

**CITY OF SACRAMENTO**

**1231 I Street, Sacramento, CA 95814**

**Permit No: 0014428**

**Insp Area: 2**

**Site Address: 19 RIVERGLADE CT SAC**

Parcel No: 031-0260-011

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR

ZIMMERMAN ROOFING, INC  
3675 R STREET  
SACRAMENTO, CA 95816

OWNER

LARRY JOHN A & AIRRIE  
SACRAMENTO CA  
95822

ARCHITECT

**Nature of Work:** 36 SQ T/O REROOF W PIONEER 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 C39 License Number 557559 Date 12-8-00 Contractor Signature Alma Gonzalez

**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 12-8-00 Applicant/Agent Signature Alma Gonzalez

**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 PENNSYLVANIA GENERAL INSU. CO. Policy Number 713-00-2021 Exp Date 10/01/2001

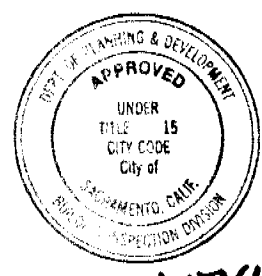
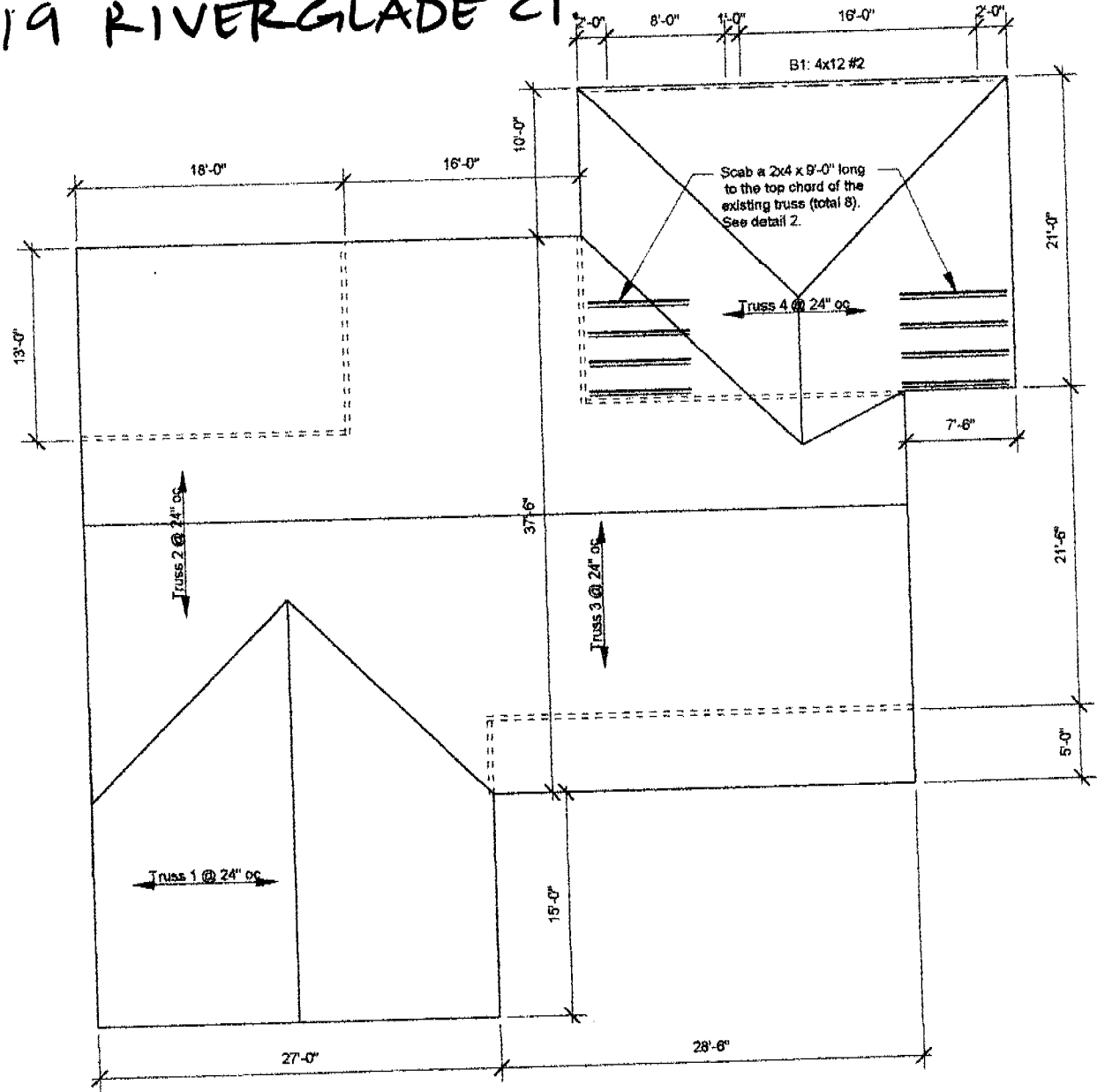
\_\_\_\_\_, (This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should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

Date 12-8-00 Applicant Signature Alma Gonzalez

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.

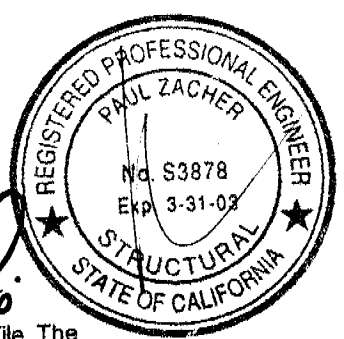
**THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.**

# 19 RIVERGLADE 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.

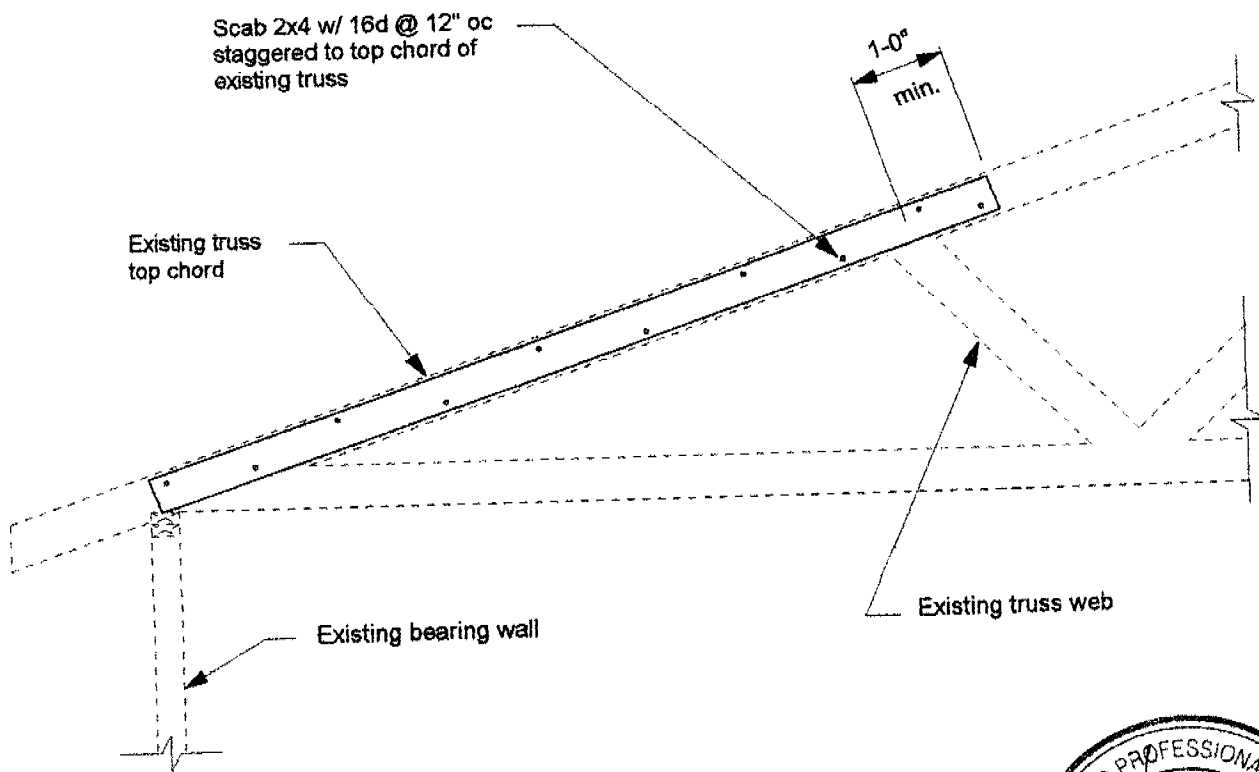
The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law.



REVIEWED BY: *[Signature]*  
12/5/00

**Notes:**

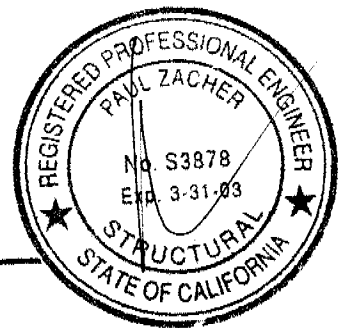
1. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.0 psf.
2. All structural wood members that were observed appear to be in sound condition and without structural defect.



2

TRUSS REINFORCEMENT DETAIL

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



Larry

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

TEL: 916.961.3960  
FAX: 916.961.6552

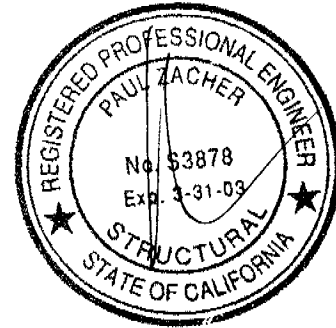
November 15, 2000

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

Attn.: Mr. Jeff Tucker,

re: Job 2000\_386: LARRY

Subject: Structural Investigation Report of the Roof for the Residence located at 19 Riverglade 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 November 15, 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 and garage areas are framed with pre-engineered wood trusses spaced at 24" on center.

**CONCLUSIONS:**

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

1/25

RECEIVED NOV 16 2000

Larry



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. Scab a 2x4 DF#2 x 9'-0" 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.

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

Job #: 00-386

Date: 11/15/00

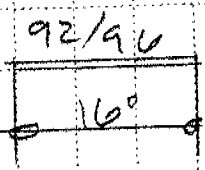
LOADING

B1

OP = 15.4 pjt 60 = 92 pjt

LP = 16.0 " " = 96.

4x12<sup>#2</sup>



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

Title :  
 Dsgnr:  
 Description :  
 Scope :

Job #  
 Date: 1:09PM, 15 NOV 00

Rev. 510304  
 User: RW-0602844, Ver 5.1.3, 22-Jun-1999, Win32  
 (c) 1983-99 ENERCALC

### Timber Beam & Joist

c:\enercalc\test.ecw\Calculations

Description BEAMS

Calculations are designed to 1997 NDS and 1997 UBC Requirements

#### Timber Member Information

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

#### Center Span Data

Span	ft	16.00
Dead Load	#/ft	92.00
Live Load	#/ft	96.00

#### Results

Ratio = 0.8127

Mmax @ Center	in-k	72.19
@ X =	ft	8.00
fb : Actual	psi	977.8
Fb : Allowable	psi	1,203.1
Bending OK		
fv : Actual	psi	50.9
Fv : Allowable	psi	118.8
Shear OK		

#### Reactions

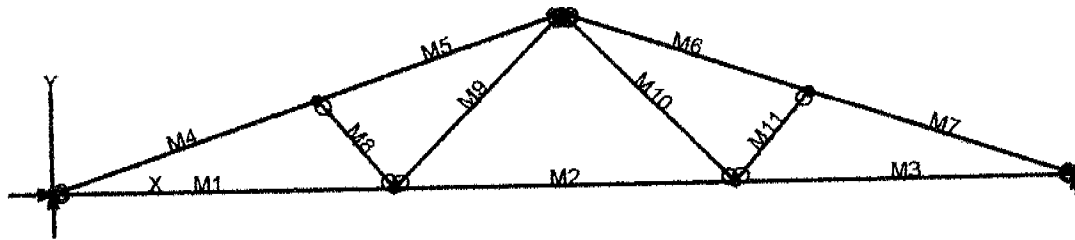
@ Left End	DL	lbs	736.00
	LL	lbs	768.00
	Max. DL+LL	lbs	1,504.00
@ Right End	DL	lbs	736.00
	LL	lbs	768.00
	Max. DL+LL	lbs	1,504.00

#### Deflections

Ratio OK

Center DL Defl	in	-0.204
L/Defl Ratio		940.4
Center LL Defl	in	-0.213
L/Defl Ratio		901.2
Center Total Defl	in	-0.417
Location	ft	8.000
L/Defl Ratio		460.2





# VisualAnalysis 3.50.c Report

11/15/00 12:26:55

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	9.00	0.00	No	No	"
N3	18.00	0.00	"	"	"
N4	27.00	0.00	"	Yes	"
N5	6.75	2.25	"	No	"
N6	20.25	2.25	"	"	"
N7	13.50	4.50	"	"	"

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.00
M2	"	"	9.00
M3	"	"	9.00
M4	"	"	7.12
M5	"	"	7.12
M6	"	"	7.12
M7	"	"	7.12
M8	"	"	3.18
M9	"	"	6.36
M10	"	"	6.36
M11	"	"	3.18

## 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	887.38	-NA-
N4	"	-NA-	887.38	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2115.90	-44.50	-52.17	-0.2240
"	2115.90	-18.70	42.4280	-0.2208
"	2115.90	7.1036	59.8173	-0.1559
"	<b>2115.90</b>	32.9036	0.0000	-0.0000
M2	1323.31	-38.70	-52.17	-0.2240
"	1323.31	-12.90	25.0388	-0.2559
"	1323.31	12.9000	25.0388	-0.2559
"	1323.31	38.7000	-52.17	-0.2240
M3	2115.90	-32.90	0.0000	-0.0000
"	2115.90	-7.1036	59.8173	-0.1560
"	2115.90	18.6964	42.4280	-0.2208
"	2115.90	44.4964	-52.17	-0.2240
M4	<b>-2277.53</b>	141.52	0.0000	-0.0000
"	-2236.88	19.5692	<b>190.30</b>	-0.2128
"	-2196.23	-102.38	92.1017	-0.2483
"	-2155.58	<b>-224.33</b>	<b>-294.61</b>	-0.2103
M5	-1931.25	<b>224.33</b>	-294.61	-0.2103
"	-1890.60	102.38	92.1017	-0.3227
"	-1849.95	-19.57	190.30	<b>-0.3619</b>
"	-1809.30	-141.52	0.0000	-0.2236
M6	-1931.25	-224.33	-294.61	-0.1890
"	-1890.60	-102.38	92.1017	-0.3015
"	-1849.95	19.5692	190.30	-0.3406
"	-1809.30	141.52	0.0000	-0.2023
M7	-2277.53	-141.52	0.0000	<b>0.0213</b>
"	-2236.88	-19.57	190.30	-0.1916
"	-2196.23	102.38	92.1017	-0.2270
"	-2155.58	224.33	-294.61	-0.1890
M8	-501.62	-0.0000	-0.0000	-0.1403
"	-501.62	-0.0000	-0.0000	-0.1312
"	-501.62	-0.0000	-0.0000	-0.1221
"	-501.62	-0.0000	0.0000	-0.1130
M9	619.28	-0.0000	-0.0000	-0.1825
"	619.28	-0.0000	-0.0000	-0.1805
"	619.28	-0.0000	-0.0000	-0.1785
"	619.28	-0.0000	0.0000	-0.1765
M10	619.28	0.0000	0.0000	-0.1350
"	619.28	0.0000	0.0000	-0.1329
"	619.28	0.0000	0.0000	-0.1309
"	619.28	0.0000	0.0000	-0.1289
M11	-501.62	0.0000	0.0000	-0.1878
"	-501.62	0.0000	0.0000	-0.1787
"	-501.62	0.0000	0.0000	-0.1696
"	-501.62	0.0000	0.0000	-0.1605

### BENDING & COMP: TRUSS 1 - MEMBER 4

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

#### Grading:

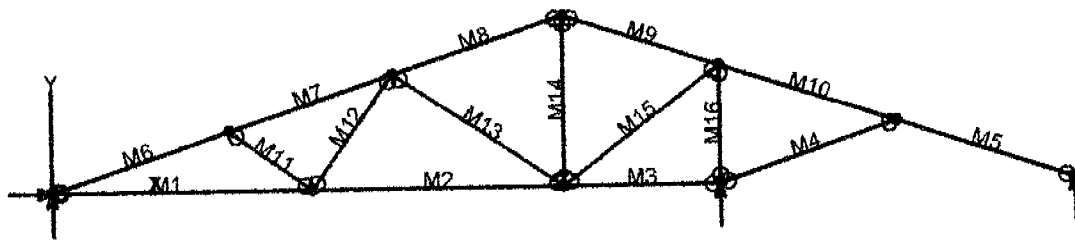
2x or 4x

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	7.12 feet
Max Axial Comp, C	2236 lbs
Max Reaction, R	19 lbs
Max Moment, M	190 ft-lbs
Max LL Deflection	0.12 inches
Max TL Deflection	0.27 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 =	426 psi
Fce =	1023 psi
Fc* =	2084 psi
F'c =	891 psi
fb =	744 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.05 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.82 < 1.0, Member OK
Live Load defl ratio	0.34 < 1.0, Member OK
Total Load defl ratio	0.57 < 1.0, Member OK



# VisualAnalysis 3.50.c Report

11/15/00 12:49:00

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	9.50	0.00	No	No	"
N3	18.75	0.00	"	"	"
N4	24.50	0.00	"	Yes	"
N5	31.00	2.17	"	No	"
N6	37.50	0.00	"	Yes	"
N7	6.50	2.17	"	No	"
N8	12.50	4.17	"	"	"
N9	18.75	6.25	"	"	"
N10	24.50	4.33	"	"	"

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.50
M2	"	"	9.25
M3	"	"	5.75
M4	"	"	6.85
M5	SS2x6	"	6.85
M6	SS2x4	"	6.85
M7	"	"	6.32
M8	"	"	6.59
M9	SS2x6	"	6.06
M10	"	"	6.85
M11	SS2x4	"	3.70
M12	"	"	5.14
M13	"	"	7.51
M14	"	"	6.25
M15	"	"	7.20
M16	"	"	4.33

## 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
"	SS2x6	8.25	20.80	7.56	7.56

## 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	677.86	-NA-
N4	"	-NA-	1588.18	-NA-
N6	"	-NA-	146.03	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1468.80	-48.02	-68.10	-0.1121
"	1468.80	-20.79	40.6203	-0.1530
"	1468.80	6.4478	63.3218	-0.1299
"	<b>1468.80</b>	33.6811	0.0000	-0.0000
M2	846.30	-37.36	-45.73	-0.0551
"	846.30	-10.84	28.3688	-0.1088
"	846.30	15.6775	20.9098	-0.1233
"	846.30	42.1941	-68.10	-0.1121
M3	-667.28	-16.77	0.0000	-0.0000
"	-667.28	-0.2890	16.2716	-0.0244
"	-667.28	16.1943	1.0290	-0.0392
"	-667.28	32.6776	-45.73	-0.0551
M4	-712.82	27.9500	0.0000	-0.0076
"	-706.60	9.3167	42.4562	-0.0434
"	-700.37	-9.3167	42.4562	-0.0407
"	-694.15	-27.95	0.0000	0.0006
M5	-46.24	-138.51	0.0000	0.0043
"	-7.0379	-21.08	181.61	-0.0271
"	32.1667	96.3520	95.6382	-0.0178
"	71.3714	<b>213.79</b>	-257.90	0.0103
M6	<b>-1597.20</b>	145.91	0.0000	-0.0000
"	-1558.00	28.4804	<b>198.51</b>	-0.1892
"	-1518.79	-88.95	129.44	<b>-0.2042</b>
"	-1479.59	<b>-206.39</b>	-207.20	-0.1125
M7	-1215.64	161.94	-207.20	-0.1125
"	-1179.51	53.5385	19.3624	-0.1081
"	-1143.38	-54.86	17.9678	-0.1030
"	-1107.24	-163.26	-211.38	-0.0983
M8	-269.49	201.47	-211.38	-0.0983
"	-231.91	88.5491	106.39	-0.1827
"	-194.34	-24.37	176.85	-0.1882
"	-156.76	-137.28	-0.0000	-0.0508
M9	-267.30	-194.04	-231.64	-0.0052
"	-232.62	-90.15	54.9654	-0.0349
"	-197.93	13.7305	132.18	-0.0569
"	-163.24	117.61	0.0000	-0.0561
M10	643.35	-179.98	<b>-257.90</b>	0.0103

"	682.37	-62.55	18.3016	0.0052
"	721.40	54.8825	27.0557	-0.0007
"	760.42	172.32	-231.64	-0.0052
M11	-452.63	-0.0000	-0.0000	-0.0798
"	-452.63	-0.0000	-0.0000	-0.0789
"	-452.63	-0.0000	-0.0000	-0.0780
"	-452.63	-0.0000	0.0000	-0.0771
M12	437.93	-0.0000	0.0000	-0.0807
"	437.93	-0.0000	-0.0000	-0.0757
"	437.93	-0.0000	-0.0000	-0.0707
"	437.93	-0.0000	-0.0000	-0.0657
M13	-786.46	-0.0000	0.0000	-0.0793
"	-786.46	-0.0000	-0.0000	-0.0627
"	-786.46	-0.0000	-0.0000	-0.0462
"	-786.46	-0.0000	-0.0000	-0.0296
M14	-140.62	0.0000	0.0000	-0.0293
"	-140.62	0.0000	0.0000	-0.0167
"	-140.62	0.0000	0.0000	-0.0041
"	-140.62	0.0000	0.0000	0.0085
M15	1075.78	0.0000	0.0000	-0.0617
"	1075.78	0.0000	0.0000	-0.0445
"	1075.78	0.0000	0.0000	-0.0273
"	1075.78	0.0000	0.0000	-0.0101
M16	-1319.17	-0.0000	0.0000	0.0066
"	-1319.17	-0.0000	-0.0000	0.0124
"	-1319.17	-0.0000	-0.0000	0.0183
"	-1319.17	-0.0000	-0.0000	0.0241

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## **BENDING & COMP: TRUSS 2 - MEMBER 6**

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

### Grading:

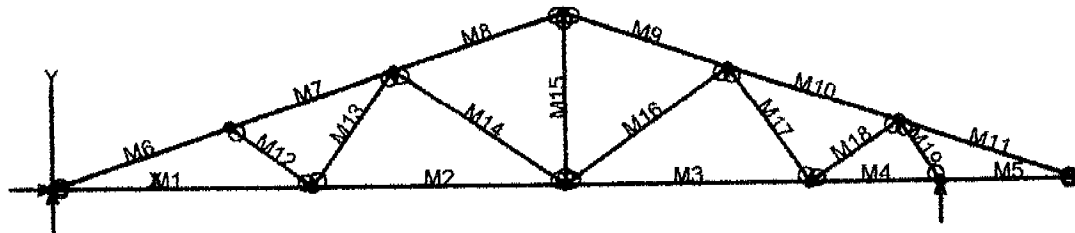
2x or 4x

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	6.85 feet
Max Axial Comp, C	1479 lbs
Max Reaction, R	206 lbs
Max Moment, M	207 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 =	1.19
fc =	282 psi
Fce =	1099 psi
Fc* =	2084 psi
F'c =	943 psi
fb =	811 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.50 < 1.0, Member OK
Interaction equation:	
(fc/F'c) <sup>2</sup> +	
fb/(F'b(1-fc/Fce)) =	0.60 < 1.0, Member OK
Live Load defl ratio	0.15 < 1.0, Member OK
Total Load defl ratio	0.24 < 1.0, Member OK



# VisualAnalysis 3.50.c Report

11/15/00 12:57:51

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	9.50	0.00	No		No		"	
N3	18.75	0.00	"		"		"	
N4	27.75	0.00	"		"		"	
N5	32.50	0.00	"		Yes		"	
N6	37.50	0.00	"		No		"	
N7	6.50	2.17	"		"		"	
N8	31.00	2.17	"		"		"	
N9	12.50	4.17	"		"		"	
N10	24.75	4.17	"		"		"	
N11	18.75	6.25	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.50
M2	"	"	9.25
M3	"	"	9.00
M4	"	"	4.75
M5	"	"	5.00
M6	"	"	6.85
M7	"	"	6.32
M8	"	"	6.59
M9	"	"	6.35
M10	"	"	6.56
M11	"	"	6.85
M12	"	"	3.70
M13	"	"	5.14
M14	"	"	7.51
M15	"	"	6.25
M16	"	"	7.31
M17	"	"	5.14
M18	"	"	3.91
M19	"	"	2.64

## 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>
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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	1043.14	-NA-
N5	"	-NA-	1421.85	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2551.25	-46.40	-52.69	-0.2494
"	2551.25	-19.16	50.8979	-0.2607
"	2551.25	8.0705	68.4606	-0.1886
"	<b>2551.25</b>	35.3039	0.0000	-0.0000
M2	1939.24	-40.87	-62.86	-0.2034
"	1939.24	-14.36	22.0844	-0.2486
"	1939.24	12.1584	25.4758	-0.2660
"	1939.24	38.6751	-52.69	-0.2494
M3	1400.31	-35.01	-29.66	-0.0961
"	1400.31	-9.2114	36.4759	-0.1770
"	1400.31	16.5886	25.4101	-0.2065
"	1400.31	42.3886	-62.86	-0.2034
M4	460.75	-21.00	-32.39	-0.0000
"	460.75	-7.3822	-9.9764	-0.0266
"	460.75	6.2344	-9.0677	-0.0588
"	460.75	19.8511	-29.66	-0.0961
M5	-488.24	-15.02	-0.0000	0.0579
"	-488.24	-0.6885	13.0322	0.0347
"	-488.24	13.6448	2.2352	0.0172
"	-488.24	27.9782	-32.39	-0.0000
M6	<b>-2739.10</b>	148.08	0.0000	-0.0000
"	-2699.90	30.6459	<b>203.45</b>	-0.2359
"	-2660.69	-86.79	139.33	-0.2925
"	-2621.49	<b>-204.22</b>	-192.36	-0.2329
M7	-2360.76	160.15	-192.36	-0.2329
"	-2324.63	51.7533	30.4387	-0.2462
"	-2288.49	-56.65	25.2806	-0.2495
"	-2252.36	-165.05	-207.83	-0.2471
M8	-1427.13	200.93	-207.83	-0.2471
"	-1389.55	88.0103	108.75	-0.3302
"	-1351.97	-24.91	178.03	<b>-0.3323</b>
"	-1314.39	-137.82	-0.0000	-0.1904
M9	-1433.06	-193.39	-195.52	-0.1311
"	-1395.48	-84.99	98.5403	-0.2355
"	-1357.90	23.4116	163.71	-0.2718

"	-1320.32	131.81	0.0000	-0.1853
M10	-1234.77	-176.95	-245.25	-0.0212
"	-1198.64	-64.04	17.7013	-0.0613
"	-1162.51	48.8787	34.2811	-0.1033
"	-1126.37	161.80	-195.52	-0.1325
M11	467.87	-140.36	0.0000	0.0781
"	507.08	-22.93	185.82	-0.0898
"	546.28	94.5064	104.07	-0.0960
"	585.49	211.94	-245.25	-0.0207
M12	-447.12	-0.0000	-0.0000	-0.1830
"	-447.12	-0.0000	-0.0000	-0.1739
"	-447.12	-0.0000	-0.0000	-0.1649
"	-447.12	-0.0000	0.0000	-0.1558
M13	427.62	0.0000	0.0000	-0.1744
"	427.62	0.0000	0.0000	-0.1737
"	427.62	0.0000	0.0000	-0.1729
"	427.62	0.0000	0.0000	-0.1721
M14	-779.69	-0.0000	0.0000	-0.1865
"	-779.69	-0.0000	-0.0000	-0.1703
"	-779.69	-0.0000	-0.0000	-0.1540
"	-779.69	-0.0000	-0.0000	-0.1378
M15	592.20	0.0000	0.0000	-0.0567
"	592.20	0.0000	0.0000	-0.0401
"	592.20	0.0000	0.0000	-0.0234
"	592.20	0.0000	0.0000	-0.0068
M16	-133.52	0.0000	0.0000	-0.1994
"	-133.52	0.0000	0.0000	-0.1748
"	-133.52	0.0000	0.0000	-0.1501
"	-133.52	0.0000	0.0000	-0.1255
M17	-476.39	-0.0000	0.0000	-0.0729
"	-476.39	-0.0000	-0.0000	-0.0474
"	-476.39	-0.0000	-0.0000	-0.0218
"	-476.39	-0.0000	-0.0000	0.0037
M18	795.21	0.0000	0.0000	-0.1208
"	795.21	0.0000	0.0000	-0.0970
"	795.21	0.0000	0.0000	-0.0731
"	795.21	0.0000	0.0000	-0.0493
M19	-1668.94	0.0000	0.0000	0.0113
"	-1668.94	0.0000	0.0000	0.0285
"	-1668.94	0.0000	0.0000	0.0458
"	-1668.94	0.0000	0.0000	0.0630

**BENDING & COMP: TRUSS 3 - MEMBER 6**

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

Grading:

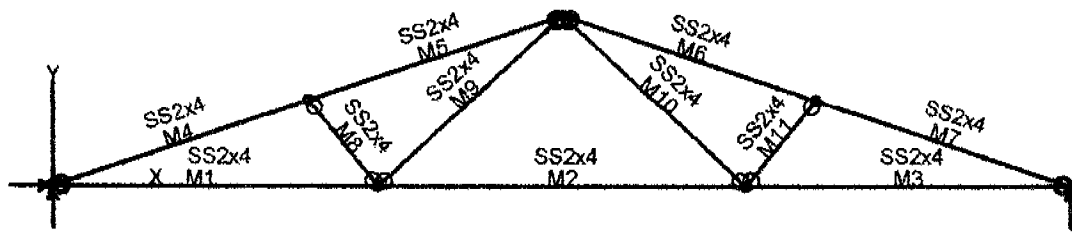
2x or 4x

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	6.85 feet
Max Axial Comp, C	2621 lbs
Max Reaction, R	204 lbs
Max Moment, M	192 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, C'T =	1.19
fc =	499 psi
Fce=	1099 psi
Fc*=	2084 psi
F'c=	943 psi
fb=	752 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.49 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.92 < 1.0, Member OK
Live Load defl ratio	0.15 < 1.0, Member OK
Total Load defl ratio	0.24 < 1.0, Member OK



## 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	953.05	-NA-
N4	"	-NA-	953.05	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2279.06	-46.92	-66.09	-0.2590
"	2279.06	-20.40	37.4921	-0.2415
"	2279.06	6.1129	59.5237	-0.1683
"	<b>2279.06</b>	32.6296	0.0000	-0.0000
M2	1419.59	-45.15	-66.09	-0.2590
"	1419.59	-15.05	38.9918	-0.3296
"	1419.59	15.0500	38.9918	-0.3296
"	1419.59	45.1500	-66.09	-0.2590
M3	2279.06	-32.63	-0.0000	-0.0000
"	2279.06	-6.1129	59.5237	-0.1683
"	2279.06	20.4037	37.4921	-0.2415
"	2279.06	46.9204	-66.09	-0.2590
M4	<b>-2453.23</b>	151.47	0.0000	-0.0000
"	-2409.51	20.4907	<b>218.23</b>	-0.2695
"	-2365.79	-110.49	103.58	-0.3046
"	-2322.07	-241.48	<b>-343.95</b>	-0.2452
M5	-2136.31	<b>241.49</b>	-343.95	-0.2452
"	-2092.76	110.51	103.44	-0.3904
"	-2049.22	-20.47	218.09	<b>-0.4416</b>
"	-2005.68	-151.46	0.0000	-0.2585
M6	-2136.31	<b>-241.49</b>	-343.95	-0.2210
"	-2092.76	-110.51	103.44	-0.3663
"	-2049.22	20.4720	218.09	-0.4173
"	-2005.68	151.46	0.0000	-0.2343
M7	<b>-2453.23</b>	-151.47	-0.0000	<b>0.0243</b>
"	-2409.51	-20.49	218.23	-0.2452
"	-2365.79	110.49	103.58	-0.2802
"	-2322.07	241.48	-343.95	-0.2209
M8	-514.88	-0.0000	-0.0000	-0.1432
"	-514.88	-0.0000	-0.0000	-0.1325
"	-514.88	-0.0000	-0.0000	-0.1219
"	-514.88	-0.0000	0.0000	-0.1112
M9	722.18	-0.0000	-0.0000	-0.2171
"	722.18	-0.0000	-0.0000	-0.2147
"	722.18	-0.0000	-0.0000	-0.2122
"	722.18	-0.0000	0.0000	-0.2098
M10	722.18	0.0000	0.0000	-0.1651
"	722.18	0.0000	0.0000	-0.1627
"	722.18	0.0000	0.0000	-0.1603
"	722.18	0.0000	0.0000	-0.1579
M11	-514.88	0.0000	0.0000	-0.2023
"	-514.88	0.0000	0.0000	-0.1917
"	-514.88	0.0000	0.0000	-0.1810
"	-514.88	0.0000	0.0000	-0.1704



# VisualAnalysis 3.50.c Report

11/15/00 12:30:29

Project: Truss 1

File: C:\Program Files\IES\VA35\truss 4.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	9.25	0.00	No		No		"	
N3	19.75	0.00	"		"		"	
N4	29.00	0.00	"		Yes		"	
N5	7.25	2.42	"		No		"	
N6	21.75	2.42	"		"		"	
N7	14.50	4.83	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.25
M2	"	"	10.50
M3	"	"	9.25
M4	"	"	7.64
M5	"	"	7.64
M6	"	"	7.64
M7	"	"	7.64
M8	"	"	3.14
M9	"	"	7.13
M10	"	"	7.13
M11	"	"	3.14

## 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)

### 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	7.64 feet
Max Axial Comp, C	2322 lbs
Max Reaction, R	241 lbs
Max Moment, M	343 ft-lbs
Max LL Deflection	0.1 inches
Max TL Deflection	0.24 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 =	1.21
fc =	221 psi
Fce =	900 psi
Fc* =	2084 psi
F'c =	800 psi
fb =	672 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.29 < 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	0.26 < 1.0, Member OK
Total Load defl ratio	0.47 < 1.0, Member OK