

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Site Address: 432 RIVERGATE WY SAC

Parcel No: 031-0390-018

Permit No: 0111971

Insp Area: 2

Thos Bros:

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR

ZIMMERMAN ROOFING, INC
3675 R STREET
SACRAMENTO, CA 95816

OWNER

AROCAN BENNIE
432 RIVERGATE
SACRAMENTO, CA 95831

ARCHITECT

Nature of Work: TEAR OFF SHAKE & REROOF 30 SQ'S 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 9/19/01 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 9/19/01 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. **CITY OF SACRAMENTO**

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

Carrier STATE FUND Exp Date 10/01/2001

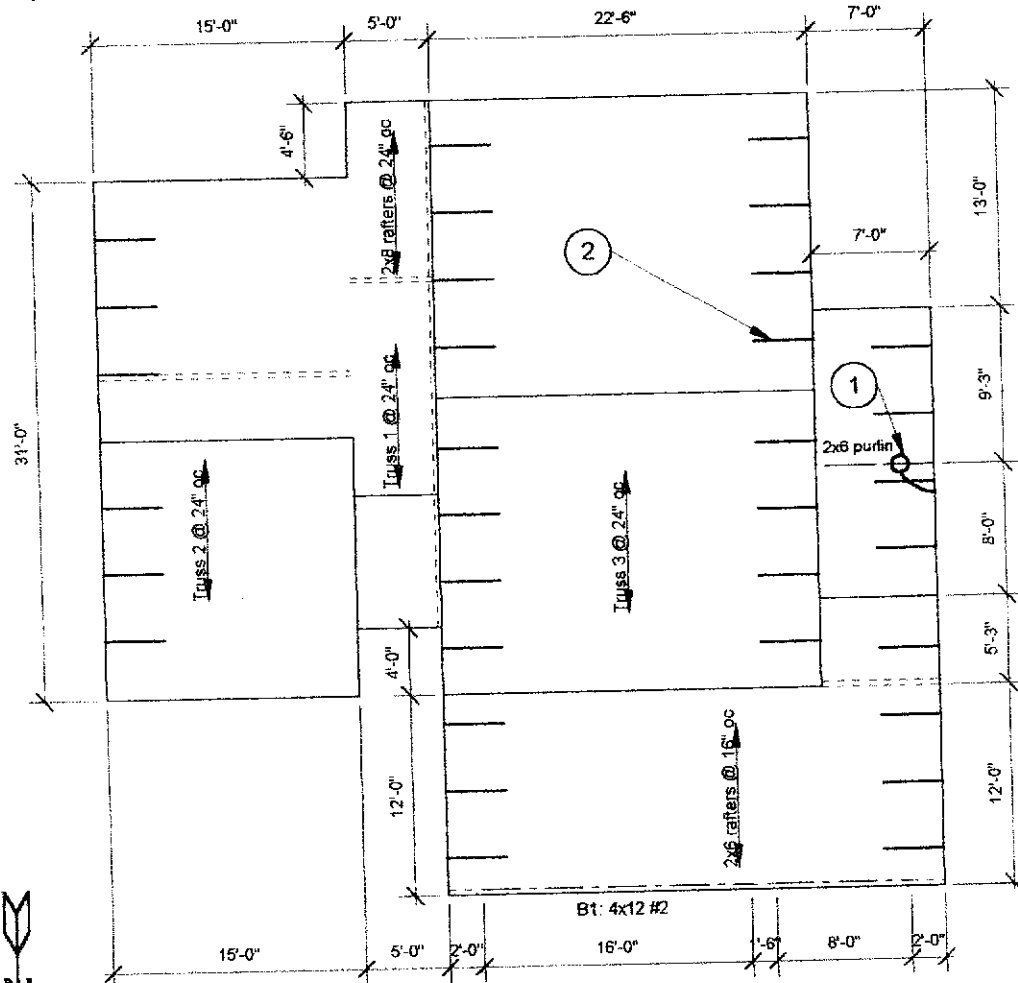
(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become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

Date 9/19/01 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.

432 RIVERGATE WAY



DN



This set of plans and specifications must be read and followed 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.

Julian 9/16/01



FRAMING NOTES:

1. Add a 2x4 strut to bearing below (total 1).
2. Add 2x6 outlookers @ 4'-0" oc (total 33). See detail 2.

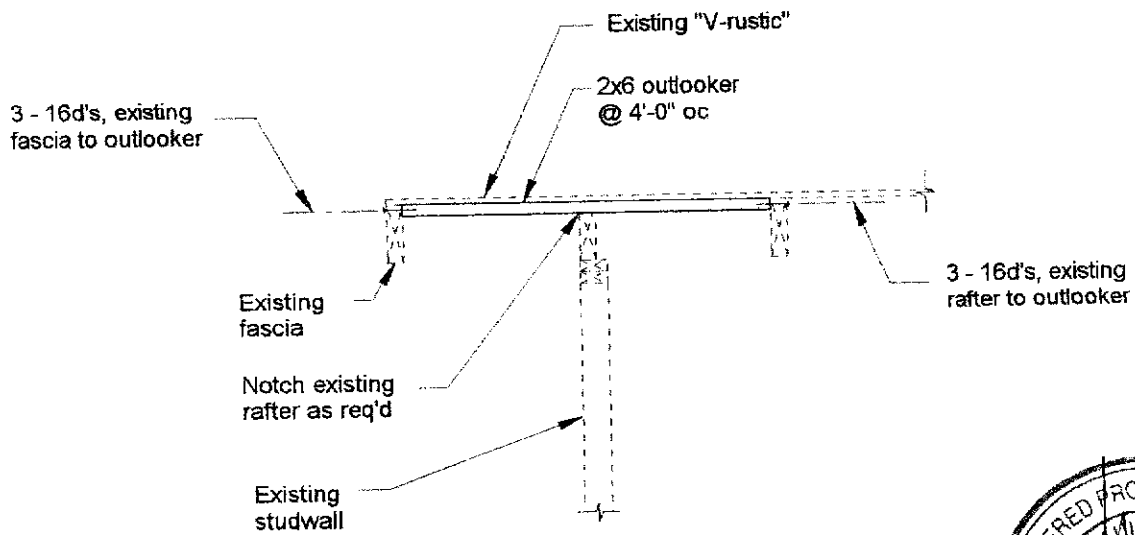
Notes:

- A. 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.
- B. All rafters are 2x6 DF#2 and hips and valleys are 2x8 DF#2 unless otherwise noted.
- C. All existing rafter, hips, valleys, rafter ties, and purlins are braced per UBC Section 2320.1 "Roof and Ceiling Framing" unless otherwise shown.
- D. All structural wood members that were observed appear to be in sound condition and without structural defect.



ROOF PLAN - AROCAN

Not to Scale



2

DETAIL

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

ZM

Arocan



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

TEL: 916.961.3960
FAX: 916.961.6552

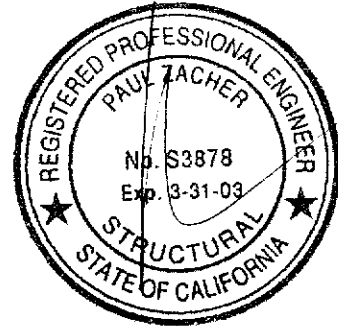
August 30, 2001

Zimmerman Roofing
3675 R Street
Sacramento, CA 95816
TEL: (916) 454-3667
FAX: (916) 392-6853

Attn.: Mr. Jeff Tucker,

re: Job 2001_255: AROCAN

Subject: Structural Investigation Report of the Roof for the Residence located at 432 Rivergate 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 August 29, 2001. The investigation was made to determine the existing condition of the structure. All information, data and analysis contained within this report are based on the 1997 Uniform Building Code.

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

DESCRIPTION:

Type of Facility: Residence.
Year Built: Estimated 1980's vintage.
Occupancy: Residential.
No. of Stories: Two.
Dimensions: Approximately 3000 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 framed with 2x6 rafters spaced at 16" on center and 2x6 cross ties spaced at 4'-0" on center.

CONCLUSIONS:

Roof:
The roof structure currently lacks sufficient structural capacity for the applied live and dead loads. See "Recommendations" for location and repair to bring the roof structure up to the required capacity.

PERMISSION TO REPRODUCE THIS REPORT IS GRANTED BY THE AUTHOR FOR THE PURPOSE OF RESEARCH AND EDUCATION ONLY. IT IS NOT TO BE USED FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN PERMISSION OF THE AUTHOR.

1/207

Arocan



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.

Roof Structure:

1. Provide an additional 2x4 strut from the existing purlin to the bearing wall below. The unbraced length of the struts shall not exceed 8'-0" and the minimum slope of the struts shall not be less than 45 degrees from the horizontal. See detail 1.
2. Add 2x6 out lookers spaced at 4'-0" on center. 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 6 in 12
Pitch Adjustment Factor 1.12

LOCATION: ROOF

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.00	psf
Roofing felt	0.30	psf
1x4 skip sh't'g	1.09	psf
1/2" OSB/ plywood	1.50	psf
2x6 rafters @ 16" oc	<u>1.51</u>	psf
Load	11.4	psf
Roof Pitch Adjustment	<u>1.35</u>	psf
Total Load	12.7	psf

LOCATION: VAULT

<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 sh't'g	1.09	psf
2x8 rafters @ 24" oc	1.32	psf
Batt/blown insul	0.50	psf
1/2" Gypboard	<u>2.50</u>	psf
Load	14.2	psf
Roof Pitch Adjustment	<u>1.68</u>	psf
Total Load	15.9	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 sh't'g	1.09	psf
2x4 truss @ 24" oc	<u>0.64</u>	psf
Load	10.5	psf
Roof Pitch Adjustment	<u>1.24</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	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 #: 01-255

Date: 8/30/01

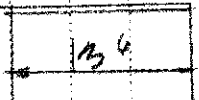
LOADING

16.9/21.7

PAPER

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Lr: 16.0 " " = 21.7

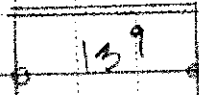


31.8/32

VAULT

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Lr: 16.0 " " = 32

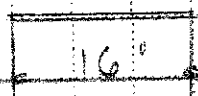


76/96

B.I

Op: 12.7 pcf $\times 6^0 = 76$ pcf 4×12^2

Lr: 16.0 " " = 96



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

Title :
 Dsgnr:
 Description :

Job #
 Date: 3:07PM, 30 AUG 01

Scope :

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 RAFTERS AND BEAMS

Timber Member Information

Calculations are designed to 1997 NDS and 1997 UBC Requirements

Timber Section		rafter	vault	B1
		2x6	2x8	4x12
Beam Width	in	1.500	1.500	3.500
Beam Depth	in	5.500	7.250	11.250
Le: Unbraced Length	ft	0.00	2.00	0.00
Timber Grade		Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch
Fb - Basic Allow	psi	875.0	875.0	875.0
Fv - Basic Allow	psi	95.0	95.0	95.0
Elastic Modulus	ksi	1,600.0	1,600.0	1,600.0
Load Duration Factor		1.250	1.250	1.250
Member Type		Sawn	Sawn	Sawn
Repetitive Status		Repetitive	Repetitive	No

Center Span Data

Span	ft	13.50	13.75	16.00
Dead Load	#/ft	16.90	31.80	76.00
Live Load	#/ft	21.30	32.00	96.00

Results

Ratio = 0.8445 0.9352 0.7436

Mmax @ Center	in-k	10.44	18.09	66.05
@ X =	ft	6.75	6.87	8.00
fb : Actual	psi	1,380.9	1,376.9	894.6
Fb : Allowable	psi	1,635.2	1,472.3	1,203.1
		Bending OK	Bending OK	Bending OK
fv : Actual	psi	43.9	55.7	46.5
Fv : Allowable	psi	118.8	118.8	118.8
		Shear OK	Shear OK	Shear OK

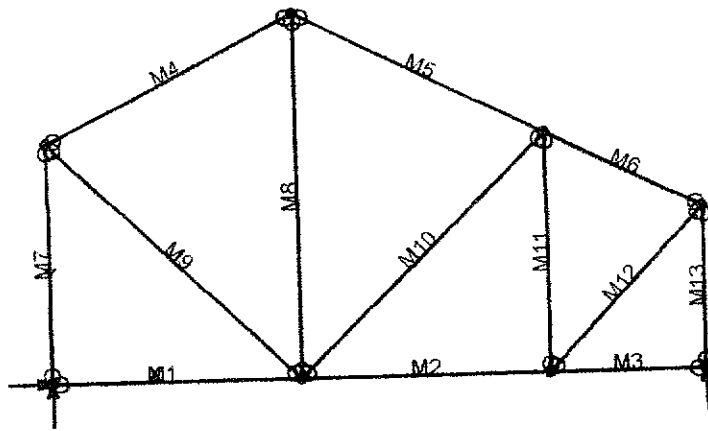
Reactions

@ Left End	DL	lbs	114.07	218.62	608.00
	LL	lbs	143.77	220.00	768.00
	Max. DL+LL	lbs	257.85	438.62	1,376.00
@ Right End	DL	lbs	114.07	218.62	608.00
	LL	lbs	143.77	220.00	768.00
	Max. DL+LL	lbs	257.85	438.62	1,376.00

Deflections

Ratio OK Deflection OK Deflection OK

Center DL Defl	in	-0.380	-0.336	-0.169
L/Defl Ratio		426.8	491.7	1,138.4
Center LL Defl	in	-0.478	-0.338	-0.213
L/Defl Ratio		338.6	488.6	901.2
Center Total Defl	in	-0.858	-0.673	-0.382
Location	ft	6.750	6.875	8.000
L/Defl Ratio		188.8	245.1	503.0



VisualAnalysis 3.50.c Report

08/30/01 14:42:10

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	8.00	0.00	No	No	"
N3	16.00	0.00	"	"	"
N4	21.00	0.00	"	Yes	"
N5	0.00	7.75	"	No	"
N6	8.00	11.75	"	"	"
N7	16.00	7.75	"	"	"
N8	21.00	5.25	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.00
M2	"	"	8.00
M3	"	"	5.00
M4	"	"	8.94
M5	"	"	8.94
M6	"	"	5.59
M7	"	"	7.75
M8	"	"	11.75
M9	"	"	11.14
M10	"	"	11.14
M11	"	"	7.75
M12	"	"	7.25
M13	"	"	5.25

Section Properties

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

Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft ³
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	743.01	-NA-
N4	"	-NA-	743.01	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	0.0000	-41.70	-58.38	-0.0184
"	0.0000	-18.76	22.0840	-0.0440
"	0.0000	4.1694	41.5433	-0.0466
"	0.0000	27.1027	0.0000	-0.0000
M2	418.01	-31.01	-31.30	-0.0157
"	418.01	-8.0816	20.6780	-0.0337
"	418.01	14.8517	11.6513	-0.0305
"	418.01	37.7850	-58.38	-0.0184
M3	0.0000	-15.24	-0.0000	-0.0000
"	0.0000	-0.9071	13.3965	-0.0094
"	0.0000	13.4262	2.9639	-0.0128
"	0.0000	27.7596	-31.30	-0.0157
M4	-466.88	222.40	0.0000	-0.0073
"	-392.75	74.1333	440.94	-0.6928
"	-318.61	-74.13	440.94	-0.6970
"	-244.48	-222.40	0.0000	-0.0196
M5	-488.00	-264.63	-377.73	-0.0183
"	-413.86	-116.37	189.12	-0.3466
"	-339.73	31.9013	315.03	-0.4162
"	-265.60	180.17	0.0000	-0.0169
M6	-503.06	-71.43	0.0000	-0.0037
"	-456.73	21.2379	46.3309	-0.0022
"	-410.39	113.90	-79.58	0.0204
"	-364.06	206.57	-377.73	-0.0183
M7	-715.91	0.0000	0.0000	0.0000
"	-715.91	0.0000	0.0000	0.0004
"	-715.91	0.0000	0.0000	0.0009
"	-715.91	0.0000	0.0000	0.0013
M8	-131.95	0.0000	0.0000	0.0000
"	-131.95	0.0000	0.0000	0.0010
"	-131.95	0.0000	0.0000	0.0020
"	-131.95	0.0000	0.0000	0.0030
M9	442.93	-0.0000	-0.0000	0.0044
"	442.93	-0.0000	-0.0000	0.0074
"	442.93	-0.0000	-0.0000	0.0103
"	442.93	-0.0000	0.0000	0.0132
M10	-139.05	0.0000	0.0000	-0.0132
"	-139.05	0.0000	0.0000	-0.0131
"	-139.05	0.0000	0.0000	-0.0130
"	-139.05	0.0000	0.0000	-0.0130
M11	-380.13	0.0000	0.0000	-0.0016
"	-380.13	0.0000	0.0000	0.0004
"	-380.13	0.0000	0.0000	0.0025
"	-380.13	0.0000	0.0000	0.0045

M12	606.11	0.0000	0.0000	-0.0141
"	606.11	0.0000	0.0000	-0.0110
"	606.11	0.0000	0.0000	-0.0080
"	606.11	0.0000	0.0000	-0.0050
M13	-727.77	0.0000	0.0000	0.0020
"	-727.77	0.0000	0.0000	0.0028
"	-727.77	0.0000	0.0000	0.0037
"	-727.77	0.0000	0.0000	0.0045

BENDING & COMP: TRUSS 1 - MEMBER 4

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

Grading:

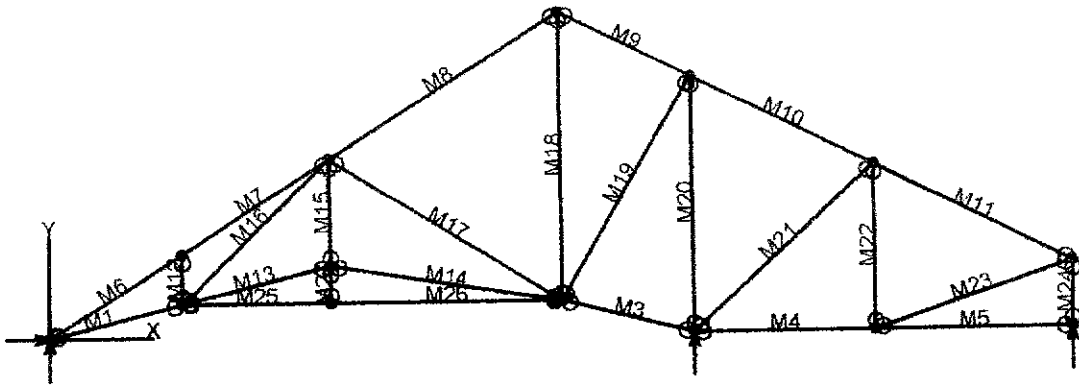
2x or 4x

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	8.94 feet
Max Axial Comp, C	392 feet
Max Reaction, R	74 feet
Max Moment, M	440 feet
Max LL Deflection	0.2 feet
Max TL Deflection	0.41 feet
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 =	75 psi
Fce=	676 psi
Fc*=	2084 psi
F'c=	623 psi
fb=	1724 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.18 < 1.0, Member OK
Interaction equation: (fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.91 < 1.0, Member OK
Live Load defl ratio	0.45 < 1.0, Member OK
Total Load defl ratio	0.69 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08/30/01 14:48:52

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	4.00	1.00	No	No	"
N3	15.50	1.00	"	"	"
N4	19.50	0.00	"	Yes	"
N5	25.00	0.00	"	No	"
N6	31.00	0.00	"	Yes	"
N7	4.00	2.52	"	No	"
N8	8.50	5.35	"	"	"
N9	15.50	9.75	"	"	"
N10	19.50	7.75	"	"	"
N11	25.00	5.00	"	"	"
N12	31.00	2.00	"	"	"
N13	8.50	2.13	"	"	"
N14	8.50	1.00	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	4.12
M3	"	"	4.12
M4	"	"	5.50
M5	"	"	6.00
M6	"	"	4.73
M7	"	"	5.32
M8	"	"	8.27
M9	"	"	4.47
M10	"	"	6.15
M11	"	"	6.71
M12	"	"	1.52
M13	"	"	4.64
M14	"	"	7.09
M15	"	"	3.22
M16	"	"	6.26
M17	"	"	8.24
M18	"	"	8.75
M19	"	"	7.85
M20	"	"	7.75
M21	"	"	7.43
M22	"	"	5.00
M23	"	"	6.32
M24	"	"	2.00
M25	"	"	4.50
M26	"	"	7.00
M27	"	"	1.13

Section Properties

Category	Section	Ax	Iz	Sy+	Sy-
----------	---------	----	----	-----	-----

	in ²	in ⁴	in ³	in ³
Wood Sha SS2x4	5.25	5.36	3.06	3.06

Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft ³
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	511.01	-NA-
N4	"	-NA-	1693.54	-NA-
N6	"	-NA-	45.81	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1002.13	17.2000	0.0000	-0.0000
"	1005.00	5.7333	15.7200	-0.0304
"	1007.87	-5.7333	15.7200	-0.0556
"	1010.73	-17.20	-0.0000	-0.0756
M3	-539.78	-17.20	-0.0000	0.0080
"	-536.91	-5.7333	15.7200	-0.0070
"	-534.05	5.7333	15.7200	-0.0168
"	-531.18	17.2000	0.0000	-0.0214
M4	-146.68	-29.97	-34.75	-0.0021
"	-146.68	-14.20	5.6664	-0.0060
"	-146.68	1.5651	17.2498	-0.0077
"	-146.68	17.3318	0.0000	-0.0000
M5	0.0000	-20.01	0.0000	-0.0000
"	0.0000	-2.8083	22.7306	-0.0129
"	0.0000	14.3917	11.1471	-0.0106
"	0.0000	31.5917	-34.75	-0.0021
M6	-1219.16	103.44	0.0000	-0.0000
"	-1172.45	29.3032	104.30	-0.0696
"	-1125.75	-44.83	92.0643	-0.0947
"	-1079.04	-118.96	-36.70	-0.0810
M7	-1200.58	75.0043	-36.70	-0.0810
"	-1148.13	-8.3957	21.9422	-0.0626
"	-1095.68	-91.80	-66.83	-0.0384
"	-1043.24	-175.20	-303.01	-0.0608

M8	-7.9058	231.25	-303.01	-0.0608
"	73.6408	101.51	154.65	-0.2802
"	155.19	-28.22	255.65	-0.3186
"	236.73	-157.95	-0.0000	-0.0315
M9	60.3869	-139.44	-126.28	-0.0037
"	97.4536	-65.30	26.0456	-0.0250
"	134.52	8.8286	68.1404	-0.0391
"	171.59	82.9619	0.0000	-0.0283
M10	495.87	-169.88	-230.71	0.0111
"	546.84	-67.95	12.5150	0.0004
"	597.80	33.9854	47.3220	-0.0137
"	648.77	135.92	-126.28	-0.0037
M11	97.7901	-132.41	0.0000	0.0133
"	153.39	-21.21	171.13	-0.1060
"	208.99	89.9915	94.2255	-0.0826
"	264.59	201.19	-230.71	0.0111
M12	-228.12	-0.0000	-0.0000	0.0237
"	-228.12	-0.0000	-0.0000	0.0282
"	-228.12	-0.0000	-0.0000	0.0326
"	-228.12	-0.0000	0.0000	0.0370
M13	187.17	0.0000	0.0000	-0.0756
"	187.17	0.0000	0.0000	-0.0716
"	187.17	0.0000	0.0000	-0.0677
"	187.17	0.0000	0.0000	-0.0637
M14	183.91	0.0000	0.0000	-0.0560
"	183.91	0.0000	0.0000	-0.0454
"	183.91	0.0000	0.0000	-0.0349
"	183.91	0.0000	0.0000	-0.0244
M15	137.92	-0.0000	0.0000	-0.0220
"	137.92	-0.0000	-0.0000	-0.0212
"	137.92	-0.0000	-0.0000	-0.0203
"	137.92	-0.0000	-0.0000	-0.0195
M16	655.30	0.0000	0.0000	-0.0682
"	655.30	0.0000	0.0000	-0.0643
"	655.30	0.0000	0.0000	-0.0603
"	655.30	0.0000	0.0000	-0.0564
M17	-731.85	-0.0000	0.0000	-0.0404
"	-731.85	-0.0000	-0.0000	-0.0301
"	-731.85	-0.0000	-0.0000	-0.0199
"	-731.85	-0.0000	-0.0000	-0.0097
M18	-410.65	0.0000	0.0000	-0.0287
"	-410.65	0.0000	0.0000	-0.0208
"	-410.65	0.0000	0.0000	-0.0129
"	-410.65	0.0000	0.0000	-0.0049
M19	790.74	0.0000	0.0000	-0.0397
"	790.74	0.0000	0.0000	-0.0333
"	790.74	0.0000	0.0000	-0.0270
"	790.74	0.0000	0.0000	-0.0206
M20	-1189.69	0.0000	0.0000	0.0166
"	-1189.69	0.0000	0.0000	0.0221
"	-1189.69	0.0000	0.0000	0.0275
"	-1189.69	0.0000	0.0000	0.0330
M21	-503.84	-0.0000	0.0000	-0.0222
"	-503.84	-0.0000	-0.0000	-0.0213
"	-503.84	-0.0000	-0.0000	-0.0204
"	-503.84	-0.0000	-0.0000	-0.0194
M22	110.45	0.0000	0.0000	0.0274
"	110.45	0.0000	0.0000	0.0289
"	110.45	0.0000	0.0000	0.0304
"	110.45	0.0000	0.0000	0.0319
M23	-154.62	0.0000	0.0000	-0.0121
"	-154.62	0.0000	0.0000	-0.0112
"	-154.62	0.0000	0.0000	-0.0104
"	-154.62	0.0000	0.0000	-0.0095
M24	-25.80	0.0000	0.0000	0.0299
"	-25.80	0.0000	0.0000	0.0306
"	-25.80	0.0000	0.0000	0.0312
"	-25.80	0.0000	0.0000	0.0319
M25	323.65	-27.81	-38.06	-0.0603

"	323.65	-14.91	-6.0696	-0.0627
"	323.65	-2.0071	6.6160	-0.0684
"	323.65	10.8929	0.0000	-0.0720
M26	323.65	-24.66	0.0000	-0.0293
"	323.65	-4.5967	34.0196	-0.0664
"	323.65	15.4700	21.3340	-0.0724
"	323.65	35.5367	-38.06	-0.0603
M27	63.3437	0.0000	0.0000	0.0220
"	63.3437	0.0000	0.0000	0.0232
"	63.3437	0.0000	0.0000	0.0245
"	63.3437	0.0000	0.0000	0.0257

BENDING & COMP: TRUSS 2 - MEMBER 6

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

Grading:

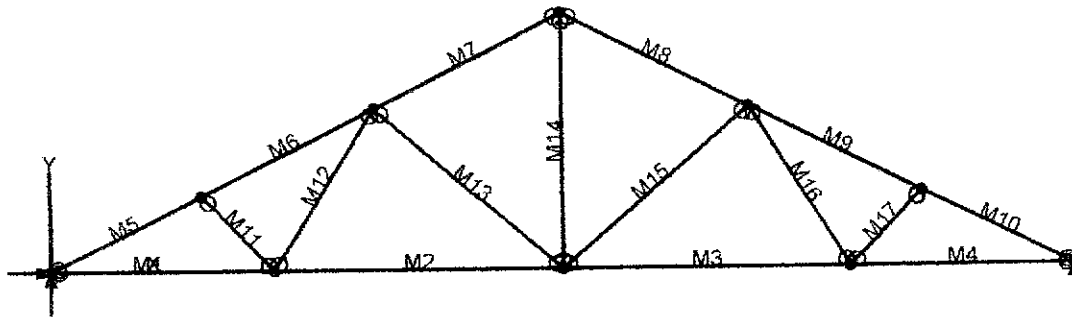
2x or 4x

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	4.73 feet
Max Axial Comp, C	1079 feet
Max Reaction, R	118 feet
Max Moment, M	36 feet
Max LL Deflection	0.04 feet
Max TL Deflection	0.08 feet
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 =	1.13
fc =	206 psi
Fce=	2192 psi
Fc*=	2084 psi
F'c=	1476 psi
fb=	141 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.28 < 1.0, Member OK
Interaction equation: (fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.09 < 1.0, Member OK
Live Load defl ratio	0.17 < 1.0, Member OK
Total Load defl ratio	0.25 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08/30/01 14:53:02

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 Fix
N1	0.00	0.00	Yes	Yes	No	No
N2	7.75	0.00	No	No	"	"
N3	17.75	0.00	"	"	"	"
N4	27.75	0.00	"	"	"	"
N5	35.50	0.00	"	Yes	"	"
N6	5.25	2.63	"	No	"	"
N7	30.25	2.63	"	"	"	"
N8	11.25	5.63	"	"	"	"
N9	24.25	5.63	"	"	"	"
N10	17.75	8.88	"	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	7.75
M2	"	"	10.00
M3	"	"	10.00
M4	"	"	7.75
M5	"	"	5.87
M6	"	"	6.71
M7	"	"	7.27
M8	"	"	7.27
M9	"	"	6.71
M10	"	"	5.87
M11	"	"	3.63
M12	"	"	6.63
M13	"	"	8.60
M14	"	"	8.88
M15	"	"	8.60
M16	"	"	6.63
M17	"	"	3.63

Section Properties

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

Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft ³
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	1256.04	-NA-
N5	"	-NA-	1256.04	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2189.53	-39.38	-46.89	-0.1926
"	2189.53	-17.16	25.9891	-0.1620
"	2189.53	5.0579	41.6193	-0.1043
"	2189.53	27.2746	0.0000	-0.0000
M2	1754.87	-46.25	-79.37	-0.2223
"	1754.87	-17.58	26.7745	-0.2600
"	1754.87	11.0856	37.6002	-0.2577
"	1754.87	39.7523	-46.89	-0.1926
M3	1754.87	-39.75	-46.89	-0.1926
"	1754.87	-11.09	37.6002	-0.2577
"	1754.87	17.5810	26.7745	-0.2600
"	1754.87	46.2477	-79.37	-0.2223
M4	2189.53	-27.27	0.0000	-0.0000
"	2189.53	-5.0579	41.6193	-0.1043
"	2189.53	17.1588	25.9891	-0.1620
"	2189.53	39.3754	-46.89	-0.1926
M5	-2507.90	119.85	0.0000	-0.0000
"	-2459.25	22.5494	138.83	-0.1337
"	-2410.60	-74.75	87.7627	-0.1781
"	-2361.95	-172.05	-153.20	-0.1700
M6	-2262.91	151.14	-153.20	-0.1700
"	-2207.31	39.9448	59.8212	-0.2130
"	-2151.71	-71.26	24.8150	-0.2187
"	-2096.11	-182.46	-258.22	-0.2198
M7	-1522.41	216.23	-258.22	-0.2198
"	-1462.17	95.7655	118.94	-0.3541
"	-1401.94	-24.70	205.02	-0.3824
"	-1341.71	-145.17	-0.0000	-0.2095
M8	-1522.41	-216.23	-258.22	-0.1782
"	-1462.17	-95.77	118.94	-0.3126
"	-1401.94	24.7012	205.02	-0.3409
"	-1341.71	145.17	0.0000	-0.1680
M9	-2262.91	-151.14	-153.20	-0.1284
"	-2207.31	-39.94	59.8212	-0.1715
"	-2151.71	71.2552	24.8150	-0.1771
"	-2096.11	182.46	-258.22	-0.1782
M10	-2507.90	-119.85	-0.0000	0.0415
"	-2459.25	-22.55	138.83	-0.0922

"	-2410.60	74.7506	87.7627	-0.1366
"	-2361.95	172.05	-153.20	-0.1284
M11	-338.03	0.0000	0.0000	-0.1163
"	-338.03	0.0000	0.0000	-0.1003
"	-338.03	0.0000	0.0000	-0.0842
"	-338.03	0.0000	0.0000	-0.0682
M12	381.49	-0.0000	-0.0000	-0.1669
"	381.49	-0.0000	-0.0000	-0.1517
"	381.49	-0.0000	-0.0000	-0.1364
"	381.49	-0.0000	0.0000	-0.1211
M13	-647.85	-0.0000	-0.0000	-0.1377
"	-647.85	-0.0000	-0.0000	-0.1319
"	-647.85	-0.0000	-0.0000	-0.1260
"	-647.85	-0.0000	0.0000	-0.1202
M14	940.38	0.0000	0.0000	-0.0464
"	940.38	0.0000	0.0000	-0.0464
"	940.38	0.0000	0.0000	-0.0464
"	940.38	0.0000	0.0000	-0.0464
M15	-647.85	0.0000	0.0000	-0.1984
"	-647.85	0.0000	0.0000	-0.1926
"	-647.85	0.0000	0.0000	-0.1868
"	-647.85	0.0000	0.0000	-0.1810
M16	381.49	0.0000	0.0000	-0.0881
"	381.49	0.0000	0.0000	-0.0729
"	381.49	0.0000	0.0000	-0.0576
"	381.49	0.0000	0.0000	-0.0423
M17	-338.03	0.0000	0.0000	-0.1835
"	-338.03	0.0000	0.0000	-0.1675
"	-338.03	0.0000	0.0000	-0.1514
"	-338.03	0.0000	0.0000	-0.1354

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	6.71 feet
Max Axial Comp, C	2096 feet
Max Reaction, R	182 feet
Max Moment, M	258 feet
Max LL Deflection	0.04 feet
Max TL Deflection	0.08 feet
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 =	1.18
fc =	399 psi
Fcc =	1142 psi
Fc* =	2084 psi
F'c =	972 psi
fb =	1011 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.44 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fcc)) =	0.89 < 1.0, Member OK
Live Load defl ratio	0.12 < 1.0, Member OK
Total Load defl ratio	0.18 < 1.0, Member OK