

CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0104328
Insp Area: 2

Site Address: 352 BAY RIVER WY SAC
Parcel No: 031-0380-017

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

CONTRACTOR
ZIMMERMAN ROOFING, INC
3675 R STREET
SACRAMENTO, CA 95816

OWNER
TOMPKINS LEE W/MARY W
351 BAY RIVER WY
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: 35 SQ T/O REROOF W PIONEER LT WT 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 C-39 License Number _____ Date 4/9/2001 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 city and county ordinances and state laws relating to building construction and hereby authorize representative(s) of this city to enter upon the above mentioned property for inspection purposes.

X Date April 9th, 2001 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.

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 PENNSYLVANIA GENERAL INSUR CO Policy Number 713-00-2021 Exp Date 10/01/2001

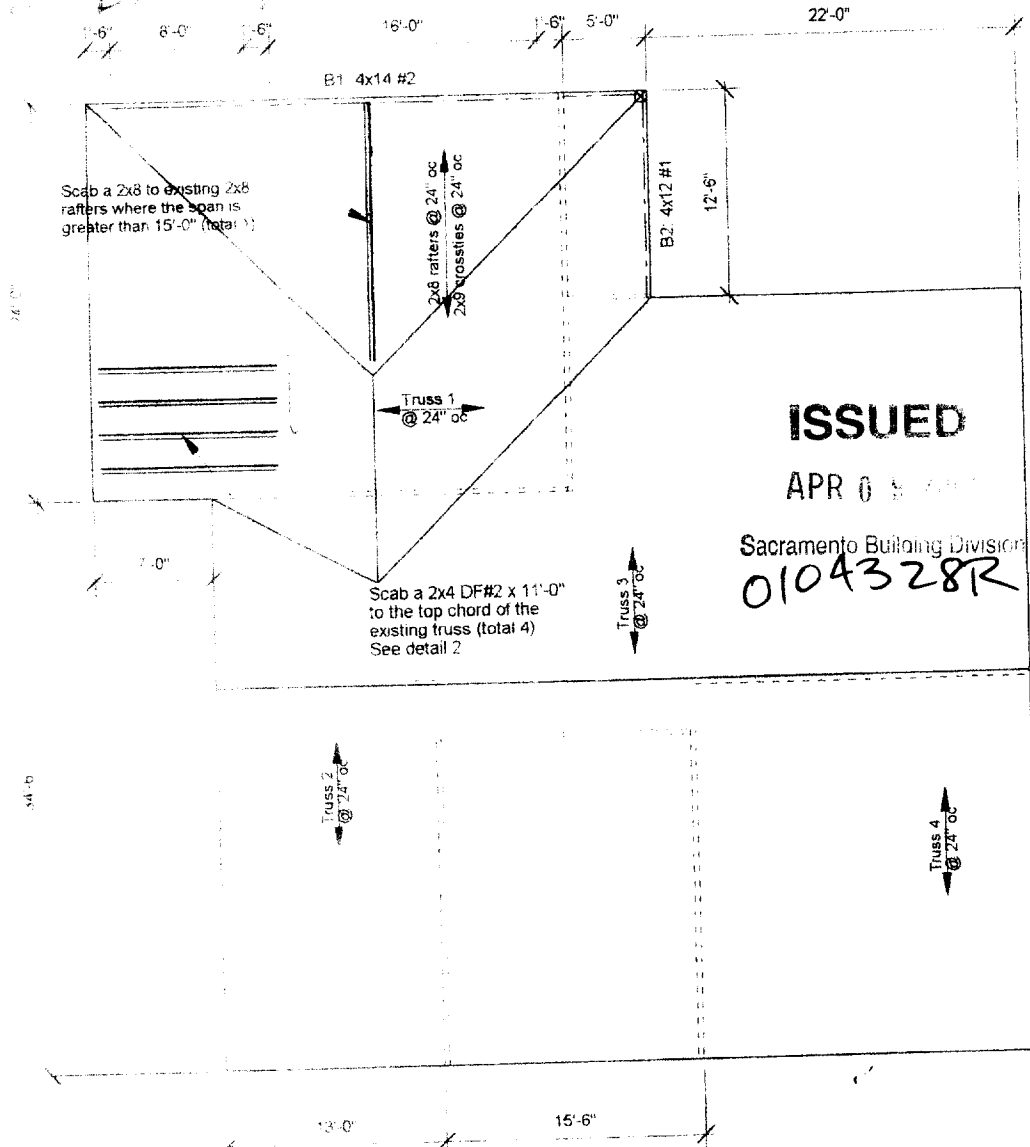
____ (This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become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

X Date 4/9/2001 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.

3500 BA... WORK WAY

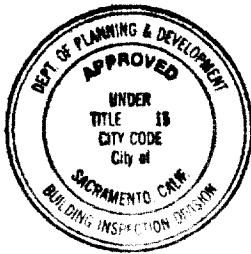


ISSUED

APR 0 8 2001

Sacramento Building Division

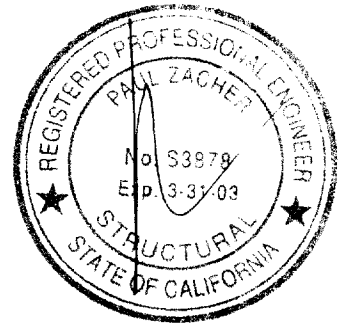
0104328R



This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the Building Inspection Division.

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

REVIEWED BY *[Signature]* 4/9/01



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 rafters are 2x8 DF#2 and hips and valleys are 2x10 DF#2 unless otherwise noted.
- 3 All structural wood members that were observed appear to be in sound condition and without structural defect.



1

ROOF PLAN - THOMPSON

Not to Scale

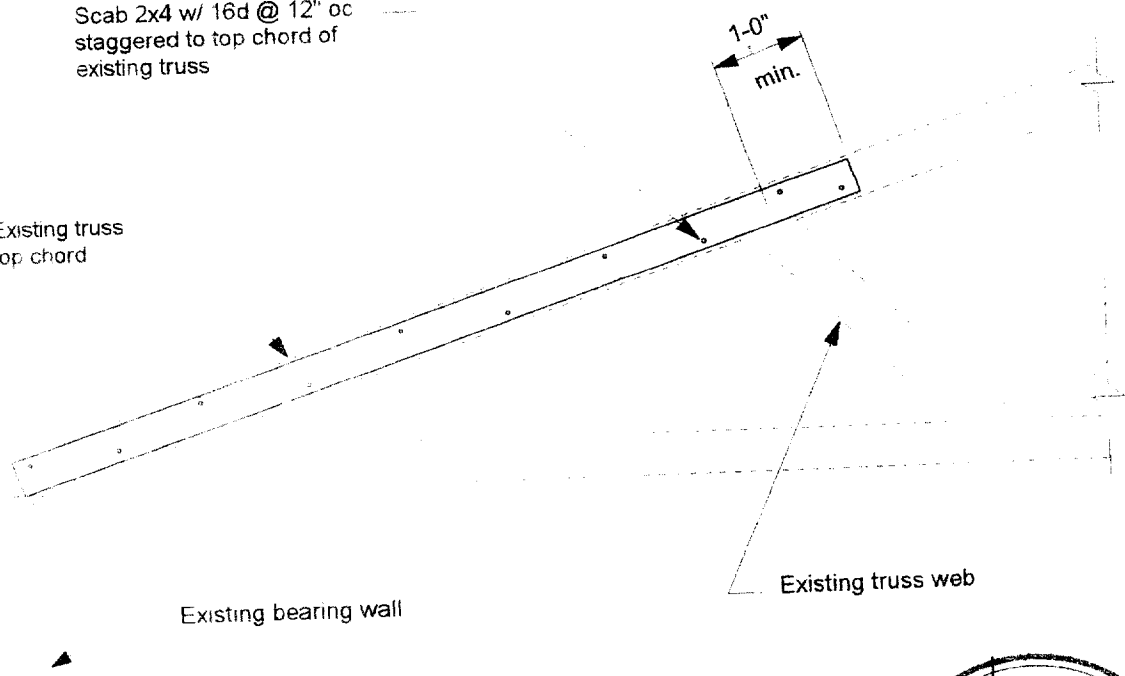
Scab 2x4 w/ 16d @ 12" oc
staggered to top chord of
existing truss

Existing truss
top chord

1'-0"
min.

Existing bearing wall

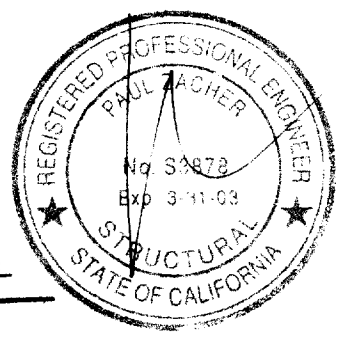
Existing truss web



2

TRUSS REINFORCEMENT DETAIL

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



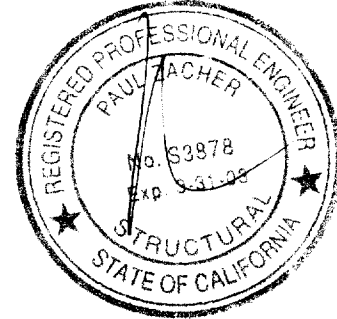
Thompson

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

TEL: 916.961.3960
FAX: 916.961.6552

April 3, 2001

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



Attn: Mr. Jeff Tucker.

re: Job 2001_076: THOMPSON

Subject: Structural Investigation Report of the Roof for the Residence located at 352 Bay River 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 April 3, 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 2500 square feet with a first story plate height of 8 feet.

CONSTRUCTION:

Roof:
The roof covering will consist of a Light Weight Concrete Tile over 1/2" solid sheathing. The living area is framed with pre-engineered wood trusses spaced at 24" on center. The garage area is framed with pre-engineered wood trusses spaced at 24" on center and with 2x8 rafters spaced at 24" on center and 2x8 cross ties spaced at 24" on center.

CONCLUSIONS:

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

Thompson

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

TEL: 916.961.3960
FAX: 916.961.6552

RECOMMENDATIONS:

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

Garage:

1. Scab a 2x4 DF#2 x 11'-0" long rafter to the top chord of the existing truss. See details 1 and 2.
2. Scab a 2x8 rafter to the existing 2x8 rafters with 16d's @ 12" on center where the span is greater than 15'-0". See detail 1.

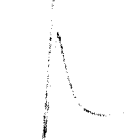
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and 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	7.00	psf	
Roofing felt	0.30	psf	
1/2" OSB/ plywood	1.50	psf	
1x4 skip sht'g	1.09	psf	
2x8 rafters @ 24" oc	<u>1.32</u>	psf	
	Load	11.2	psf
Roof Pitch Adjustment	<u>1.32</u>	psf	
Total Load	12.5	psf	

LOCATION: TOP CHORD

<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 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.

Job #

Date

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

LOADING

PAVING

2-12-88 10:00 AM
2-12-88 10:00 AM

2-8#2

25/102

15°

PAVING

2-12-88 10:00 AM
2-12-88 10:00 AM

2-2-8#2

25/102

199

PAVING

2-12-88 10:00 AM
2-12-88 10:00 AM

4-14#2

100/28

110°

PAVING

2-12-88 10:00 AM
2-12-88 10:00 AM

4-12#1

57/48

126°

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

Title :
 Dsgnr:
 Description :
 Scope :

Job #
 Date: 3:30PM, 3 APR 01

File: F10304
 Path: K:\0602044_Ver 4.1.0.02 (Jan-1999) Win32
 © 1983-99 ENERCALC

Timber Beam & Joist

c:\enercalc\test.ecw\Calculations

Description RAFTERS AND BEAMS

Calculations are designed to 1997 NDS and 1997 UBC Requirements

Timber Member Information

	rafter	rafter	B1	B2
Timber Section	2x8	2-2x8	4x14	4x12
Beam Width	in 1.500	3.000	3.500	3.500
Beam Depth	in 7.250	7.250	13.250	11.250
Le: Unbraced Length	ft 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	psi 875.0	875.0	875.0	875.0
Fv - Basic Allow	psi 95.0	95.0	95.0	95.0
Elastic Modulus	ksi 1,600.0	1,600.0	1,600.0	1,600.0
Load Duration Factor	1.250	1.250	1.250	1.250
Member Type	Sawn	Sawn	Sawn	Sawn
Repetitive Status	Repetitive	Repetitive	No	No

Center Span Data

		rafter	rafter	B1	B2
Span	ft	15.00	19.75	16.00	12.50
Dead Load	#/ft	25.00	25.00	100.00	37.00
Live Load	#/ft	32.00	32.00	128.00	48.00

Results

Ratio = 0.9699 0.8407 0.7816 0.2243

Mmax @ Center	in-k	19.24	33.35	87.55	19.92
@ X =	ft	7.50	9.87	8.00	6.25
Fb Actual	psi	1,464.0	1,269.0	854.9	269.8
Fb Allowable	psi	1,509.4	1,509.4	1,093.8	1,203.1
		Bending OK	Bending OK	Bending OK	Bending OK
Fv Actual	psi	54.2	36.6	51.0	17.3
Fv Allowable	psi	118.8	118.8	118.8	118.8
		Shear OK	Shear OK	Shear OK	Shear OK

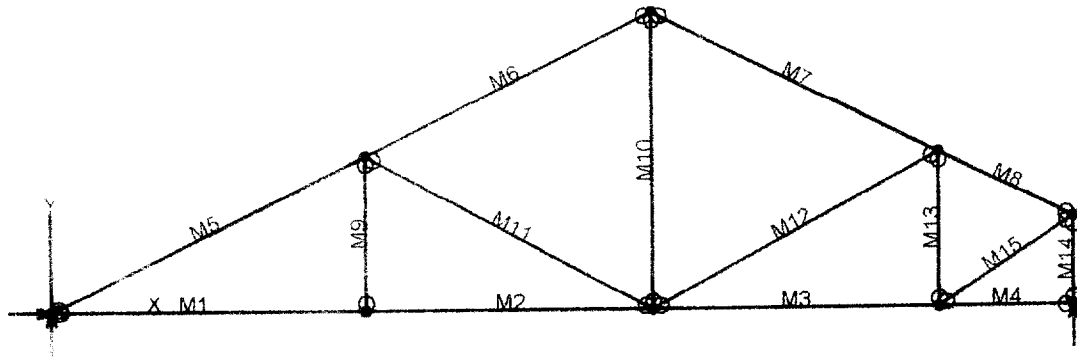
Reactions

@ Left End	DL	lbs	187.50	246.87	800.00	231.25
	LL	lbs	240.00	316.00	1,024.00	300.00
	Max. DL+LL	lbs	427.50	562.87	1,824.00	531.25
@ Right End	DL	lbs	187.50	246.87	800.00	231.25
	LL	lbs	240.00	316.00	1,024.00	300.00
	Max. DL+LL	lbs	427.50	562.87	1,824.00	531.25

Deflections

Ratio OK Deflection OK Deflection OK Deflection OK

Center DL Defl	in	-0.374	-0.561	-0.136	-0.031
L/Defl Ratio		481.8	422.1	1,413.5	4,903.9
Center LL Defl	in	-0.478	-0.719	-0.174	-0.040
L/Defl Ratio		376.4	329.8	1,104.3	3,780.1
Center Total Defl	in	-0.852	-1.280	-0.310	-0.070
Location	ft	7.500	9.875	8.000	6.250
L/Defl Ratio		211.3	185.1	620.0	2,134.6



VisualAnalysis 3.50.c Report

04/03/01 14:52:33

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	8.75	0.00	No	No				
N3	16.75	0.00	"	"				
N4	24.75	0.00	"	"				
N5	28.50	0.00	"	Yes				
N6	8.75	4.38	"	No				
N7	24.75	4.38	"	"				
N8	16.75	8.38	"	"				
N9	28.50	2.50	"	"				

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.75
M2	"	"	8.00
M3	"	"	8.00
M4	"	"	3.75
M5	"	"	9.79
M6	"	"	8.94
M7	"	"	8.94
M8	"	"	4.38
M9	"	"	4.38
M10	"	"	8.38
M11	"	"	9.12
M12	"	"	9.12
M13	"	"	4.38
M14	"	"	2.50
M15	"	"	4.51

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	1008.37	-NA-
N5	"	-NA-	1008.37	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1531.06	-43.28	-49.45	-0.1138
"	1531.06	18.19	40.0114	-0.1396
"	1531.06	6.8905	56.4941	-0.1105
"	1531.06	31.9738	0.0000	-0.0000
M1	1531.06	34.04	-46.60	-0.0884
"	1531.06	-11.11	13.4525	-0.1079
"	1531.06	11.8225	12.5036	-0.1159
"	1531.06	34.2559	-49.45	-0.1138
M1	840.82	-30.17	-28.75	-0.0416
"	840.82	-9.0351	26.3032	-0.0833
"	840.82	14.6982	20.3523	-0.0962
"	840.82	36.6316	-46.60	-0.0884
M1	-0.0000	-8.4587	-0.0000	-0.0000
"	-0.0000	2.2913	3.8210	-0.0137
"	-0.0000	13.0413	-5.7618	-0.0267
"	-0.0000	23.7913	-28.75	-0.0416
M1	-1806.08	188.60	0.0000	-0.0000
"	-1724.99	26.4372	349.30	-0.5353
"	-1643.91	-135.73	171.10	-0.4551
"	-1562.83	-297.90	-534.59	-0.1157
M1	-1076.91	282.17	-534.59	-0.1157
"	-1002.77	133.90	84.5457	-0.2847
"	-928.64	-14.36	262.74	-0.3710
"	-854.51	-162.63	0.0000	-0.0763
M1	-1067.48	-263.32	-366.02	-0.0352
"	-993.35	-115.06	196.93	-0.3874
"	-919.22	33.2114	318.94	-0.4679
"	-845.08	181.48	0.0000	-0.0728
M1	-948.54	-16.95	0.0000	0.0083
"	-913.79	52.5501	-25.12	0.0211
"	-879.04	112.05	-147.12	0.0215
"	-844.29	191.55	-366.02	-0.0352
M1	78.0321	0.0000	0.0000	0.0180
"	78.0321	0.0000	0.0000	0.0226
"	78.0321	0.0000	0.0000	0.0273
"	78.0321	0.0000	0.0000	0.0319
M1	452.30	-0.0000	0.0000	0.0039
"	452.30	-0.0000	-0.0000	0.0141
"	452.30	0.0000	-0.0000	0.0243
"	452.30	-0.0000	-0.0000	0.0345
M1	-791.04	-0.0000	0.0000	-0.0841

	-791.04	-0.0000	-0.0000	0.0164
	-791.04	-0.0000	-0.0000	0.0687
	-791.04	-0.0000	-0.0000	0.0610
M 1	-4.3267	-0.0000	0.0000	-0.0941
	-4.3267	-0.0000	-0.0000	-0.0775
	-4.3267	-0.0000	-0.0000	-0.0608
	-4.3267	-0.0000	-0.0000	-0.0441
M 2	-504.59	0.0000	0.0000	0.0104
	-504.59	0.0000	0.0000	0.0215
	-504.59	0.0000	0.0000	0.0325
	-504.59	0.0000	0.0000	0.0435
M 3	-999.91	0.0000	0.0000	0.0254
	-999.91	0.0000	0.0000	0.0314
	-999.91	0.0000	0.0000	0.0375
	-999.91	0.0000	0.0000	0.0435
M 4	1010.54	-0.0000	0.0000	0.0169
	1010.54	-0.0000	-0.0000	0.0308
	1010.54	-0.0000	-0.0000	0.0448
	1010.54	-0.0000	-0.0000	0.0588

BENDING & COMP: TRUSS 1 - MEMBER 5

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

Grading.

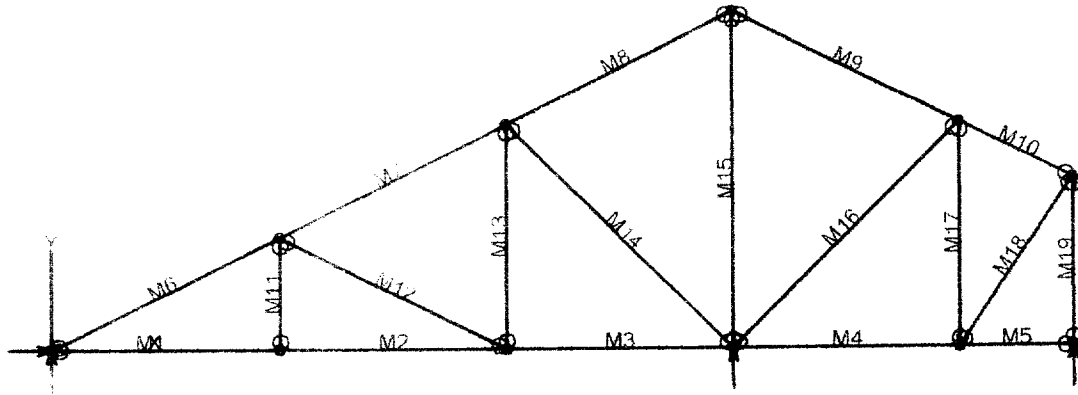
2x or 4x

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	3 inches
Depth, d	3.5 inches
Length	9.78 feet
Max Axial Comp. C	1562 lbs
Max Reaction, R	297 lbs
Max Moment, M	534 ft-lbs
Max LL Deflection	0.04 inches
Max TL Deflection	0.11 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.27
fc =	149 psi
Fce=	576 psi
Fc*=	2084 psi
F'c=	538 psi
fb=	1046 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.36 < 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	0.08 < 1.0, Member OK
Total Load defl ratio	0.17 < 1.0, Member OK



VisualAnalysis 3.50.c Report

04/07/01 15:00:49

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	7.67	0.00	No	No				
N3	15.33	0.00	"	"				
N4	23.00	0.00	"	Yes				
N5	30.67	0.00	"	No				
N6	34.50	0.00	"	Yes				
N7	7.67	3.83	"	No				
N8	34.50	3.75	"	"				
N9	15.33	7.67	"	"				
N10	30.67	7.67	"	"				
N11	23.00	11.50	"	"				

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	7.67
M2	"	"	7.67
M3	"	"	7.67
M4	"	"	7.67
M5	"	"	3.83
M6	"	"	8.57
M7	"	"	8.57
M8	"	"	8.57
M9	"	"	8.57
M10	"	"	4.28
M11	"	"	3.83
M12	"	"	8.57
M13	"	"	7.67
M14	"	"	10.85
M15	"	"	11.50
M16	"	"	10.85
M17	"	"	7.67
M18	"	"	6.91
M19	"	"	5.75

Section Properties

Category	Section	Ax in ²	Iz in ⁴	Sy+ in ³	Sy- in ³
Wood	Sha SS2x4	5.25	5.38	3.06	3.06

Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft ³

Load Combination Summary

Equation Case: Equation Case 1
 Combination: +1D+1E+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	603.80	-NA-
N4	"	-NA-	1850.50	-NA-
N6	"	-NA-	-12.99	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	770.41	-32.78	-44.44	-0.0536
	770.41	16.79	26.4461	-0.0690
	770.41	11.1995	41.2599	-0.0572
	770.41	31.1868	0.0000	-0.0000
M2	770.41	-31.90	-36.49	-0.0359
	770.41	19.9407	16.7900	-0.0559
	770.41	12.0179	14.1380	-0.0607
	770.41	33.9766	-44.44	-0.0536
M3	175.55	35.06	-52.45	-0.0000
	175.55	13.07	8.9465	-0.0196
	175.55	8.9125	14.2673	-0.0338
	175.55	36.8999	-36.49	-0.0359
M4	-25.73	39.79	-27.97	-0.0027
	-25.73	1.8029	19.9411	-0.0181
	-25.73	14.1844	11.7834	-0.0135
	-25.73	34.1718	-52.45	-0.0000
M5	0.0000	-9.1648	0.0000	0.0000
	0.0000	1.8145	4.6569	-0.0013
	0.0000	12.7938	-4.6680	-0.0016
	0.0000	23.7732	-27.97	-0.0037
M6	-946.85	171.70	0.0000	-0.0000
	-875.87	29.5468	286.53	-0.3488
	-804.89	-112.60	167.86	-0.3064
	-733.91	-254.75	-356.03	-0.0547
M7	-302.41	211.53	-356.03	-0.0547
	-231.25	69.5690	44.4029	-0.0622
	-160.08	-72.40	40.3651	-0.0520
	-88.91	-214.36	-368.14	-0.0300
M8	336.37	256.17	-368.14	-0.0300
	407.35	114.02	159.78	-0.2829
	478.33	-28.13	282.49	-0.3393
	549.32	-170.28	-0.0000	-0.0104
M9	337.79	-253.31	-343.66	-0.0016
	408.78	-111.16	176.10	-0.2833

	479.78	30.4899	290.66	0.0464
	550.74	173.14	0.0000	0.0111
M10	15.6196	25.26	0.0000	0.0050
	51.2036	44.3214	-13.43	0.0270
	86.7876	115.70	-127.99	0.0405
	122.37	188.59	-343.66	0.0016
M11	72.7518	-0.0000	-0.0000	0.0079
	72.7518	0.0000	-0.0000	0.0106
	72.7518	-0.0000	-0.0000	0.0130
	72.7518	-0.0000	0.0000	0.0158
M12	-665.07	0.0000	0.0000	-0.0406
	-665.07	0.0000	0.0000	-0.0254
	-665.07	0.0000	0.0000	-0.0302
	-665.07	0.0000	0.0000	-0.0250
M13	360.23	-0.0000	0.0000	-0.0159
	360.23	0.0000	-0.0000	-0.0115
	360.23	-0.0000	-0.0000	-0.0071
	360.23	0.0000	-0.0000	-0.0027
M14	-835.70	-0.0000	0.0000	-0.0209
	-835.70	-0.0000	-0.0000	-0.0097
	-835.70	-0.0000	-0.0000	0.0014
	-835.70	-0.0000	-0.0000	0.0125
M15	-798.70	0.0000	0.0000	-0.0177
	-798.70	0.0000	0.0000	-0.0110
	-798.70	0.0000	0.0000	-0.0049
	-798.70	0.0000	0.0000	0.0315
M16	-551.04	-0.0000	0.0000	0.0125
	-551.04	-0.0000	-0.0000	-0.0111
	-551.04	-0.0000	-0.0000	-0.0097
	-551.04	-0.0000	-0.0000	-0.0083
M17	92.1953	-0.0000	0.0000	0.0090
	92.1953	-0.0000	-0.0000	0.0118
	92.1953	-0.0000	-0.0000	0.0146
	92.1953	-0.0000	-0.0000	0.0174
M18	-46.42	0.0000	0.0000	0.0165
	-46.42	0.0000	0.0000	-0.0140
	-46.42	0.0000	0.0000	-0.0115
	-46.42	0.0000	0.0000	-0.0090
M19	22.1553	0.0000	0.0000	0.0109
	22.1553	0.0000	0.0000	0.0131
	22.1553	0.0000	0.0000	0.0153
	22.1553	0.0000	0.0000	0.0174

BENDING & COMP: TRUSS 2 - MEMBER 6

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

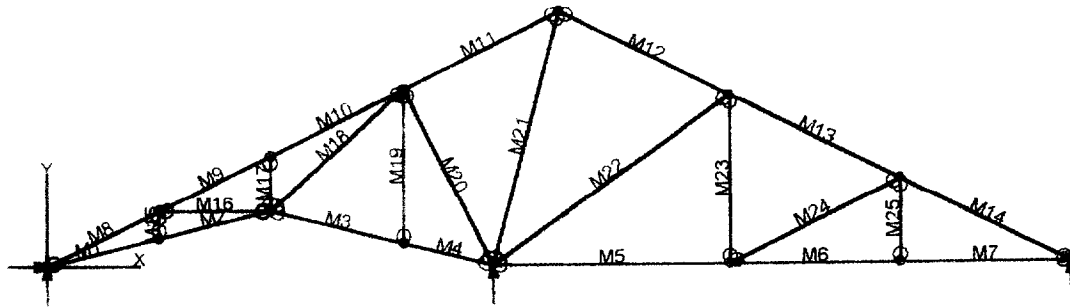
Grading:

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	8.57 feet
Max Axial Comp. C	733 lbs
Max Reaction, R	254 lbs
Max Moment, M	346 ft-lbs
Max LL Deflection	0.03 inches
Max TL Deflection	0.05 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 =	1.24
$f_c =$	140 psi
$F_{ce} =$	730 psi
$F_c^* =$	2084 psi
$F'_c =$	667 psi
$f_b =$	1356 psi
$F'_b = F_b^* =$	2156 psi
Shear D/C ratio	0.61 < 1.0, Member OK
Interaction equation: $(f_c/F'_c)^2 +$	
$f_b/(F'_b(1-f_c/F_{ce})) =$	0.82 < 1.0, Member OK
Live Load defl ratio	0.07 < 1.0, Member OK
Total Load defl ratio	0.09 < 1.0, Member OK



VisualAnalysis 3.50.c Report

04/03/01 15:13:59

Project: Truss 3

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	5.00	1.25	No		No			
N3	10.00	2.50						
N4	15.00	4.00						
N5	20.00	6.00			Yes			
N6	30.67	6.00			No			
N7	38.33	2.00						
N8	46.00	6.00			Yes			
N9	5.00	2.50			No			
N10	10.00	5.00						
N11	16.00	8.00						
N12	23.00	11.50						
N13	30.67	7.67						
N14	38.33	3.83						

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	5.15
M2	"	"	5.15
M3	"	"	6.18
M4	"	"	4.11
M5	"	"	10.67
M6	"	"	7.67
M7	"	"	7.67
M8	"	"	5.59
M9	"	"	5.59
M10	"	"	6.71
M11	"	"	7.83
M12	"	"	8.57
M13	"	"	8.57
M14	"	"	8.57
M15	"	"	1.25
M16	"	"	5.00
M17	"	"	2.50
M18	"	"	8.14
M19	"	"	7.00
M20	"	"	8.94
M21	"	"	11.88
M22	"	"	13.14
M23	"	"	7.67
M24	"	"	8.56
M25	"	"	3.83

Section Properties

Category	Section	Ax in ²	Iz in ⁴	Sy+ in ³	Sy- in ³
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Wood Sha SS2x4	1.25	5.136	3.06	3.06
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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	277.17	-NA-
N2	"	-NA-	2396.45	-NA-
N3	"	-NA-	586.76	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	529.43	28.3374	0.0000	-0.0000
	533.01	-8.0041	22.5653	-0.0284
	536.59	-8.3293	20.5680	-0.0453
	540.18	-8.66	-5.9918	-0.0519
M2	528.84	22.5626	-5.9918	-0.0519
	532.43	-8.3293	20.5680	-0.0556
	536.01	-8.0041	22.5653	-0.0489
	539.59	-8.034	-0.0000	-0.0308
M3	-643.17	-30.75	-30.63	-0.0083
	-638.87	-13.55	14.9507	-0.0259
	-634.57	3.6476	25.1604	-0.0337
	-630.27	20.8476	0.0000	-0.0237
M4	-637.92	-9.7714	-0.0000	-0.0031
	-635.05	1.6953	5.5103	-0.0010
	-632.19	13.1620	-4.6993	-0.0036
	-629.32	24.6286	-30.63	-0.0083
M5	148.20	-54.19	-88.65	-0.0448
	148.20	-23.60	49.4150	-0.1507
	148.20	6.9850	78.9660	-0.1592
	148.20	37.5724	0.0000	-0.0000
M6	733.10	-25.52	-31.81	-0.0566
	733.10	-3.5589	5.1680	-0.0456
	733.10	18.3997	-13.78	-0.0340
	733.10	40.3584	-88.65	-0.0448
M7	733.10	-28.83	0.0000	-0.0000
	733.10	-6.8460	45.4695	0.0651

"	733.10	15.1414	34.8652	0.0096
"	733.10	37.1287	-31.87	-0.0568
M8	-636.36	113.21	0.0000	0.0000
"	-590.03	20.5383	124.18	0.0795
"	-543.69	12.13	76.1102	0.0867
"	-497.36	164.79	-144.20	0.0530
M9	221.64	142.47	-144.20	-0.0530
"	267.98	49.8057	34.5144	-0.0608
"	314.31	-42.86	40.9848	0.0550
"	360.64	135.53	-124.79	0.0315
M10	223.33	139.09	-124.79	0.0315
"	278.93	27.8928	61.2868	-0.0147
"	334.53	-83.31	-0.6683	-0.0191
"	390.13	-194.51	-310.65	-0.0130
M11	878.12	234.29	-310.65	-0.0130
"	942.99	104.56	130.49	0.1959
"	1007.86	-25.17	234.04	0.2457
"	1072.72	-154.91	-0.0000	0.0297
M1	543.82	-256.10	-367.54	-0.0268
"	614.81	-113.95	160.18	0.2809
"	685.79	28.2038	282.69	0.3377
"	756.77	170.35	0.0000	0.0091
M1	-271.89	-211.66	-356.49	0.0449
"	-200.72	-69.69	44.2967	0.0547
"	-129.55	72.2728	40.6118	-0.0467
"	-58.38	214.24	-367.54	0.0267
M12	-905.12	-171.64	-0.0000	0.0133
"	-834.14	-29.49	286.38	0.0365
"	-763.16	112.66	167.55	-0.2950
"	-692.17	254.81	-356.49	-0.0450
M13	46.7201	0.0000	0.0000	0.0162
"	46.7201	0.0000	0.0000	0.0174
"	46.7201	0.0000	0.0000	0.0187
"	46.7201	0.0000	0.0000	0.0199
M14	-780.51	0.0000	0.0000	-0.0493
"	-780.51	0.0000	0.0000	-0.0422
"	-780.51	0.0000	0.0000	-0.0352
"	-780.51	0.0000	0.0000	-0.0281
M15	-307.04	0.0000	0.0000	-0.0147
"	-307.04	0.0000	0.0000	-0.0138
"	-307.04	0.0000	0.0000	-0.0130
"	-307.04	0.0000	0.0000	-0.0122
M16	480.96	0.0000	0.0000	0.0127
"	480.96	0.0000	0.0000	0.0187
"	480.96	0.0000	0.0000	0.0246
"	480.96	0.0000	0.0000	0.0306
M17	57.0855	-0.0000	0.0000	0.0064
"	57.0855	-0.0000	-0.0000	0.0087
"	57.0855	-0.0000	-0.0000	0.0110
"	57.0855	-0.0000	0.0000	0.0133
M18	-611.99	-0.0000	0.0000	0.0007
"	-611.99	-0.0000	-0.0000	0.0042
"	-611.99	-0.0000	-0.0000	0.0077
"	-611.99	-0.0000	0.0000	0.0113
M19	-1145.89	0.0000	0.0000	-0.0278
"	-1145.89	0.0000	0.0000	-0.0226
"	-1145.89	0.0000	0.0000	-0.0174
"	-1145.89	0.0000	0.0000	-0.0122
M20	-922.62	0.0000	0.0000	0.0073
"	-922.62	0.0000	0.0000	0.0202
"	-922.62	0.0000	0.0000	0.0331
"	-922.62	0.0000	0.0000	0.0459
M21	386.99	0.0000	0.0000	0.0147
"	386.99	0.0000	0.0000	0.0171
"	386.99	0.0000	0.0000	0.0195
"	386.99	0.0000	0.0000	0.0219
M22	-653.93	0.0000	0.0000	-0.0557
"	-653.93	0.0000	0.0000	-0.0527

✓	-653.92	0.0000	0.0000	0.0497
✓	-653.92	0.0000	0.0000	0.0467
M2	62.6463	0.0000	0.0000	0.0120
✓	62.6463	0.0000	0.0000	0.0154
✓	62.6463	0.0000	0.0000	0.0189
✓	62.6463	0.0000	0.0000	0.0223

BENDING & COMP: TRUSS 3 - MEMBER 14

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

Grading

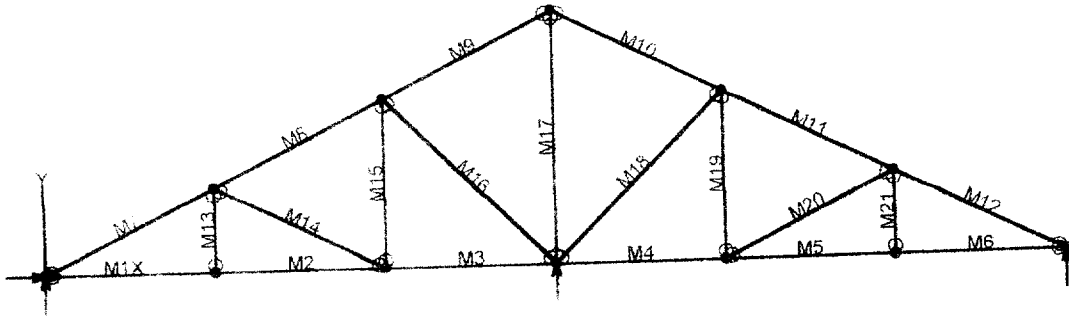
2x or 4x

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	8.57 feet
Max Axial Comp. C	692 lbs
Max Reaction, R	254 lbs
Max Moment, M	356 ft-lbs
Max LL Deflection	0.03 inches
Max TL Deflection	0.05 inches
LL Defl Criteria = $L/240$	0.34
TL Defl Criteria = $L/180$	0.48
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	1.24
f_c	132 psi
F_{ce}	730 psi
F_c^*	2084 psi
F'_c	667 psi
f_b	1395 psi
$F'_b = F_b^*$	2156 psi
Shear D/C ratio	0.61 < 1.0. Member OK
Interaction equation	
$(f_c/F'_c)^2 +$	
$f_b/(F'_b(1-f_c/F_{ce})) =$	0.83 < 1.0, Member OK
Live Load defl ratio	0.07 < 1.0, Member OK
Total Load defl ratio	0.09 < 1.0, Member OK



VisualAnalysis 3.50.c Report

04/03/01 15:22:43

Project: Truss 4

File: C:\Program Files\IES\VA35\truss 4.vap

Company: PK Associates Engineers

Engineer: Paul Zacher

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

Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes		No	
N2	7.67	0.00	No		No			
N3	15.33	0.00	"		"			
N4	23.00	0.00	"		Yes			
N5	30.67	0.00	"		No			
N6	38.33	0.00	"		"			
N7	46.00	0.00	"		Yes			
N8	7.67	3.83	"		No			
N9	38.33	3.83	"		"			
N10	15.33	7.67	"		"			
N11	30.67	7.67	"		"			
N12	23.00	11.50	"		"			

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	7.67
M2	"	"	7.67
M3	"	"	7.67
M4	"	"	7.67
M5	"	"	7.67
M6	"	"	7.67
M7	"	"	8.57
M8	"	"	8.57
M9	"	"	8.57
M10	"	"	8.57
M11	"	"	8.57
M12	"	"	8.57
M13	"	"	3.83
M14	"	"	8.57
M15	"	"	7.67
M16	"	"	10.85
M17	"	"	11.50
M18	"	"	10.85
M19	"	"	7.67
M20	"	"	8.57
M21	"	"	3.83

Section Properties

Category	Section	Ax in ²	Iz in ⁴	Sy+ in ³	Sy- in ³
Wood Sha	SS2x4	6.25	5.36	1.06	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+1E+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	486.16	-NA-
N4	"	-NA-	2282.76	-NA-
N7	"	-NA-	486.16	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	535.85	39.05	-46.56	-0.0408
"	535.85	-17.06	25.0349	-0.0589
"	535.85	4.9235	40.5543	-0.0517
"	535.85	26.9108	0.0000	-0.0000
M1	535.85	-31.67	36.86	-0.0266
"	535.85	-9.7133	15.8347	-0.0439
"	535.85	17.2454	12.6020	-0.0473
"	535.85	34.2041	46.56	-0.0408
M1	-59.44	-34.95	-51.96	-0.0000
"	-59.44	-12.96	9.1472	-0.0166
"	-59.44	9.0250	14.1804	-0.0276
"	-59.44	31.0124	-36.86	-0.0266
M1	-59.44	31.01	36.86	-0.0266
"	-59.44	-9.0250	14.1804	-0.0276
"	-59.44	12.9623	9.1472	-0.0166
"	-59.44	34.9496	-51.96	-0.0000
M1	535.85	-34.20	-46.56	0.0408
"	535.85	-12.25	12.6020	-0.0473
"	535.85	9.7133	15.8347	-0.0439
"	535.85	31.6719	-36.86	-0.0266
M1	535.85	26.91	0.0000	-0.0000
"	535.85	-4.9235	40.5543	-0.0517
"	535.85	17.0638	25.0349	-0.0589
"	535.85	39.0512	-46.56	-0.0408
M1	-684.57	171.49	0.0000	-0.0000
"	-613.59	29.3358	285.93	-0.3433
"	-542.61	-112.81	166.65	-0.2962
"	-471.62	-254.97	-357.84	-0.0418
M1	-39.62	211.67	-357.84	-0.0418
"	31.5468	69.7011	42.9713	-0.0492
"	102.71	-72.26	39.3109	-0.0410

	173.88	-214.23	-368.82	0.0226
M9	599.36	256.25	-368.82	-0.0226
	670.34	114.10	159.33	-0.2802
	741.32	-28.05	282.27	-0.3420
	812.30	-170.21	-0.0000	-0.0189
M10	599.36	-256.25	-368.82	-0.0133
	670.34	-114.10	159.33	-0.2710
	741.32	28.0549	282.27	-0.3326
	812.30	170.21	0.0000	-0.0096
M11	-39.62	-211.67	-357.84	-0.0324
	31.5468	-69.70	42.9713	-0.0399
	102.71	72.2642	39.3109	-0.0315
	173.88	214.23	-368.82	-0.0133
M12	-684.57	-171.49	0.0000	0.0093
	-613.59	-29.34	285.93	-0.3341
	-542.61	112.81	166.65	-0.2868
	-471.62	254.97	-357.84	-0.0325
M13	73.2552	-0.0000	-0.0000	0.0055
	73.2552	-0.0000	-0.0000	0.0079
	73.2552	-0.0000	-0.0000	0.0103
	73.2552	-0.0000	0.0000	0.0127
M14	-665.55	0.0000	0.0000	-0.0304
	-665.55	0.0000	0.0000	-0.0266
	-665.55	0.0000	0.0000	-0.0227
	-665.55	0.0000	0.0000	-0.0188
M15	360.33	-0.0000	0.0000	-0.0110
	360.33	-0.0000	-0.0000	-0.0090
	360.33	-0.0000	-0.0000	-0.0069
	360.33	-0.0000	-0.0000	-0.0048
M16	-836.17	-0.0000	0.0000	-0.0128
	-836.17	-0.0000	-0.0000	-0.0061
	-836.17	0.0000	-0.0000	0.0007
	-836.17	-0.0000	-0.0000	0.0074
M17	-1030.34	-0.0000	0.0000	-0.0104
	-1030.34	-0.0000	-0.0000	-0.0104
	-1030.34	-0.0000	-0.0000	-0.0104
	-1030.34	-0.0000	-0.0000	-0.0104
M18	-836.17	0.0000	0.0000	-0.0275
	-836.17	0.0000	0.0000	-0.0208
	-836.17	0.0000	0.0000	-0.0141
	-836.17	0.0000	0.0000	-0.0074
M19	360.33	0.0000	0.0000	0.0098
	360.33	0.0000	0.0000	0.0119
	360.33	0.0000	0.0000	0.0140
	360.33	0.0000	0.0000	0.0161
M20	-665.55	0.0000	0.0000	-0.0398
	-665.55	0.0000	0.0000	0.0359
	-665.55	0.0000	0.0000	-0.0320
	-665.55	0.0000	0.0000	-0.0282
M21	73.2552	0.0000	0.0000	0.0081
	73.2552	0.0000	0.0000	0.0105
	73.2552	0.0000	0.0000	0.0129
	73.2552	0.0000	0.0000	0.0153

BENDING & COMP: TRUSS 4 - 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	8.57 feet
Max Axial Comp. C	599 lbs
Max Reaction, R	256 lbs
Max Moment, M	368 ft-lbs
Max LL Deflection	0.11 inches
Max TL Deflection	0.27 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 =	1.24
fc =	114 psi
Fce =	730 psi
Fc* =	2084 psi
F'c =	667 psi
fb =	1442 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.62 < 1.0, Member OK
Interaction equation	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.82 < 1.0, Member OK
Live Load defl ratio	0.26 < 1.0, Member OK
Total Load defl ratio	0.47 < 1.0, Member OK