

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0110387

Insp Area: 2

Thos Bros: 336J2

Site Address: 7255 LONG RIVER DR SAC

Parcel No: 031-0270-056

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR

ZIMMERMAN ROOFING, INC
3675 R STREET
SACRAMENTO, CA 95816

OWNER

CHIN GRANT Y/LURLINE P
7255 LONG RIVER DR
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: TEAR OFF & REPLACE TILE 35 SQ'S 4/12 PITCH

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 8/16/01 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.

Date 8/16/01 Applicant/Agent Signature Billy Coy

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:

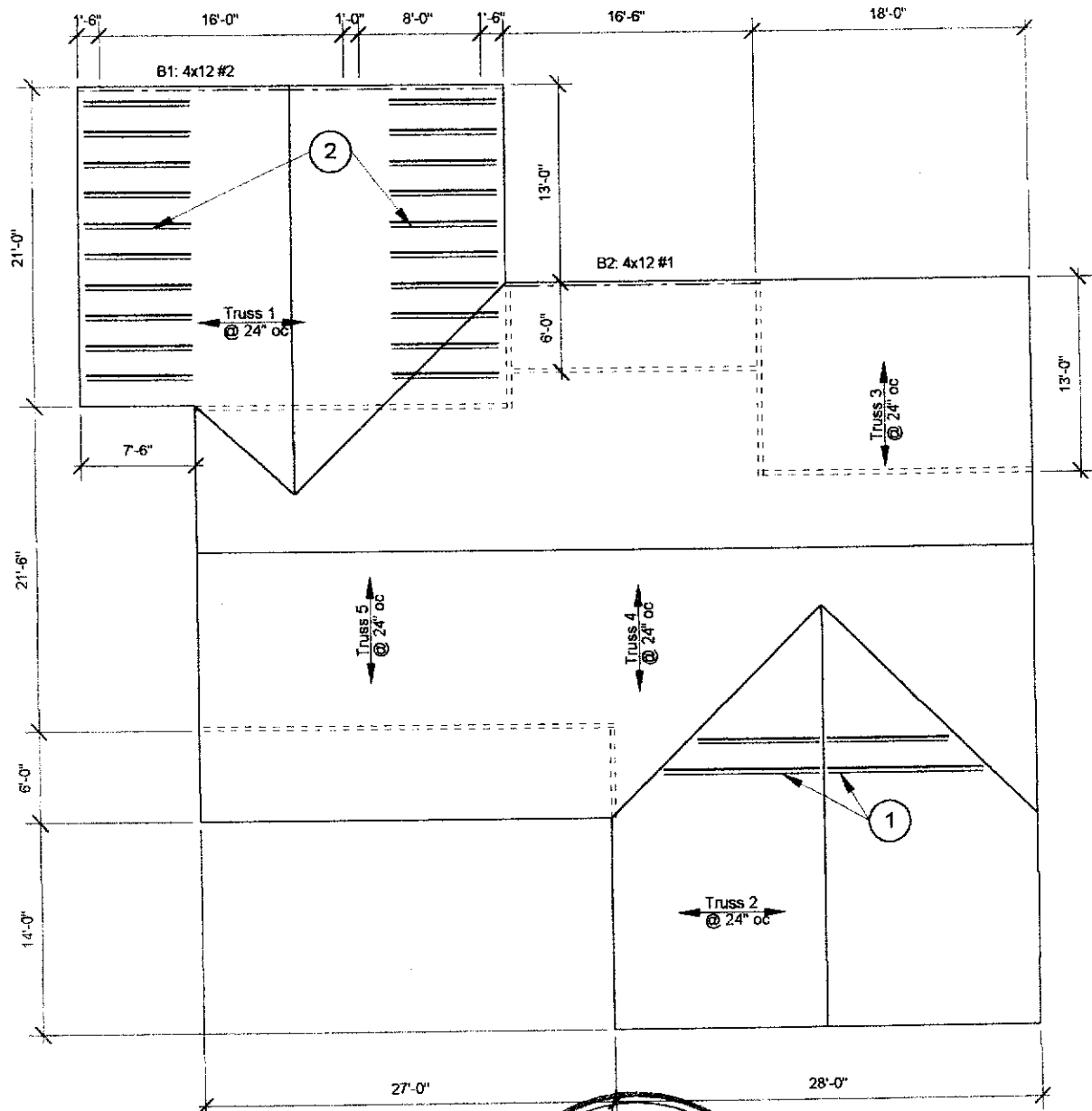
Carrier STATE FUND Policy Number 713-00-2021 Exp Date 10/01/2001

(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.

Date 8/16/01 Applicant Signature Billy Coy

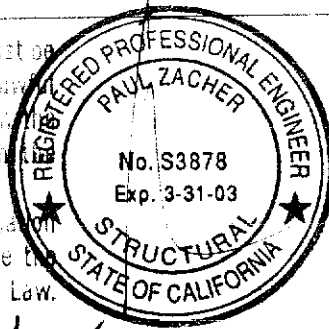
WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S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

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

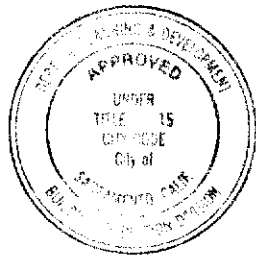


This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations to the same without written permission from the Building Inspection Division.

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



7255 LONG RIVER DR.



FRAMING NOTES:

1. Scab a 2x6 to existing 2x4 rafters where the span is greater than 7'-9" (total 4).
2. Scab a 2x4 DF#2 x 9'-0" long rafter to the top chord of the existing truss #1 (total 20). See detail 2.

Notes:

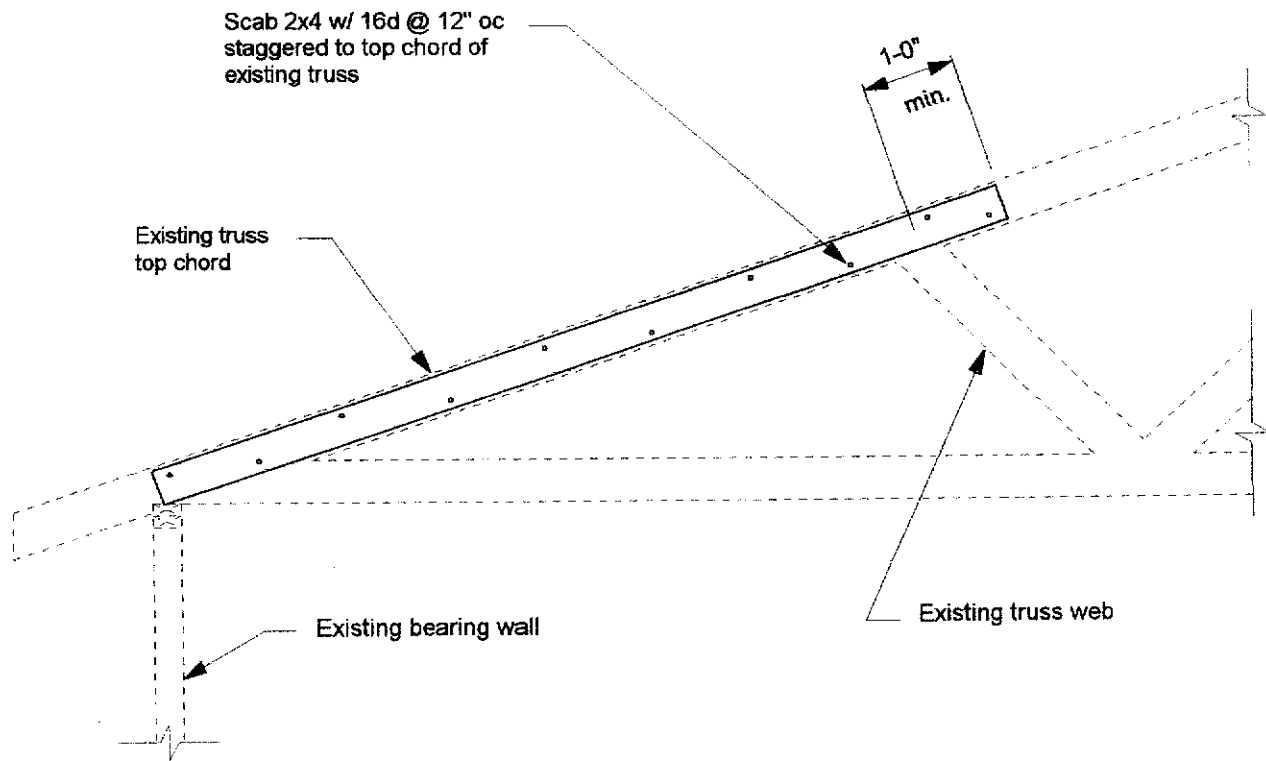
- A. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.0 psf.
- B. All structural wood members that were observed appear to be in sound condition and without structural defect.



ROOF PLAN - CHIN

Not to Scale

29



2

TRUSS REINFORCEMENT DETAIL

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



Chin



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

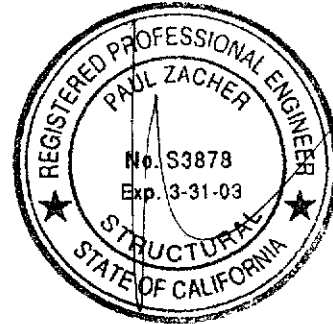
TEL: 916.961.3960
FAX: 916.961.6552

August 9, 2001

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

Attn.: Mr. Jeff Tucker,

re: Job 2001_214: CHIN



Subject: Structural Investigation Report of the Roof for the Residence located at 7255 Long River Drive, 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 August 9, 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:

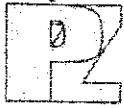
Roof:
The roof covering will consist of a Light Weight Concrete Tile over 1/2" solid sheathing. The living and garage areas are framed with pre-engineered wood trusses spaced at 24" on center.

CONCLUSIONS:

Roof:
The living and garage areas currently lack sufficient structural capacity for the applied live and dead loads. See "Recommendations" for location and repair to bring the living and garage areas up to the required capacity.

PAUL ZACHER REGISTERED PROFESSIONAL ENGINEER

Chin



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 2x6 rafter to the existing 2x4 rafters with 16d's @ 12" on center where the span is greater than 7'-9". See detail 1.

Garage:

2. Scab a 2x4 DF#2 x 9'-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 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>0.64</u>	psf
Load	10.5	psf
Roof Pitch Adjustment	<u>0.57</u>	psf
Total Load	11.1	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

3

P.K. Zacher, S.E.

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

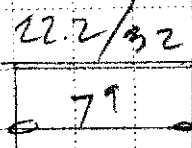
Job #: 01-214

Date: 8/9/01

LOADING

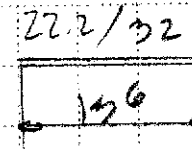
RAFTER

$D_p = 11.1 \text{ psf} \times 2' = 22.2 \text{ psf}$ $2 \times 4 \times 2$
 $L_p = 16.0' \times \dots = 32'$



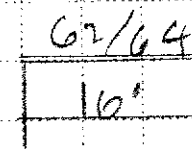
RAFTER

$D_p = 11.1 \text{ psf} \times 2' = 22.2 \text{ psf}$ $2 \times 6 \times 2 +$
 $L_p = 16.0' \times \dots = 32'$ $2 \times 4 \times 2$



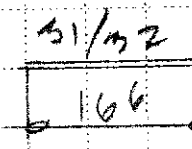
B3

$D_p = 15.4 \text{ psf} \times 4' = 62 \text{ psf}$ $4 \times 12 \times 2$
 $L_p = 16.0' \times \dots = 64'$



B2

$D_p = 15.4 \text{ psf} \times 2' = 31 \text{ psf}$ $4 \times 12 \times 1$
 $L_p = 16.0' \times \dots = 32 \text{ psf}$



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

Title :
Dsgnr:
Description :

Job #
Date: 2:19PM, 9 AUG 01

Scope :

Rev. 510304
 User: KW-0602844, Ver 5.1.3, 22-Jun-1999, Win32
 (c) 1983-99 ENERCALC

Timber Beam & Joist

c:\enercalc\test.ecw\Calculations

Description RAFTERS AND BEAMS

Timber Member Information

Calculations are designed to 1997 NDS and 1997 UBC Requirements

Timber Section		rafter 2x4	rafter 2x4 + 2x6	B1 4x12	B2 4x12
Beam Width	in	1.500	2.120	3.500	3.500
Beam Depth	in	3.500	5.500	11.250	11.250
Le: Unbraced Length	ft	0.00	2.00	6.00	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	1,000.0
Fv - Basic Allow	psi	95.0	95.0	95.0	95.0
Elastic Modulus	ksi	1,600.0	1,600.0	1,600.0	1,700.0
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

Span	ft	7.75	13.50	16.00	16.50
Dead Load	#/ft	22.20	22.20	62.00	31.00
Live Load	#/ft	32.00	32.00	64.00	32.00

Results

Ratio = 0.8451 0.8547 0.5529 0.2534

Mmax @ Center	in-k	4.88	14.82	48.38	25.73
@ X =	ft	3.87	6.75	8.00	8.25
Fb : Actual	psi	1,594.5	1,386.3	655.4	348.5
Fb : Allowable	psi	1,886.7	1,622.0	1,185.4	1,375.0
		Bending OK	Bending OK	Bending OK	Bending OK
Fv : Actual	psi	55.7	44.1	34.1	17.6
Fv : Allowable	psi	118.8	118.8	118.8	118.8
		Shear OK	Shear OK	Shear OK	Shear OK

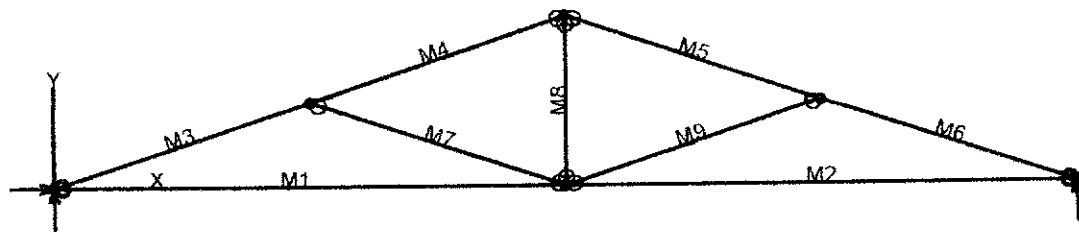
Reactions

@ Left End	DL	lbs	86.02	149.85	496.00	255.75
	LL	lbs	124.00	216.00	512.00	264.00
	Max. DL+LL	lbs	210.02	365.85	1,008.00	519.75
@ Right End	DL	lbs	86.02	149.85	496.00	255.75
	LL	lbs	124.00	216.00	512.00	264.00
	Max. DL+LL	lbs	210.02	365.85	1,008.00	519.75

Deflections

Ratio OK Deflection OK Deflection OK Deflection OK

Center DL Defl	in	-0.210	-0.353	-0.138	-0.073
L/Defl Ratio		442.6	459.2	1,395.5	2,703.9
Center LL Defl	in	-0.303	-0.509	-0.142	-0.076
L/Defl Ratio		307.0	318.6	1,351.9	2,619.4
Center Total Defl	in	-0.513	-0.861	-0.280	-0.149
Location	ft	3.875	6.750	8.000	8.250
L/Defl Ratio		181.3	188.1	686.7	1,330.5



VisualAnalysis 3.50.c Report

08/09/01 13:46:08

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	14.00	0.00	No		No		"	
N3	28.00	0.00	"		Yes		"	
N4	7.00	2.33	"		No		"	
N5	21.00	2.33	"		"		"	
N6	14.00	4.67	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	14.00
M2	"	"	14.00
M3	"	"	7.38
M4	"	"	7.38
M5	"	"	7.38
M6	"	"	7.38
M7	"	"	7.38
M8	"	"	4.67
M9	"	"	7.38

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	920.30	-NA-
N3	"	-NA-	920.30	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2160.10	-73.84	-190.95	-0.2447
"	2160.10	-33.71	59.5196	-0.4336
"	2160.10	6.4273	123.17	-0.4389
"	2160.10	46.5606	0.0000	-0.0000
M2	2160.10	-46.56	0.0000	-0.0000
"	2160.10	-6.4273	123.17	-0.4390
"	2160.10	33.7061	59.5196	-0.4336
"	2160.10	73.8394	-190.95	-0.2447
M3	-2325.49	146.82	0.0000	-0.0000
"	-2283.40	20.3508	204.77	-0.2439
"	-2241.30	-106.12	99.3160	-0.2827
"	-2199.20	-232.58	-316.37	-0.2362
M4	-1575.50	232.56	-316.37	-0.2362
"	-1533.22	106.10	99.4491	-0.3632
"	-1490.94	-20.37	204.91	-0.4050
"	-1448.67	-146.84	-0.0000	-0.2412
M5	-1575.50	-232.56	-316.37	-0.2104
"	-1533.22	-106.10	99.4491	-0.3375
"	-1490.94	20.3692	204.91	-0.3792
"	-1448.67	146.84	0.0000	-0.2154
M6	-2325.49	-146.82	0.0000	0.0257
"	-2283.40	-20.35	204.77	-0.2183
"	-2241.30	106.12	99.3160	-0.2569
"	-2199.20	232.58	-316.37	-0.2105
M7	-779.51	0.0000	0.0000	-0.2194
"	-779.51	0.0000	0.0000	-0.2138
"	-779.51	0.0000	0.0000	-0.2081
"	-779.51	0.0000	0.0000	-0.2025
M8	640.05	-0.0000	-0.0000	-0.0407
"	640.05	-0.0000	0.0000	-0.0407
"	640.05	-0.0000	-0.0000	-0.0407
"	640.05	-0.0000	-0.0000	-0.0407
M9	-779.51	0.0000	0.0000	-0.2450
"	-779.51	0.0000	0.0000	-0.2394
"	-779.51	0.0000	0.0000	-0.2338
"	-779.51	0.0000	0.0000	-0.2282

BENDING & COMP: TRUSS 1 - MEMBER 3

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

Grading:

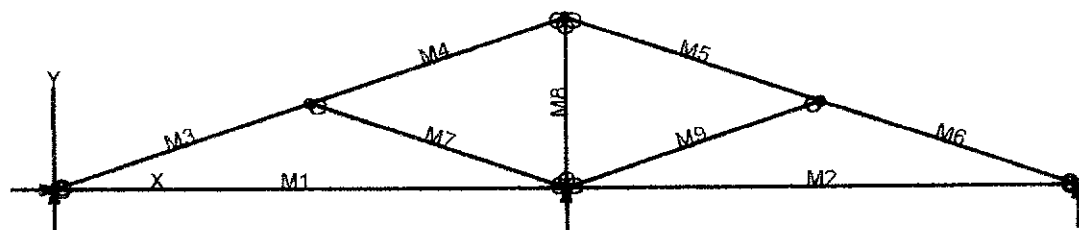
2x or 4x

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	3 inches
Depth, d	3.5 inches
Length	7.38 feet
Max Axial Comp, C	2199 feet
Max Reaction, R	232 feet
Max Moment, M	316 feet
Max LL Deflection	0.11 feet
Max TL Deflection	0.23 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 =	1.20
fc =	209 psi
Fce=	958 psi
Fc*=	2084 psi
F'c=	844 psi
fb=	619 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.28 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.43 < 1.0, Member OK
Live Load defl ratio	0.30 < 1.0, Member OK
Total Load defl ratio	0.47 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08/09/01 13:47:00

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	14.00	0.00	No		"		"	
N3	28.00	0.00	"		"		"	
N4	7.00	2.33	"		No		"	
N5	21.00	2.33	"		"		"	
N6	14.00	4.67	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	14.00
M2	"	"	14.00
M3	"	"	7.38
M4	"	"	7.38
M5	"	"	7.38
M6	"	"	7.38
M7	"	"	7.38
M8	"	"	4.67
M9	"	"	7.38

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	273.83	-NA-
N2	"	-NA-	1292.94	-NA-
N3	"	-NA-	273.83	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	234.02	-75.25	-210.70	-0.0000
"	234.02	-35.12	46.3540	-0.2253
"	234.02	5.0167	116.59	-0.3212
"	234.02	45.1500	0.0000	-0.0000
M2	234.02	-45.15	0.0000	-0.0000
"	234.02	-5.0167	116.59	-0.3213
"	234.02	35.1167	46.3540	-0.2252
"	234.02	75.2500	-210.70	-0.0000
M3	-294.27	143.07	0.0000	-0.0000
"	-252.17	16.6034	195.56	-0.1588
"	-210.08	-109.86	80.8848	-0.1230
"	-167.98	-236.33	-344.02	-0.0231
M4	462.23	236.31	-344.02	-0.0231
"	504.51	109.84	81.0178	-0.1249
"	546.78	-16.62	195.69	-0.1626
"	589.06	-143.09	0.0000	-0.0052
M5	462.23	-236.31	-344.02	-0.0203
"	504.51	-109.84	81.0178	-0.1222
"	546.78	16.6234	195.69	-0.1597
"	589.06	143.09	0.0000	-0.0024
M6	-294.27	-143.07	0.0000	0.0028
"	-252.17	-16.60	195.56	-0.1560
"	-210.08	109.86	80.8848	-0.1202
"	-167.98	236.33	-344.02	-0.0203
M7	-787.64	0.0000	0.0000	-0.0198
"	-787.64	0.0000	0.0000	-0.0128
"	-787.64	0.0000	0.0000	-0.0057
"	-787.64	0.0000	0.0000	0.0014
M8	-644.93	-0.0000	-0.0000	-0.0044
"	-644.93	-0.0000	-0.0000	-0.0044
"	-644.93	-0.0000	-0.0000	-0.0044
"	-644.93	-0.0000	0.0000	-0.0044
M9	-787.64	0.0000	0.0000	-0.0226
"	-787.64	0.0000	0.0000	-0.0155
"	-787.64	0.0000	0.0000	-0.0085
"	-787.64	0.0000	0.0000	-0.0014

BENDING & COMP: TRUSS 2 - MEMBER 3

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

Grading:

2x or 4x

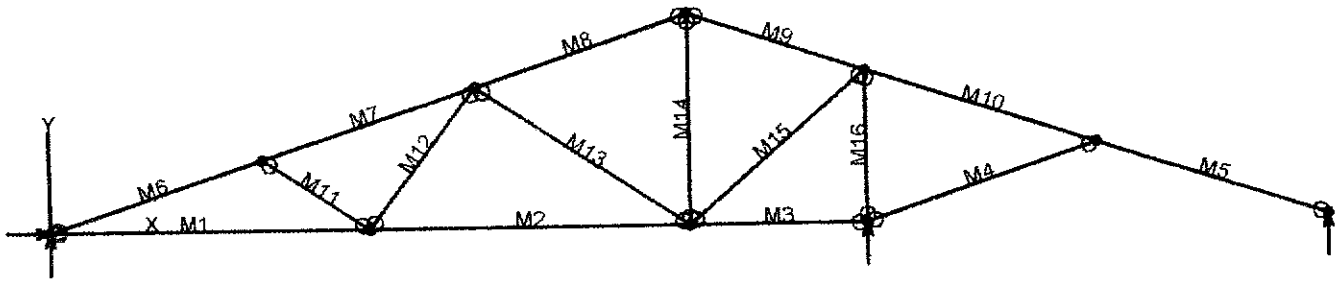
Doug-fir larch: No. 2

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	7.38 feet
Max Axial Comp, C	167 feet
Max Reaction, R	236 feet
Max Moment, M	344 feet
Max LL Deflection	0.01 feet
Max TL Deflection	0.02 feet
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.20
fc =	32 psi
Fce =	958 psi
Fc* =	2084 psi
F'c =	844 psi
fb =	1348 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.57 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.65 < 1.0, Member OK
Live Load defl ratio	0.03 < 1.0, Member OK
Total Load defl ratio	0.04 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08/09/01 13:52:52

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	9.00	0.00	No	No	"
N3	18.00	0.00	"	"	"
N4	23.00	0.00	"	Yes	"
N5	29.50	2.17	"	No	"
N6	36.00	0.00	"	Yes	"
N7	6.00	2.00	"	No	"
N8	12.00	4.00	"	"	"
N9	18.00	6.00	"	"	"
N10	23.00	4.33	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.00
M2	"	"	9.00
M3	"	"	5.00
M4	"	"	6.85
M5	SS2x6	"	6.85
M6	SS2x4	"	6.32
M7	"	"	6.32
M8	"	"	6.32
M9	SS2x6	"	5.27
M10	"	"	6.85
M11	"	"	3.61
M12	"	"	5.00
M13	"	"	7.21
M14	"	"	6.00
M15	"	"	6.61
M16	"	"	4.33

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
"	SS2x6	8.25	20.80	7.56	7.56

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	619.44	-NA-
N4	"	-NA-	1549.41	-NA-
N6	"	-NA-	144.63	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1341.23	-45.67	-62.73	-0.0898
"	1341.23	-19.87	35.3856	-0.1214
"	1341.23	5.9299	56.2961	-0.1032
"	1341.23	31.7299	0.0000	-0.0000
M2	721.28	-36.48	-42.73	-0.0397
"	721.28	-10.68	27.8090	-0.0893
"	721.28	15.1223	21.1421	-0.1022
"	721.28	40.9223	-62.73	-0.0898
M3	-679.23	-12.95	-0.0000	-0.0000
"	-679.23	1.3794	9.5856	-0.0148
"	-679.23	15.7128	-4.6579	-0.0255
"	-679.23	30.0461	-42.73	-0.0397
M4	-725.42	27.9500	0.0000	-0.0065
"	-719.19	9.3167	42.4562	-0.0415
"	-712.97	-9.3167	42.4562	-0.0381
"	-706.75	-27.95	0.0000	0.0039
M5	-45.80	-137.19	0.0000	0.0026
"	-6.5942	-19.75	178.57	-0.0270
"	32.6105	97.6812	89.5660	-0.0168
"	71.8151	215.11	-267.01	0.0108
M6	-1458.25	133.41	0.0000	-0.0000
"	-1422.12	25.0125	166.42	-0.1375
"	-1385.99	-83.39	104.89	-0.1508
"	-1349.85	-191.79	-184.60	-0.0912
M7	-1076.84	159.23	-184.60	-0.0912
"	-1040.70	50.8308	36.2548	-0.0992
"	-1004.57	-57.57	29.1519	-0.0922
"	-968.44	-165.97	-205.91	-0.0762
M8	-160.63	195.16	-205.91	-0.0762
"	-124.49	86.7568	90.6846	-0.1427
"	-88.36	-21.64	159.32	-0.1483
"	-52.23	-130.04	0.0000	-0.0356
M9	-153.40	-173.08	-198.11	-0.0038
"	-123.23	-82.75	26.2614	-0.0217
"	-93.06	7.5855	92.2979	-0.0375
"	-62.89	97.9189	0.0000	-0.0414
M10	653.88	-186.21	-267.01	0.0108

"	692.90	-68.78	23.4061	0.0035
"	731.92	48.6574	46.3730	-0.0032
"	770.95	166.09	-198.11	-0.0038
M11	-444.69	-0.0000	-0.0000	-0.0657
"	-444.69	-0.0000	-0.0000	-0.0656
"	-444.69	-0.0000	-0.0000	-0.0655
"	-444.69	-0.0000	0.0000	-0.0654
M12	416.58	-0.0000	0.0000	-0.0669
"	416.58	-0.0000	-0.0000	-0.0615
"	416.58	-0.0000	-0.0000	-0.0562
"	416.58	-0.0000	-0.0000	-0.0509
M13	-757.90	0.0000	0.0000	-0.0631
"	-757.90	0.0000	0.0000	-0.0484
"	-757.90	0.0000	0.0000	-0.0338
"	-757.90	0.0000	0.0000	-0.0192
M14	-179.81	0.0000	0.0000	-0.0250
"	-179.81	0.0000	0.0000	-0.0136
"	-179.81	0.0000	0.0000	-0.0022
"	-179.81	0.0000	0.0000	0.0092
M15	1018.47	0.0000	0.0000	-0.0464
"	1018.47	0.0000	0.0000	-0.0326
"	1018.47	0.0000	0.0000	-0.0188
"	1018.47	0.0000	0.0000	-0.0051
M16	-1280.23	-0.0000	0.0000	0.0023
"	-1280.23	-0.0000	-0.0000	0.0083
"	-1280.23	-0.0000	-0.0000	0.0144
"	-1280.23	-0.0000	-0.0000	0.0204

BENDING & COMP: TRUSS 3 - MEMBER 6

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

Grading:

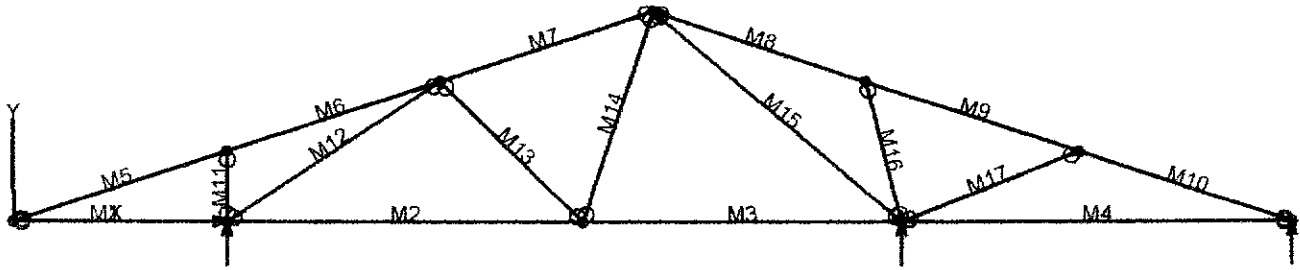
2x or 4x

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	6.32 feet
Max Axial Comp, C	1349 feet
Max Reaction, R	191 feet
Max Moment, M	184 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 =	1.17
fc =	257 psi
Fce=	1275 psi
Fc*=	2084 psi
F'c=	1057 psi
fb=	721 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.46 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.48 < 1.0, Member OK
Live Load defl ratio	0.13 < 1.0, Member OK
Total Load defl ratio	0.21 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08/09/01 13:59:15

Project: Truss 4

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	No	No	No
N2	6.00	0.00	Yes	Yes	"
N3	16.00	0.00	No	No	"
N4	25.00	0.00	"	Yes	"
N5	36.00	0.00	"	"	"
N6	6.00	2.00	"	No	"
N7	12.00	4.00	"	"	"
N8	18.00	6.00	"	"	"
N9	24.00	4.00	"	"	"
N10	30.00	2.00	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	6.00
M2	"	"	10.00
M3	"	"	9.00
M4	"	"	11.00
M5	"	"	6.32
M6	"	"	6.32
M7	"	"	6.32
M8	"	"	6.32
M9	"	"	6.32
M10	"	"	6.32
M11	"	"	2.00
M12	"	"	7.21
M13	"	"	5.66
M14	"	"	6.32
M15	"	"	9.22
M16	"	"	4.12
M17	"	"	5.39

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
N2	Equation Case 1	-0.00	1009.85	-NA-
N4	"	-NA-	1118.08	-NA-
N5	"	-NA-	238.42	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	-442.36	-38.47	-76.00	-0.0000
"	-442.36	-21.27	-16.35	-0.0072
"	-442.36	-4.0662	8.9815	-0.0288
"	-442.36	13.1338	0.0000	-0.0458
M2	369.68	-40.37	-49.72	-0.0231
"	369.68	-11.71	36.8400	-0.0704
"	369.68	16.9614	28.0797	-0.0566
"	369.68	45.6281	-76.00	-0.0000
M3	245.10	-44.46	-101.57	-0.0000
"	245.10	-18.66	-7.0763	0.0052
"	245.10	7.1389	10.2070	-0.0123
"	245.10	32.9389	-49.72	-0.0231
M4	186.73	-38.07	0.0000	-0.0000
"	186.73	-6.5334	81.4778	-0.1547
"	186.73	24.9999	47.6225	-0.1261
"	186.73	56.5333	-101.57	-0.0000
M5	423.82	127.43	0.0000	-0.0446
"	459.95	19.0278	153.81	-0.1223
"	496.08	-89.37	79.6568	-0.0863
"	532.22	-197.77	-222.45	0.0013
M6	410.66	166.89	-222.45	0.0013
"	446.80	58.4885	14.5482	-0.0066
"	482.93	-49.91	23.5891	-0.0177
"	519.06	-158.31	-195.33	-0.0246
M7	-375.01	193.48	-195.33	-0.0246
"	-338.87	85.0837	97.7387	-0.1078
"	-302.74	-23.32	162.85	-0.1242
"	-266.61	-131.72	0.0000	-0.0194
M8	165.80	-196.25	-212.83	0.0005
"	201.94	-87.85	86.0682	-0.0827
"	238.07	20.5484	157.01	-0.1090
"	274.20	128.95	0.0000	-0.0190
M9	287.08	-160.52	-199.71	-0.0086
"	323.22	-52.12	23.8748	-0.0089
"	359.35	56.2753	19.4996	-0.0046
"	395.48	164.68	-212.83	0.0005
M10	-240.51	-131.02	-0.0000	0.0034

"	-204.38	-22.62	161.39	-0.1021
"	-168.24	85.7763	94.8186	-0.0875
"	-132.11	194.18	-199.71	-0.0086
M11	-384.39	0.0000	0.0000	-0.0071
"	-384.39	0.0000	0.0000	-0.0047
"	-384.39	0.0000	0.0000	-0.0024
"	-384.39	0.0000	0.0000	0.0000
M12	-975.96	0.0000	0.0000	-0.0229
"	-975.96	0.0000	0.0000	-0.0153
"	-975.96	0.0000	0.0000	-0.0076
"	-975.96	0.0000	0.0000	-0.0000
M13	-106.22	-0.0000	0.0000	-0.0138
"	-106.22	-0.0000	-0.0000	-0.0135
"	-106.22	-0.0000	-0.0000	-0.0131
"	-106.22	-0.0000	-0.0000	-0.0128
M14	156.45	0.0000	0.0000	-0.0120
"	156.45	0.0000	0.0000	-0.0103
"	156.45	0.0000	0.0000	-0.0086
"	156.45	0.0000	0.0000	-0.0070
M15	-611.73	-0.0000	0.0000	-0.0150
"	-611.73	-0.0000	-0.0000	-0.0082
"	-611.73	-0.0000	-0.0000	-0.0015
"	-611.73	-0.0000	-0.0000	0.0052
M16	-427.81	-0.0000	-0.0000	-0.0077
"	-427.81	-0.0000	-0.0000	-0.0077
"	-427.81	-0.0000	-0.0000	-0.0077
"	-427.81	-0.0000	0.0000	-0.0077
M17	-549.12	-0.0000	-0.0000	-0.0142
"	-549.12	-0.0000	-0.0000	-0.0104
"	-549.12	-0.0000	-0.0000	-0.0067
"	-549.12	-0.0000	0.0000	-0.0029

BENDING & COMP: TRUSS 4 - MEMBER 7

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

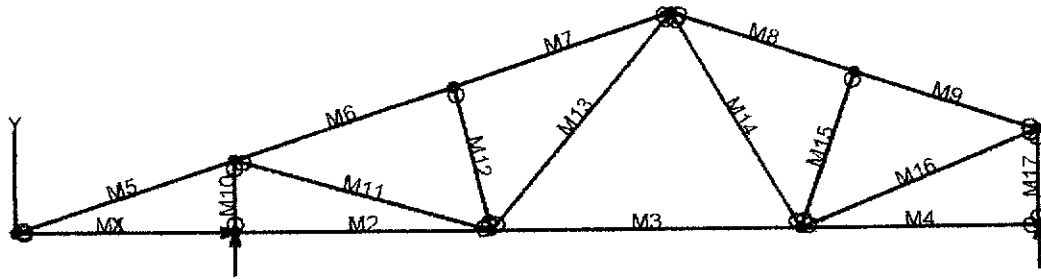
Grading:

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	6.32 feet
Max Axial Comp, C	302 feet
Max Reaction, R	23 feet
Max Moment, M	162 feet
Max LL Deflection	0.06 feet
Max TL Deflection	0.12 feet
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.17
fc =	58 psi
Fce =	1275 psi
Fc* =	2084 psi
F'c =	1057 psi
fb =	635 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.06 < 1.0, Member OK
Interaction equation: (fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.31 < 1.0, Member OK
Live Load defl ratio	0.19 < 1.0, Member OK
Total Load defl ratio	0.28 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08/09/01 14:02:11

Project: Truss 5

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	No	No	No
N2	6.00	0.00	Yes	Yes	"
N3	13.00	0.00	No	No	"
N4	21.50	0.00	"	"	"
N5	28.00	0.00	"	Yes	"
N6	6.00	2.00	"	No	"
N7	12.00	4.00	"	"	"
N8	18.00	6.00	"	"	"
N9	23.00	4.33	"	"	"
N10	28.00	2.67	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	6.00
M2	"	"	7.00
M3	"	"	8.50
M4	"	"	6.50
M5	"	"	6.32
M6	"	"	6.32
M7	"	"	6.32
M8	"	"	5.27
M9	"	"	5.27
M10	"	"	2.00
M11	"	"	7.28
M12	"	"	4.12
M13	"	"	7.81
M14	"	"	6.95
M15	"	"	4.58
M16	"	"	7.03
M17	"	"	2.67

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
N2	Equation Case 1	0.00	1171.23	-NA-
N5	"	-NA-	669.21	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	-452.49	-34.65	-53.10	-0.0000
"	-452.49	-17.45	-1.0865	-0.0159
"	-452.49	-0.2501	16.6138	-0.0346
"	-452.49	16.9499	0.0000	-0.0430
M2	-452.49	-27.39	-34.13	-0.0423
"	-452.49	-7.3230	6.2529	-0.0286
"	-452.49	12.7437	-0.0713	-0.0123
"	-452.49	32.8104	-53.10	-0.0000
M3	562.29	-38.28	-48.85	-0.0364
"	562.29	-13.91	24.9264	-0.0702
"	562.29	10.4518	29.8323	-0.0747
"	562.29	34.8185	-34.13	-0.0423
M4	0.0000	-20.44	-0.0000	-0.0000
"	0.0000	-1.8019	23.9893	-0.0257
"	0.0000	16.8314	7.7074	-0.0331
"	0.0000	35.4648	-48.85	-0.0364
M5	434.63	127.01	0.0000	-0.0419
"	470.77	18.6111	152.93	-0.1203
"	506.90	-89.79	77.8998	-0.0858
"	543.03	-198.19	-225.08	-0.0011
M6	-801.45	167.85	-225.08	-0.0011
"	-765.32	59.4463	13.9319	-0.0137
"	-729.18	-48.95	24.9920	-0.0302
"	-693.05	-157.35	-191.90	-0.0411
M7	-719.99	192.94	-191.90	-0.0411
"	-683.86	84.5426	100.02	-0.1259
"	-647.73	-23.86	163.99	-0.1421
"	-611.59	-132.26	0.0000	-0.0360
M8	-706.35	-167.82	-170.36	-0.0358
"	-676.18	-77.48	44.7588	-0.0668
"	-646.01	12.8489	101.55	-0.0790
"	-615.84	103.18	0.0000	-0.0396
M9	-800.38	-103.16	0.0000	-0.0034
"	-770.39	-12.83	101.45	-0.0548
"	-740.40	77.5038	44.6639	-0.0546
"	-710.41	167.84	-170.36	-0.0358
M10	-1103.77	0.0000	0.0000	-0.0053
"	-1103.77	0.0000	0.0000	-0.0035

	-1103.77	0.0000	0.0000	-0.0018
	-1103.77	0.0000	0.0000	-0.0000
M11	1206.14	-0.0000	-0.0000	-0.0418
"	1206.14	-0.0000	-0.0000	-0.0293
"	1206.14	-0.0000	-0.0000	-0.0168
"	1206.14	-0.0000	0.0000	-0.0043
M12	-351.33	-0.0000	-0.0000	0.0091
"	-351.33	-0.0000	-0.0000	0.0109
"	-351.33	-0.0000	-0.0000	0.0126
"	-351.33	-0.0000	0.0000	0.0144
M13	93.3273	0.0000	0.0000	-0.0238
"	93.3273	0.0000	0.0000	-0.0229
"	93.3273	0.0000	0.0000	-0.0220
"	93.3273	0.0000	0.0000	-0.0211
M14	108.20	0.0000	0.0000	-0.0250
"	108.20	0.0000	0.0000	-0.0221
"	108.20	0.0000	0.0000	-0.0193
"	108.20	0.0000	0.0000	-0.0165
M15	-336.95	0.0000	0.0000	-0.0140
"	-336.95	0.0000	0.0000	-0.0103
"	-336.95	0.0000	0.0000	-0.0066
"	-336.95	0.0000	0.0000	-0.0029
M16	786.06	0.0000	0.0000	-0.0345
"	786.06	0.0000	0.0000	-0.0232
"	786.06	0.0000	0.0000	-0.0120
"	786.06	0.0000	0.0000	-0.0007
M17	-648.77	-0.0000	0.0000	-0.0038
"	-648.77	-0.0000	-0.0000	-0.0018
"	-648.77	-0.0000	-0.0000	0.0002
"	-648.77	-0.0000	-0.0000	0.0022

BENDING & COMP: TRUSS 5 - 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	6.32 feet
Max Axial Comp, C	719 feet
Max Reaction, R	192 feet
Max Moment, M	191 feet
Max LL Deflection	0.02 feet
Max TL Deflection	0.04 feet
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.17
fc =	137 psi
Fce=	1275 psi
Fc*=	2084 psi
F'c=	1057 psi
fb=	748 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.46 < 1.0, Member OK
Interaction equation: (fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.41 < 1.0, Member OK
Live Load defl ratio	0.06 < 1.0, Member OK
Total Load defl ratio	0.09 < 1.0, Member OK