

CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0007430
Insp Area: 1

Site Address: 32 CACHE RIVER CR SAC
Parcel No: 031-0640-009

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

CONTRACTOR
ZIMMERMAN ROOFING
3675 R ST
SACRAMENTO CA 95816

OWNER
RON LAM
32 CACHE RIVER CR
SAC CA

ARCHITECT

Nature of Work: 29 SQ TO 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.

X License Class C39 License Number 557559 Date 6/30/00 Contractor Signature Billy Coy

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.

X Date 6/30/00 Applicant/Agent Signature Billy Coy **2000**

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury that I have and will maintain a certificate of consent to self-insure for workers' compensation as provided in Section 3700 of the Labor Code, for the performance of work for which the permit is issued.

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

Carrier STATE COMP INS FUND Policy Number 713-99-2021 Exp Date 10/01/2000

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

X Date 6/30/00 Applicant Signature Billy Coy

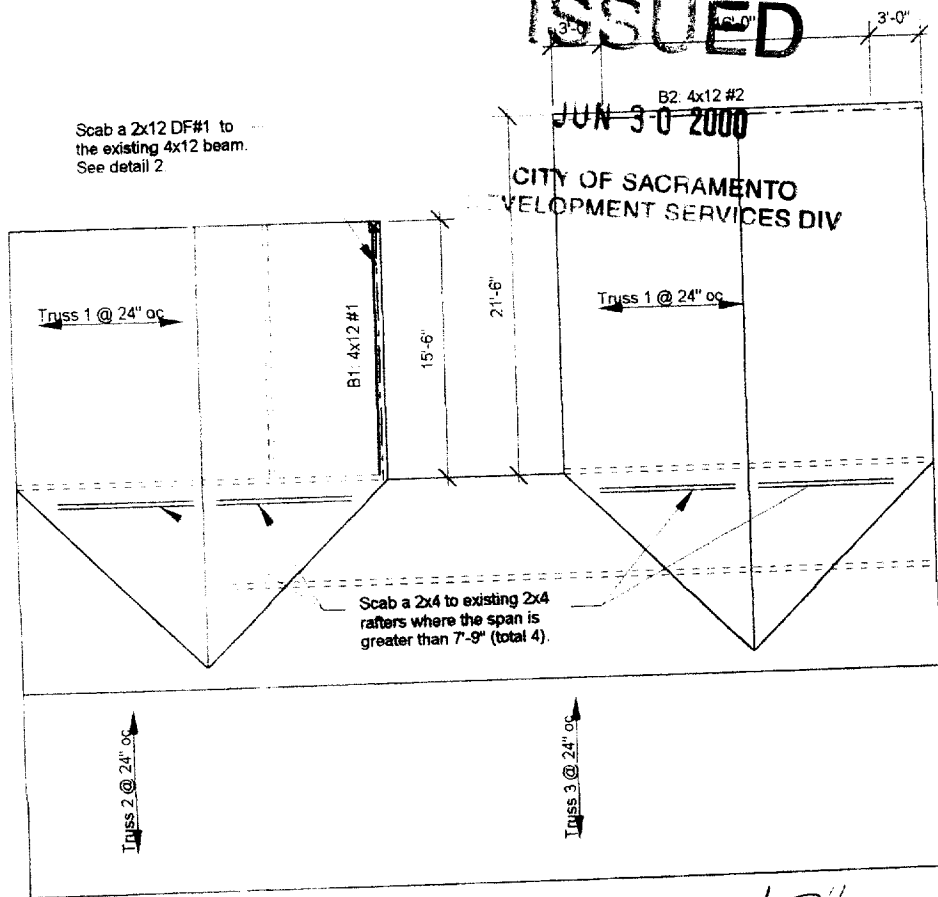
WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

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

ISSUED

JUN 30 2000

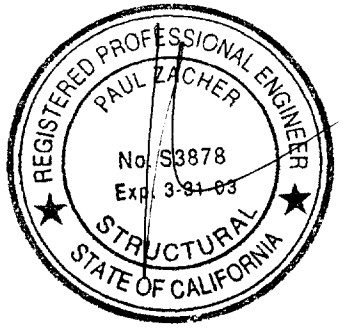
CITY OF SACRAMENTO
DEVELOPMENT SERVICES DIV



Max 2x4 span @ 24" o-c is 7'-9", per engineering
 verify adequate valley & ridge support in field

All work shall conform to the plans and specifications must be approved by the City Engineer and if it is unlawful to do so, the contractor shall obtain a permit from the City Engineer. The contractor shall obtain a permit from the City Engineer.

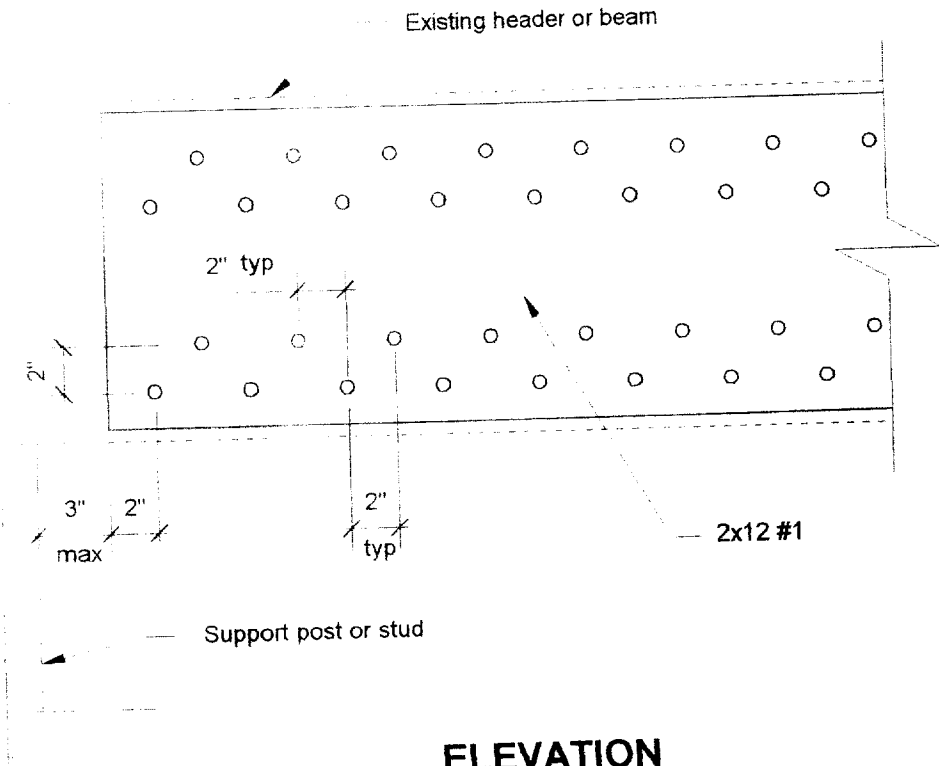
The contractor shall obtain a permit and specification from the City Engineer and shall not permit or approve the work until it is approved by the City Engineer or State Law.



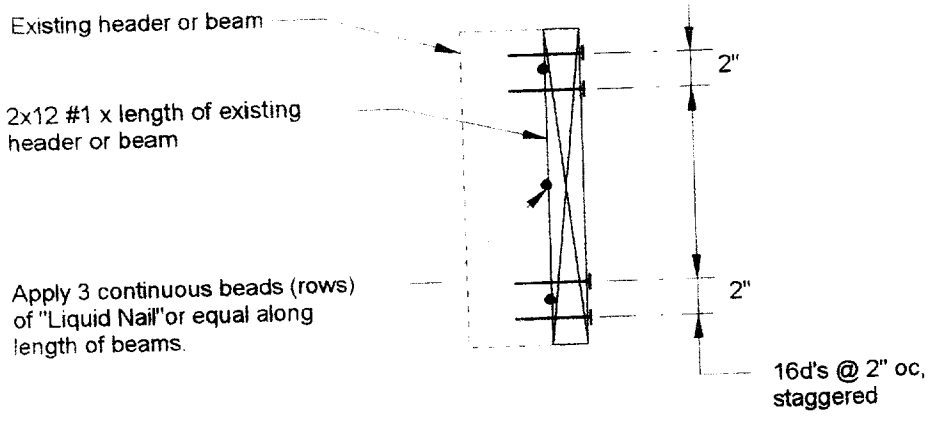
- Notes:**
1. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.0 psf.
 2. All structural wood members that were observed appear to be in sound condition and without structural defect.

1 ROOF PLAN - LAM
 Not to Scale

Mark P. 6/30/00



ELEVATION



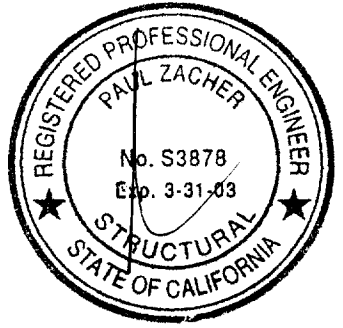
SECTION

2

HEADER DETAIL

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

20



lam

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

TEL: 916.961.3960
FAX: 916.961.6552

RECOMMENDATIONS:

If any of the following recommendations do not correspond to actual field conditions, the engineer of record shall be notified for further investigation and evaluation before continuing work.

Living Area.

1. Scab a 2x12 DF#1 x 15'-6" long to the existing 4x12 #1 beam. See details 1 and 2.
2. Scab a 2x4 rafter to the existing 2x4 rafters with 16d's @ 12" on center where the span is greater than 7'-9". See detail 1

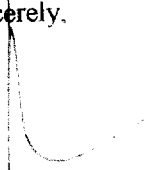
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and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

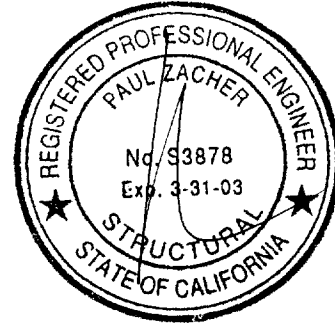
lam

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

TEL: 916.961.3960
FAX: 916.961.6552

June 26, 2000

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



Attn: Mr. Jeff Tucker,

re: Job 2000_179: LAM

Subject: Structural Investigation Report of the Roof for the Residence located at 32 Cache River Circle, 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 June 26, 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 2000 square feet with a first story plate height of 8 feet.

CONSTRUCTION:

Roof:
The roof covering will consist of a Light Weight Concrete Tile over 1/2" solid sheathing. The living and garage areas are framed per-engineered wood trusses spaced at 24" on center.

CONCLUSIONS:

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

1/20

DESIGN LOADING:

Roof Pitch 4 in 12
Pitch Adjustment Factor 1.05

LOCATION: ROOF

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.00	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
1/2" OSB/ plywood	1.50	psf
2x4 rafters @ 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: 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>1.28</u>	psf
Load	11.2	psf
Roof Pitch Adjustment	<u>0.60</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	0.64	psf
1/2" Gypboard	<u>2.50</u>	psf
Load	3.6	psf

P K Zacher, S E

Job #

00-100

Date:

6/20/00

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

LOADING

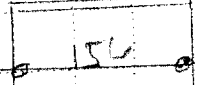
B1

15' 4" x 11' 3" 139 SF

LB 6.0' x 11' 3" 67.0'

4x12#1 + 2x12#1

169/176



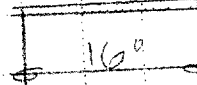
B2

12' 4" x 11' 3" 139 SF

LB 6.0' x 11' 3" 67.0'

4x12#2

62/64



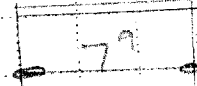
RAPIDS

12' 11" x 11' 3" 139 SF

LB 6.0' x 11' 3" 67.0'

2x4#2

222/112



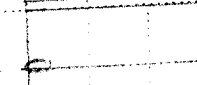
RAPIDS

12' 11" x 11' 3" 139 SF

LB 6.0' x 11' 3" 67.0'

2x4#2

222/112



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

Title :
 Dsgnr:
 Description :

Job #
 Date: 11:37AM, 27 JUN 00

Scope :

Timber Beam & Joist

c:\enercalc\test.ecw\Calculations

Description BEAMS

Calculations are designed to 1997 NDS and 1997 UBC Requirements

Timber Member Information

	B1	B2	rafter	rafter
Timber Section	4x12 + 2x1	4x12	2x4	2-2x4
Beam Width	5.000	3.500	1.500	3.000
Beam Depth	11.250	11.250	3.500	3.500
Le. Unbraced Length	0.00	0.00	0.00	0.00
Timber Grade	Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch
Fb - Basic Allow	1,000.0	875.0	875.0	875.0
Fv - Basic Allow	95.0	95.0	95.0	95.0
Elastic Modulus	1,700.0	1,600.0	1,600.0	1,600.0
Load Duration Factor	1.250	1.250	1.250	1.250
Member Type	Manuf/Pine	Sawn	Sawn	Sawn
Repetitive Status	No	No	No	No

Center Span Data

		B1	B2	rafter	rafter
Span	ft	15.50	16.00	7.75	9.75
Dead Load	#/ft	169.00	62.00	22.20	22.20
Live Load	#/ft	176.00	64.00	32.00	32.00

Results

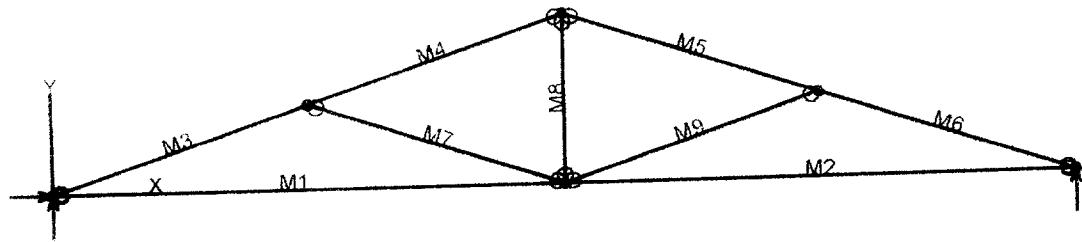
	Ratio =	B1	B2	rafter	rafter
Mmax @ Center	in-k	124.33	48.38	4.88	7.73
@ X =	ft	7.75	8.00	3.87	4.87
Fb : Actual	psi	1,178.8	655.4	1,594.5	1,261.8
Fb : Allowable	psi	1,250.0	1,203.1	1,640.6	1,640.6
		Bending OK	Bending OK	Bending OK	Bending OK
Fv : Actual	psi	62.7	34.1	55.7	35.6
Fv : Allowable	psi	118.8	118.8	118.8	118.8
		Shear OK	Shear OK	Shear OK	Shear OK

Reactions

		B1	B2	rafter	rafter
@ Left End	DL	1,309.75	496.00	86.02	108.22
	LL	1,364.00	512.00	124.00	156.00
	Max. DL+LL	2,673.75	1,008.00	210.02	264.22
@ Right End	DL	1,309.75	496.00	86.02	108.22
	LL	1,364.00	512.00	124.00	156.00
	Max. DL+LL	2,673.75	1,008.00	210.02	264.22

Deflections

		Ratio OK	Deflection OK	Deflection OK	Deflection OK
Center DL Defl	in	-0.218	-0.138	-0.210	-0.263
L/Defl Ratio		854.7	1,395.5	442.6	444.5
Center LL Defl	in	-0.227	-0.142	-0.303	-0.379
L/Defl Ratio		820.7	1,351.9	307.0	308.4
Center Total Defl	in	-0.444	-0.280	-0.513	-0.643
Location	ft	7.750	8.000	3.875	4.875
L/Defl Ratio		418.7	686.7	181.3	182.1



VisualAnalysis 3.50.c Report

06/16/00 19:22:33

Project: Truss 1

File: C:\Program Files\IES\VA35\truss 1.vap

Company: PK Associates Engineers

Engineer: Paul Zacher

Default Units: Feet, Pounds, Degrees, °Fahrenheit, Seconds.

Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes		No	
N2	11.00	0.00	No		No		"	
N3	22.00	0.00	"		Yes		"	
N4	5.50	1.83	"		No		"	
N5	16.50	1.83	"		"		"	
N6	11.00	3.67	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	11.00
M2	"	"	11.00
M3	"	"	5.80
M4	"	"	5.80
M5	"	"	5.80
M6	"	"	5.80
M7	"	"	5.80
M8	"	"	3.67
M9	"	"	5.80

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	695.20	-NA-
N3	"	-NA-	695.20	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1627.74	-50.53	-96.02	-0.1448
"	1627.74	-22.66	37.9109	-0.1992
"	1627.74	5.2045	69.9166	-0.1779
"	1627.74	33.0712	0.0000	-0.0000
M2	1627.74	-33.07	0.0000	-0.0000
"	1627.74	-5.2045	69.9166	-0.1779
"	1627.74	22.6622	37.9109	-0.1992
"	1627.74	50.5288	-96.02	-0.1448
M3	-1753.53	114.37	0.0000	-0.0000
"	-1721.35	17.6503	127.07	-0.1117
"	-1689.17	-79.07	67.7389	-0.1444
"	-1656.99	-175.79	-178.01	-0.1399
M4	-1184.97	175.69	-178.01	-0.1399
"	-1152.64	79.0266	67.7389	-0.1921
"	-1120.30	-17.64	127.07	-0.2070
"	-1087.96	-114.31	0.0000	-0.1428
M5	-1184.97	-175.69	-178.01	-0.1246
"	-1152.64	-79.03	67.7389	-0.1768
"	-1120.30	17.6407	127.07	-0.1917
"	-1087.96	114.31	0.0000	-0.1275
M6	-1753.53	-114.37	-0.0000	0.0152
"	-1721.35	-17.65	127.07	-0.0965
"	-1689.17	79.0697	67.7389	-0.1292
"	-1656.99	175.79	-178.01	-0.1247
M7	-589.90	0.0000	0.0000	-0.1298
"	-589.90	0.0000	0.0000	-0.1265
"	-589.90	0.0000	0.0000	-0.1233
"	-589.90	0.0000	0.0000	-0.1200
M8	473.53	0.0000	0.0000	-0.0241
"	473.53	0.0000	0.0000	-0.0241
"	473.53	0.0000	0.0000	-0.0241
"	473.53	0.0000	0.0000	-0.0241
M9	-589.90	-0.0000	0.0000	-0.1450
"	-589.90	-0.0000	-0.0000	-0.1417
"	-589.90	-0.0000	-0.0000	-0.1385
"	-589.90	-0.0000	-0.0000	-0.1352

BENDING & COMP: TRUSS 1 - MEMBER 3

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

Grading.

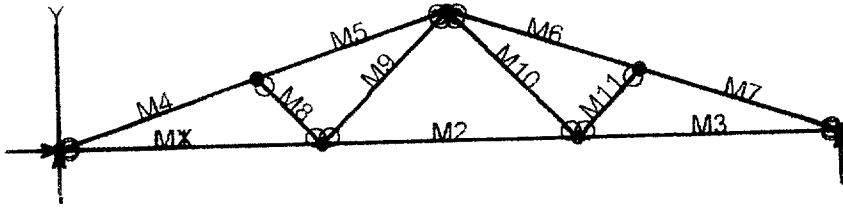
2x or 4x

Doug-fir larch: No. 2

Assumptions:

Solid sheathing on top chord of truss. Therefore,
continuous lateral support is provided along compression face
Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	3.5 inches
Length	5.8 feet
Max Axial Comp. C	1656 lbs
Max Reaction, R	176 lbs
Max Moment, M	178 ft-lbs
Max LL Deflection	0.06 inches
Max TL Deflection	0.14 inches
LL Defl Criteria = $L/240$	240
TL Defl Criteria = $L/180$	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.17
$f_c =$	315 psi
$F_{ce} =$	1420 psi
$F_c^* =$	1869 psi
$F'_c =$	1102 psi
$f_b =$	697 psi
$F'_b = F_b^* =$	1887 psi
Shear D/C ratio	0.42 < 1.0, Member OK
Interaction equation:	
$(f_c/F'_c)^2 +$	
$f_b / (F'_b(1-f_c/F_{ce})) =$	0.56 < 1.0, Member OK
Live Load defl ratio	0.21 < 1.0, Member OK
Total Load defl ratio	0.36 < 1.0, Member OK



VisualAnalysis 3.50.c Report

06/26/00 19:26:14

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	8.25	0.00	No		No		"	
N3	16.25	0.00	"		"		"	
N4	24.50	0.00	"		Yes		"	
N5	6.25	2.08	"		No		"	
N6	18.25	2.08	"		"		"	
N7	12.25	4.08	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.25
M2	"	"	8.00
M3	"	"	8.25
M4	"	"	6.59
M5	"	"	6.32
M6	"	"	6.32
M7	"	"	6.59
M8	"	"	2.89
M9	"	"	5.71
M10	"	"	5.71
M11	"	"	2.89

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	774.20	-NA-
N4	"	-NA-	774.20	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1833.76	-35.42	-33.60	-0.1771
"	1833.76	-14.52	34.9325	-0.1667
"	1833.76	6.3775	46.1319	-0.1130
"	1833.76	27.2775	0.0000	-0.0000
M2	1155.58	-30.40	-33.60	-0.1771
"	1155.58	-10.13	20.3112	-0.1985
"	1155.58	10.1333	20.3112	-0.1985
"	1155.58	30.4000	-33.60	-0.1771
M3	1833.76	-27.28	0.0000	-0.0000
"	1833.76	-6.3775	46.1319	-0.1130
"	1833.76	14.5225	34.9325	-0.1667
"	1833.76	35.4225	-33.60	-0.1771
M4	-1975.79	129.66	0.0000	-0.0000
"	-1939.21	19.7494	163.42	-0.1633
"	-1902.64	-90.16	86.1231	-0.1956
"	-1866.06	-200.06	-231.89	-0.1670
M5	-1677.64	194.91	-231.89	-0.1670
"	-1642.48	89.4118	67.2510	-0.2333
"	-1607.31	-16.08	144.55	-0.2582
"	-1572.15	-121.58	0.0000	-0.1767
M6	-1677.64	-194.91	-231.89	-0.1502
"	-1642.48	-89.41	67.2510	-0.2166
"	-1607.31	16.0818	144.55	-0.2413
"	-1572.15	121.58	0.0000	-0.1599
M7	-1975.79	-129.66	0.0000	0.0168
"	-1939.21	-19.75	163.42	-0.1466
"	-1902.64	90.1574	86.1231	-0.1788
"	-1866.06	200.06	-231.89	-0.1502
M8	-438.38	0.0000	0.0000	-0.1081
"	-438.38	0.0000	0.0000	-0.1011
"	-438.38	0.0000	0.0000	-0.0941
"	-438.38	0.0000	0.0000	-0.0872
M9	534.71	0.0000	0.0000	-0.1432
"	534.71	0.0000	0.0000	-0.1416
"	534.71	0.0000	0.0000	-0.1400
"	534.71	0.0000	0.0000	-0.1385
M10	534.71	-0.0000	0.0000	-0.1052
"	534.71	-0.0000	-0.0000	-0.1037
"	534.71	-0.0000	-0.0000	-0.1021
"	534.71	-0.0000	-0.0000	-0.1006
M11	-438.38	-0.0000	0.0000	-0.1464
"	-438.38	-0.0000	-0.0000	-0.1394
"	-438.38	-0.0000	-0.0000	-0.1324
"	-438.38	-0.0000	-0.0000	-0.1255

BENDING & COMP: TRUSS 2 - MEMBER 4

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

Grading:

2x or 4x

Doug-fir larch: No. 2

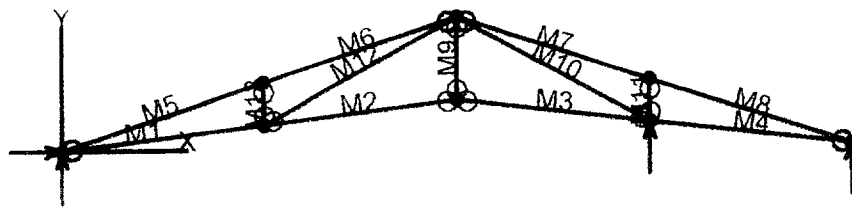
Assumptions:

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	6.59 feet
Max Axial Comp. C	1866 lbs
Max Reaction, R	200 lbs
Max Moment, M	231 ft-lbs
Max LL Deflection	0.07 inches
Max TL Deflection	0.17 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 =	355 psi
Fce =	1121 psi
Fc* =	1869 psi
F'c =	934 psi
fb =	905 psi
F'b = Fb* =	1887 psi
Shear D/C ratio	0.48 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.85 < 1.0, Member OK
Live Load defl ratio	0.21 < 1.0, Member OK
Total Load defl ratio	0.39 < 1.0, Member OK



VisualAnalysis 3.50.c Report

06/26/00 19:36:39

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	6.25	0.76	No	No	"
N3	12.25	1.50	"	"	"
N4	18.25	0.76	"	Yes	"
N5	24.50	0.00	"	"	"
N6	6.25	2.08	"	No	"
N7	18.25	2.08	"	"	"
N8	12.25	4.08	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	6.30
M2	"	"	6.05
M3	"	"	6.05
M4	"	"	6.30
M5	"	"	6.59
M6	"	"	6.32
M7	"	"	6.32
M8	"	"	6.59
M9	"	"	2.58
M10	"	"	6.86
M11	"	"	1.32
M12	"	"	6.86
M13	"	"	1.32

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	527.94	-NA-
N4	"	-NA-	965.36	-NA-
N5	"	-NA-	55.11	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1712.13	27.1591	0.0000	-0.0000
"	1714.04	11.4416	40.4228	-0.0999
"	1715.95	-4.2760	47.9419	-0.1684
"	1717.86	-19.99	22.5574	-0.1992
M2	671.43	18.8972	22.5574	-0.1992
"	673.29	3.8115	45.3623	-0.2024
"	675.15	-11.27	37.8431	-0.1726
"	677.01	-26.36	0.0000	-0.1157
M3	669.75	-32.54	-59.92	0.0065
"	671.61	-17.45	-9.6227	-0.0273
"	673.47	-2.3687	10.3507	-0.0704
"	675.33	12.7170	0.0000	-0.1074
M4	-418.78	-14.06	-0.0000	0.0060
"	-416.87	1.6583	12.9303	0.0031
"	-414.96	17.3759	-7.0430	0.0088
"	-413.04	33.0934	-59.92	0.0064
M5	-1839.21	133.72	0.0000	-0.0000
"	-1802.64	23.8093	172.33	-0.1859
"	-1766.06	-86.10	103.95	-0.2325
"	-1729.48	-196.00	-205.15	-0.2020
M6	-1858.56	190.68	-205.15	-0.2020
"	-1823.39	85.1833	85.0795	-0.2461
"	-1788.23	-20.31	153.46	-0.2336
"	-1753.06	-125.80	0.0000	-0.1073
M7	368.72	-203.07	-283.54	0.0135
"	403.89	-97.58	32.8196	-0.0649
"	439.05	7.9157	127.33	-0.1306
"	474.22	113.41	0.0000	-0.1046
M8	395.80	-121.82	0.0000	0.0156
"	432.38	-11.91	146.20	-0.0718
"	468.96	97.9981	51.6918	-0.0439
"	505.53	207.90	-283.54	0.0135
M9	204.32	-0.0000	0.0000	0.0043
"	204.32	-0.0000	-0.0000	0.0141
"	204.32	-0.0000	-0.0000	0.0239
"	204.32	-0.0000	-0.0000	0.0337
M10	-1237.41	0.0000	0.0000	-0.0956
"	-1237.41	0.0000	0.0000	-0.0552
"	-1237.41	0.0000	0.0000	-0.0148
"	-1237.41	0.0000	0.0000	0.0257
M11	-432.95	0.0000	0.0000	-0.0530
"	-432.95	0.0000	0.0000	-0.0504
"	-432.95	0.0000	0.0000	-0.0477

	432.95	0.0000	0.0000	-0.0450
MIC	1181.96	0.0000	0.0000	0.0998
	1181.96	0.0000	0.0000	0.1299
	1181.96	0.0000	0.0000	0.1600
	1181.96	0.0000	0.0000	0.1901
MIS	-408.47	-0.0000	-0.0000	-0.0488
	-408.47	-0.0000	-0.0000	-0.0453
	-408.47	-0.0000	-0.0000	-0.0419
	-408.47	-0.0000	0.0000	-0.0385

BENDING & COMP: TRUSS 4 - 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	6.59 feet
Max Axial Comp. C	1729 lbs
Max Reaction, R	196 lbs
Max Moment, M	205 ft-lbs
Max LL Deflection	0.08 inches
Max TL Deflection	0.20 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 =	329 psi
Fce=	1121 psi
Fc*=	1869 psi
F'c=	934 psi
fb=	803 psi
F'b=Fb*=	1887 psi
Shear D/C ratio	0.47 < 1.0. Member OK
Interaction equation: (fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.73 < 1.0. Member OK
Live Load defl ratio	0.24 < 1.0. Member OK
Total Load defl ratio	0.46 < 1.0. Member OK