

**CITY OF SACRAMENTO**  
1231 I Street, Sacramento, CA 95814

**Permit No: 0007316**  
**Insp Area: 3**

**Site Address: 5 LOMA MAR CT SAC**  
Parcel No: 040-0200-015

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

CONTRACTOR  
ZIMMERMAN ROOFING  
3675 R ST  
SACRAMENTO CA 95816

OWNER  
PHONG SAU CUNG  
7199 ROTELLA DR  
SACRAMENTO CA 95824

ARCHITECT

**Nature of Work: TEAR OFF, REROOF W/ TILE, 27SQ**

**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. 3097, Civ. 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 C-31 License Number 557559 Date 4/29/00 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 abovementioned property for inspection purposes.

Date 4/29/00 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 consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which this 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 COMP INS FUND Policy Number 713-99-2021 Exp Date 10/01/2000

\_\_\_\_\_, (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 4/29/00 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.**

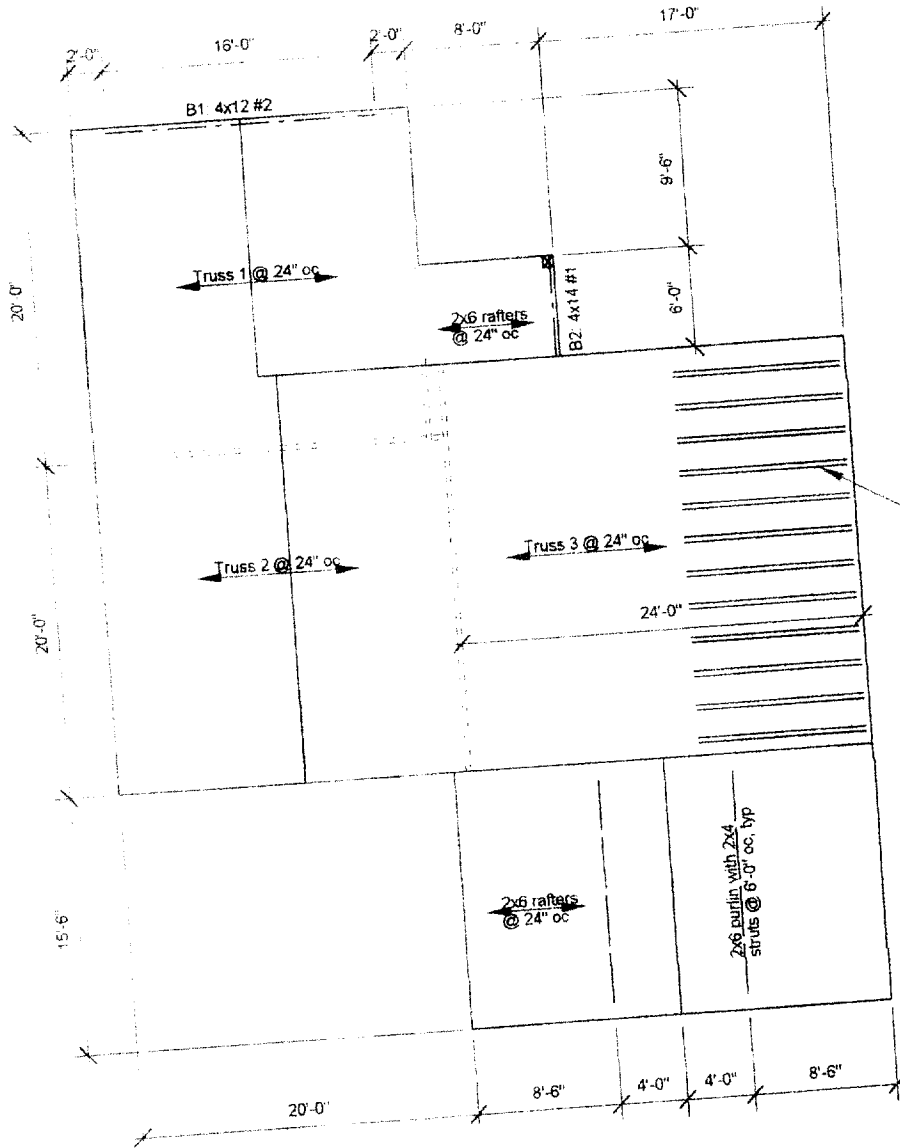
**THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.**

# ISSUED

JUN 28 2000

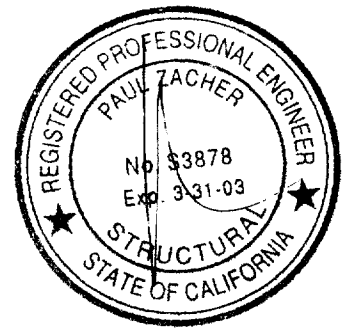
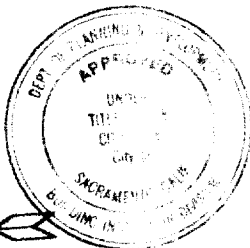
CITY OF SACRAMENTO  
DEVELOPMENT SERVICES DIV

00-07316



Scab a 2x4 to top chord  
of the existing truss  
(total 12). See detail 2  
next sheet

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.



**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 - PHONG

Not to Scale

19

WZ/P. 6/28/00

phong



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 10'-0" long to the top chord of the existing pre-engineered wood 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

JUN 28 2000

**RECEIVED**

00-07314



DEPARTMENT OF  
PLANNING AND DEVELOPMENT

CITY OF SACRAMENTO  
CALIFORNIA

1231 I STREET  
ROOM 200  
SACRAMENTO, CA  
95814-2998

Permit Services  
916-264-7819  
FAX 916-264-7066

Tommy Phony  
5 Loma Mar Ct  
Sacramento, CA 95828

TILE ROOF WORKSHEET

This worksheet must be filled out whenever any type of tile roof is applied for.

If the answer to question #5 is yes, a written engineering report from a registered engineer must be provided with each application.

- 1 BRAND AND MODEL OF TILE Pioneer Lite weight
- 2 TILE WEIGHT PER SQUARE 730 lbs
- 3 WEIGHT OF ROOF SYSTEM PER SQUARE 180 lbs
- 4 TOTAL WEIGHT OF ROOF SYSTEM 910 lbs
- 5 DOES TOTAL WEIGHT OF ROOF SYSTEM EXCEED 750# PER SQUARE?  YES  NO
- 6 ROOF SLOPE 4/12

PLEASE PROVIDE A SEPARATE WORKSHEET FOR EACH APPLICATION INVOLVING A TILE ROOF

*All attached engin. report*

phong

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

TEL: 916.961.3960  
FAX: 916.961.6552

June 13, 2000

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

Attn: Mr. Jeff Tucker,

re: Job 2000\_164: PHONG

Subject: Structural Investigation Report of the Roof for the Residence located at 5 Loma Mar Court, Sacramento, CA 95828.

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 June 13, 2000. 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:**

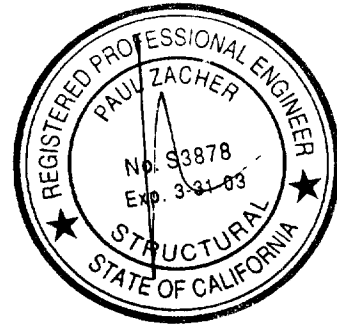
Type of Facility: Residence.  
Year Built: Estimated 1970's vintage.  
Occupancy: Residential.  
No. of Stories: One.  
Dimensions: Approximately 2500 square feet with a first story plate height of 8 feet.

**CONSTRUCTION:**

Roof:  
The roof covering will consist of a Light Weight Concrete Tile over 1/2" solid sheathing. The living area is conventionally framed with 2x6 rafters spaced at 24" on center with 2x6 purlins supported at no more than 6'-0" on center by 2x4 struts bearing on walls below and with pre-engineered wood trusses spaced at 24" on center. The garage area is framed with pre-engineered wood trusses spaced at 24" on center

**CONCLUSIONS:**

Roof:  
The living area lacks sufficient structural capacity for the applied live and dead loads. The garage has sufficient structural capacity for the applied live and dead loads.



**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	
2x6 rafters @ 24" oc	<u>1.00</u>	psf	
	Load	10.9	psf
Roof Pitch Adjustment	<u>0.59</u>	psf	
Total Load	11.5	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>1.28</u>	psf	
	Load	11.2	psf
Roof Pitch Adjustment	<u>0.60</u>	psf	
Total Load	11.8	psf	

**LOCATION: BOTTOM CHORD**

<u>MATERIAL</u>		<u>WEIGHT</u>	
Batt/blown insul	0.50	psf	
2x4 truss @ 24" oc	0.64	psf	
1/2" Gypboard	<u>2.50</u>	psf	
	Load	3.6	psf

P.K. Zacher, S.E.

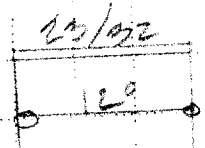
4701 Lakeside Way  
Fair Oaks, CA 95628  
TEL: (916) 961-3960  
FAX: (916) 961-6552

Job # 11-17

Date 2/13/92

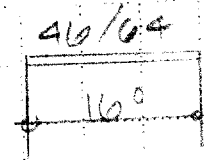
2x10 #2  
2x10 #2  
2x10 #2  
2x10 #2

2x10 #2



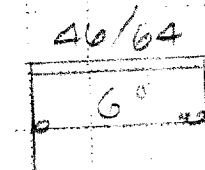
2x12 #2  
2x12 #2  
2x12 #2

4x12 #2



4x14 #1  
4x14 #1  
4x14 #1

4x14 #1



Paul Zacher - Structural Engineers  
 4701 Lakeside Way  
 Fair Oaks  
 TEL: (916) 961-3960  
 FAX: (916) 961-6552

Title :  
 Dsgnr:  
 Description :  
 Scope :

Job #  
 Date: 11:40AM, 13 JUN 00

Rev: 510304  
 User: KW-0602844, Ver 5.1.3, 22 Jun-1999, Win32  
 (c) 1993-99 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

	rafter	B1	B2
Timber Section	2x6	4x12	4x14
Beam Width	in 1.500	3.500	3.500
Beam Depth	in 5.500	11.250	13.250
Le: Unbraced Length	ft 0.00	0.00	0.00
Timber Grade	Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch
Fb - Basic Allow	psi 875.0	875.0	1,000.0
Fv - Basic Allow	psi 95.0	95.0	95.0
Elastic Modulus	ksi 1,600.0	1,600.0	1,700.0
Load Duration Factor	1.250	1.250	1.250
Member Type	Sawn	Sawn	Sawn
Repetitive Status	Repetitive	No	No

#### Center Span Data

		rafter	B1	B2
Span	ft	12.00	16.00	6.00
Dead Load	#/ft	23.00	46.00	46.00
Live Load	#/ft	32.00	64.00	64.00

#### Results

Ratio = 0.9607 0.4755 0.0568

Mmax @ Center	in-k	11.88	42.24	5.94
@ X =	ft	6.00	8.00	3.00
fb : Actual	psi	1,570.9	572.1	58.0
Fb Allowable	psi	1,635.2	1,203.1	1,250.0
		Bending OK	Bending OK	Bending OK
fv : Actual	psi	55.7	29.8	6.7
Fv Allowable	psi	118.8	118.8	118.8
		Shear OK	Shear OK	Shear OK

#### Reactions

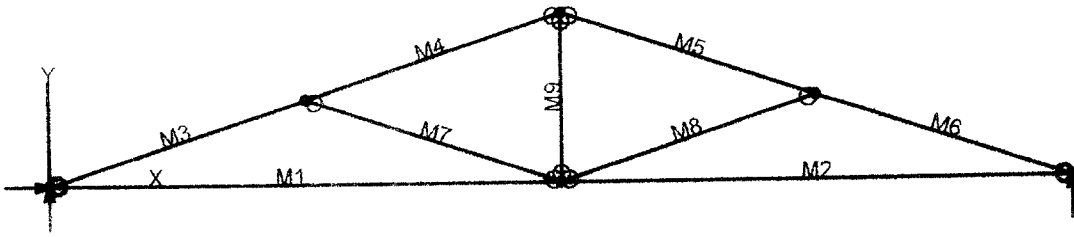
@ Left End	DL	lbs	138.00	368.00	138.00
	LL	lbs	192.00	512.00	192.00
	Max. DL+LL	lbs	330.00	880.00	330.00
@ Right End	DL	lbs	138.00	368.00	138.00
	LL	lbs	192.00	512.00	192.00
	Max. DL+LL	lbs	330.00	880.00	330.00

#### Deflections

Ratio OK Deflection OK Deflection OK

Center DL Defl	in	-0.322	-0.102	-0.001
L/Defl Ratio		446.5	1,880.9	61,913.0
Center LL Defl	in	-0.449	-0.142	-0.002
L/Defl Ratio		320.9	1,351.9	44,500.0
Center Total Defl	in	-0.771	-0.244	-0.003
Location	ft	6.000	8.000	3.000
L/Defl Ratio		186.7	786.5	25,890.9





# VisualAnalysis 3.50.c Report

06/13/00 11:22:50

Project: Truss 1

File: C:\Program Files\IES\VA35\truss 1.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	"	"	5.27
M9	"	"	3.33

## 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	632.00	-NA-
N3	"	-NA-	632.00	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1470.06	-45.62	-76.23	-0.1187
"	1470.06	-20.29	33.4122	-0.1528
"	1470.06	5.0435	58.8228	-0.1310
"	<b>1470.06</b>	30.3768	0.0000	-0.0000
M2	1470.06	-30.38	0.0000	-0.0000
"	1470.06	-5.0435	58.8228	-0.1310
"	1470.06	20.2898	33.4122	-0.1528
"	1470.06	45.6232	-76.23	-0.1187
M3	<b>-1584.94</b>	104.92	0.0000	-0.0000
"	-1555.58	17.0302	<b>106.76</b>	-0.0840
"	-1526.23	-70.86	59.4639	-0.1130
"	-1496.87	-158.76	<b>-141.89</b>	-0.1145
M4	-1076.74	<b>158.85</b>	-141.89	-0.1145
"	-1047.54	70.9060	59.4639	-0.1520
"	-1018.34	-17.04	106.76	<b>-0.1620</b>
"	-989.15	-104.99	0.0000	-0.1170
M5	-1076.74	<b>-158.85</b>	-141.89	-0.1020
"	-1047.54	-70.91	59.4639	-0.1395
"	-1018.34	17.0404	106.76	-0.1495
"	-989.15	104.99	0.0000	-0.1046
M6	-1584.94	-104.92	0.0000	0.0125
"	-1555.58	-17.03	106.76	-0.0715
"	-1526.23	70.8635	59.4639	-0.1005
"	-1496.87	158.76	-141.89	-0.1019
M7	-525.28	-0.0000	-0.0000	-0.1063
"	-525.28	-0.0000	-0.0000	-0.1035
"	-525.28	-0.0000	-0.0000	-0.1008
"	-525.28	-0.0000	0.0000	-0.0981
M8	-525.28	0.0000	0.0000	-0.1188
"	-525.28	0.0000	0.0000	-0.1161
"	-525.28	0.0000	0.0000	-0.1133
"	-525.28	0.0000	0.0000	-0.1106
M9	424.06	-0.0000	-0.0000	0.0198
"	424.06	-0.0000	-0.0000	0.0198
"	424.06	-0.0000	-0.0000	0.0198
"	424.06	-0.0000	0.0000	<b>0.0198</b>

## **BENDING & COMP: TRUSS 1 - MEMBER 5**

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

### Grading:

2x or 4x

Doug-fir larch: No. 2

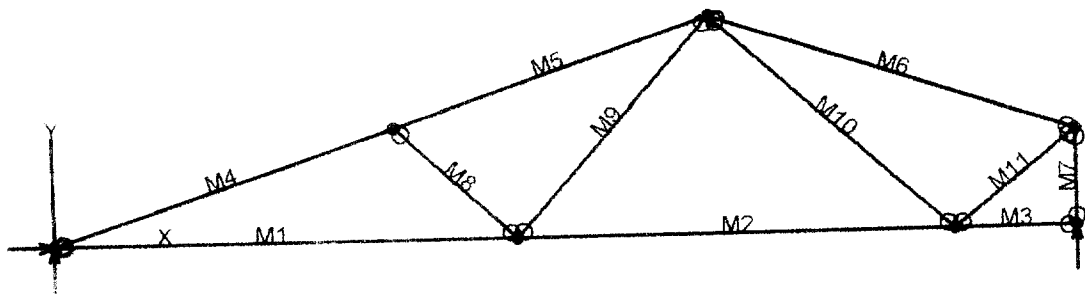
### Assumptions:

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	1496 lbs
Max Reaction, R	158 lbs
Max Moment, M	141 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
$f_c =$	285 psi
$F_{ce} =$	1697 psi
$F_c^* =$	1869 psi
$F'_c =$	1227 psi
$f_b =$	552 psi
$F'_b = F_b^* =$	1887 psi
Shear D/C ratio	0.38 < 1.0, Member OK
Interaction equation:	
$(f_c/F'_c)^2 +$	
$f_b/(F'_b(1-f_c/F_{ce})) =$	0.41 < 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

06/13/00 11:28:45

Project: Truss 2

File: C:\Program Files\IES\VA35\truss 2.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	18.50	0.00	"		"		"	
N4	21.00	0.00	"		Yes		"	
N5	7.00	2.33	"		No		"	
N6	21.00	2.00	"		"		"	
N7	13.50	4.50	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.50
M2	"	"	9.00
M3	"	"	2.50
M4	"	"	7.38
M5	"	"	6.85
M6	"	"	7.91
M7	"	"	2.00
M8	"	"	3.42
M9	"	"	6.02
M10	"	"	6.73
M11	"	"	3.20

## 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	663.60	-NA-
N4	"	-NA-	663.60	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1446.38	-42.20	-57.96	-0.0929
"	1446.38	-18.13	37.3786	-0.1334
"	1446.38	5.9320	56.6996	-0.1146
"	<b>1446.38</b>	29.9986	0.0000	-0.0000
M2	704.78	-31.72	-35.61	-0.0248
"	704.78	-8.9165	25.1670	-0.0767
"	704.78	13.8835	17.7165	-0.0952
"	704.78	36.6835	-57.96	-0.0929
M3	0.0000	4.7446	-0.0000	-0.0000
"	0.0000	11.0779	-6.6059	-0.0068
"	0.0000	17.4113	-18.48	-0.0146
"	0.0000	23.7446	-35.61	-0.0248
M4	<b>-1572.46</b>	144.37	0.0000	-0.0000
"	-1531.49	21.2813	202.93	-0.1991
"	-1490.51	-101.81	103.91	-0.1943
"	-1449.54	<b>-224.91</b>	<b>-297.06</b>	-0.0984
M5	-1209.38	<b>214.75</b>	-297.06	-0.0984
"	-1171.24	100.48	62.3173	-0.1592
"	-1133.09	-13.78	161.34	-0.1791
"	-1094.94	-128.05	0.0000	-0.0609
M6	-493.63	-197.80	-0.0000	0.0019
"	-449.67	-65.93	346.63	-0.4386
"	-405.72	65.9335	<b>346.63</b>	<b>-0.4606</b>
"	-361.76	197.80	0.0000	-0.0641
M7	-668.34	0.0000	0.0000	0.0115
"	-668.34	0.0000	0.0000	0.0167
"	-668.34	0.0000	0.0000	0.0218
"	-668.34	0.0000	0.0000	<b>0.0270</b>
M8	-502.01	0.0000	0.0000	-0.0603
"	-502.01	0.0000	0.0000	-0.0586
"	-502.01	0.0000	0.0000	-0.0570
"	-502.01	0.0000	0.0000	-0.0554
M9	563.48	-0.0000	0.0000	-0.0755
"	563.48	-0.0000	-0.0000	-0.0637
"	563.48	-0.0000	-0.0000	-0.0518
"	563.48	-0.0000	-0.0000	-0.0400
M10	-402.32	0.0000	0.0000	-0.0524
"	-402.32	0.0000	0.0000	-0.0350
"	-402.32	0.0000	0.0000	-0.0177
"	-402.32	0.0000	0.0000	-0.0004
M11	519.61	-0.0000	0.0000	-0.0362
"	519.61	-0.0000	-0.0000	-0.0270
"	519.61	-0.0000	-0.0000	-0.0178
"	519.61	-0.0000	-0.0000	-0.0086

**BENDING & COMP: TRUSS 2 - MEMBER 4**

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

Grading:

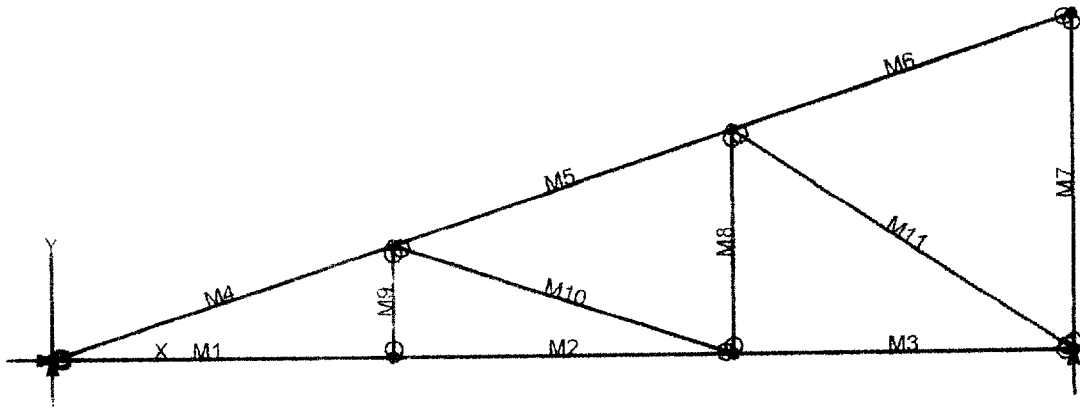
2x or 4x                                  Doug-fir larch: No. 2

Assumptions:

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

Width, b	1.5 inches
Depth, d	3.5 inches
Length	5.27 feet
Max Axial Comp, C	1449 lbs
Max Reaction, R	224 lbs
Max Moment, M	297 ft-lbs
Max LL Deflection	0.04 inches
Max TL Deflection	0.10 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 =	276 psi
Fce =	1697 psi
Fc* =	1869 psi
F'c =	1227 psi
fb =	1164 psi
F'b = Fb* =	1887 psi
Shear D/C ratio	0.54 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.79 < 1.0, Member OK
Live Load defl ratio	0.15 < 1.0, Member OK
Total Load defl ratio	0.28 < 1.0, Member OK





# VisualAnalysis 3.50.c Report

06/13/00 11:34:26

Project: Truss 3

File: C:\Program Files\IES\VA35\truss 3.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	8.00	0.00	No		No			
N3	16.00	0.00	"		"			
N4	24.00	0.00	"		Yes			
N5	8.00	2.67	"		No			
N6	16.00	5.33	"		"			
N7	24.00	8.00	"		"			

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.00
M2	"	"	8.00
M3	"	"	8.00
M4	"	"	8.43
M5	"	"	8.43
M6	"	"	8.43
M7	"	"	8.00
M8	"	"	5.33
M9	"	"	2.67
M10	"	"	8.43
M11	"	"	9.61

## 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)

17/15

NOT USED

# 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
M1	Equation Case 1	-0.00	758.40	-NA-
M4	"	-NA-	758.40	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1648.16	-33.37	-23.74	-0.1463
"	1648.16	-13.10	38.0849	-0.1465
"	1648.16	7.1662	45.9971	-0.1012
"	<b>1648.16</b>	27.4329	0.0000	-0.0000
M2	1648.16	-32.66	-49.83	-0.0935
"	1648.16	-13.40	12.7754	-0.1263
"	1648.16	6.8713	21.4740	-0.1478
"	1648.16	27.1380	-23.74	-0.1463
M3	835.42	-24.17	-0.0000	-0.0000
"	835.42	-3.9043	37.2985	-0.0680
"	835.42	16.3624	20.6876	-0.0918
"	835.42	36.6291	-49.83	-0.0935
M4	<b>-1794.80</b>	171.59	0.0000	-0.0000
"	-1747.86	30.9485	<b>283.70</b>	<b>-0.3702</b>
"	-1700.92	-109.69	173.02	-0.3646
"	-1653.98	<b>-250.33</b>	-332.05	-0.1475
M5	-949.53	207.94	-332.05	-0.1475
"	-902.75	67.2497	53.6331	-0.1550
"	-855.97	-73.44	44.9302	-0.1304
"	-809.19	-214.14	<b>-358.16</b>	-0.0862
M6	-84.58	<b>253.43</b>	-358.16	-0.0862
"	-37.64	112.79	155.61	-0.2993
"	9.2959	-27.85	275.00	-0.3272
"	56.2346	-168.49	-0.0000	0.0079
M7	-177.63	0.0000	0.0000	-0.0306
"	-177.63	0.0000	0.0000	-0.0056
"	-177.63	0.0000	0.0000	0.0194
"	-177.63	0.0000	0.0000	<b>0.0444</b>
M8	341.54	-0.0000	0.0000	-0.0007
"	341.54	-0.0000	-0.0000	0.0114
"	341.54	-0.0000	-0.0000	0.0234
"	341.54	-0.0000	-0.0000	0.0355
M9	60.5051	0.0000	0.0000	0.0177
"	60.5051	0.0000	0.0000	0.0212
"	60.5051	0.0000	0.0000	0.0247
"	60.5051	0.0000	0.0000	0.0282
M10	-856.81	0.0000	0.0000	-0.1297
"	-856.81	0.0000	0.0000	-0.1123
"	-856.81	0.0000	0.0000	-0.0949
"	-856.81	0.0000	0.0000	-0.0775
M11	-1003.86	0.0000	0.0000	-0.0762
"	-1003.86	0.0000	0.0000	-0.0426
"	-1003.86	0.0000	0.0000	-0.0090
"	-1003.86	0.0000	0.0000	0.0246

**BENDING & COMP: TRUSS 3 - 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	8.43 feet
Max Axial Comp. C	1653 lbs
Max Reaction, R	250 lbs
Max Moment, M	332 ft-lbs
Max LL Deflection	0.06 inches
Max TL Deflection	0.15 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 =	1.25
fc =	157 psi
Fce =	716 psi
Fc* =	1869 psi
F'c =	648 psi
fb =	650 psi
F'b = Fb* =	1887 psi
Shear D/C ratio	0.30 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.50 < 1.0, Member OK
Live Load defl ratio	0.14 < 1.0, Member OK
Total Load defl ratio	0.27 < 1.0, Member OK