

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

**Permit No: 0012260**  
**Insp Area: 2**

**Site Address: 2 VIERRA CT SAC**  
Parcel No: 031-0750-055

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

**CONTRACTOR**  
ZIMMERMAN ROOFING  
3675 R ST  
SACRAMENTO CA 95816

**OWNER**  
GUAN PETER J/CALVIN C  
2 VIERRA CT  
SACRAMENTO CA 95831

**ARCHITECT**

**Nature of Work: 27 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 CSA License Number 557559 Date 10/13/00 Contractor Signature [Signature]

**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 [Signature]

**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

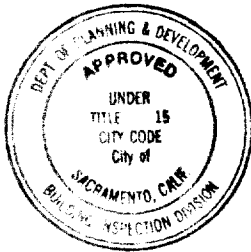
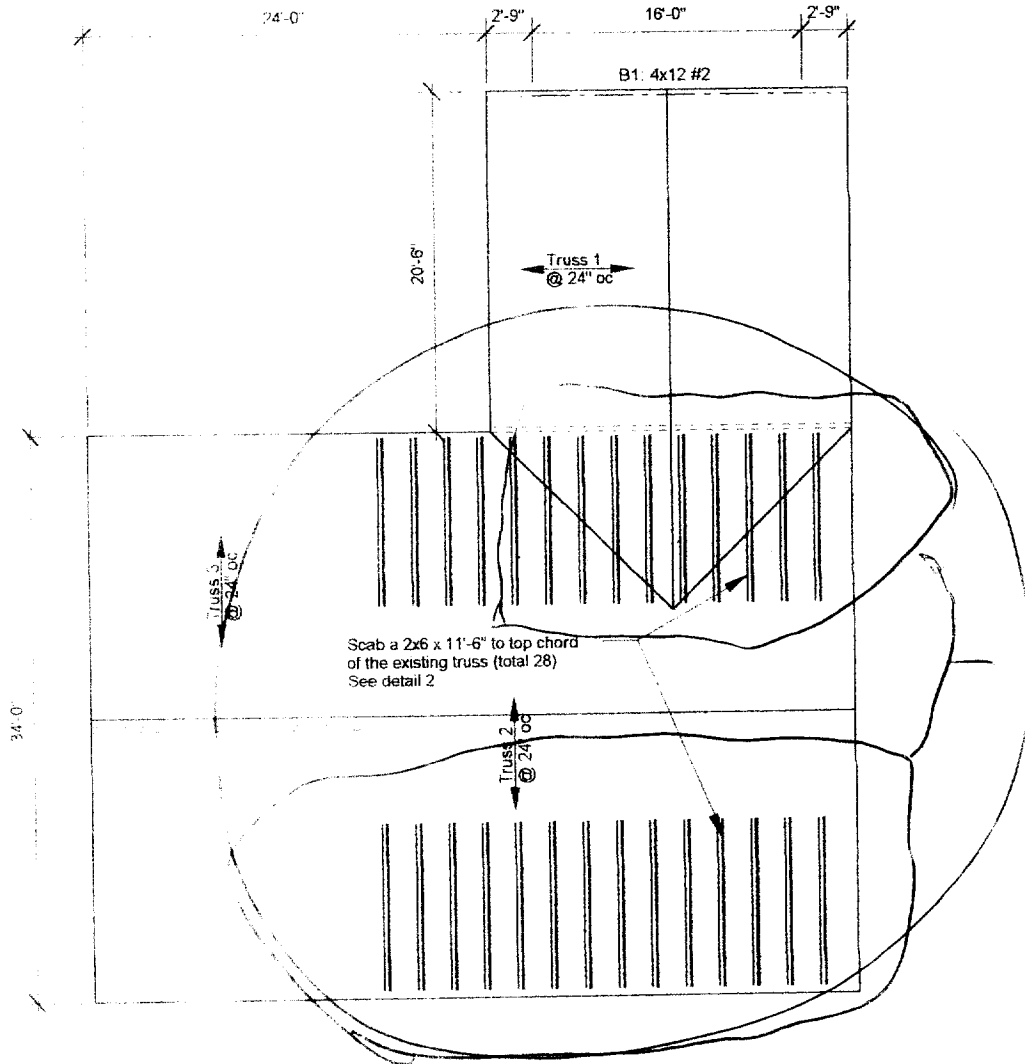
\_\_\_\_ (This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should 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 [Signature]

**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.**

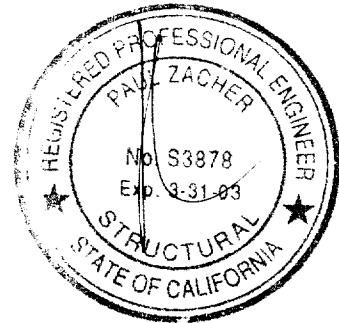
9 VIERRA CT



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.

REVIEWED BY:  
*Bulalo*  
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.

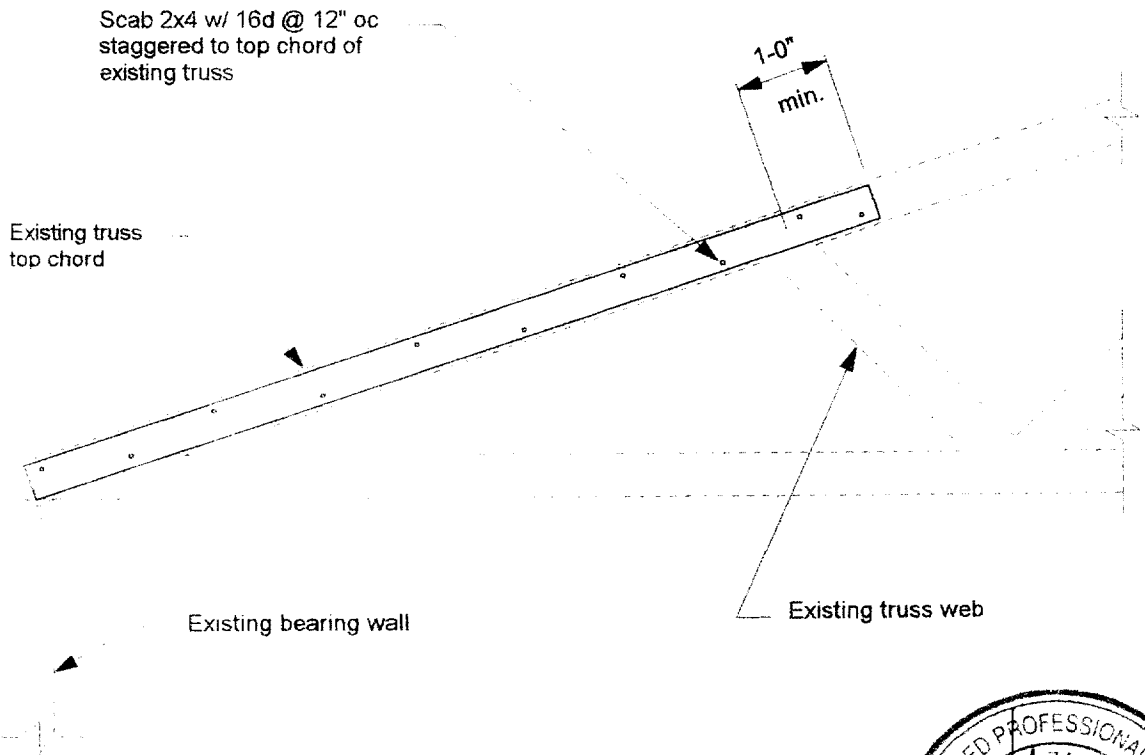


ROOF PLAN - GUAN

Not to Scale

20





Scab 2x4 w/ 16d @ 12" oc  
staggered to top chord of  
existing truss

1-0"  
min.

Existing truss  
top chord

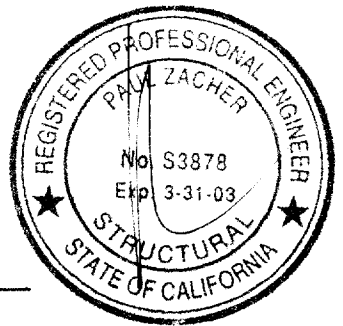
Existing bearing wall

Existing truss web

2

**TRUSS REINFORCEMENT DETAIL**

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



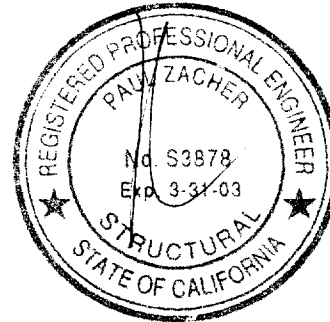
Guan

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

TEL: 916.961.3960  
FAX: 916.961.6552

September 8, 2000

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



Attn: Mr. Jeff Tucker.

re: Job 2000\_009: MARSHALL

Subject: Structural Investigation Report of the Roof for the Residence located at 2 Vierra 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 September 8, 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.

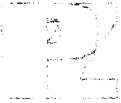
**CONSTRUCTION:**

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

Guan



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 2x6 DF#2 x 11'-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: 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.

Job #: 01-270

Date: 7/8/00

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

LOADING

CE-194 PIF = 2 62 PIF  
-2-020 - 34

4x12 #2

62/64

62

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

Title :  
 Dsgnr:  
 Description :  
 Scope :

Job #  
 Date: 1:52PM, 8 SEP 00

Rev: 010304  
 User: RW 0602844 Ver: 5.1.3.22 Jun-1999 Win32  
 © 1983-99 ENERCALC

**Timber Beam & Joist**

c:\enercalc\test.ecw\Calculations

**Description BEAMS**

**Timber Member Information**

Calculations are designed to 1997 NDS and 1997 UBC Requirements

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

**Center Span Data**

<b>Span</b>	ft	16.00
<b>Dead Load</b>	#/ft	62.00
<b>Live Load</b>	#/ft	64.00

**Results Ratio = 0.5447**

<b>Mmax @ Center</b>	in-k	48.38
<b>@ X =</b>	ft	8.00
<b>fb: Actual</b>	psi	655.4
<b>Fb: Allowable</b>	psi	1,203.1
		Bending OK
<b>fv: Actual</b>	psi	34.1
<b>Fv: Allowable</b>	psi	118.8
		Shear OK

**Reactions**

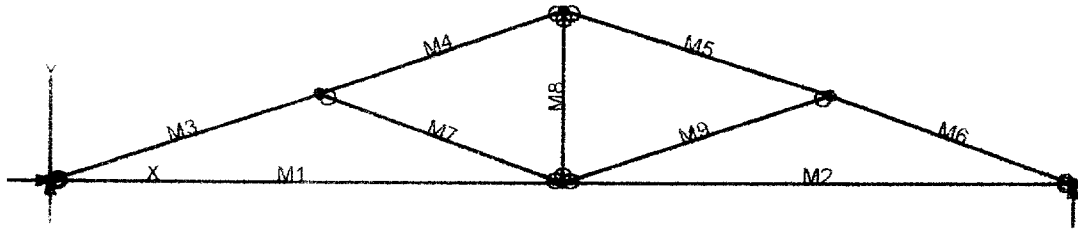
<b>@ Left End DL</b>	lbs	496.00
<b>LL</b>	lbs	512.00
<b>Max. DL+LL</b>	lbs	1,008.00
<b>@ Right End DL</b>	lbs	496.00
<b>LL</b>	lbs	512.00
<b>Max. DL+LL</b>	lbs	1,008.00

**Deflections**

Ratio OK

<b>Center DL Defl</b>	in	-0.138
<b>L/Defl Ratio</b>		1,395.5
<b>Center LL Defl</b>	in	-0.142
<b>L/Defl Ratio</b>		1,351.9
<b>Center Total Defl</b>	in	-0.280
<b>Location</b>	ft	8.000
<b>L/Defl Ratio</b>		686.7





# VisualAnalysis 3.50.c Report

09/08/00 13:27:12

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	10.50	0.00	No		No		"	
N3	21.00	0.00	"		Yes		"	
N4	5.50	1.83	"		No		"	
N5	16.00	1.83	"		"		"	
N6	10.50	3.58	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	10.50
M2	"	"	10.50
M3	"	"	5.80
M4	"	"	5.30
M5	"	"	5.77
M6	"	"	5.32
M7	"	"	5.32
M8	"	"	3.58
M9	"	"	5.80

## 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	659.40	-NA-
N3	"	-NA-	659.40	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1513.21	-54.78	-101.16	-0.1210
"	1513.21	-24.68	37.6447	-0.1743
"	1513.21	5.4154	71.3656	-0.1598
"	<b>1513.21</b>	35.5154	0.0000	-0.0000
M2	1421.98	-35.52	0.0000	-0.0000
"	1421.98	-5.4154	71.3656	-0.1599
"	1421.98	24.6846	37.6447	-0.1742
"	1421.98	54.7846	-101.16	-0.1210
M3	<b>-1632.78</b>	114.24	0.0000	-0.0000
"	-1601.41	19.9559	<b>129.19</b>	-0.1087
"	-1570.04	-74.33	76.6602	-0.1367
"	-1538.67	-168.61	-157.58	-0.1209
M4	-1109.63	<b>157.64</b>	-157.58	-0.1207
"	-1079.79	72.3785	45.1236	-0.1497
"	-1049.94	-12.88	97.6509	-0.1592
"	-1020.10	-98.15	0.0000	-0.1183
M5	-1098.45	<b>-169.81</b>	<b>-160.30</b>	-0.0989
"	-1068.32	-75.12	74.8512	-0.1564
"	-1038.19	19.5713	128.28	-0.1717
"	-1008.06	114.26	0.0000	-0.1077
M6	-1549.78	-97.14	-0.0000	<b>0.0142</b>
"	-1518.73	-12.31	96.7464	-0.0625
"	-1487.68	72.5216	43.3135	-0.0890
"	-1456.64	157.35	-160.30	-0.0969
M7	-551.56	0.0000	0.0000	-0.1063
"	-551.56	0.0000	0.0000	-0.1049
"	-551.56	0.0000	0.0000	-0.1036
"	-551.56	0.0000	0.0000	-0.1023
M8	441.12	-0.0000	0.0000	-0.0214
"	441.12	-0.0000	-0.0000	-0.0204
"	441.12	-0.0000	-0.0000	-0.0194
"	441.12	-0.0000	-0.0000	-0.0185
M9	-449.72	-0.0000	0.0000	-0.1215
"	-449.72	-0.0000	-0.0000	-0.1166
"	-449.72	-0.0000	-0.0000	-0.1117
"	-449.72	-0.0000	-0.0000	-0.1067

### BENDING & COMP: TRUSS 1 - MEMBER 3

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

#### Grading:

2x or 4x

Doug-fir larch: No. 2

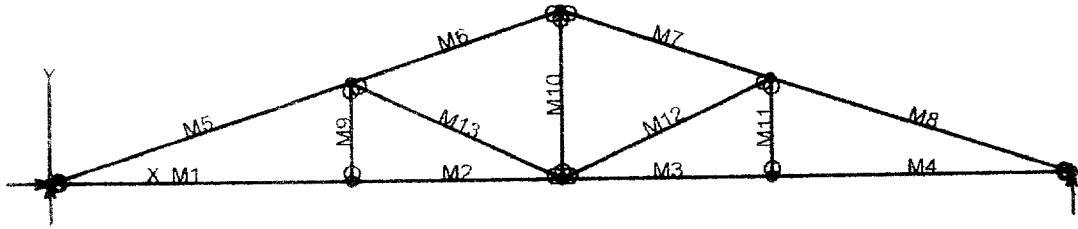
#### Assumptions:

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	5.8 feet
Max Axial Comp. C	1538 lbs
Max Reaction, R	168 lbs
Max Moment, M	157 ft-lbs
Max LL Deflection	0.04 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 =	1.16
fc =	293 psi
Fce =	1496 psi
Fc* =	2084 psi
F'c =	1184 psi
fb =	615 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.40 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.42 < 1.0, Member OK
Live Load defl ratio	0.14 < 1.0, Member OK
Total Load defl ratio	0.31 < 1.0, Member OK



# VisualAnalysis 3.50.c Report

09/08/00 13:32:37

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	10.00	0.00	No		No		"	
N3	17.00	0.00	"		"		"	
N4	24.00	0.00	"		"		"	
N5	34.00	0.00	"		Yes		"	
N6	10.00	3.33	"		No		"	
N7	24.00	3.33	"		"		"	
N8	17.00	5.67	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	10.00
M2	"	"	7.00
M3	"	"	7.00
M4	"	"	10.00
M5	"	"	10.54
M6	"	"	7.38
M7	"	"	7.38
M8	"	"	10.54
M9	"	"	3.33
M10	"	"	5.67
M11	"	"	3.33
M12	"	"	7.75
M13	"	"	7.75

## 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	1067.60	-NA-
N5	"	-NA-	1067.60	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2430.63	-48.09	-50.90	-0.3299
"	2430.63	-19.42	61.3852	-0.3447
"	2430.63	9.2436	78.3509	-0.2465
"	<b>2430.63</b>	37.9103	0.0000	-0.0000
M2	2430.63	-26.19	-23.55	-0.3413
"	2430.63	-6.1266	14.0392	-0.3449
"	2430.63	13.9400	4.9236	-0.3380
"	2430.63	34.0067	-50.90	-0.3299
M3	2430.63	-34.01	-50.90	-0.3299
"	2430.63	-13.94	4.9236	-0.3380
"	2430.63	6.1266	14.0392	-0.3449
"	2430.63	26.1933	-23.55	-0.3413
M4	2430.63	-37.91	-0.0000	-0.0000
"	2430.63	-9.2436	78.3509	-0.2465
"	2430.63	19.4231	61.3852	-0.3446
"	2430.63	48.0897	-50.90	-0.3299
M5	<b>-2631.45</b>	209.01	0.0000	-0.0000
"	-2574.37	37.5927	<b>431.68</b>	<b>-0.8741</b>
"	-2517.29	-133.82	262.64	-0.8551
"	-2460.21	<b>-305.23</b>	<b>-507.11</b>	-0.3353
M6	-1775.00	248.62	-507.11	-0.3353
"	-1734.91	128.68	-43.72	-0.3225
"	-1694.81	8.7360	125.31	-0.3867
"	-1654.72	-111.21	-0.0000	-0.3352
M7	-1775.00	-248.62	-507.11	-0.3000
"	-1734.91	-128.68	-43.72	-0.2873
"	-1694.81	-8.7360	125.31	-0.3515
"	-1654.72	111.21	0.0000	-0.3000
M8	-2631.45	-209.01	0.0000	0.0351
"	-2574.37	-37.59	431.68	-0.8391
"	-2517.29	133.82	262.64	-0.8198
"	-2460.21	<b>305.23</b>	<b>-507.11</b>	-0.3002
M9	82.0964	-0.0000	-0.0000	0.0327
"	82.0964	-0.0000	-0.0000	0.0457
"	82.0964	-0.0000	-0.0000	0.0587
"	82.0964	-0.0000	0.0000	0.0717
M10	838.29	-0.0000	0.0000	0.0556
"	838.29	-0.0000	-0.0000	0.0556
"	838.29	-0.0000	-0.0000	0.0556
"	838.29	-0.0000	-0.0000	0.0556
M11	82.0964	0.0000	0.0000	0.0394
"	82.0964	0.0000	0.0000	0.0524
"	82.0964	0.0000	0.0000	0.0654
"	82.0964	0.0000	0.0000	0.0784

M10	-914.72	-0.0000	0.0000	0.3145
	-914.72	-0.0000	-0.0000	0.3204
	-914.72	-0.0000	-0.0000	0.3262
	-914.72	-0.0000	-0.0000	<b>0.3321</b>
M13	-914.72	0.0000	0.0000	0.2668
	-914.72	0.0000	0.0000	0.2726
	-914.72	0.0000	0.0000	0.2785
	-914.72	0.0000	0.0000	0.2843

---



## **BENDING & COMP: TRUSS 2 - MEMBER 5**

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

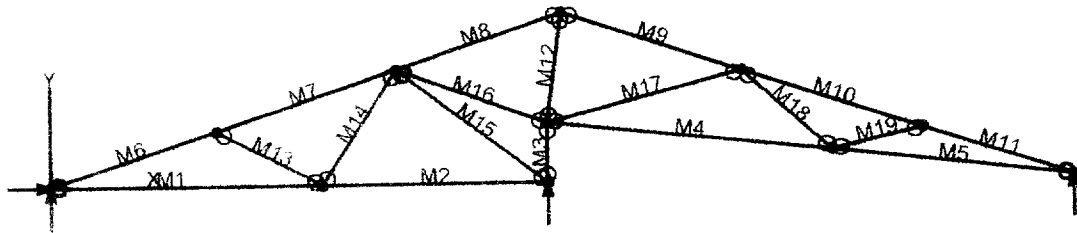
### Grading:

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	5.5 inches
Length	10.54 feet
Max Axial Comp. C	2460 lbs
Max Reaction, R	305 lbs
Max Moment, M	507 ft-lbs
Max LL Deflection	0.14 inches
Max TL Deflection	0.33 inches
LL Defl Criteria = $L/240$	240
TL Defl Criteria = $L/180$	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 =	1.29
fc =	298 psi
Fce =	1244 psi
Fc* =	2084 psi
F'c =	1038 psi
fb =	804 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.47 < 1.0, Member OK
Interaction equation: $(fc/F'c)^2 +$	
$fb/(F'b(1-fc/Fce)) =$	0.57 < 1.0, Member OK
Live Load defl ratio	0.27 < 1.0, Member OK
Total Load defl ratio	0.47 < 1.0, Member OK



# VisualAnalysis 3.50.c Report

09/08/00 13:48:47

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	9.00	0.00	No	No	"
N3	16.50	0.00	"	Yes	"
N4	16.50	2.00	"	No	"
N5	26.00	0.97	"	"	"
N6	34.00	0.00	"	Yes	"
N7	5.50	1.83	"	No	"
N8	11.50	3.83	"	"	"
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	9.00
M2	"	"	7.50
M3	"	"	2.00
M4	"	"	9.56
M5	"	"	8.06
M6	"	"	5.80
M7	"	"	6.32
M8	"	"	5.80
M9	"	"	6.32
M10	"	"	4.32
M11	"	"	6.27
M12	"	"	3.70
M13	"	"	3.95
M14	"	"	4.57
M15	"	"	6.30
M16	"	"	5.32
M17	"	"	6.71
M18	"	"	4.04
M19	"	"	3.08

## 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	314.04	-NA-
N3	"	-NA-	1464.06	-NA-
N6	"	-NA-	357.10	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	494.74	-46.61	-71.19	-0.0162
"	494.74	-20.81	29.7493	-0.0643
"	494.74	4.9905	53.4779	-0.0723
"	494.74	30.7905	0.0000	-0.0000
M2	-94.24	-22.76	0.0000	-0.0000
"	-94.24	-1.2586	29.8870	-0.0262
"	-94.24	20.2414	6.1584	-0.0223
"	-94.24	41.7414	-71.19	-0.0162
M3	-1513.48	0.0000	0.0000	-0.0050
"	-1513.48	0.0000	0.0000	-0.0004
"	-1513.48	0.0000	0.0000	0.0042
"	-1513.48	0.0000	0.0000	0.0089
M4	121.55	-47.67	-67.41	-0.0832
"	124.49	-20.59	41.0807	-0.1370
"	127.42	6.4825	63.5520	-0.1252
"	130.36	33.5572	0.0000	-0.0050
M5	1039.82	-25.78	0.0000	0.0007
"	1042.58	-3.0178	38.5314	-0.0629
"	1045.34	19.7488	16.0501	-0.0807
"	1048.10	42.5153	-67.41	-0.0832
M6	-558.86	112.57	0.0000	-0.0000
"	-527.49	18.2857	125.96	-0.0737
"	-496.12	-76.00	70.2061	-0.0690
"	-464.75	-170.28	-167.27	-0.0250
M7	-154.36	151.21	-167.27	-0.0250
"	-120.08	48.3723	42.5696	-0.0382
"	-85.80	-54.47	36.1473	-0.0304
"	-51.52	-157.30	-186.53	-0.0069
M8	970.85	173.51	-186.53	-0.0069
"	1002.37	79.2796	57.3614	-0.0535
"	1033.90	-14.95	119.54	-0.0698
"	1065.42	-109.19	0.0000	-0.0121
M9	843.22	-187.17	-208.18	-0.0615
"	877.50	-84.33	77.4742	-0.1135

"	911.78	18.5032	<b>146.87</b>	-0.1150
"	946.06	121.34	0.0000	-0.0079
M13	-565.57	-140.82	-123.22	-0.0903
"	-531.30	-37.99	64.7160	-0.1124
"	-497.02	54.8506	36.3993	-0.0949
"	-462.74	167.69	<b>-208.18</b>	-0.0615
M14	-1126.71	-105.15	-0.0000	0.0018
"	-1098.09	-19.46	109.10	-0.0775
"	-1069.47	66.2159	68.0293	-0.1002
"	-1040.86	151.90	-123.22	-0.0903
M15	-863.75	0.0000	0.0000	-0.0083
"	-863.75	0.0000	0.0000	-0.0028
"	-863.75	0.0000	0.0000	0.0027
"	-863.75	0.0000	0.0000	0.0081
M16	-446.99	0.0000	0.0000	-0.0202
"	-446.99	0.0000	0.0000	-0.0173
"	-446.99	0.0000	0.0000	-0.0145
"	-446.99	0.0000	0.0000	-0.0116
M17	352.84	-0.0000	0.0000	-0.0139
"	352.84	-0.0000	-0.0000	-0.0100
"	352.84	-0.0000	-0.0000	-0.0062
"	352.84	-0.0000	-0.0000	-0.0024
M18	118.71	0.0000	0.0000	-0.0079
"	118.71	0.0000	0.0000	-0.0043
"	118.71	0.0000	0.0000	-0.0006
"	118.71	0.0000	0.0000	0.0031
M19	-1039.04	0.0000	0.0000	-0.0085
"	-1039.04	0.0000	0.0000	-0.0079
"	-1039.04	0.0000	0.0000	-0.0074
"	-1039.04	0.0000	0.0000	-0.0069
M20	-1017.12	0.0000	0.0000	-0.0611
"	-1017.12	0.0000	0.0000	-0.0413
"	-1017.12	0.0000	0.0000	-0.0215
"	-1017.12	0.0000	0.0000	-0.0017
M21	492.45	0.0000	0.0000	-0.0714
"	492.45	0.0000	0.0000	-0.0641
"	492.45	0.0000	0.0000	-0.0568
"	492.45	0.0000	0.0000	-0.0495
M22	-557.94	-0.0000	-0.0000	-0.0837
"	-557.94	-0.0000	-0.0000	-0.0812
"	-557.94	-0.0000	-0.0000	-0.0787
"	-557.94	-0.0000	0.0000	-0.0762

**BENDING & COMP: TRUSS 3 - 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	1040 lbs
Max Reaction, R	151 lbs
Max Moment, M	123 ft-lbs
Max LL Deflection	0.04 inches
Max TL Deflection	0.09 inches
LL Defl Criteria = L <sub>v</sub>	240
TL Defl Criteria = L <sub>v</sub>	180
Duration factor, C <sub>d</sub>	1.25
Repetitive Factor, C <sub>r</sub>	1.15
Size Factor, C <sub>f</sub> bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, C <sub>f</sub> comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, C <sub>T</sub> =	1.15
f <sub>c</sub> =	198 psi
F <sub>ce</sub> =	1789 psi
F <sub>c</sub> * =	2084 psi
F' <sub>c</sub> =	1326 psi
f <sub>b</sub> =	482 psi
F' <sub>b</sub> = F <sub>b</sub> * =	2156 psi
Shear D/C ratio	0.36 < 1.0, Member OK
Interaction equation (f <sub>c</sub> /F' <sub>c</sub> ) <sup>2</sup> +	
f <sub>b</sub> / (F' <sub>b</sub> (1-f <sub>c</sub> /F <sub>ce</sub> )) =	0.27 < 1.0, Member OK
Live Load defl ratio	0.15 < 1.0, Member OK
Total Load defl ratio	0.26 < 1.0, Member OK