

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0112529

Insp Area: 2

Thos Bros: 336J3

Site Address: 9 EASTWIND CT SAC

Parcel No: 031-0700-030

Sub-Type: REM

Housing (Y/N): N

CONTRACTOR

ZIMMERMAN ROOFING, INC
3675 R STREET
SACRAMENTO, CA 95816

OWNER

MASSEY HUBERT E
9 EASTWIND CT
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: REROOF, TEAR-OFF, RESHEET INSALL 34 SQ 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 557559 Date 10/9/01 Contractor Signature Billy Cory

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 herby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

Date 10/9/01 Applicant/Agent Signature Billy Cory

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:

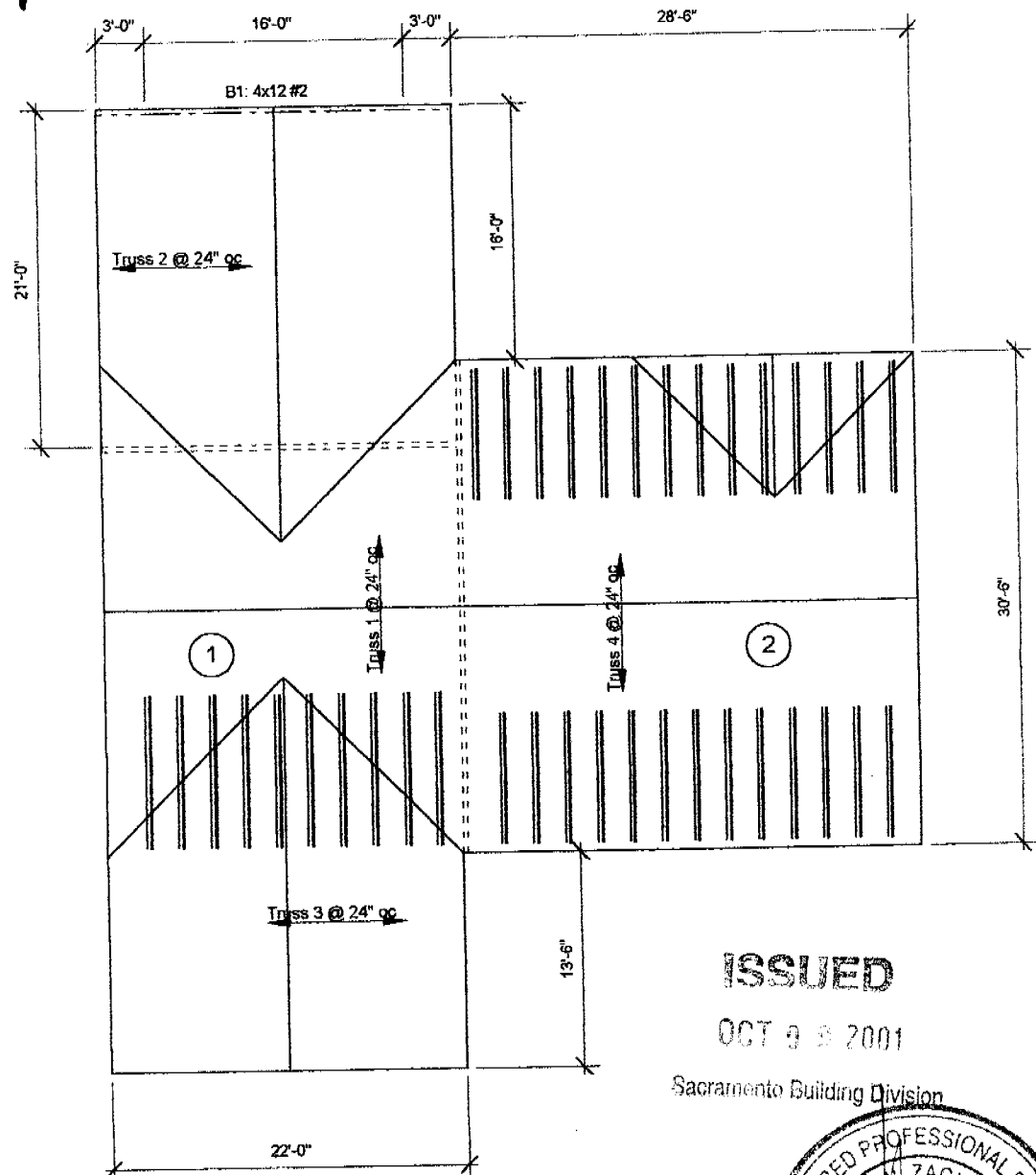
Carrier STATE FUND Policy Number 713-0002021 Exp.Date 10/01/2002

(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 10/9/01 Applicant Signature Billy Cory

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

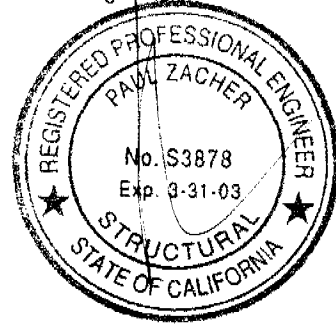
OCT 9 9 2001

Sacramento Building Division



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.



Paul Zacher 10/4/01

FRAMING NOTES:

1. Scab a 2x4 DF#2 x 11'-0" long rafter to the top chord of the existing truss #1 (total 10). See detail 2.
2. Scab a 2x4 DF#2 x 10'-0" long rafter to the top chord of the existing truss #1 (total 26). See detail 2.

Notes:

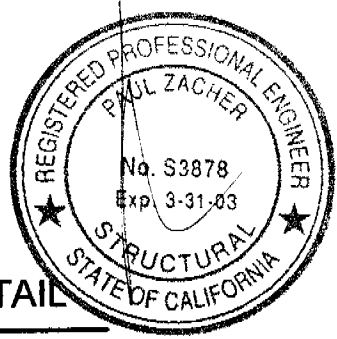
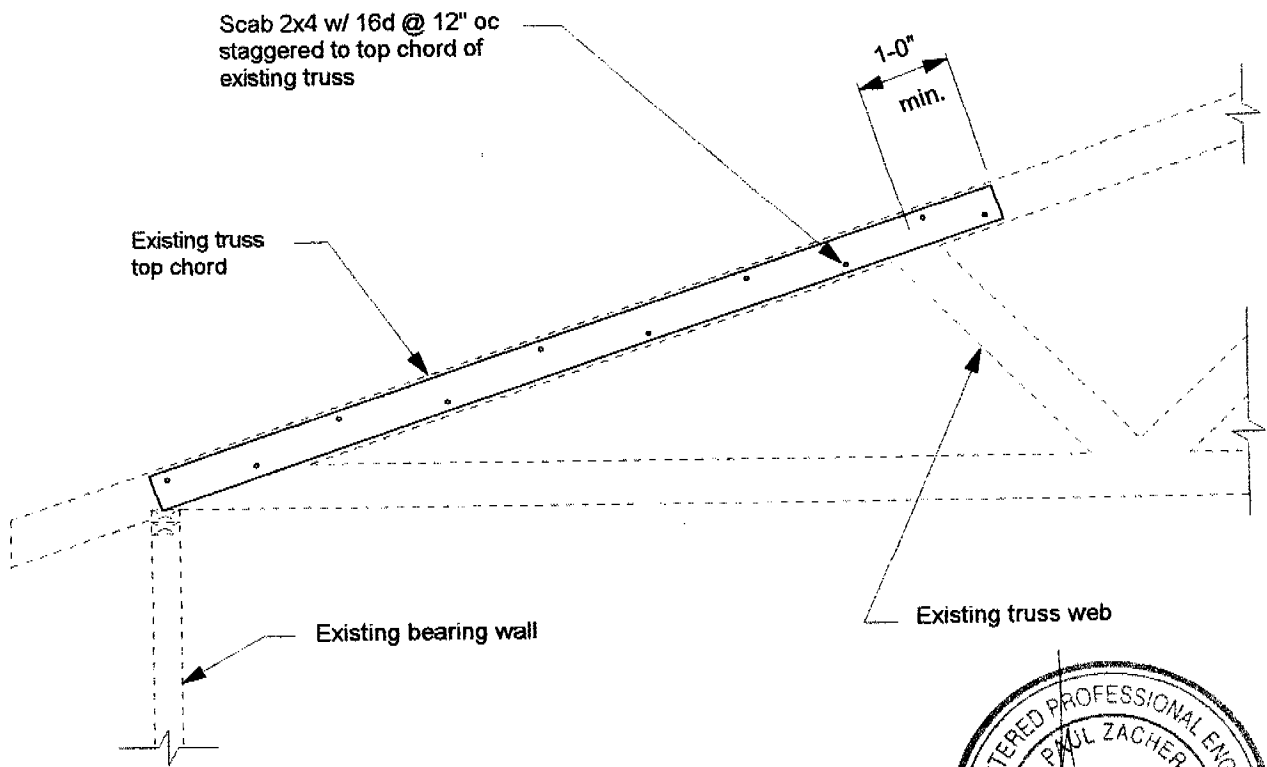
- A. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.0 psf.
- B. All structural wood members that were observed appear to be in sound condition and without structural defect.



ROOF PLAN - MASSEY

Not to Scale

24



2

TRUSS REINFORCEMENT DETAIL

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

25

Massey

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

TEL: 916.961.3960
FAX: 916.961.6552



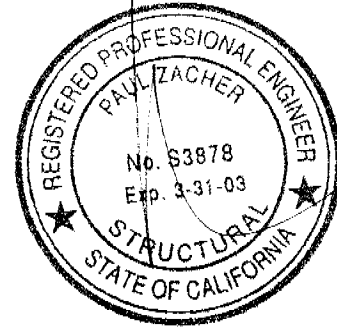
September 19, 2001

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

Attn.: Mr. Jeff Tucker,

re: Job 2001_192: MASSEY

Subject: Structural Investigation Report of the Roof for the Residence located at 9 Eastwind Court, 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 September 19, 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 is framed with pre-engineered wood spaced at 24" on center.

CONCLUSIONS:

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

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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. 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 2x4 DF#2 x 10'-0" long rafter to the top chord of the existing truss. See details 1 and 2.

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

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

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

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

Sincerely,

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

file

DESIGN LOADING:

Roof Pitch	6	in 12
Pitch Adjustment Factor	1.12	

LOCATION: 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>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

m

P.K. Zacher, S.E.

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

Job #: 01-192

Date: 9/19/01

LOADING

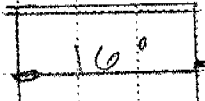
B1

OP: 16.1 pcf $\times 4' = 64$ pcf

4 x 12[#] 2

64/64

LP: 16.0 " = 64 "



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

Title :
 Dsgnr:
 Description :
 Scope :

Job #
 Date: 9:53PM, 19 SEP 01

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

		B1
Timber Section		4x12
Beam Width	in	3.500
Beam Depth	in	11.250
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	64.00
Live Load	#/ft	64.00

Results Ratio = 0.5557

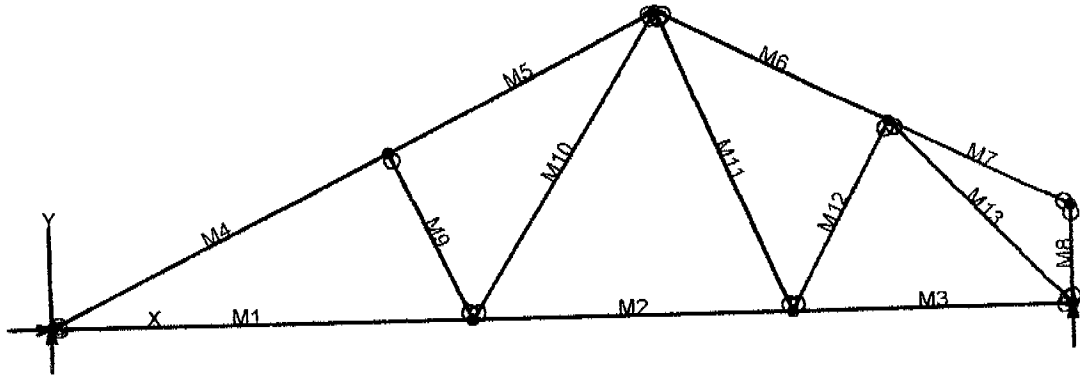
Mmax @ Center	in-k	49.15
@ X =	ft	8.00
fb : Actual	psi	665.8
Fb : Allowable	psi	1,198.1
		Bending OK
fv : Actual	psi	34.6
Fv : Allowable	psi	118.8
		Shear OK

Reactions

@ Left End	DL	lbs	512.00
	LL	lbs	512.00
	Max. DL+LL	lbs	1,024.00
@ Right End	DL	lbs	512.00
	LL	lbs	512.00
	Max. DL+LL	lbs	1,024.00

Deflections Ratio OK

Center DL Defl	in	-0.142
L/Defl Ratio		1,351.9
Center LL Defl	in	-0.142
L/Defl Ratio		1,351.9
Center Total Defl	in	-0.284
Location	ft	8.000
L/Defl Ratio		675.9



6

VisualAnalysis 3.50.c Report

09/19/01 21:25:32

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	10.50	0.00	No		No		"	
N3	18.50	0.00	"		"		"	
N4	25.50	0.00	"		Yes		"	
N5	8.50	4.25	"		No		"	
N6	15.25	7.63	"		"		"	
N7	21.00	4.75	"		"		"	
N8	25.50	2.50	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	10.50
M2	"	"	8.00
M3	"	"	7.00
M4	"	"	9.50
M5	"	"	7.55
M6	"	"	6.43
M7	"	"	5.03
M8	"	"	2.50
M9	"	"	4.70
M10	"	"	8.98
M11	"	"	8.29
M12	"	"	5.37
M13	"	"	6.54

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	902.22	-NA-
N4	"	-NA-	902.22	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1308.19	-52.62	-78.41	-0.0883
"	1308.19	-22.52	52.8133	-0.1818
"	1308.19	7.5824	78.9500	-0.1724
"	1308.19	37.6824	0.0000	-0.0000
M2	723.63	-29.15	-36.42	-0.0552
"	723.63	-6.2180	10.5855	-0.0675
"	723.63	16.7153	-3.4109	-0.0723
"	723.63	39.6486	-78.41	-0.0883
M3	741.84	-24.90	0.0000	-0.0000
"	741.84	-4.8304	34.5649	-0.0459
"	741.84	15.2363	22.4246	-0.0602
"	741.84	35.3030	-36.42	-0.0552
M4	-1556.71	188.23	0.0000	-0.0000
"	-1477.95	30.6975	345.51	-0.5129
"	-1399.18	-126.84	193.24	-0.4474
"	-1320.41	-284.37	-456.82	-0.0907
M5	-1333.09	248.18	-456.82	-0.0907
"	-1270.54	123.08	9.3684	-0.1217
"	-1207.99	-2.0185	161.64	-0.1715
"	-1145.44	-127.12	-0.0000	-0.0586
M6	-931.01	-191.77	-205.19	-0.0370
"	-877.72	-85.20	90.9991	-0.1275
"	-824.44	21.3659	159.39	-0.1548
"	-771.16	127.93	0.0000	-0.0599
M7	-42.16	-84.32	-0.0000	0.0102
"	-0.4583	-0.9166	71.1206	-0.0252
"	41.2417	82.4834	2.7248	-0.0288
"	82.9417	165.88	-205.19	-0.0370
M8	-94.27	0.0000	0.0000	0.0234
"	-94.27	0.0000	0.0000	0.0267
"	-94.27	0.0000	0.0000	0.0300
"	-94.27	0.0000	0.0000	0.0332
M9	-532.70	0.0000	0.0000	-0.0209
"	-532.70	0.0000	0.0000	-0.0193
"	-532.70	0.0000	0.0000	-0.0178
"	-532.70	0.0000	0.0000	-0.0162
M10	676.58	0.0000	0.0000	-0.0624
"	676.58	0.0000	0.0000	-0.0529
"	676.58	0.0000	0.0000	-0.0433
"	676.58	0.0000	0.0000	-0.0338
M11	59.5054	0.0000	0.0000	-0.0273
"	59.5054	0.0000	0.0000	-0.0174
"	59.5054	0.0000	0.0000	-0.0074
"	59.5054	0.0000	0.0000	0.0025

M12	10.9772	-0.0000	0.0000	-0.0489
"	10.9772	-0.0000	-0.0000	-0.0399
"	10.9772	-0.0000	-0.0000	-0.0308
"	10.9772	-0.0000	-0.0000	-0.0217
M13	-1078.66	-0.0000	0.0000	-0.0276
"	-1078.66	-0.0000	-0.0000	-0.0103
"	-1078.66	-0.0000	-0.0000	0.0069
"	-1078.66	-0.0000	-0.0000	0.0241

BENDING & COMP: TRUSS 1 - MEMBER 4

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

Grading:

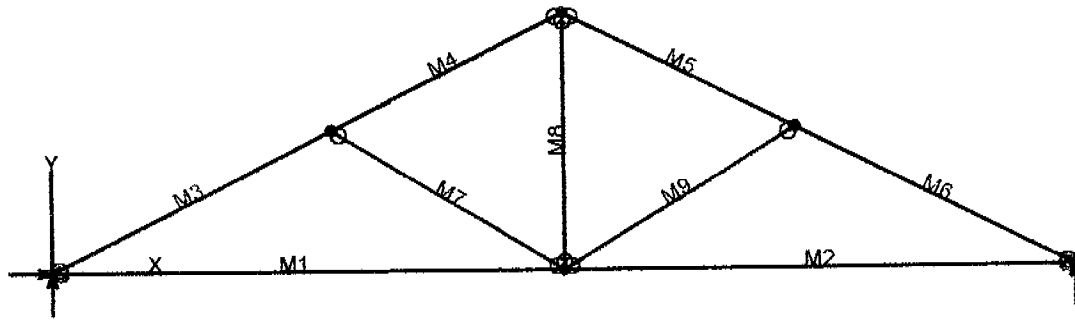
2x or 4x

Doug-fir larch: No. 2

Assumptions:

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

Width, b	3 inches
Depth, d	3.5 inches
Length	9.5 feet
Max Axial Comp, C	1320 feet
Max Reaction, R	284 feet
Max Moment, M	456 feet
Max LL Deflection	0.04 feet
Max TL Deflection	0.09 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 =	126 psi
Fce =	606 psi
Fc* =	2084 psi
F'c =	564 psi
fb =	893 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.34 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.57 < 1.0, Member OK
Live Load defl ratio	0.08 < 1.0, Member OK
Total Load defl ratio	0.14 < 1.0, Member OK



VisualAnalysis 3.50.c Report

09/19/01 21:27:45

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	11.00	0.00	No		No		"	
N3	22.00	0.00	"		Yes		"	
N4	6.00	3.00	"		No		"	
N5	11.00	5.50	"		"		"	
N6	16.00	3.00	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	11.00
M2	"	"	11.00
M3	"	"	6.71
M4	"	"	5.59
M5	"	"	5.59
M6	"	"	6.71
M7	"	"	5.83
M8	"	"	5.50
M9	"	"	5.83

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	778.39	-NA-
N3	"	-NA-	778.39	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1185.98	-58.16	-119.47	-0.0811
"	1185.98	-26.63	35.6875	-0.1549
"	1185.98	4.9059	75.5103	-0.1615
"	1185.98	36.4392	0.0000	-0.0000
M2	1185.98	-36.44	-0.0000	-0.0000
"	1185.98	-4.9059	75.5103	-0.1615
"	1185.98	26.6274	35.6875	-0.1549
"	1185.98	58.1608	-119.47	-0.0811
M3	-1392.59	133.23	0.0000	-0.0000
"	-1336.99	22.0326	172.97	-0.1472
"	-1281.39	-89.17	97.9113	-0.1500
"	-1225.79	-200.37	-225.18	-0.0790
M4	-984.19	179.28	-225.18	-0.0790
"	-937.86	86.6142	22.1246	-0.1000
"	-891.53	-6.0525	97.1835	-0.1156
"	-845.19	-98.72	-0.0000	-0.0766
M5	-984.19	-179.28	-225.18	-0.0633
"	-937.86	-86.61	22.1246	-0.0844
"	-891.53	6.0525	97.1835	-0.0999
"	-845.19	98.7191	0.0000	-0.0609
M6	-1392.59	-133.23	0.0000	0.0157
"	-1336.99	-22.03	172.97	-0.1315
"	-1281.39	89.1674	97.9113	-0.1343
"	-1225.79	200.37	-225.18	-0.0633
M7	-450.00	-0.0000	-0.0000	-0.0606
"	-450.00	-0.0000	-0.0000	-0.0578
"	-450.00	-0.0000	-0.0000	-0.0551
"	-450.00	-0.0000	0.0000	-0.0524
M8	579.37	0.0000	0.0000	-0.0175
"	579.37	0.0000	0.0000	-0.0175
"	579.37	0.0000	0.0000	-0.0175
"	579.37	0.0000	0.0000	-0.0175
M9	-450.00	0.0000	0.0000	-0.0786
"	-450.00	0.0000	0.0000	-0.0759
"	-450.00	0.0000	0.0000	-0.0732
"	-450.00	0.0000	0.0000	-0.0704

BENDING & COMP: TRUSS 2 - MEMBER 3

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

Grading:

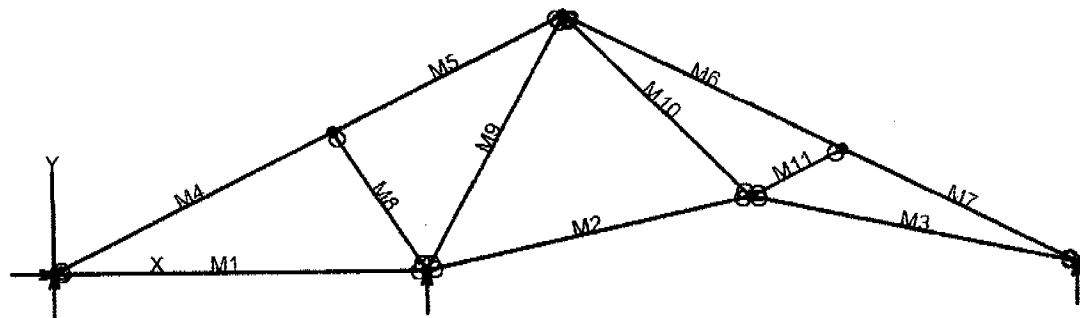
2x or 4x

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	1225 feet
Max Reaction, R	200 feet
Max Moment, M	225 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 =	233 psi
Fce =	1142 psi
Fc* =	2084 psi
F'c =	972 psi
fb =	882 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)) =	0.57 < 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

09/19/01 21:30:20

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	8.00	0.00	No		"		"	
N3	15.00	1.50	"		No		"	
N4	22.00	0.00	"		Yes		"	
N5	6.00	3.00	"		No		"	
N6	11.00	5.50	"		"		"	
N7	17.00	2.50	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.00
M2	"	"	7.16
M3	"	"	7.16
M4	"	"	6.71
M5	"	"	5.59
M6	"	"	6.71
M7	"	"	5.59
M8	"	"	3.61
M9	"	"	6.26
M10	"	"	5.66
M11	"	"	2.24

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	12.12	-NA-
N2	"	-NA-	1205.51	-NA-
N4	"	-NA-	341.89	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	-335.04	-34.40	0.0000	-0.0000
"	-335.04	-11.47	61.0027	-0.0754
"	-335.04	11.4667	61.0027	-0.0754
"	-335.04	34.4000	0.0000	-0.0000
M2	-129.62	30.1000	0.0000	0.0008
"	-125.32	10.0333	47.7654	-0.0610
"	-121.02	-10.03	47.7654	-0.0754
"	-116.72	-30.10	-0.0000	-0.0426
M3	711.47	-30.10	-0.0000	0.0043
"	715.77	-10.03	47.7654	-0.0580
"	720.07	10.0333	47.7654	-0.0730
"	724.37	30.1000	0.0000	-0.0408
M4	309.63	129.90	0.0000	-0.0000
"	365.23	18.7031	165.53	-0.1113
"	420.83	-92.50	83.0211	-0.0852
"	476.43	-203.70	-247.51	0.0006
M5	524.80	183.28	-247.51	0.0006
"	571.13	90.6096	7.2345	-0.0226
"	617.47	-2.0570	89.7385	-0.0500
"	663.80	-94.72	-0.0000	-0.0278
M6	-410.74	-200.24	-224.35	-0.0389
"	-355.14	-89.04	98.4644	-0.1271
"	-299.54	22.1563	173.25	-0.1410
"	-243.94	133.36	0.0000	-0.0103
M7	-834.27	-98.87	-0.0000	0.0092
"	-787.94	-6.2009	97.4601	-0.0453
"	-741.61	86.4658	22.6777	-0.0450
"	-695.27	179.13	-224.35	-0.0389
M8	-389.98	-0.0000	-0.0000	-0.0030
"	-389.98	-0.0000	-0.0000	-0.0008
"	-389.98	-0.0000	-0.0000	0.0014
"	-389.98	-0.0000	0.0000	0.0036
M9	-899.91	0.0000	0.0000	-0.0274
"	-899.91	0.0000	0.0000	-0.0172
"	-899.91	0.0000	0.0000	-0.0070
"	-899.91	0.0000	0.0000	0.0032
M10	563.23	0.0000	0.0000	-0.0271
"	563.23	0.0000	0.0000	-0.0185
"	563.23	0.0000	0.0000	-0.0098
"	563.23	0.0000	0.0000	-0.0012
M11	-474.22	0.0000	0.0000	-0.0426
"	-474.22	0.0000	0.0000	-0.0418
"	-474.22	0.0000	0.0000	-0.0409
"	-474.22	0.0000	0.0000	-0.0401

BENDING & COMP: TRUSS 3 - MEMBER 7

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

Grading:

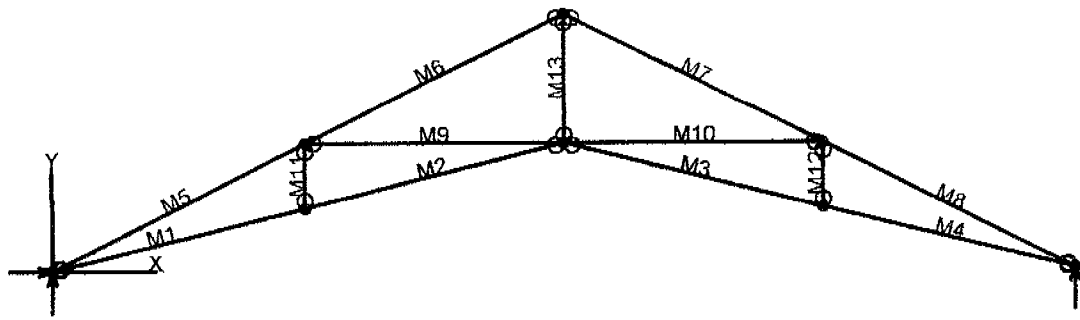
2x or 4x

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	695 feet
Max Reaction, R	179 feet
Max Moment, M	224 feet
Max LL Deflection	0.01 feet
Max TL Deflection	0.03 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 =	1.15
fc =	132 psi
Fce=	1602 psi
Fc*=	2084 psi
F'c=	1239 psi
fb=	878 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.43 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.46 < 1.0, Member OK
Live Load defl ratio	0.04 < 1.0, Member OK
Total Load defl ratio	0.08 < 1.0, Member OK



VisualAnalysis 3.50.c Report

09/19/01 21:34:34

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	7.50	1.84	No		No		"	
N3	23.00	1.84	"		"		"	
N4	7.50	3.75	"		"		"	
N5	15.25	3.75	"		"		"	
N6	23.00	3.75	"		"		"	
N7	15.25	7.63	"		"		"	
N8	30.50	0.00	"		Yes		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	7.72
M2	"	"	7.98
M3	"	"	7.98
M4	"	"	7.72
M5	"	"	8.39
M6	"	"	8.66
M7	"	"	8.66
M8	"	"	8.39
M9	"	"	7.75
M10	"	"	7.75
M11	"	"	1.91
M12	"	"	1.91
M13	"	"	3.88

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	1083.04	-NA-
N8	"	-NA-	1083.04	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	3497.35	33.2833	0.0000	-0.0000
"	3502.62	11.7833	57.8654	-0.2710
"	3507.90	-9.7167	60.5252	-0.4750
"	3513.17	-31.22	7.9794	-0.6088
M2	3498.45	32.3253	7.9794	-0.6088
"	3503.93	10.1086	64.2822	-0.7058
"	3509.41	-12.11	61.6224	-0.7232
"	3514.88	-34.32	0.0000	-0.6644
M3	3498.45	-32.33	7.9794	-0.4987
"	3503.93	-10.11	64.2822	-0.5957
"	3509.41	12.1080	61.6224	-0.6130
"	3514.88	34.3247	0.0000	-0.5542
M4	3497.35	-33.28	-0.0000	0.1097
"	3502.62	-11.78	57.8654	-0.1613
"	3507.90	9.7167	60.5252	-0.3653
"	3513.17	31.2167	7.9794	-0.4991
M5	-3887.68	162.55	0.0000	-0.0000
"	-3818.18	23.5549	259.12	-0.4830
"	-3748.68	-115.45	130.70	-0.6301
"	-3679.18	-254.45	-385.26	-0.6299
M6	-2509.24	259.91	-385.26	-0.6299
"	-2437.42	116.28	156.97	-0.9011
"	-2365.61	-27.35	285.39	-0.9771
"	-2293.79	-170.99	0.0000	-0.6561
M7	-2509.24	-259.91	-385.26	-0.4239
"	-2437.42	-116.28	156.97	-0.6952
"	-2365.61	27.3536	285.39	-0.7711
"	-2293.79	170.99	0.0000	-0.4502
M8	-3887.68	-162.55	-0.0000	0.2059
"	-3818.18	-23.55	259.12	-0.2772
"	-3748.68	115.45	130.70	-0.4241
"	-3679.18	254.45	-385.26	-0.4239
M9	-1276.46	1.5309	0.0000	-0.5824
"	-1276.46	1.5309	3.9548	-0.6041
"	-1276.46	1.5309	7.9095	-0.6207
"	-1276.46	1.5309	11.8643	-0.6275
M10	-1276.46	-1.5309	0.0000	-0.5824
"	-1276.46	-1.5309	3.9548	-0.6041
"	-1276.46	-1.5309	7.9095	-0.6207
"	-1276.46	-1.5309	11.8643	-0.6275
M11	61.6277	0.0000	0.0000	0.1804
"	61.6277	0.0000	0.0000	0.2014
"	61.6277	0.0000	0.0000	0.2225
"	61.6277	0.0000	0.0000	0.2435

M12	61.6277	-0.0000	0.0000	0.2169
"	61.6277	-0.0000	-0.0000	0.2380
"	61.6277	-0.0000	-0.0000	0.2590
"	61.6277	-0.0000	-0.0000	0.2801
M13	1745.76	0.0000	0.0000	0.2302
"	1745.76	0.0000	0.0000	0.2302
"	1745.76	0.0000	0.0000	0.2302
"	1745.76	0.0000	0.0000	0.2302

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	3 inches
Depth, d	3.5 inches
Length	8.39 feet
Max Axial Comp, C	3679 feet
Max Reaction, R	254 feet
Max Moment, M	385 feet
Max LL Deflection	0.24 feet
Max TL Deflection	0.48 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 =	1.23
fc =	350 psi
Fce =	759 psi
Fc* =	2084 psi
F'c =	690 psi
fb =	754 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.31 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.91 < 1.0, Member OK
Live Load defl ratio	0.57 < 1.0, Member OK
Total Load defl ratio	0.86 < 1.0, Member OK