

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

**Permit No: 0012258**  
**Insp Area: 2**

**Site Address: 511 LITTLE RIVER WY SAC**  
Parcel No: 031-0670-044

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

CONTRACTOR  
ZIMMERMAN ROOFING  
3675 R ST  
SACRAMENTO CA 95816

OWNER  
KAMIKAWA BEN  
511 LITTLE RIVER WY  
SACRAMENTO CA 95831

ARCHITECT

**Nature of Work: 26 SQ T/O RESHEET REROOF W 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. 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-39 License Number 557559 Date 10/13/00 Contractor Signature Billy 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 10/13/00 Applicant/Agent Signature Billy 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 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:

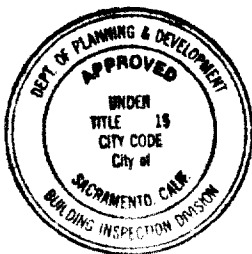
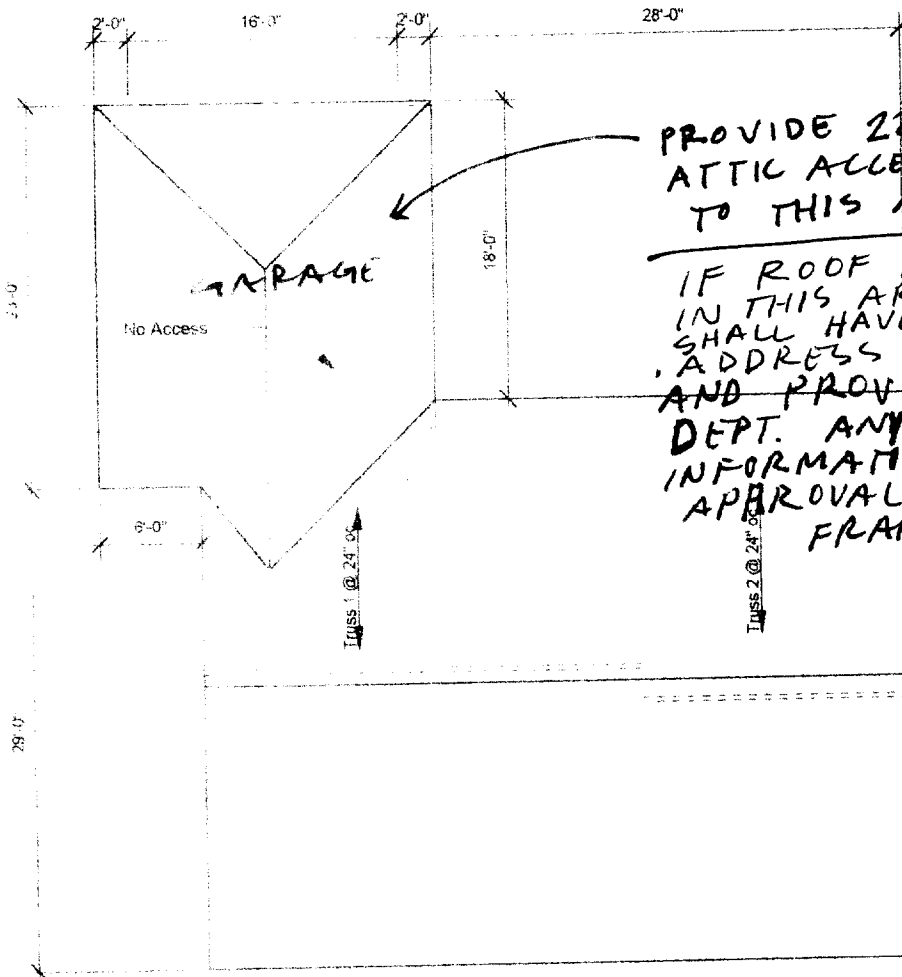
Carrier STATE COMP INS FUND Policy Number 713-99-2021 Exp Date 10/01/2000

(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 10/13/00 Applicant Signature Billy 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.

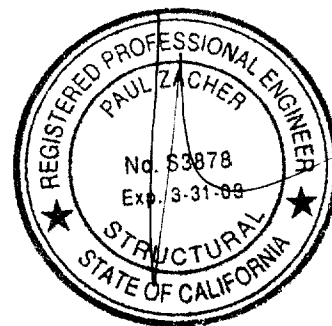
**THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.**



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 a violation of any City Ordinance or State Law.

REVIEWED BY: *[Signature]*  
10/12/00



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 - KAMIKAWA

Not to Scale

16

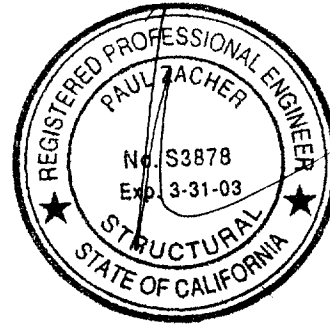
Kamikawa

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

TEL: 916.961.3960  
FAX: 916.961.8552

September 18, 2000

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



Attn: Mr. Jeff Tucker,

re Job 2000\_315: KAMIKAWA

Subject: Structural Investigation Report of the Roof for the Residence located at 511 Little River Way, 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 September 18, 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 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 area is framed with pre-engineered wood trusses spaced at 24" on center. The garage area is inaccessible and was not inspected.

**CONCLUSIONS:**

Roof:  
~~The living area has sufficient structural capacity for the applied live and dead loads. The garage is inaccessible and therefore no conclusions are drawn.~~

Kamikawa

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.

#### Garage:

1. After the roofing material has been removed, the contractor shall verify that the framing in the non-accessible of the structure does not exceed the following:

#### Flat Ceiling Portion:

- a. 2x6 @ 24" oc - max span = 11'-3"

If the framing differs from the above, the contractor shall supply the engineer with diagrams showing the member sizes and span lengths. The engineer shall then determine if the structure can adequately support the applied dead and live loads and a supplemental report shall be issued. See detail 1.

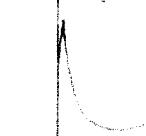
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and 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: 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

P. K. Zacher, S.E.

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

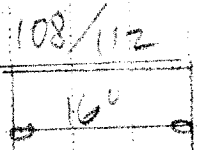
Job #: 00-1015

Date: 9/8/00

LOADING

2  
15' 4" O.C. 7" x 12" PL  
16" x 12"

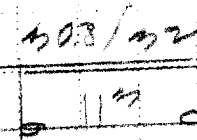
4x12#2



RAFTERS

15' 4" O.C. 2" x 6" RA  
16" x 12"

2x6#2



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

Title :  
 Dsgnr:  
 Description :  
 Scope :

Job #  
 Date: 6:17PM, 18 SEP 00

Rev: 510304  
 User: KW 0602844, Ver: 5.1.3, 22 Jun-1999, Win32  
 (c) 1983-99 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	B1
Beam Width	in	2x6 1.500	4x12 3.500
Beam Depth	in	5.500	11.250
Le: Unbraced Length	ft	0.00	0.00
Timber Grade		Douglas Fir - Larch	Douglas Fir - Larch
Fb - Basic Allow	psi	875.0	875.0
Fv - Basic Allow	psi	95.0	95.0
Elastic Modulus	ksi	1,600.0	1,600.0
Load Duration Factor		1.250	1.250
Member Type		Sawn	Sawn
Repetitive Status		Repetitive	No

#### Center Span Data

Span	ft	11.25	16.00
Dead Load	#/ft	30.80	108.00
Live Load	#/ft	32.00	112.00

#### Results

Ratio = 0.9641 0.9511

Mmax @ Center	in-k	11.92	84.48
@ X =	ft	5.62	8.00
Fb: Actual	psi	1,576.5	1,144.3
Fb: Allowable	psi	1,635.2	1,203.1
		Bending OK	Bending OK
Fv: Actual	psi	59.1	59.5
Fv: Allowable	psi	118.8	118.8
		Shear OK	Shear OK

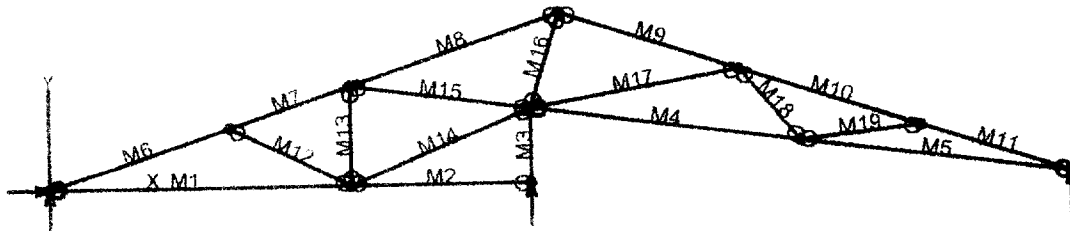
#### Reactions

@ Left End	DL	lbs	173.25	864.00
	LL	lbs	180.00	896.00
	Max DL+LL	lbs	353.25	1,760.00
@ Right End	DL	lbs	173.25	864.00
	LL	lbs	180.00	896.00
	Max DL+LL	lbs	353.25	1,760.00

#### Deflections

Ratio OK Deflection OK

Center DL Defl	in	-0.334	-0.240
L/Defl Ratio		404.7	801.1
Center LL Defl	in	-0.347	-0.249
L/Defl Ratio		389.5	772.5
Center Total Defl	in	-0.680	-0.488
Location	ft	5.625	8.000
L/Defl Ratio		198.5	393.3





# VisualAnalysis 3.50.c Report

09/18/00 18:11:41

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	16.00	0.00	"		Yes		"	
N4	16.00	2.50	"		No		"	
N5	25.00	1.25	"		"		"	
N6	34.00	0.00	"		Yes		"	
N7	6.00	2.00	"		No		"	
N8	10.00	3.33	"		"		"	
N9	17.00	5.67	"		"		"	
N10	23.00	3.67	"		"		"	
N11	29.00	1.67	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	10.00
M2	"	"	6.00
M3	"	"	2.50
M4	"	"	9.09
M5	"	"	9.09
M6	"	"	6.32
M7	"	"	4.22
M8	"	"	5.38
M9	"	"	6.32
M10	"	"	6.32
M11	"	"	5.27
M12	"	"	4.47
M13	"	"	3.33
M14	"	"	6.50
M15	"	"	6.06
M16	"	"	3.32
M17	"	"	7.10
M18	"	"	3.14
M19	"	"	4.02

## 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>

Wload -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	304.12	-NA-
N3	"	-NA-	1537.07	-NA-
N6	"	-NA-	395.29	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	363.61	-50.49	-74.91	-0.0258
"	363.61	-21.82	45.3761	-0.1139
"	363.61	6.8422	70.3464	-0.1227
"	363.61	35.5089	0.0000	-0.0000
M2	-0.0000	-13.31	0.0000	-0.0000
"	-0.0000	3.8852	9.3437	-0.0072
"	-0.0000	21.0852	-15.63	-0.0096
"	-0.0000	38.2852	-74.91	-0.0258
M3	-1523.75	0.0000	-0.0000	-0.0049
"	-1523.75	0.0000	-0.0000	-0.0021
"	-1523.75	0.0000	0.0000	0.0007
"	-1523.75	0.0000	0.0000	0.0035
M4	265.08	-46.11	-67.34	-0.1090
"	268.66	-20.31	33.0537	-0.1340
"	272.25	5.4888	55.5007	-0.1124
"	275.83	31.2888	0.0000	-0.0056
M5	1262.76	-31.29	-0.0000	0.0022
"	1266.35	-5.4888	55.5007	-0.1072
"	1269.93	20.3112	33.0537	-0.1314
"	1273.51	46.1112	-67.34	-0.1090
M6	-429.89	139.85	0.0000	-0.0000
"	-393.76	31.4460	179.99	-0.1319
"	-357.62	-76.95	132.02	-0.1282
"	-321.49	-185.35	-143.91	-0.0289
M7	-50.20	85.9043	-143.91	-0.0289
"	-26.18	13.6377	-74.23	0.0072
"	-2.1473	-58.63	-105.84	0.0124
"	21.8814	-130.90	-238.74	-0.0249
M8	1295.92	222.05	-238.74	-0.0249
"	1338.20	95.5790	151.21	-0.1983
"	1380.47	-30.89	230.78	-0.2272
"	1422.75	-157.35	-0.0000	-0.0209
M9	952.48	-197.15	-218.49	-0.0899
"	988.61	-88.75	82.2942	-0.1376

	1024.74	19.6533	155.13	-0.1314
	1060.88	128.05	0.0000	-0.0106
M11	-599.89	-147.05	-120.16	-0.1259
	-563.76	-38.65	75.0186	-0.1522
	-527.63	69.7478	42.2410	-0.1310
	-491.49	178.15	-218.49	-0.0899
M12	-1360.86	-112.71	0.0000	0.0051
	-1330.69	-22.37	118.28	-0.0923
	-1300.52	67.9608	78.2279	-0.1282
	-1270.35	158.29	-120.16	-0.1259
M12	-383.56	-0.0000	0.0000	-0.0227
	-383.56	-0.0000	-0.0000	-0.0221
	-383.56	-0.0000	-0.0000	-0.0215
	-383.56	-0.0000	-0.0000	-0.0208
M13	251.75	0.0000	0.0000	-0.0049
	251.75	0.0000	0.0000	-0.0048
	251.75	0.0000	0.0000	-0.0048
	251.75	0.0000	0.0000	-0.0048
M14	22.2473	-0.0000	0.0000	-0.0257
	22.2473	-0.0000	-0.0000	-0.0182
	22.2473	-0.0000	-0.0000	-0.0108
	22.2473	-0.0000	-0.0000	-0.0034
M15	-1332.57	0.0000	0.0000	-0.0237
	-1332.57	0.0000	0.0000	-0.0177
	-1332.57	0.0000	0.0000	-0.0116
	-1332.57	0.0000	0.0000	-0.0056
M16	-1108.62	0.0000	0.0000	-0.0018
	-1108.62	0.0000	0.0000	0.0056
	-1108.62	0.0000	0.0000	0.0131
	-1108.62	0.0000	0.0000	<b>0.0205</b>
M17	-1251.97	-0.0000	-0.0000	-0.0931
	-1251.97	-0.0000	-0.0000	-0.0636
	-1251.97	-0.0000	-0.0000	-0.0340
	-1251.97	-0.0000	0.0000	-0.0045
M18	398.25	-0.0000	-0.0000	-0.0800
	398.25	-0.0000	-0.0000	-0.0736
	398.25	-0.0000	-0.0000	-0.0671
	398.25	-0.0000	0.0000	-0.0607
M19	-736.48	0.0000	0.0000	-0.1248
	-736.48	0.0000	0.0000	-0.1185
	-736.48	0.0000	0.0000	-0.1122
	-736.48	0.0000	0.0000	-0.1060

**BENDING & COMP: TRUSS 1 - MEMBER 11**

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

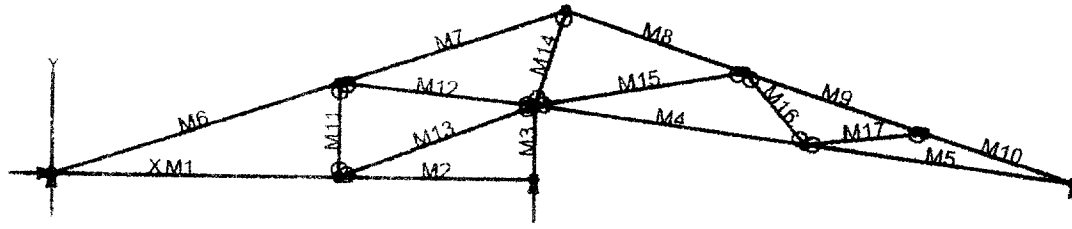
Grading:

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	1270 lbs
Max Reaction, R	158 lbs
Max Moment, M	120 ft-lbs
Max LL Deflection	0.05 inches
Max TL Deflection	0.12 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 =	242 psi
Fce=	1789 psi
Fc*=	2084 psi
F'c=	1326 psi
fb=	470 psi
F*b=Fb*=	2156 psi
Shear D/C ratio	0.38 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F*b(1-fc/Fce)) =	0.29 < 1.0, Member OK
Live Load defl ratio	0.19 < 1.0, Member OK
Total Load defl ratio	0.34 < 1.0, Member OK



# VisualAnalysis 3.50.c Report

09/18/00 19:15:07

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			No
N2	9.50	0.00	No	No				"
N3	16.00	0.00	"	Yes				"
N4	16.00	2.50	"	No				"
N5	25.00	1.25	"	"				"
N6	34.00	0.00	"	Yes				"
N7	9.50	3.17	"	No				"
N8	17.00	5.67	"	"				"
N9	23.00	3.67	"	"				"
N10	29.00	1.67	"	"				"

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.50
M2	"	"	6.50
M3	"	"	2.50
M4	"	"	9.09
M5	"	"	9.09
M6	"	"	10.01
M7	"	"	7.91
M8	"	"	6.32
M9	"	"	6.32
M10	"	"	5.27
M11	"	"	3.17
M12	"	"	6.53
M13	"	"	6.96
M14	"	"	3.32
M15	"	"	7.10
M16	"	"	3.14
M17	"	"	4.02

## 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
M1	Equation Case 1	-0.00	308.38	-NA-
M2	"	-NA-	1529.06	-NA-
M3	"	-NA-	399.04	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	167.99	-76.58	-134.67	-0.0260
"	167.99	-49.34	64.4912	-0.1982
"	167.99	-22.11	177.63	-0.2607
"	167.99	5.1221	204.74	-0.0000
M2	-36.14	-3.8236	22.1507	-0.0000
"	-36.14	14.8097	10.1492	0.0007
"	-36.14	33.4430	-42.13	0.0074
"	-36.14	52.0764	-134.67	-0.0260
M3	-1525.24	-36.14	-68.20	3.0037
"	-1525.24	-36.14	-38.09	3.0055
"	-1525.24	-36.14	-7.9672	3.0024
"	<b>-1525.24</b>	-36.14	22.1507	-0.0018
M4	264.76	-37.24	-54.91	-0.1080
"	268.34	-11.44	18.6085	-0.0926
"	271.92	14.3632	14.1766	-0.0559
"	275.51	40.1632	-68.20	-0.0056
M5	1276.42	-30.72	17.6286	0.0022
"	1280.01	-4.9171	71.3976	-0.1334
"	1283.59	20.8829	47.2190	-0.1562
"	1287.17	46.6829	-54.91	-0.1080
M6	-255.34	<b>234.50</b>	-204.74	-0.0000
"	-198.07	62.8633	<b>290.16</b>	<b>-0.4688</b>
"	-140.80	-108.77	213.54	-0.4242
"	-83.53	<b>-280.40</b>	<b>-434.62</b>	-0.0265
M7	1175.06	233.73	-434.62	-0.0265
"	1220.23	98.2347	1.8927	-0.0245
"	1265.40	-37.27	82.2280	-0.0579
"	<b>1310.56</b>	-172.77	-193.62	-0.0214
M8	854.04	-158.63	-168.52	-0.0882
"	890.17	-50.23	51.0730	-0.0873
"	926.31	58.1693	42.7051	-0.0591
"	962.44	166.57	-193.62	-0.0105
M9	-597.60	-156.40	-129.30	-0.1261
"	-561.46	-48.00	85.5828	-0.1662
"	-525.33	60.4001	72.5119	-0.1499
"	-489.20	168.90	-168.52	-0.0882
M10	-1375.58	-114.30	-17.83	0.0051

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	1345.41	-23.98	103.48	-0.0843
	-1315.24	86.3510	66.2568	-0.1208
	-1285.07	156.68	-129.30	-0.1261
M11	50.1420	-0.0000	-0.0000	0.0021
	50.1420	-0.0000	-0.0000	0.0035
	50.1420	-0.0000	-0.0000	0.0049
	50.1420	-0.0000	0.0000	0.0062
M12	-1363.86	0.0000	0.0000	-0.0250
	-1363.86	0.0000	0.0000	-0.0185
	-1363.86	0.0000	0.0000	-0.0120
	-1363.86	0.0000	0.0000	-0.0055
M13	218.71	0.0000	0.0000	0.0035
	218.71	0.0000	0.0000	0.0107
	218.71	0.0000	0.0000	0.0179
	218.71	0.0000	0.0000	<b>0.0251</b>
M14	-1091.26	0.0000	0.0000	-0.0214
	-1091.26	0.0000	0.0000	-0.0136
	-1091.26	0.0000	0.0000	-0.0058
	-1091.26	0.0000	0.0000	0.0020
M15	-1143.38	-0.0000	-0.0000	-0.0916
	-1143.38	-0.0000	-0.0000	-0.0626
	-1143.38	-0.0000	-0.0000	-0.0335
	-1143.38	-0.0000	0.0000	-0.0044
M16	392.61	-0.0000	-0.0000	-0.0793
	392.61	-0.0000	-0.0000	-0.0726
	392.61	-0.0000	-0.0000	-0.0660
	392.61	-0.0000	0.0000	-0.0593
M17	-755.17	0.0000	0.0000	-0.1250
	-755.17	0.0000	0.0000	-0.1183
	-755.17	0.0000	0.0000	-0.1116
	-755.17	0.0000	0.0000	-0.1049



## BENDING & COMP: TRUSS 2 - MEMBER 11

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	10.01 feet
Max Axial Comp. C	83 lbs
Max Reaction, R	280 lbs
Max Moment, M	434 ft-lbs
Max LL Deflection	0.2 inches
Max TL Deflection	0.46 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 =	1.28
fc =	16 psi
Fce =	552 psi
Fc* =	2084 psi
F'c =	518 psi
fb =	1701 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.67 < 1.0, Member OK
Interaction equation (fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.81 < 1.0, Member OK
Live Load defl ratio	0.40 < 1.0, Member OK
Total Load defl ratio	0.69 < 1.0, Member OK