

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0114553

Insp Area: 2

Thos Bros: 336 G2

Site Address: 7471 GRIGGS WY SAC

Parcel No: 031-1060-021

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR

ZIMMERMAN ROOFING, INC
3675 R STREET
SACRAMENTO, CA 95816

OWNER

FONG ELLEN CINDI
7471 GRIGGS WY
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: TEAR OFF SHAKES & REROOF W/PIONEER TILE 24 SQ'S

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 039 License Number 557559 Date 11-19-01 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 11-19-01 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 STATE FUND Policy Number 713-2021-01 Exp Date 10/01/2002

(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 11-19-01 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.

Fong

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

TEL: 916.961.3960  
FAX: 916.961.6552

October 29, 2001

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

Attn.: Mr. Jeff Tucker,

re: Job 2001\_353: FONG

Subject: Structural Investigation Report of the Roof for the Residence located at 7471 Griggs Way,  
Sacramento, CA 95831.

As requested by Mr. Jeff Tucker, in a report to determine what needs should be addressed to correct any structural deficiencies of the roof, Paul Zacher visited the site October 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: One.  
Dimensions: Approximately 2000 square feet with a first story plate height of 8 feet.

**CONSTRUCTION:**

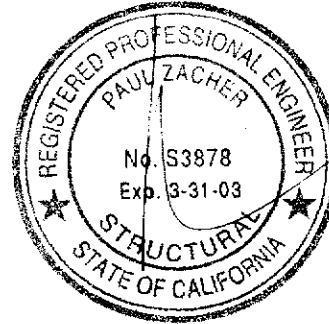
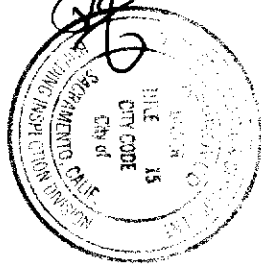
Roof:  
The roof covering will consist of a Light Weight Concrete Tile over 1/2" solid sheathing. The roof structure is framed with pre-engineered wood trusses spaced at 24" on center.

**CONCLUSIONS:**

Roof:  
The roof structure has sufficient structural capacity for the applied live and dead loads.

**RECOMMENDATIONS:**

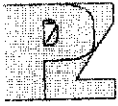
None.



The act of preparing and submitting this report is a contract on the job for all times and its purpose is to make any changes or alterations on the job without written permission from the Building Inspection Division. The approval of this plan and certification SHALL NOT be held to permit or approval of the violation of any Ordinance or State Law.

PHOTOGRAPHIC COPY

Fong



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

TEL: 916.961.3960  
FAX: 916.961.6552

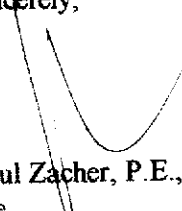
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and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

**MATERIAL**

**WEIGHT**

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>1.24</u>	psf
Total Load	11.8	psf

**LOCATION: BOTTOM CHORD**

**MATERIAL**

**WEIGHT**

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 #: 01-353

Date: 10/29/01

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

LOADING

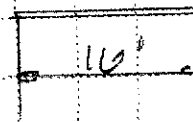
B1

Dp = 16.1 pcf @ 5' = 81 pcf

Lp = 16.0 " " " 80 "

4 x 14" 2

81/80



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

Title :  
 Dsgnr:  
 Description :

Job #  
 Date: 10:03AM, 29 OCT 01

Scope :

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 BEAMS

#### Timber Member Information

Calculations are designed to 1997 NDS and 1997 UBC Requirements

Timber Section		B1	4x14
Beam Width	in		3.500
Beam Depth	in		13.250
Le: Unbraced Length	ft		2.00
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	81.00
Live Load	#/ft	80.00

#### Results Ratio = 0.5544

Mmax @ Center	in-k	61.82
@ X =	ft	8.00
fb : Actual	psi	603.7
Fb : Allowable	psi	1,088.8
		<b>Bending OK</b>
fv : Actual	psi	36.0
Fv : Allowable	psi	118.8
		<b>Shear OK</b>

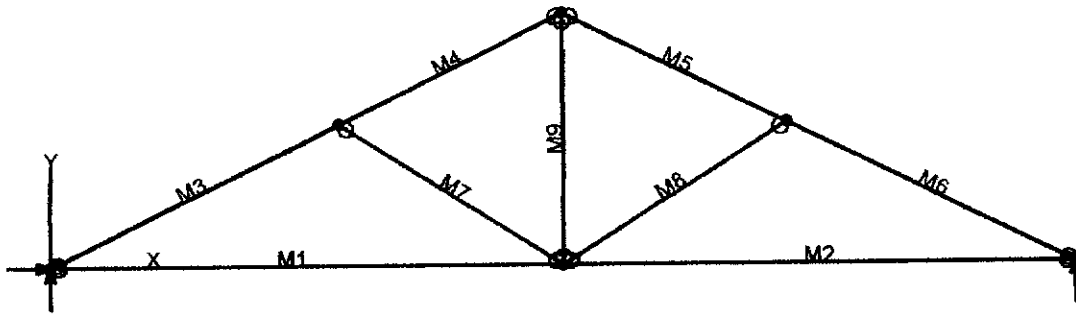
#### Reactions

@ Left End	DL	lbs	648.00
	LL	lbs	640.00
	Max. DL+LL	lbs	1,288.00
@ Right End	DL	lbs	648.00
	LL	lbs	640.00
	Max. DL+LL	lbs	1,288.00

#### Deflections

Ratio OK

Center DL Defl	in	-0.110
L/Defl Ratio		1,745.1
Center LL Defl	in	-0.109
L/Defl Ratio		1,766.9
Center Total Defl	in	-0.219
Location	ft	8.000
L/Defl Ratio		878.0



# VisualAnalysis 3.50.c Report

10/29/01 10:06:18

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	RE
N1	0.00	0.00	Yes		Yes		No	
N2	10.67	0.00	No		No		"	
N3	21.33	0.00	"		Yes		"	
N4	6.00	3.00	"		No		"	
N5	15.33	3.00	"		"		"	
N6	10.67	5.33	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	10.67
M2	"	"	10.66
M3	"	"	6.71
M4	"	"	5.22
M5	"	"	5.21
M6	"	"	6.71
M7	"	"	5.55
M8	"	"	5.54
M9	"	"	5.33

## Section Properties

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

## Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft <sup>3</sup>
Wood	-NA-	1700000.00	0.36	40.47

## Load Combination Summary

Equation Case: Equation Case 1

Combination: +1D+1L+1Lr

Contributing Cases & Source

Service Case 1 (Dead loads)

Service Case 2 (Roof Live loads)

## Member Uniform Loads



This item is empty. Check the selection state, or report properties.

## Nodal Reactions

Node	Load Case	FX lbs	FY lbs	MZ lb-ft
N1	Equation Case 1	0.00	754.61	-NA-
N3	"	-NA-	754.64	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1137.45	-56.35	-111.70	-0.0760
"	1137.45	-25.76	34.0476	-0.1409
"	1137.45	4.8247	71.2823	-0.1451
"	1137.45	35.4120	0.0000	-0.0000
M2	1137.53	-35.36	0.0000	-0.0000
"	1137.53	-4.8005	71.0790	-0.1444
"	1137.53	25.7581	33.8443	-0.1402
"	1137.53	56.3168	-111.70	-0.0760
M3	-1339.00	134.58	0.0000	-0.0000
"	-1283.40	23.3844	175.99	-0.1494
"	-1227.80	-87.82	103.96	-0.1516
"	-1172.20	-199.02	-216.11	-0.0742
M4	-952.54	171.23	-216.11	-0.0742
"	-909.36	84.6835	6.1199	-0.0837
"	-866.18	-1.8671	78.1562	-0.0965
"	-823.00	-88.42	-0.0000	-0.0716
M5	-952.97	-170.98	-215.86	-0.0596
"	-909.79	-84.61	5.7072	-0.0688
"	-866.61	1.7511	77.6606	-0.0815
"	-823.42	88.1164	0.0000	-0.0570
M6	-1339.11	-134.62	-0.0000	0.0146
"	-1283.51	-23.42	176.08	-0.1349
"	-1227.91	87.7785	104.12	-0.1371
"	-1172.31	198.98	-215.86	-0.0596
M7	-429.73	-0.0000	-0.0000	-0.0551
"	-429.73	-0.0000	-0.0000	-0.0526
"	-429.73	-0.0000	-0.0000	-0.0501
"	-429.73	-0.0000	0.0000	-0.0476
M8	-430.09	-0.0000	0.0000	-0.0727
"	-430.09	-0.0000	-0.0000	-0.0702
"	-430.09	-0.0000	-0.0000	-0.0677
"	-430.09	-0.0000	-0.0000	-0.0652
M9	577.74	-0.0000	-0.0000	-0.0163
"	577.74	-0.0000	-0.0000	-0.0163
"	577.74	-0.0000	-0.0000	-0.0163
"	577.74	-0.0000	0.0000	-0.0163

### **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

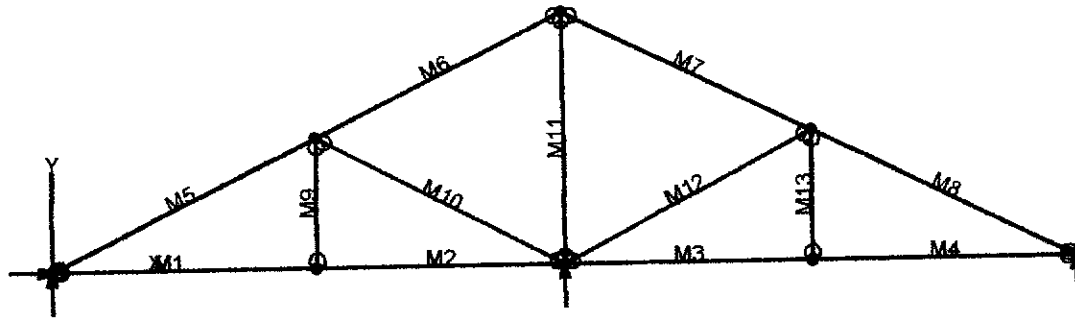
#### Assumptions:

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	6.71 feet
Max Axial Comp, C	1172 feet
Max Reaction, R	199 feet
Max Moment, M	216 feet
Max LL Deflection	0.03 feet
Max TL Deflection	0.07 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 =	223 psi
Fce =	1142 psi
Fc* =	2084 psi
F'c =	972 psi
fb =	846 psi
F*b = Fb* =	2156 psi
Shear D/C ratio	0.48 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F*b(1-fc/Fce)) =	0.54 < 1.0, Member OK
Live Load defl ratio	0.09 < 1.0, Member OK
Total Load defl ratio	0.16 < 1.0, Member OK



# VisualAnalysis 3.50.c Report

10/29/01 10:09:10

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	8.50	0.00	No	No	"
N3	16.50	0.00	"	Yes	"
N4	24.50	0.00	"	No	"
N5	33.00	0.00	"	Yes	"
N6	8.50	4.25	"	No	"
N7	24.50	4.25	"	"	"
N8	16.50	8.25	"	"	"

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.50
M2	"	"	8.00
M3	"	"	8.00
M4	"	"	8.50
M5	"	"	9.50
M6	"	"	8.94
M7	"	"	8.94
M8	"	"	9.50
M9	"	"	4.25
M10	"	"	9.06
M11	"	"	8.25
M12	"	"	9.06
M13	"	"	4.25

## 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	371.50	-NA-
N3	"	-NA-	1592.17	-NA-
N5	"	-NA-	371.50	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	279.15	-43.32	-57.53	-0.0210
"	279.15	-18.95	30.5137	-0.0616
"	279.15	5.4152	49.6900	-0.0642
"	279.15	29.7819	0.0000	-0.0000
M2	279.15	-32.86	-45.22	-0.0000
"	279.15	-9.9279	11.6808	-0.0142
"	279.15	13.0055	7.5773	-0.0194
"	279.15	35.9388	-57.53	-0.0210
M3	279.15	-35.94	-57.53	-0.0210
"	279.15	-13.01	7.5773	-0.0194
"	279.15	9.9279	11.6808	-0.0142
"	279.15	32.8612	-45.22	-0.0000
M4	279.15	-29.78	-0.0000	-0.0000
"	279.15	-5.4152	49.6900	-0.0642
"	279.15	18.9514	30.5137	-0.0616
"	279.15	43.3181	-57.53	-0.0210
M5	-402.50	180.80	0.0000	-0.0000
"	-323.73	23.2694	<b>321.98</b>	<b>-0.4301</b>
"	-244.97	-134.26	146.18	-0.3265
"	-166.20	<b>-291.80</b>	<b>-527.41</b>	-0.0211
M6	327.89	281.37	-527.41	-0.0211
"	402.02	133.10	89.3364	-0.2065
"	476.16	-15.17	265.14	-0.3011
"	<b>550.29</b>	-163.43	0.0000	-0.0106
M7	327.89	-281.37	-527.41	-0.0156
"	402.02	-133.10	89.3364	-0.2010
"	476.16	15.1675	265.14	-0.2954
"	550.29	163.43	0.0000	-0.0050
M8	-402.50	-180.80	-0.0000	0.0055
"	-323.73	-23.27	321.98	-0.4246
"	-244.97	134.26	146.18	-0.3209
"	-166.20	<b>291.80</b>	-527.41	-0.0156
M9	79.2569	0.0000	0.0000	0.0032
"	79.2569	0.0000	0.0000	0.0042
"	79.2569	0.0000	0.0000	0.0052
"	79.2569	0.0000	0.0000	0.0062
M10	<b>-790.67</b>	-0.0000	0.0000	-0.0152
"	-790.67	-0.0000	-0.0000	-0.0092
"	-790.67	-0.0000	-0.0000	-0.0031
"	-790.67	-0.0000	-0.0000	0.0029
M11	-784.55	0.0000	0.0000	-0.0062
"	-784.55	0.0000	0.0000	-0.0062

"	-784.55	0.0000	0.0000	-0.0062
"	-784.55	0.0000	0.0000	-0.0062
M12	-790.67	0.0000	0.0000	-0.0210
"	-790.67	0.0000	0.0000	-0.0150
"	-790.67	0.0000	0.0000	-0.0089
"	-790.67	0.0000	0.0000	-0.0029
M13	79.2569	0.0000	0.0000	0.0062
"	79.2569	0.0000	0.0000	0.0072
"	79.2569	0.0000	0.0000	0.0082
"	79.2569	0.0000	0.0000	<b>0.0092</b>

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

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

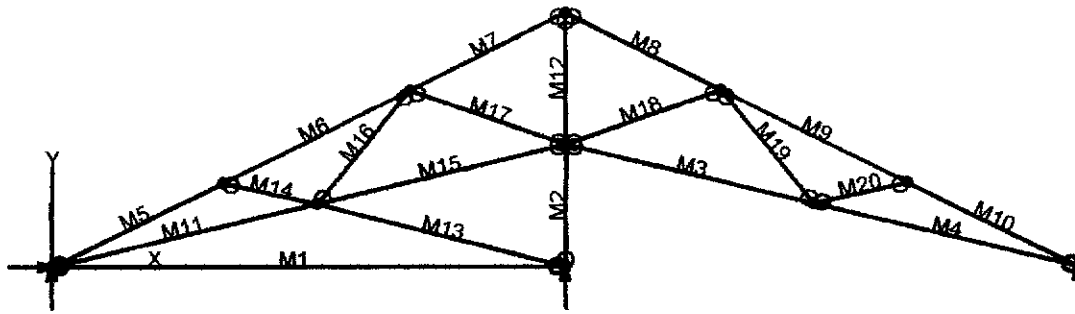
#### Grading:

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	3.5 inches	
Length	9.5 feet	
Max Axial Comp, C	166 feet	
Max Reaction, R	291 feet	
Max Moment, M	527 feet	
Max LL Deflection	0.01 feet	
Max TL Deflection	0.02 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 =	1.26	
fc =	32 psi	
Fce=	606 psi	
Fc*=	2084 psi	
F'c=	564 psi	
fb=	2065 psi	
F'b=Fb*=	2156 psi	
Shear D/C ratio	0.70 < 1.0, Member	OK
Interaction equation:		
$(fc/F'c)^2 +$		
$fb/(F'b(1-fc/Fce)) =$	1.01 > 1.0, Member No Good.	OK 1% over
Live Load defl ratio	0.02 < 1.0, Member	OK
Total Load defl ratio	0.03 < 1.0, Member	OK





# VisualAnalysis 3.50.c Report

10/29/01 10:15:48

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	16.50	0.00	No		"		"	
N3	8.50	2.06	"		No		"	
N4	24.50	2.06	"		"		"	
N5	16.50	4.00	"		"		"	
N6	33.00	0.00	"		Yes		"	
N7	5.50	2.75	"		No		"	
N8	27.50	2.75	"		"		"	
N9	11.50	5.75	"		"		"	
N10	21.50	5.75	"		"		"	
N11	16.50	8.25	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	16.50
M2	"	"	4.00
M3	"	"	8.23
M4	"	"	8.75
M5	"	"	6.15
M6	"	"	6.71
M7	"	"	5.59
M8	"	"	5.59
M9	"	"	6.71
M10	"	"	6.15
M11	"	"	8.75
M12	"	"	4.25
M13	"	"	8.26
M14	"	"	3.08
M15	"	"	8.23
M16	"	"	4.76
M17	"	"	5.30
M18	"	"	5.30
M19	"	"	4.76
M20	"	"	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	Elasticity	Poisson	Density
		psi	psi		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	382.98	-NA-
N2	"	-NA-	1571.25	-NA-
N6	"	-NA-	385.04	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	283.22	-70.95	0.0000	-0.0000
"	283.22	-23.65	259.50	-1.3648
"	283.22	23.6500	259.50	-1.3646
"	283.22	70.9500	0.0000	-0.0000
M2	-1426.71	-1.7994	-7.1976	-0.0008
"	-1426.71	-1.7994	-4.7984	-0.0013
"	-1426.71	-1.7994	-2.3992	-0.0034
"	-1426.71	-1.7994	0.0000	-0.0063
M3	-46.53	-42.08	-63.21	-0.0582
"	-40.96	-19.15	20.6288	-0.0734
"	-35.40	3.7876	41.6997	-0.0663
"	-29.84	26.7209	0.0000	-0.0073
M4	864.44	-29.32	0.0000	0.0030
"	870.34	-4.9557	49.7889	-0.0769
"	876.25	19.4109	28.7179	-0.0860
"	882.15	43.7776	-63.21	-0.0582
M5	-531.80	119.88	0.0000	-0.0000
"	-480.83	17.9456	140.73	-0.0879
"	-429.86	-83.99	73.0448	-0.0775
"	-378.90	-185.92	-203.05	-0.0223
M6	49.5356	169.00	-203.05	-0.0223
"	105.14	57.8042	49.9050	-0.0489
"	160.74	-53.40	54.8337	-0.0473
"	216.34	-164.60	-188.27	-0.0128
M7	783.39	172.68	-188.27	-0.0128
"	829.73	80.0115	46.7312	-0.0495
"	876.06	-12.66	109.49	-0.0646
"	922.39	-105.32	-0.0000	-0.0170
M8	785.13	-172.99	-189.99	-0.0319
"	831.47	-80.32	45.5854	-0.0583
"	877.80	12.3477	108.91	-0.0638
"	924.13	105.01	0.0000	-0.0071

M9	-430.65	-166.61	-188.72	-0.0646
"	-375.05	-55.41	58.8878	-0.0903
"	-319.45	55.7888	58.4657	-0.0792
"	-263.85	166.99	-189.99	-0.0319
M10	-1008.11	-122.21	0.0000	0.0057
"	-957.14	-20.28	145.51	-0.1032
"	-906.17	81.6568	82.6006	-0.1101
"	-855.21	<b>183.59</b>	-188.72	-0.0646
M11	142.69	0.6115	0.0000	-0.0000
"	142.69	0.6115	1.7827	-0.0094
"	142.69	0.6115	3.5654	-0.0159
"	142.69	0.6115	5.3480	-0.0167
M12	-1013.92	1.6936	-7.1976	-0.0008
"	-1013.92	1.6936	-4.7984	-0.0027
"	-1013.92	1.6936	-2.3992	-0.0064
"	-1013.92	1.6936	0.0000	-0.0110
M13	-294.37	-0.1943	-0.0000	0.0016
"	-294.37	-0.1943	0.5349	-0.0046
"	-294.37	-0.1943	1.0698	-0.0101
"	-294.37	-0.1943	1.6047	-0.0140
M14	-556.35	-1.1790	-0.0000	<b>0.0196</b>
"	-556.35	-1.1790	1.2098	0.0175
"	-556.35	-1.1790	2.4197	0.0156
"	-556.35	-1.1790	3.6295	0.0142
M15	-240.19	-0.0138	-0.0000	-0.0077
"	-240.19	-0.0138	0.0379	-0.0108
"	-240.19	-0.0138	0.0759	-0.0138
"	-240.19	-0.0138	0.1138	-0.0167
M16	182.84	0.0000	0.0000	-0.0143
"	182.84	0.0000	0.0000	-0.0131
"	182.84	0.0000	0.0000	-0.0119
"	182.84	0.0000	0.0000	-0.0106
M17	-574.96	-0.0000	0.0000	-0.0108
"	-574.96	-0.0000	-0.0000	-0.0095
"	-574.96	-0.0000	-0.0000	-0.0082
"	-574.96	-0.0000	-0.0000	-0.0070
M18	-788.58	0.0000	0.0000	-0.0382
"	-788.58	0.0000	0.0000	-0.0280
"	-788.58	0.0000	0.0000	-0.0178
"	-788.58	0.0000	0.0000	-0.0075
M19	548.44	-0.0000	-0.0000	-0.0450
"	548.44	-0.0000	-0.0000	-0.0366
"	548.44	-0.0000	-0.0000	-0.0282
"	548.44	-0.0000	0.0000	-0.0199
M20	-550.36	0.0000	0.0000	-0.0621
"	-550.36	0.0000	0.0000	-0.0591
"	-550.36	0.0000	0.0000	-0.0560
"	-550.36	0.0000	0.0000	-0.0530

### BENDING & COMP: TRUSS 3 - MEMBER 10

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

#### Grading:

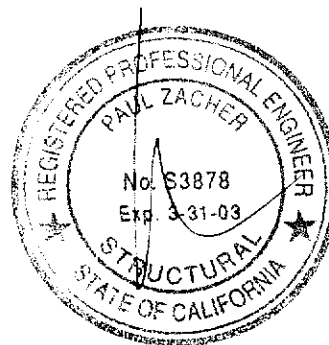
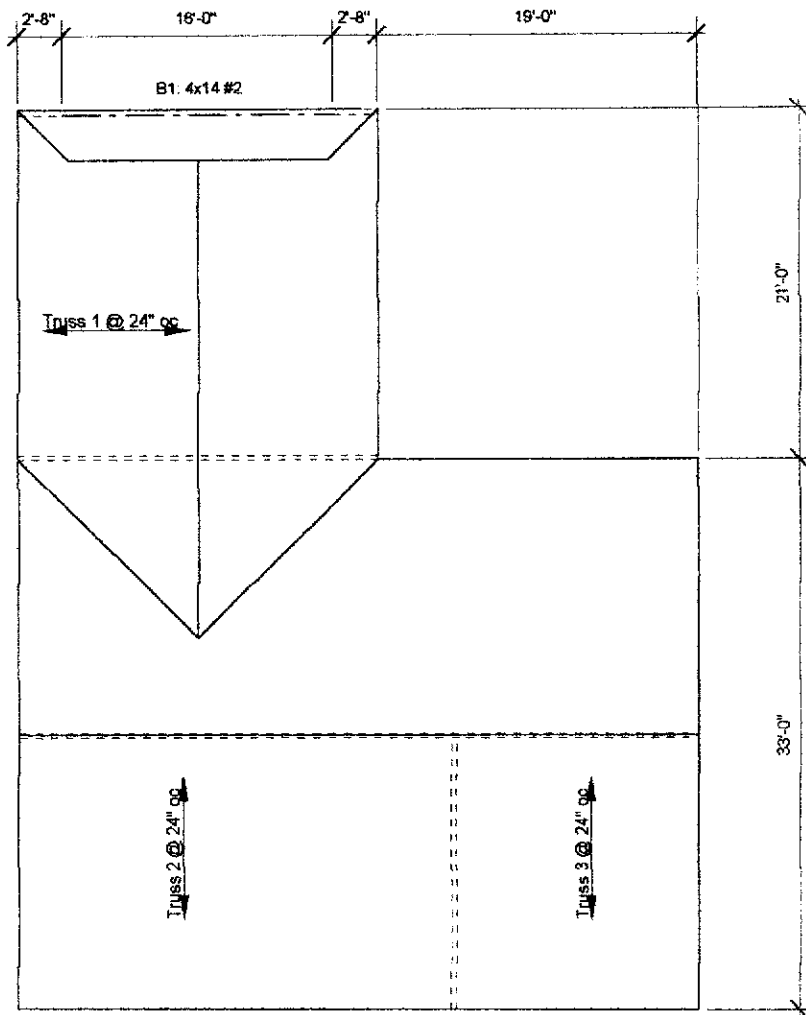
2x or 4x

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	6.15 feet
Max Axial Comp, C	855 feet
Max Reaction, R	183 feet
Max Moment, M	188 feet
Max LL Deflection	0.03 feet
Max TL Deflection	0.06 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 =	1.17
fc =	163 psi
Fce=	1341 psi
Fc*=	2084 psi
F'c=	1097 psi
fb=	737 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/Fce)) =	0.41 < 1.0, Member OK
Live Load defl ratio	0.10 < 1.0, Member OK
Total Load defl ratio	0.15 < 1.0, Member OK



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 structural wood members that were observed appear to be in sound condition and without structural defect.

1

ROOF PLAN - FONG

Not to Scale

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