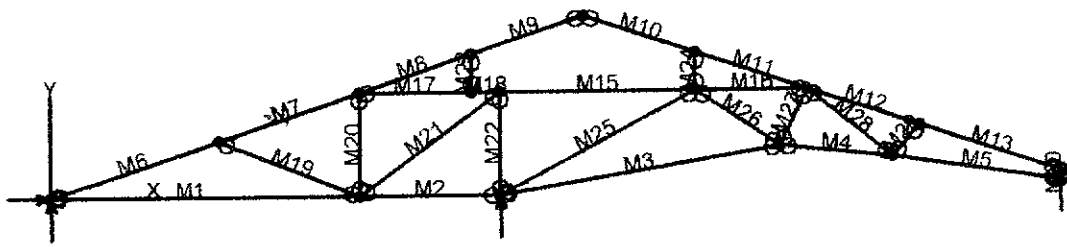
#### Deflections

Ratio OK Deflection OK Deflection OK Deflection OK

Center DL Defl	in	-0.210	-0.263	-0.284	-0.138
L/Defl Ratio		442.6	444.5	464.3	1,395.5
Center LL Defl	in	-0.303	-0.379	-0.410	-0.142
L/Defl Ratio		307.0	308.4	322.1	1,351.9
Center Total Defl	in	-0.513	-0.643	-0.694	-0.280
Location	ft	3.875	4.875	5.500	8.000
L/Defl Ratio		181.3	182.1	190.2	686.7

5





# VisualAnalysis 3.50.c Report

05/25/01 12:45:19

Project: Truss 1

File: Untitled.Vap

Company: PK Associates Engineers

Engineer: Paul Zacher

Default Units: Feet, Pounds, Degrees, °Fahrenheit, Seconds.

## Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	11.00	0.00	No	No	"
N3	16.00	0.00	"	Yes	"
N4	26.00	1.67	"	No	"
N5	30.00	1.25	"	"	"
N6	36.00	0.33	"	"	"
N7	6.00	2.00	"	"	"
N8	11.00	3.67	"	"	"
N9	15.00	5.00	"	"	"
N10	19.00	6.33	"	"	"
N12	16.00	3.67	"	"	"
N13	23.00	3.67	"	"	"
N14	27.00	3.67	"	"	"
N15	23.00	5.00	"	"	"
N16	31.00	2.33	"	"	"
N17	36.00	0.67	"	Yes	"
N18	15.00	3.67	"	No	"

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	11.00
M2	"	"	5.00
M3	"	"	10.14
M4	"	"	4.02
M5	"	"	6.07
M6	"	"	6.32
M7	"	"	5.27
M8	"	"	4.22
M9	"	"	4.22
M10	"	"	4.22
M11	"	"	4.22
M12	"	"	4.22
M13	"	"	5.27
M15	"	"	7.00
M16	"	"	4.00
M17	"	"	4.00
M18	"	"	1.00
M19	"	"	5.39
M20	"	"	3.67
M21	"	"	6.20
M22	"	"	3.67
M23	"	"	1.33
M24	"	"	1.33
M25	"	"	7.90
M26	"	"	3.61
M27	"	"	2.24
M28	"	"	3.85
M29	"	"	1.47
M30	"	"	0.34

## Section Properties

Category Section	Ax in <sup>2</sup>	Iz in <sup>4</sup>	Sy+ in <sup>3</sup>	Sy- in <sup>3</sup>
Wood Sha SS2x4	5.25	5.36	3.06	3.06

## Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft <sup>3</sup>
Wood	-NA-	1700000.00	0.36	40.47

## Load Combination Summary

Equation Case: Equation Case 1  
 Combination: +1D+1L+1Lr  
 Contributing Cases & Source  
 Service Case 1 (Dead loads)  
 Service Case 2 (Roof Live loads)

## Member Uniform Loads

This item is empty. Check the selection state, or report properties.

## Nodal Reactions

Node	Load Case	FX lbs	FY lbs	MZ lb-ft
N1	Equation Case 1	0.00	-48.10	-NA-
N3	"	-NA-	2217.26	-NA-
N17	"	-NA-	199.00	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	-664.96	-56.53	-101.52	0.0128
"	-664.96	-25.00	47.6541	-0.1176
"	-664.96	6.5377	81.4936	-0.1504
"	-664.96	38.0710	0.0000	0.0000
M2	-2560.65	-1.1963	-0.0000	-0.0000
"	-2560.65	13.1371	-10.01	0.0165
"	-2560.65	27.4704	-43.85	0.0267
"	-2560.65	41.8037	-101.52	0.0128
M3	-1320.67	43.0000	0.0000	0.0045
"	-1315.88	14.3333	96.6367	-0.2736
"	-1311.09	-14.33	96.6367	-0.3599
"	-1306.30	-43.00	-0.0000	-0.2542
M4	-392.70	11.2989	114.62	-0.3765
"	-391.49	22.7656	91.7494	-0.3631
"	-390.29	34.2323	53.5420	-0.3189
"	-389.08	45.6989	0.0000	-0.2569
M5	-6.8514	-44.68	0.0000	0.0062
"	-4.2141	-27.48	72.9225	-0.1851

"	-1.5767	-10.28	111.13	-0.3220
"	1.0606	6.9170	114.62	-0.3750
M6	658.09	128.53	0.0000	0.0000
"	694.22	20.1277	156.13	-0.0881
"	730.35	-88.27	84.2944	-0.0606
"	766.49	-196.67	<b>-215.49</b>	0.0224
M7	1191.35	<b>163.63</b>	-215.49	0.0224
"	1221.52	73.2927	-7.7355	0.0190
"	1251.69	-17.04	41.6869	0.0035
"	1281.86	-107.37	-67.23	0.0049
M8	-265.11	86.6482	-67.23	0.0049
"	-241.08	14.3815	3.4996	-0.0046
"	-217.06	-57.89	-27.06	-0.0160
"	-193.03	-130.15	-158.92	-0.0405
M9	-284.88	146.10	-158.92	-0.0405
"	-260.85	73.8330	-4.6556	-0.1035
"	-236.82	1.5663	48.3164	-0.1712
"	-212.79	-70.70	-0.0000	-0.2240
M10	-284.85	-146.00	-158.51	-0.1388
"	-260.82	-73.74	-4.3827	-0.1518
"	-236.79	-1.4692	48.4529	-0.1695
"	-212.76	70.7974	0.0000	-0.1722
M11	-267.06	-92.51	-91.53	-0.2564
"	-243.03	-20.24	-12.57	-0.2066
"	-219.01	52.0222	-34.89	-0.1647
"	-194.98	124.29	-158.51	-0.1388
M12	131.41	-73.64	55.0908	-0.3806
"	155.62	-1.3766	107.58	-0.3702
"	179.83	70.8901	58.7081	-0.3226
"	204.04	143.16	-91.53	-0.2561
M13	-48.46	-145.96	0.0000	0.0470
"	-18.47	-55.62	176.60	-0.1948
"	11.5236	34.7097	<b>194.97</b>	-0.3410
"	41.5143	125.04	55.0908	<b>-0.3810</b>
M15	<b>2784.88</b>	22.8366	-125.25	-0.0064
"	2784.88	22.8366	-71.97	-0.0077
"	2784.88	22.8366	-18.68	-0.0822
"	2784.88	22.8366	34.6034	-0.1762
M16	904.89	-8.6509	0.0000	-0.2878
"	904.89	-8.6509	11.5345	-0.2557
"	904.89	-8.6509	23.0690	-0.2198
"	904.89	-8.6509	34.6034	-0.1762
M17	1406.06	33.1738	0.0000	0.0094
"	1406.06	33.1738	44.2317	-0.0247
"	1406.06	33.1738	88.4634	-0.0439
"	1406.06	33.1738	132.70	-0.0336
M18	1406.06	-257.95	-125.25	-0.0064
"	1406.06	-257.95	-39.27	-0.0152
"	1406.06	-257.95	46.7123	-0.0249
"	1406.06	<b>-257.95</b>	132.70	-0.0336
M19	-556.68	-0.0000	-0.0000	0.0083
"	-556.68	-0.0000	-0.0000	0.0125
"	-556.68	-0.0000	-0.0000	0.0168
"	-556.68	-0.0000	0.0000	0.0210
M20	-706.98	-0.0000	-0.0000	-0.0125
"	-706.98	-0.0000	-0.0000	-0.0051
"	-706.98	-0.0000	-0.0000	0.0024
"	-706.98	-0.0000	0.0000	0.0098
M21	1710.38	-0.0000	-0.0000	-0.0181
"	1710.38	-0.0000	-0.0000	-0.0067
"	1710.38	-0.0000	-0.0000	0.0047
"	1710.38	-0.0000	0.0000	0.0162
M22	-1292.84	-0.0000	-0.0000	-0.0270
"	-1292.84	-0.0000	-0.0000	-0.0107
"	-1292.84	-0.0000	-0.0000	0.0056
"	-1292.84	-0.0000	0.0000	0.0220
M23	-291.12	-0.0000	-0.0000	0.0201
"	-291.12	-0.0000	-0.0000	0.0219

"	-291.12	-0.0000	-0.0000	0.0238
"	-291.12	-0.0000	0.0000	0.0256
M24	-284.84	0.0000	0.0000	0.0482
"	-284.84	0.0000	0.0000	0.0626
"	-284.84	0.0000	0.0000	0.0770
"	-284.84	0.0000	0.0000	0.0914
M25	-1428.43	-0.0000	-0.0000	-0.0126
"	-1428.43	-0.0000	-0.0000	0.0511
"	-1428.43	-0.0000	-0.0000	0.1148
"	-1428.43	-0.0000	0.0000	0.1784
M26	739.00	0.0000	0.0000	-0.2159
"	739.00	0.0000	0.0000	-0.1839
"	739.00	0.0000	0.0000	-0.1519
"	739.00	0.0000	0.0000	-0.1199
M27	-646.07	0.0000	0.0000	-0.1762
"	-646.07	0.0000	0.0000	-0.1553
"	-646.07	0.0000	0.0000	-0.1344
"	-646.07	0.0000	0.0000	-0.1135
M28	313.14	-0.0000	-0.0000	-0.3038
"	313.14	-0.0000	-0.0000	-0.2661
"	313.14	-0.0000	-0.0000	-0.2284
"	313.14	-0.0000	0.0000	-0.1907
M29	-217.84	-0.0000	-0.0000	-0.2865
"	-217.84	-0.0000	-0.0000	-0.2723
"	-217.84	-0.0000	-0.0000	-0.2580
"	-217.84	-0.0000	0.0000	-0.2438
M30	45.2053	0.0000	0.0000	0.0411
"	45.2053	0.0000	0.0000	0.0771
"	45.2053	0.0000	0.0000	0.1132
"	45.2053	0.0000	0.0000	0.1492

**BENDING & COMP: TRUSS 1 - MEMBER 6**

Design based on 1997 UBC 2321 Division V and ANSI/TPI 1-1995

Grading:

2x or 4x

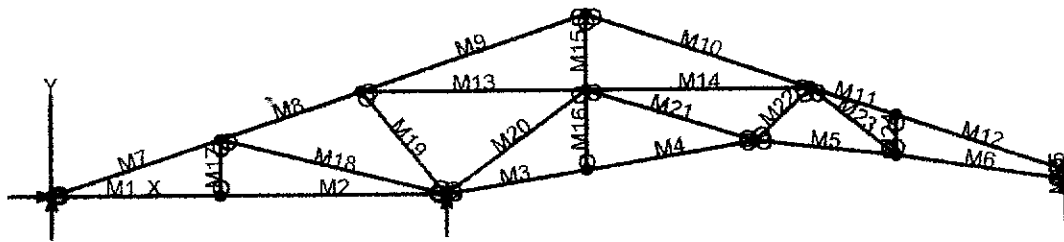
Doug-fir larch: No. 2

Assumptions:

Solid sheathing on top chord of truss. Therefore,  
continuous lateral support is provided along compression face

Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	3.5 inches
Length	6.32 feet
Max Axial Comp, C	766 lbs
Max Reaction, R	196 lbs
Max Moment, M	215 ft-lbs
Max LL Deflection	0.01 inches
Max TL Deflection	0.02 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.17
fc =	146 psi
Fce =	1275 psi
Fc* =	2084 psi
F'c =	1057 psi
fb =	842 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.47 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.46 < 1.0, Member OK
Live Load defl ratio	0.03 < 1.0, Member OK
Total Load defl ratio	0.05 < 1.0, Member OK



# VisualAnalysis 3.50.c Report

05/25/01 12:54:20

Project: Truss 2

File: Untitled.Vap

Company: PK Associates Engineers

Engineer: Paul Zacher

Default Units: Feet, Pounds, Degrees, °Fahrenheit, Seconds.

## Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	6.00	0.00	No	No	"
N3	14.00	0.00	"	Yes	"
N4	19.00	0.83	"	No	"
N5	25.00	1.83	"	"	"
N6	30.00	1.25	"	"	"
N7	36.00	0.33	"	Yes	"
N8	6.00	2.00	"	No	"
N9	11.00	3.67	"	"	"
N10	19.00	3.67	"	"	"
N11	27.00	3.67	"	"	"
N12	19.00	6.33	"	"	"
N13	30.00	2.67	"	"	"
N14	36.00	0.67	"	"	"

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	6.00
M2	"	"	8.00
M3	"	"	5.07
M4	"	"	6.08
M5	"	"	5.03
M6	"	"	6.07
M7	"	"	6.32
M8	"	"	5.27
M9	"	"	8.43
M10	"	"	8.43
M11	"	"	3.16
M12	"	"	6.32
M13	"	"	8.00
M14	"	"	8.00
M15	"	"	2.66
M16	"	"	2.84
M17	"	"	2.00
M18	"	"	8.25
M19	"	"	4.74
M20	"	"	6.20
M21	"	"	6.28
M22	"	"	2.72
M23	"	"	3.85
M24	"	"	1.42
M25	"	"	0.34

## Section Properties

Category	Section	Ax in <sup>2</sup>	Iz in <sup>4</sup>	Sy+ in <sup>3</sup>	Sy- in <sup>3</sup>
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Wood Sha SS2x4	5.25	5.36	3.06	3.06
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## Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft <sup>3</sup>
Wood	-NA-	1700000.00	0.36	40.47

## Load Combination Summary

Equation Case: Equation Case 1  
 Combination: +1D+1L+1Lr  
 Contributing Cases & Source  
 Service Case 1 (Dead loads)  
 Service Case 2 (Roof Live loads)

## Member Uniform Loads

This item is empty. Check the selection state, or report properties.

## Nodal Reactions

Node	Load Case	FX lbs	FY lbs	MZ lb-ft
N1	Equation Case 1	0.00	-342.65	-NA-
N3	"	-NA-	2497.86	-NA-
N7	"	-NA-	213.15	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	-1498.29	-38.36	-75.36	0.0590
"	-1498.29	-21.16	-15.92	0.0472
"	-1498.29	-3.9593	9.1954	0.0212
"	-1498.29	13.2407	0.0000	0.0000
M2	-1498.29	-24.98	-0.0000	-0.0000
"	-1498.29	-2.0472	35.8840	-0.0106
"	-1498.29	20.8862	10.7654	0.0202
"	-1498.29	43.8195	-75.36	0.0590
M3	-1140.91	14.8349	0.0000	0.0046
"	-1138.53	0.5016	12.8948	-0.0409
"	-1136.15	-13.83	1.6343	-0.0805
"	-1133.77	-28.17	-33.78	-0.1203
M4	-1144.88	31.3536	-33.78	-0.1203
"	-1142.02	14.1536	12.2664	-0.1805
"	-1139.15	-3.0464	23.5268	-0.2334
"	-1136.28	-20.25	-0.0000	-0.2702
M5	-223.80	-4.2201	86.9789	-0.3794
"	-222.14	10.1132	81.9749	-0.3811
"	-220.48	24.4466	52.9819	-0.3402
"	-218.82	38.7799	0.0000	-0.2721
M6	-6.1531	-40.13	0.0000	0.0067
"	-3.5158	-22.93	63.7080	-0.1762
"	-0.8784	-5.7290	92.7009	-0.3119
"	1.7589	11.4710	86.9789	-0.3780
M7	1533.94	136.18	0.0000	0.0000
"	1570.08	27.7768	172.25	-0.0943

"	1606.21	-80.62	116.55	-0.0595
"	1642.34	-189.02	-167.11	0.0580
M8	2249.01	103.92	-167.11	0.0580
"	2279.18	13.5899	-64.27	0.1022
"	2309.35	-76.74	-119.75	0.1013
"	<b>2339.52</b>	-167.08	-333.57	0.0230
M9	970.28	<b>256.37</b>	-333.57	0.0231
"	1018.34	111.83	182.77	-0.3136
"	1066.39	-32.70	<b>293.96</b>	-0.4261
"	1114.45	-177.23	-0.0000	-0.1487
M10	964.64	<b>-258.17</b>	<b>-348.77</b>	-0.2883
"	1012.70	-113.64	172.64	<b>-0.4905</b>
"	1060.75	30.8972	288.90	-0.4833
"	1108.81	175.43	0.0000	-0.0942
M11	10.3977	31.1931	6.9636	-0.3563
"	28.4644	85.3931	-54.63	-0.3128
"	46.5310	139.59	-173.20	-0.2818
"	64.5977	193.79	-348.77	-0.2882
M12	-54.57	-163.70	0.0000	0.0447
"	-18.43	-55.30	230.28	-0.2677
"	17.6997	53.0990	232.60	-0.4020
"	53.8330	161.50	6.9636	-0.3563
M13	1848.52	0.0473	0.0000	0.0313
"	1848.52	0.0473	0.1262	-0.0208
"	1848.52	0.0473	0.2524	-0.0727
"	1848.52	0.0473	0.3786	-0.1243
M14	-424.26	1.1604	-9.2830	-0.1243
"	-424.26	1.1604	-6.1886	-0.1813
"	-424.26	1.1604	-3.0943	-0.2465
"	-424.26	1.1604	0.0000	-0.3159
M15	-1036.12	-4.7818	-12.72	0.0408
"	-1036.12	-4.7818	-8.4797	0.0571
"	-1036.12	-4.7818	-4.2399	0.0720
"	-1036.12	-4.7818	0.0000	0.0864
M16	61.2648	1.0768	0.0000	0.0154
"	61.2648	1.0768	1.0193	-0.0036
"	61.2648	1.0768	2.0387	-0.0224
"	61.2648	1.0768	3.0580	-0.0408
M17	82.1788	-0.0000	-0.0000	-0.0121
"	82.1788	-0.0000	-0.0000	-0.0099
"	82.1788	-0.0000	-0.0000	-0.0077
"	82.1788	-0.0000	0.0000	-0.0055
M18	-688.35	-0.0000	-0.0000	-0.0068
"	-688.35	-0.0000	-0.0000	0.0142
"	-688.35	-0.0000	-0.0000	0.0352
"	-688.35	-0.0000	0.0000	0.0562
M19	-1080.81	0.0000	0.0000	-0.0360
"	-1080.81	0.0000	0.0000	-0.0167
"	-1080.81	0.0000	0.0000	0.0025
"	-1080.81	0.0000	0.0000	0.0218
M20	-2142.35	-0.0000	-0.0000	-0.1244
"	-2142.35	-0.0000	-0.0000	-0.0773
"	-2142.35	-0.0000	-0.0000	-0.0303
"	<b>-2142.35</b>	-0.0000	0.0000	0.0167
M21	576.94	0.0000	0.0000	-0.2619
"	576.94	0.0000	0.0000	-0.2102
"	576.94	0.0000	0.0000	-0.1585
"	576.94	0.0000	0.0000	-0.1068
M22	-476.59	-0.0000	-0.0000	-0.2570
"	-476.59	-0.0000	-0.0000	-0.2386
"	-476.59	-0.0000	-0.0000	-0.2201
"	-476.59	-0.0000	0.0000	-0.2016
M23	285.00	-0.0000	-0.0000	-0.3047
"	285.00	-0.0000	-0.0000	-0.2775
"	285.00	-0.0000	-0.0000	-0.2503
"	285.00	-0.0000	0.0000	-0.2231
M24	-137.35	-0.0000	-0.0000	-0.0149
"	-137.35	-0.0000	-0.0000	-0.0053

"	-137.35	-0.0000	-0.0000	0.0042
"	-137.35	-0.0000	0.0000	0.0138
M25	-172.56	0.0000	0.0000	0.0445
"	-172.56	0.0000	0.0000	0.0769
"	-172.56	0.0000	0.0000	0.1093
"	-172.56	0.0000	0.0000	<b>0.1417</b>

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**BENDING & COMP: TRUSS 2 - MEMBER 7**

Design based on 1997 UBC 2321 Division V and ANSI/TPI 1-1995

Grading:

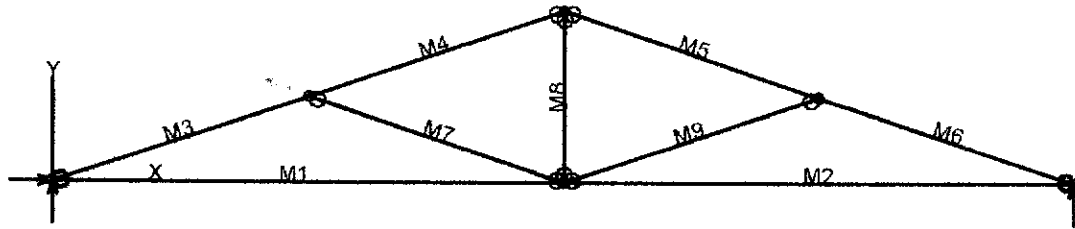
2x or 4x

Doug-fir larch: No. 2

Assumptions:

Solid sheathing on top chord of truss. Therefore,  
continuous lateral support is provided along compression face  
Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	3.5 inches
Length	6.32 feet
Max Axial Comp, C	1642 lbs
Max Reaction, R	189 lbs
Max Moment, M	167 ft-lbs
Max LL Deflection	0.01 inches
Max TL Deflection	0.02 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.17
fc =	313 psi
Fce=	1275 psi
Fc*=	2084 psi
F'c=	1057 psi
fb=	654 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.45 < 1.0, Member OK
Interaction equation: (fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.49 < 1.0, Member OK
Live Load defl ratio	0.03 < 1.0, Member OK
Total Load defl ratio	0.05 < 1.0, Member OK



# VisualAnalysis 3.50.c Report

05/25/01 12:57:13

Project: Truss 3

File: Untitled.Vap

Company: PK Associates Engineers

Engineer: Paul Zacher

Default Units: Feet, Pounds, Degrees, °Fahrenheit, Seconds.

## Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes		No	
N2	10.00	0.00	No		No		"	
N3	20.00	0.00	"		Yes		"	
N4	5.00	1.67	"		No		"	
N5	15.00	1.67	"		"		"	
N6	10.00	3.33	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	10.00
M2	"	"	10.00
M3	"	"	5.27
M4	"	"	5.27
M5	"	"	5.27
M6	"	"	5.27
M7	"	"	5.27
M8	"	"	3.33
M9	"	"	5.27

## Section Properties

Category	Section	Ax in <sup>2</sup>	Iz in <sup>4</sup>	Sy+ in <sup>3</sup>	Sy- in <sup>3</sup>
Wood Sha	SS2x4	5.25	5.36	3.06	3.06

## Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft <sup>3</sup>
Wood	-NA-	1700000.00	0.36	40.47

## Load Combination Summary

Equation Case: Equation Case 1

Combination: +1D+1L+1Lr

Contributing Cases & Source

Service Case 1 (Dead loads)

Service Case 2 (Roof Live loads)

## Member Uniform Loads

This item is empty. Check the selection state, or report properties.

## Nodal Reactions

Node	Load Case	FX lbs	FY lbs	MZ lb-ft
N1	Equation Case 1	-0.00	657.26	-NA-
N3	"	-NA-	657.26	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1524.86	-51.80	-88.01	-0.1232
"	1524.86	-23.13	36.6440	-0.1636
"	1524.86	5.5324	65.9803	-0.1429
"	<b>1524.86</b>	34.1991	0.0000	-0.0000
M2	1524.86	-34.20	0.0000	-0.0000
"	1524.86	-5.5324	65.9803	-0.1429
"	1524.86	23.1342	36.6440	-0.1635
"	1524.86	51.8009	-88.01	-0.1232
M3	<b>-1643.70</b>	107.90	0.0000	-0.0000
"	-1613.53	17.5659	<b>109.84</b>	-0.0868
"	-1583.36	-72.77	61.3358	-0.1170
"	-1553.19	-163.10	<b>-145.50</b>	-0.1188
M4	-1121.71	<b>163.12</b>	-145.50	-0.1188
"	-1091.72	72.7840	61.2410	-0.1574
"	-1061.73	-17.55	109.74	<b>-0.1677</b>
"	-1031.74	-107.88	0.0000	-0.1215
M5	-1121.71	<b>-163.12</b>	-145.50	-0.1059
"	-1091.72	-72.78	61.2410	-0.1445
"	-1061.73	17.5494	109.74	-0.1548
"	-1031.74	107.88	0.0000	-0.1086
M6	-1643.70	-107.90	0.0000	<b>0.0130</b>
"	-1613.53	-17.57	109.84	-0.0738
"	-1583.36	72.7674	61.3358	-0.1040
"	-1553.19	163.10	<b>-145.50</b>	-0.1058
M7	-539.47	-0.0000	-0.0000	-0.1104
"	-539.47	-0.0000	-0.0000	-0.1075
"	-539.47	-0.0000	-0.0000	-0.1046
"	-539.47	-0.0000	0.0000	-0.1017
M8	445.41	0.0000	0.0000	-0.0205
"	445.41	0.0000	0.0000	-0.0205
"	445.41	0.0000	0.0000	-0.0205
"	445.41	0.0000	0.0000	-0.0205
M9	-539.47	0.0000	0.0000	-0.1234
"	-539.47	0.0000	0.0000	-0.1205
"	-539.47	0.0000	0.0000	-0.1176
"	-539.47	0.0000	0.0000	-0.1147

**BENDING & COMP: TRUSS 3 - MEMBER 3**

Design based on 1997 UBC 2321 Division V and ANSI/TPI 1-1995

Grading:

2x or 4x

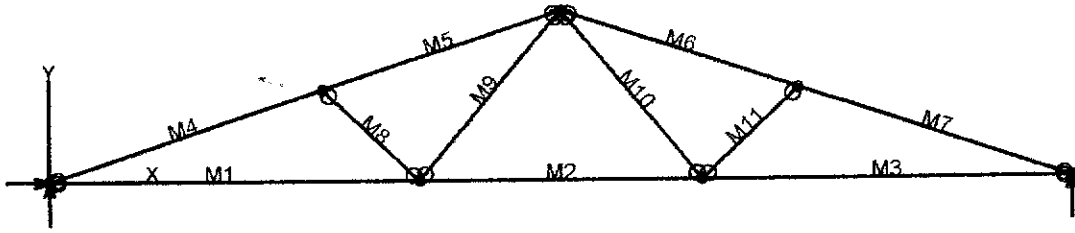
Doug-fir larch: No. 2

Assumptions:

Solid sheathing on top chord of truss. Therefore,  
continuous lateral support is provided along compression face  
Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	3.5 inches
Length	5.27 feet
Max Axial Comp, C	1553 lbs
Max Reaction, R	163 lbs
Max Moment, M	145 ft-lbs
Max LL Deflection	0.05 inches
Max TL Deflection	0.11 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.15
fc =	296 psi
Fce=	1789 psi
Fc*=	2084 psi
F'c=	1326 psi
fb=	568 psi
F*b=Fb*=	2156 psi
Shear D/C ratio	0.39 < 1.0, Member OK
Interaction equation: (fc/F'c)^2 +	
fb/ (F*b(1-fc/Fce)) =	0.37 < 1.0, Member OK
Live Load defl ratio	0.19 < 1.0, Member OK
Total Load defl ratio	0.31 < 1.0, Member OK





# VisualAnalysis 3.50.c Report

05/25/01 13:02:18

Project: Truss 4

File: Untitled.Vap

Company: PK Associates Engineers

Engineer: Paul Zacher

Default Units: Feet, Pounds, Degrees, °Fahrenheit, Seconds.

## Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes			No
N2	9.50	0.00	No		No			"
N3	16.75	0.00	"		"			"
N4	26.25	0.00	"		Yes			"
N5	7.00	2.33	"		No			"
N6	19.25	2.33	"		"			"
N7	13.13	4.38	"		"			"

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.50
M2	"	"	7.25
M3	"	"	9.50
M4	"	"	7.38
M5	"	"	6.46
M6	"	"	6.46
M7	"	"	7.38
M8	"	"	3.42
M9	"	"	5.68
M10	"	"	5.68
M11	"	"	3.42

## Section Properties

Category	Section	Ax in <sup>2</sup>	Iz in <sup>4</sup>	Sy+ in <sup>3</sup>	Sy- in <sup>3</sup>
Wood Sha	SS2x4	5.25	5.36	3.06	3.06

## Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft <sup>3</sup>
Wood	-NA-	1700000.00	0.36	40.47

## Load Combination Summary

Equation Case: Equation Case 1

Combination: +1D+1L+1Lr

Contributing Cases & Source

Service Case 1 (Dead loads)

Service Case 2 (Roof Live loads)

## Member Uniform Loads

This item is empty. Check the selection state, or report properties.

## Nodal Reactions

Node	Load Case	FX lbs	FY lbs	MZ lb-ft
N1	Equation Case 1	0.00	862.73	-NA-
N4	"	-NA-	862.73	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2005.13	-45.92	-48.19	-0.2099
"	2005.13	-18.69	53.8957	-0.2391
"	2005.13	8.5439	69.9595	-0.1793
"	<b>2005.13</b>	35.7772	0.0000	-0.0000
M2	1292.28	-31.17	-48.19	-0.2099
"	1292.28	-10.39	1.9094	-0.2075
"	1292.28	10.3917	1.9094	-0.2075
"	1292.28	31.1750	-48.19	-0.2099
M3	2005.13	-35.78	-0.0000	-0.0000
"	2005.13	-8.5439	69.9595	-0.1793
"	2005.13	18.6894	53.8957	-0.2391
"	2005.13	45.9228	-48.19	-0.2099
M4	<b>-2163.67</b>	151.37	0.0000	-0.0000
"	-2121.58	24.8992	<b>215.96</b>	-0.2483
"	-2079.48	-101.57	121.69	-0.2787
"	-2037.39	<b>-228.03</b>	<b>-282.81</b>	-0.1983
M5	-1797.92	209.78	-282.81	-0.1983
"	-1760.98	99.1262	49.0493	-0.2556
"	-1724.03	-11.53	143.32	<b>-0.2866</b>
"	-1687.08	-122.19	-0.0000	-0.2090
M6	-1797.92	-209.78	-282.81	-0.1781
"	-1760.98	-99.13	49.0493	-0.2354
"	-1724.03	11.5321	143.32	-0.2663
"	-1687.08	122.19	0.0000	-0.1888
M7	<b>-2163.67</b>	-151.37	0.0000	<b>0.0202</b>
"	-2121.58	-24.90	215.96	-0.2282
"	-2079.48	101.57	121.69	-0.2585
"	-2037.39	<b>228.03</b>	-282.81	-0.1782
M8	-500.57	-0.0000	-0.0000	-0.1361
"	-500.57	-0.0000	-0.0000	-0.1285
"	-500.57	-0.0000	-0.0000	-0.1209
"	-500.57	-0.0000	0.0000	-0.1132
M9	543.34	-0.0000	-0.0000	-0.1584
"	543.34	-0.0000	-0.0000	-0.1568
"	543.34	-0.0000	-0.0000	-0.1552
"	543.34	-0.0000	0.0000	-0.1536
M10	543.34	0.0000	0.0000	-0.1092
"	543.34	0.0000	0.0000	-0.1076
"	543.34	0.0000	0.0000	-0.1061
"	543.34	0.0000	0.0000	-0.1045
M11	-500.57	0.0000	0.0000	-0.1796
"	-500.57	0.0000	0.0000	-0.1720
"	-500.57	0.0000	0.0000	-0.1644
"	-500.57	0.0000	0.0000	-0.1568

### BENDING & COMP: TRUSS 4 - MEMBER 4

Design based on 1997 UBC 2321 Division V and ANSI/TPI 1-1995

#### Grading:

2x or 4x

Doug-fir larch: No. 2

#### Assumptions:

Solid sheathing on top chord of truss. Therefore,  
continuous lateral support is provided along compression face  
Maximum center-center spacing = 24"

Width, b	3 inches
Depth, d	3.5 inches
Length	7.38 feet
Max Axial Comp, C	2037 lbs
Max Reaction, R	228 lbs
Max Moment, M	282 ft-lbs
Max LL Deflection	0.08 inches
Max TL Deflection	0.19 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.20
fc =	194 psi
Fce =	958 psi
Fc* =	2084 psi
F'c =	844 psi
fb =	552 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.27 < 1.0, Member OK
Interaction equation: (fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.37 < 1.0, Member OK
Live Load defl ratio	0.22 < 1.0, Member OK
Total Load defl ratio	0.39 < 1.0, Member OK