

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0508910

Insp Area: 2

Thos Bros: 336G3

Site Address: 7724 ROBERTS RIVER WY SAC

Parcel No: 031-1190-052

Sub-Type: REM

Housing (Y/N): N

CONTRACTOR  
ZIMMERMAN REROOFING CO.  
3675 R ST  
SACRAMENTO CA 95816

OWNER  
MIKE W CHAN SURVIVORS TRU  
7808 RIVER ESTATES DR  
SACRAMENTO, CA 95831

ARCHITECT

Nature of Work: REROOF, TEAR OFF & INSTALL LIGHT WEIGHT CONCRETE TILE.

CONSTRUCTION LENDING AGENCY : I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C).

Lender's Name \_\_\_\_\_ Lender's Address \_\_\_\_\_

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class C-39 License Number 763169 Date 6-21-05 Contractor Signature Kat O

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 PAT CITY OF SACRAMENTO

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 improvements 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 6-21-05 Applicant/Agent Signature Kat O

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.

NO 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 713-0002021 Exp Date 10/01/2005

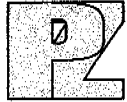
(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become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

Date 6-21-05 Applicant Signature Kat O

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.





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. After the roofing material has been removed, the contractor shall verify that the framing in the inaccessible portion of the structure does not exceed the following:

Vaulted Ceiling Portion:

- a. 2x10 @ 16" oc - max span = 19'-9"

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

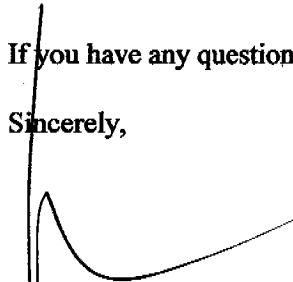
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and are not an indication of a structural hazard or failure.

It shall be noted that some deflection of the rafters may be evident after installation of the tile. The existing roof framing has deflected but this may not be readily evident due to the uneven nature of the existing roofing material. Concrete tile is a very consistent and uniform product and when installed in an even plane, even small deflections can become apparent. This is only a cosmetic issue and not a structural concern.

The inspection consisted of visual observation only, made solely to determine the structural capacity of the existing roof. Analysis does not determine any effects on the overall structure under lateral forces or effects on the foundation unless specifically noted in the calculations and in this document. No warranties, expressed or implied, are made or intended in conjunction with this report. The inspection was made only to the portions that were accessible. The specific items noted were those that were observable and there may be defects that are not observable, or are hidden by architectural and structural materials.

If you have any questions on the above, do not hesitate to call.

Sincerely,



Paul Zacher, P.E., S.E.  
file

**DESIGN LOADING:**

Roof Pitch 6 in 12  
Pitch Adjustment Factor 1.12

**LOCATION: ROOF**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.30	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
7/16" OSB/ plywood	1.30	psf
2x6 rafters @ 16" oc	<u>1.51</u>	psf
Load	11.5	psf
Roof Pitch Adjustment	<u>1.36</u>	psf
Total Load	12.9	psf

**LOCATION: VAULT**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.30	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
7/16" OSB/ plywood	1.30	psf
2x10 rafters @ 24" oc	2.54	psf
Batt/blown insul	0.50	psf
1/2" Gypboard	<u>2.50</u>	psf
Load	15.5	psf
Roof Pitch Adjustment	<u>1.83</u>	psf
Total Load	17.4	psf

The dead and live load on truss top chord is placed along the length of the top chord. Therefore, the live load is as follows:

Live Load on top chord 14.3

**LOCATION: TOP CHORD**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.30	psf
Roofing felt	0.30	psf
7/16" OSB/ plywood	1.30	psf
1x4 skip sht'g	1.09	psf
2x4 truss @ 24" oc	<u>0.64</u>	psf
Total Load	10.6	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

Job #: 05\_188

Date: 06/04/2005

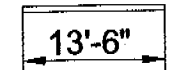
LOADING:

Rafter:

Dr = 12.9 psf x 1'-4" = 17.2 plf  
Lr = 16.0 psf x 1'-4" = 21.3 plf

2x6 #2

17.2 / 21.3

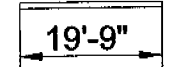


Vault:

Dr = 17.4 psf x 1'-4" = 23.2 plf  
Lr = 16.0 psf x 1'-4" = 21.3 plf

2x10 #2

23.2 / 21.3

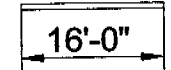


B1:

Dr = 14.9 psf x 4'-0" = 60 plf  
Lr = 16.0 psf x 4'-0" = 64 plf

4x12 #2

60 / 64



Paul Zacher Structural Engr's, Inc.  
 4701 Lakeside Way  
 Fair Oaks, CA 95628

Title :  
 Dsgnr:  
 Description :

Job #  
 Date: 6:26AM, 4 JUN 05

Scope :

Rev: 590006  
 User: KW-0602844, Ver 5.8.0, 1-Dec-2003  
 (c)1983-2003 ENERCALC Engineering Software

**Timber Beam & Joist**

Chan.ecw.Calculations

**Description RAFTERS AND BEAMS**

**Timber Member Information** Code Ref: 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000. Base allowables are user defined

		rafter	vault	B1
<b>Timber Section</b>		2x6	2x10	4x12
Beam Width	in	1.500	1.500	3.500
Beam Depth	in	5.500	9.250	11.250
Le: Unbraced Length	ft	0.00	0.00	0.00
Timber Grade		Douglas Fir - Larch, No.2	Douglas Fir - Larch, No.2	Douglas Fir - Larch, No.2
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**

		rafter	vault	B1
Span	ft	13.50	19.75	16.00
Dead Load	#/ft	17.20	23.20	60.00
Live Load	#/ft	21.30	21.30	64.00

**Results** Ratio = 0.8511 0.8797 0.5361

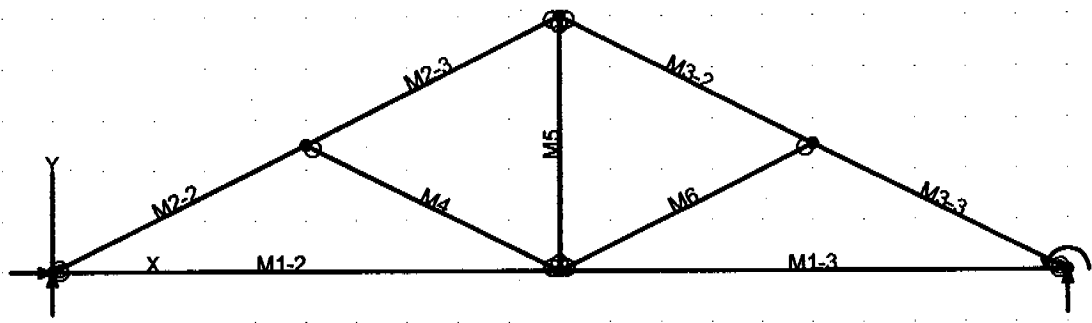
Mmax @ Center	in-k	10.52	26.04	47.62
@ X =	ft	6.75	9.87	8.00
fb : Actual	psi	1,391.7	1,217.2	645.0
Fb : Allowable	psi	1,635.2	1,383.6	1,203.1
		Bending OK	Bending OK	Bending OK
fv : Actual	psi	44.2	44.1	33.6
Fv : Allowable	psi	118.8	118.8	118.8
		Shear OK	Shear OK	Shear OK

**Reactions**

@ Left End	DL	lbs	116.10	229.10	480.00
	LL	lbs	143.77	210.34	512.00
	Max. DL+LL	lbs	259.87	439.44	992.00
@ Right End	DL	lbs	116.10	229.10	480.00
	LL	lbs	143.77	210.34	512.00
	Max. DL+LL	lbs	259.87	439.44	992.00

**Deflections** Ratio OK Deflection OK Deflection OK

Center DL Defl	in	-0.386	-0.502	-0.133
L/Defl Ratio		419.4	472.4	1,442.0
Center LL Defl	in	-0.478	-0.461	-0.142
L/Defl Ratio		338.6	514.5	1,351.9
Center Total Defl	in	-0.865	-0.962	-0.275
Location	ft	6.750	9.875	8.000
L/Defl Ratio		187.4	246.3	697.7



# Truss 1

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural - Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Owner\Desktop\Chan05\_188\Truss 1.vap

## Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes		No	
N2	20.00	0.00	No		"		Yes	
N3	10.00	5.00	"		No		No	
N4	10.00	0.00	"		"		"	
N5	5.00	2.50	"		"		"	
N6	15.00	2.50	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1-2	SS2x4	Wood	10.00
M1-3	"	"	10.00
M2-2	"	"	5.59
M2-3	"	"	5.59
M3-2	"	"	5.59
M3-3	"	"	5.59
M4	"	"	5.59
M5	"	"	5.00
M6	"	"	5.59

## Section Properties

Category	Section	Ax in <sup>2</sup>	Ix 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-	1800000.00	0.36	40.47

## Load Combination Summary

Equation Case: UBC97 12.8a

Combination: 1D+1Lr

Contributing Cases & Source

Dead Load (Dead loads)

Roof Live Load (Roof Live loads)

## Nodal Reactions

Node	Load Case	FX lb	FY lb	MZ lb-ft
N1	UBC97 12.8a	0.00	584.00	-NA-



Node	Load Case	FX lb	FY lb	MZ lb-ft
N2	"	-NA-	584.00	0.00

## Member Results

Member	Fx lb	Fy lb	Mz lb-ft	Dx in	Dy in
M1-2	909.47	-52.87	-98.70	0.01	-0.05
"	909.47	-24.20	29.72	0.01	-0.10
"	909.47	4.46	62.62	0.00	<b>-0.10</b>
"	<b>909.47</b>	33.13	0.00	0.00	0.00
M1-3	909.47	-33.13	0.00	0.02	0.00
"	909.47	-4.46	62.62	0.02	-0.10
"	909.47	24.20	29.72	0.02	-0.10
"	909.47	52.87	-98.70	0.01	-0.05
M2-2	<b>-1059.8</b>	85.99	0.00	0.00	0.00
"	-1022.6	11.75	<b>91.00</b>	-0.00	-0.06
"	-985.57	-62.49	43.73	-0.00	-0.06
"	-948.45	<b>-136.73</b>	<b>-141.82</b>	-0.01	-0.05
M2-3	-743.36	<b>136.73</b>	-141.82	-0.01	-0.05
"	-706.25	62.49	43.73	-0.01	-0.08
"	-669.13	-11.75	91.00	-0.01	-0.09
"	-632.01	-85.99	0.00	-0.01	-0.05
M3-2	-743.36	-136.73	-141.82	0.03	-0.04
"	-706.25	-62.49	43.73	0.03	-0.07
"	-669.13	11.75	91.00	0.03	-0.08
"	-632.01	85.99	0.00	0.03	-0.04
M3-3	-1059.8	-85.99	0.00	0.02	<b>0.01</b>
"	-1022.6	-11.75	91.00	0.02	-0.05
"	-985.57	62.49	43.73	0.03	-0.05
"	-948.45	136.73	-141.82	0.03	-0.04
M4	-341.82	0.00	0.00	0.03	-0.04
"	-341.82	0.00	0.00	0.03	-0.04
"	-341.82	0.00	0.00	<b>0.04</b>	-0.04
"	-341.82	0.00	0.00	0.04	-0.04
M5	411.47	0.00	0.00	<b>-0.05</b>	-0.01
"	411.47	0.00	0.00	-0.05	-0.01
"	411.47	0.00	0.00	-0.05	-0.01
"	411.47	0.00	0.00	-0.05	-0.01
M6	-341.82	0.00	0.00	-0.02	-0.05
"	-341.82	0.00	0.00	-0.01	-0.05
"	-341.82	0.00	0.00	-0.01	-0.05
"	-341.82	0.00	0.00	-0.01	-0.05

**BENDING & COMP: TRUSS 1 - MEMBER 2-2**

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

**Grading:**

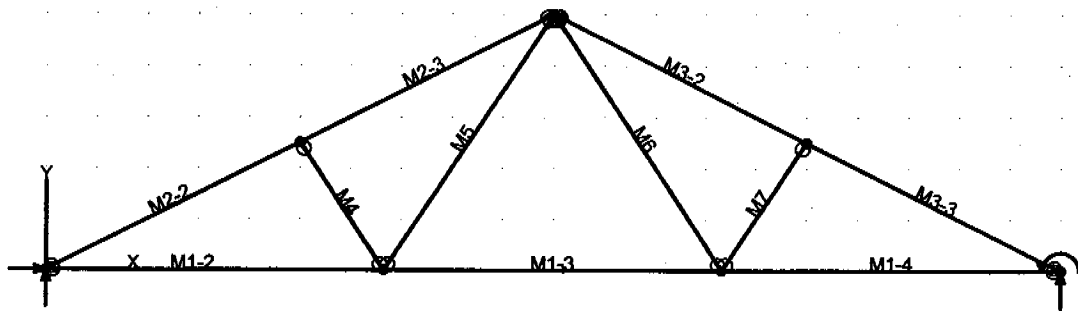
2x or 4x

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	5.59 feet
Max Axial Comp, C	948 lbs
Max Reaction, R	136 lbs
Max Moment, M	141 ft-lbs
Max LL Deflection	0.03 inches
Max TL Deflection	0.05 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.15
fc =	181 psi
Fce=	1602 psi
Fc*=	2084 psi
F'c=	1239 psi
fb=	552 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.33 < 1.0, Member OK
Interaction equation:	
(fc/F'c) <sup>2</sup> +	
fb/ (F'b(1-fc/Fce)) =	0.31 < 1.0, Member OK
Live Load defl ratio	0.11 < 1.0, Member OK
Total Load defl ratio	0.13 < 1.0, Member OK



## Truss 2

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural - Engineers Engineer: Paul Zacher  
File: C:\Documents and Settings\Owner\Desktop\Chan05\_188\Truss 2.vap

### Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	20.00	0.00	No	"	Yes
N3	10.00	5.00	"	No	No
N4	6.67	0.00	"	"	"
N5	13.33	0.00	"	"	"
N6	5.00	2.50	"	"	"
N7	15.00	2.50	"	"	"

### Member Elements

Member	Section	Material	Length ft
M1-2	SS2x4	Wood	6.67
M1-3	"	"	6.67
M1-4	"	"	6.67
M2-2	"	"	5.59
M2-3	"	"	5.59
M3-2	"	"	5.59
M3-3	"	"	5.59
M4	"	"	3.00
M5	"	"	6.01
M6	"	"	6.01
M7	"	"	3.00

### 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-	1800000.00	0.36	40.47

### Load Combination Summary

Equation Case: UBC97 12.8a

Combination: 1D+1Lr

Contributing Cases & Source

Dead Load (Dead loads)

Roof Live Load (Roof Live loads)

### Nodal Reactions

Node	Load Case	FX	FY	MZ
------	-----------	----	----	----

		lb	lb	lb-ft
N1	UBC97 12.8a	0.00	584.00	-NA-
N2	"	-NA-	584.00	0.00

## Member Results

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1-2	927.60	-33.22	-30.32	0.01	-0.05
"	927.60	-14.10	22.24	0.01	-0.05
"	927.60	5.01	32.34	0.00	-0.04
"	<b>927.60</b>	24.12	0.00	0.00	0.00
M1-3	580.51	-28.67	-30.32	0.01	-0.05
"	580.51	-9.56	12.13	0.01	-0.06
"	580.51	9.56	12.13	0.01	-0.06
"	580.51	28.67	-30.32	0.01	-0.05
M1-4	927.60	-24.12	0.00	0.02	0.00
"	927.60	-5.01	32.34	0.02	-0.04
"	927.60	14.10	22.24	0.02	-0.05
"	927.60	33.22	-30.32	0.01	-0.05
M2-2	<b>-1080.0</b>	85.94	0.00	0.00	0.00
"	-1042.9	11.70	<b>90.92</b>	-0.00	-0.06
"	-1005.8	-62.54	43.55	-0.00	-0.06
"	-968.70	<b>-136.77</b>	<b>-142.09</b>	-0.01	-0.05
M2-3	-934.51	<b>136.77</b>	-142.09	-0.01	-0.05
"	-897.39	62.54	43.55	-0.01	-0.08
"	-860.27	-11.70	90.92	-0.01	<b>-0.09</b>
"	-823.15	-85.94	0.00	-0.01	-0.05
M3-2	-934.51	-136.77	-142.09	0.03	-0.04
"	-897.39	-62.54	43.55	0.03	-0.07
"	-860.27	11.70	90.92	0.03	-0.08
"	-823.15	85.94	0.00	0.03	-0.04
M3-3	-1080.0	-85.94	0.00	0.02	<b>0.01</b>
"	-1042.9	-11.70	90.92	0.02	-0.05
"	-1005.8	62.54	43.55	0.02	-0.05
"	-968.70	136.77	-142.09	0.03	-0.04
M4	-275.68	0.00	0.00	0.05	-0.02
"	-275.68	0.00	0.00	0.05	-0.02
"	-275.68	0.00	0.00	0.05	-0.02
"	-275.68	0.00	0.00	<b>0.05</b>	-0.01
M5	350.05	0.00	0.00	<b>-0.04</b>	-0.04
"	350.05	0.00	0.00	-0.04	-0.04
"	350.05	0.00	0.00	-0.04	-0.04
"	350.05	0.00	0.00	-0.04	-0.04
M6	350.05	0.00	0.00	0.05	-0.02
"	350.05	0.00	0.00	0.05	-0.02
"	350.05	0.00	0.00	0.05	-0.02
"	350.05	0.00	0.00	0.05	-0.02
M7	-275.68	0.00	0.00	-0.04	-0.04
"	-275.68	0.00	0.00	-0.04	-0.04
"	-275.68	0.00	0.00	-0.04	-0.03
"	-275.68	0.00	0.00	-0.04	-0.03

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

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

Grading:

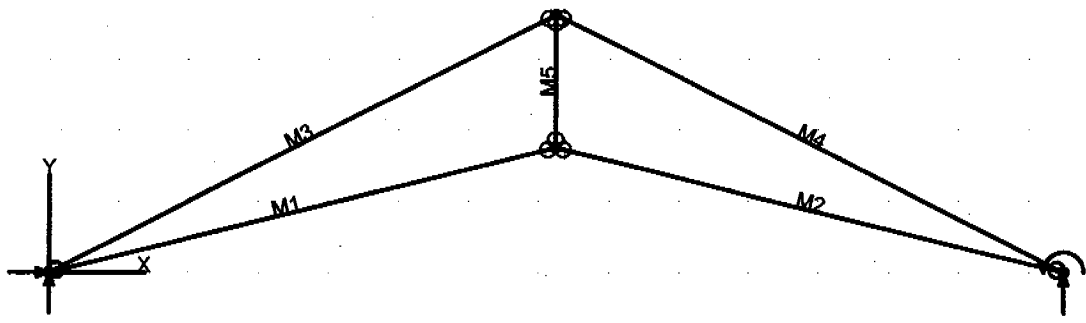
2x or 4x

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	5.59 feet
Max Axial Comp, C	968 lbs
Max Reaction, R	136 lbs
Max Moment, M	142 ft-lbs
Max LL Deflection	0.03 inches
Max TL Deflection	0.06 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.15
fc =	184 psi
Fce=	1602 psi
Fc*=	2084 psi
F'c=	1239 psi
fb=	556 psi
F*b=Fb*=	2156 psi
Shear D/C ratio	0.33 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F*b(1-fc/Fce)) =	0.31 < 1.0, Member OK
Live Load defl ratio	0.11 < 1.0, Member OK
Total Load defl ratio	0.16 < 1.0, Member OK



## Truss 3

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural - Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Owner\Desktop\Chan05\_188\Truss 3.vap

### Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	14.50	0.00	No	"	Yes
N3	7.25	3.63	"	No	No
N4	7.25	1.75	"	"	"

### Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	7.46
M2	"	"	7.46
M3	"	"	8.11
M4	"	"	8.11
M5	"	"	1.88

### 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-	1800000.00	0.36	40.47

### Load Combination Summary

Equation Case: UBC97 12.8a

Combination: 1D+1Lr

Contributing Cases & Source

Dead Load (Dead loads)

Roof Live Load (Roof Live loads)

### Nodal Reactions

Node	Load Case	FX lb	FY lb	MZ lb-ft
N1	UBC97 12.8a	0.00	234.90	-NA-
N2	"	-NA-	234.90	0.00

### Member Results



Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1	459.87	30.30	0.00	0.00	0.00
"	464.74	10.10	50.21	0.00	-0.07
"	469.62	-10.10	50.21	0.00	-0.08
"	<b>474.50</b>	-30.30	0.00	0.00	-0.04
M2	459.87	-30.30	0.00	0.03	<b>0.01</b>
"	464.74	-10.10	50.21	0.03	-0.06
"	469.62	10.10	50.21	<b>0.03</b>	-0.07
"	474.50	30.30	0.00	0.02	-0.04
M3	<b>-546.33</b>	<b>77.17</b>	0.00	0.00	0.00
"	-520.61	25.72	<b>138.94</b>	-0.00	-0.18
"	-494.88	-25.72	138.94	-0.00	<b>-0.20</b>
"	-469.16	<b>-77.17</b>	0.00	-0.01	-0.04
M4	-546.33	-77.17	0.00	0.03	0.01
"	-520.61	-25.72	138.94	0.03	-0.17
"	-494.88	25.72	138.94	0.03	-0.18
"	-469.16	77.17	0.00	0.03	-0.03
M5	281.59	0.00	0.00	-0.04	-0.01
"	281.59	0.00	0.00	-0.04	-0.01
"	281.59	0.00	0.00	-0.04	-0.01
"	281.59	0.00	0.00	<b>-0.04</b>	-0.01

**BENDING & COMP: TRUSS 3 - MEMBER 2-2**

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

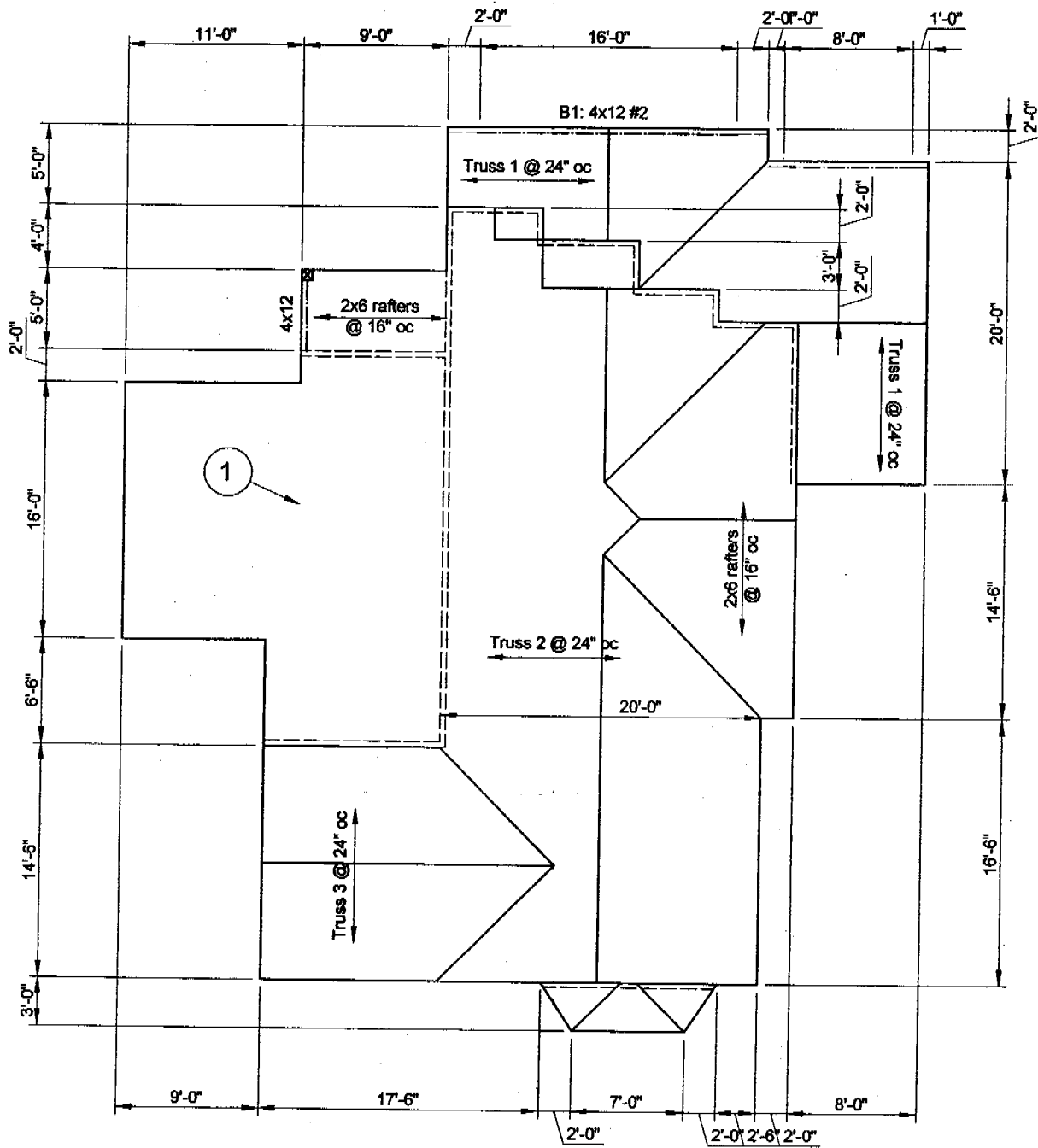
Grading:

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	8.11 feet
Max Axial Comp, C	520 lbs
Max Reaction, R	25 lbs
Max Moment, M	138 ft-lbs
Max LL Deflection	0.09 inches
Max TL Deflection	0.18 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 =	1.22
fc =	99 psi
Fce =	807 psi
Fc* =	2084 psi
F'c =	729 psi
fb =	541 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.06 < 1.0, Member OK
Interaction equation:	
(fc/F'c) <sup>2</sup> +	
fb / (F'b(1-fc/Fce)) =	0.30 < 1.0, Member OK
Live Load defl ratio	0.22 < 1.0, Member OK
Total Load defl ratio	0.33 < 1.0, Member OK



**FRAMING NOTES:**

1. No Access. See "Recommendations" for allowable rafter spans.

**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 7.3 psf.
- B. All framing members including rafters, purlins, joists and beams are existing unless otherwise noted in the framing notes above.
- C. All structural wood members that were observed appear to be in sound condition and without structural defect.

**1 ROOF PLAN - CHAN**

Not to Scale

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