

CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0113373

Insp Area: 2

Thos Bros: 336 J1

Site Address: 7145 LYNHOLLEN WY SAC

Parcel No: 031-0240-057

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR

ZIMMERMAN ROOFING, INC
3675 R STREET
SACRAMENTO, CA 95816

OWNER

PHELPS STEPHEN P
7145 LYNHOLLEN WY
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: 35 SQ T/O REROOF W PIONEER TILE

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

Lender's Name _____ Lender's Address _____

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

License Class C-39 License Number 557559 Date 10/26/01 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 10/26/01 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.

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 713-2021-01 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.

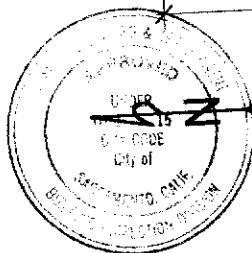
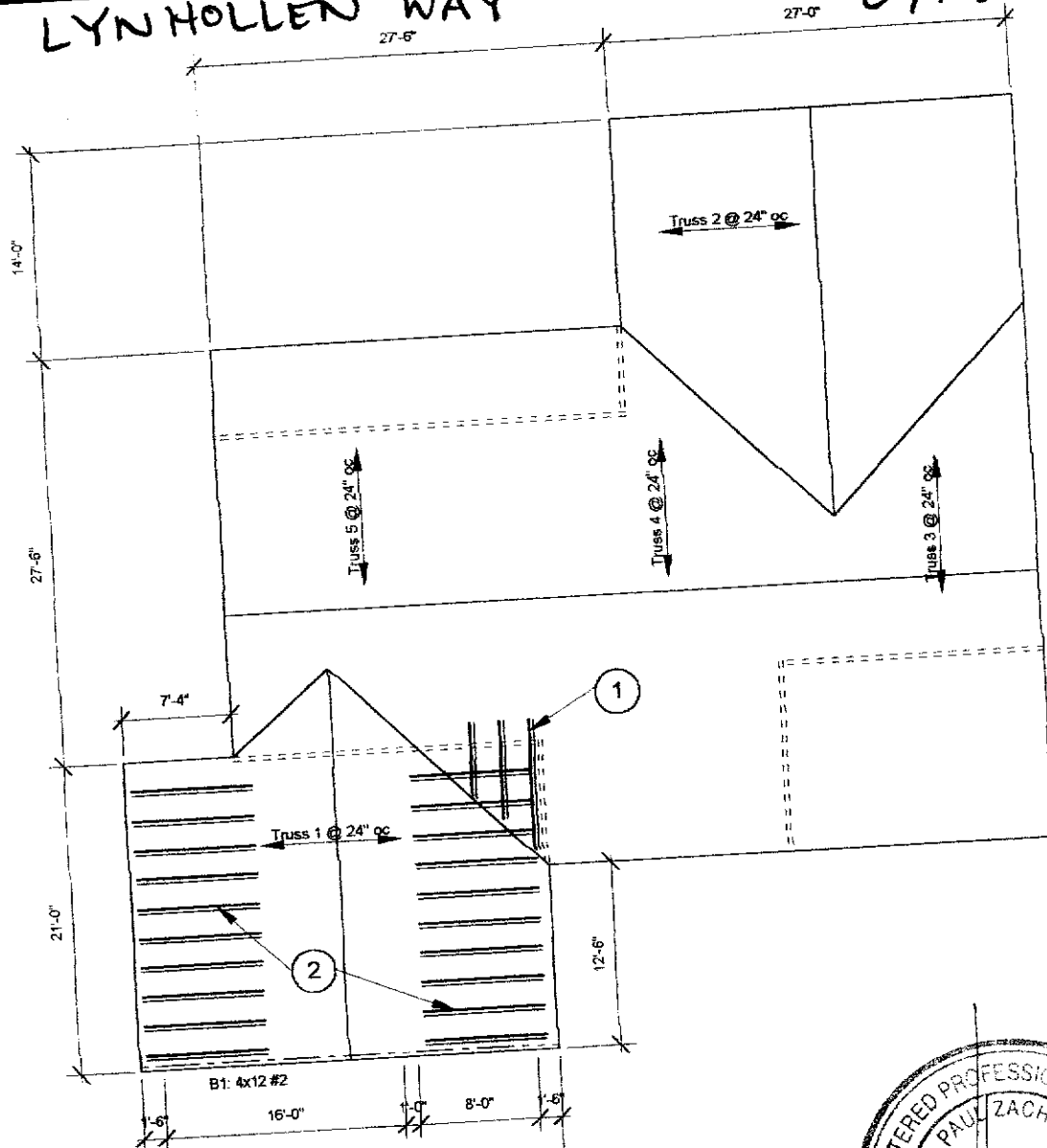
Date 10/26/01 Applicant Signature Billy Coy

WARNING: FAILURE TO SECURE WORKERS' 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 ATTORNEYS FEE.

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

7149 LYN HOLLER WAY

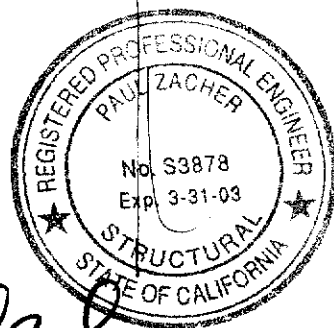
0115



This section shall be kept on the job at all times and to make any changes to the same without written permission from the Building Inspector.

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

J. Zacher
10/17/01



FRAMING NOTES:

1. Scab a 2x6 to existing 2x4 rafters extensions off the top chord of the truss (total 3).
2. Scab a 2x4 DF#2 x 10'-0" long rafter to the top chord of the existing truss #1 (total 20). See detail 2.

Notes:

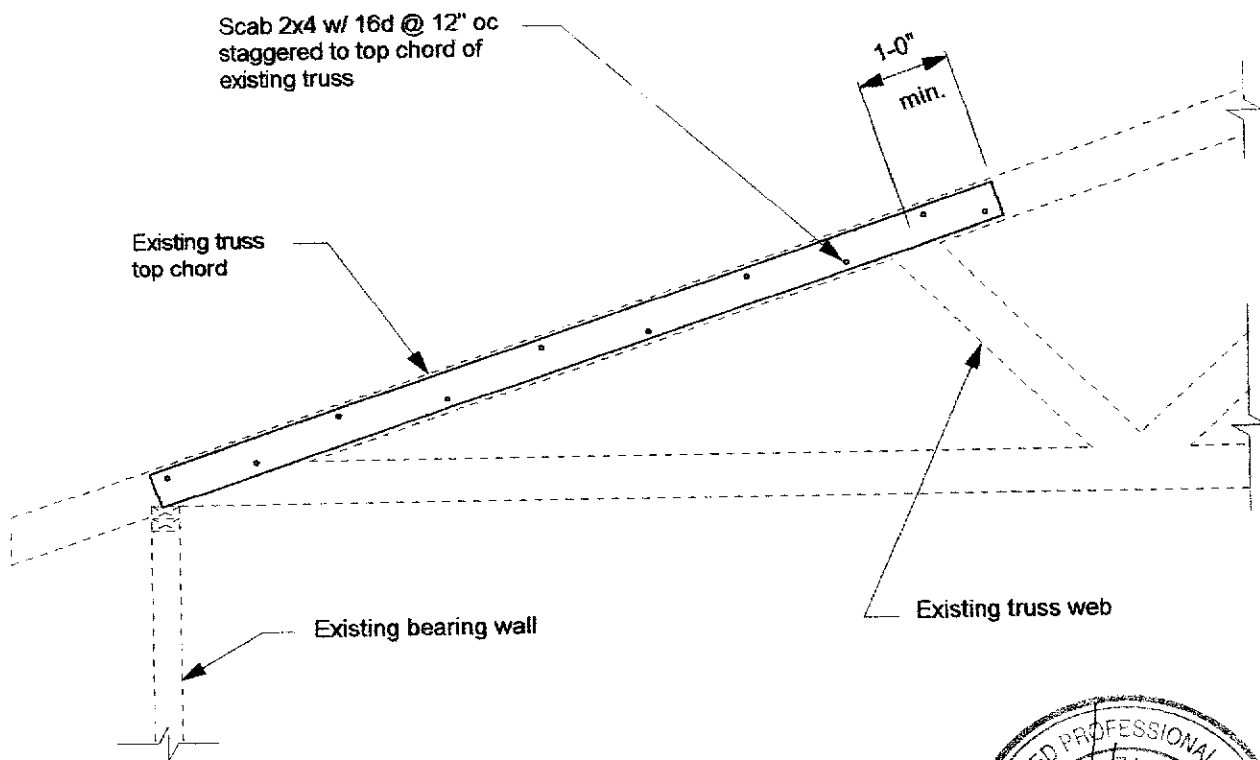
- A. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.0 psf.
- B. All structural wood members that were observed appear to be in sound condition and without structural defect.



ROOF PLAN - PHELPS

Not to Scale

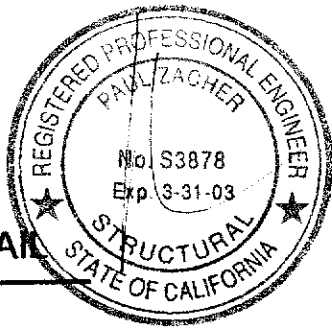
29



2

TRUSS REINFORCEMENT DETAIL

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



Phelps



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

TEL: 916.961.3960
FAX: 916.961.6552

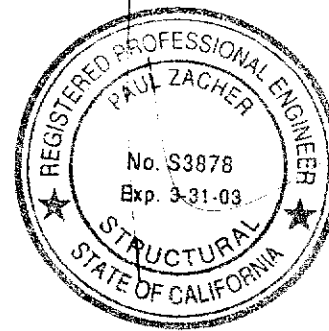
October 8, 2001

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

Attn.: Mr. Jeff Tucker,

re: Job 2001_341: PHELPS

Subject: Structural Investigation Report of the Roof for the Residence located at 7145 Lynhollen 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 October 8, 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 structure is framed with pre-engineered wood trusses 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.

Phelps



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.

Roof Structure:

1. Scab a 2x6 rafter to the existing 2x4 rafter extensions off the top chord of the truss. See detail 1.
2. Scab a 2x4 DF#2 x 10'-0" long rafter to the top chord of the existing truss. See details 1 and 2.

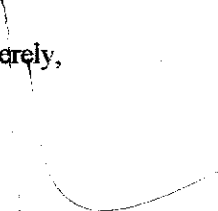
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and 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 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
2x6 rafters @ 24" oc	<u>1.00</u>	psf
Load	10.9	psf
Roof Pitch Adjustment	<u>0.59</u>	psf
Total Load	11.5	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

P.K. Zacher, S.E.

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

Job #: 01-341

Date: 10/8/01

LOADING

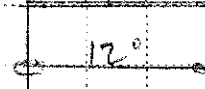
ROOF

$$Op = 11.5 \text{ psf} \times 2' = 23 \text{ psf}$$

$$Lp = 16.0 \text{ psf} \times 2' = 32 \text{ psf}$$

2x6 #2

23/32



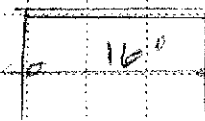
B1

$$Op = 15.4 \text{ psf} \times 5' = 77 \text{ psf}$$

$$Lp = 16.0 \text{ psf} \times 5' = 80 \text{ psf}$$

4x12 #2

67/80



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

Title :
 Dsgnr:
 Description :

Job #
 Date: 1:55PM, 8 OCT 01

Scope :

Rev: 510304
 User: KW-0602844, Ver 5.1.1.3, 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

		rafter	B1
Timber Section		2x6	4x12
Beam Width	in	1.500	3.500
Beam Depth	in	5.500	11.250
Le: Unbraced Length	ft	0.00	0.00
Timber Grade		Douglas Fir - Larch, Douglas Fir - Larch,	
Fb - Basic Allow	psi	875.0	875.0
Fv - Basic Allow	psi	95.0	95.0
Elastic Modulus	ksi	1,600.0	1,600.0
Load Duration Factor		1.250	1.250
Member Type		Sawn	Sawn
Repetitive Status		Repetitive	No

Center Span Data

Span	ft	12.00	16.00
Dead Load	#/ft	23.00	67.00
Live Load	#/ft	32.00	80.00

Results

Ratio = 0.9607 0.6355

Mmax @ Center	in-k	11.88	56.45
@ X =	ft	6.00	8.00
fb : Actual	psi	1,570.9	764.6
Fb : Allowable	psi	1,635.2	1,203.1
		Bending OK	Bending OK
fv : Actual	psi	55.7	39.8
Fv : Allowable	psi	118.8	118.8
		Shear OK	Shear OK

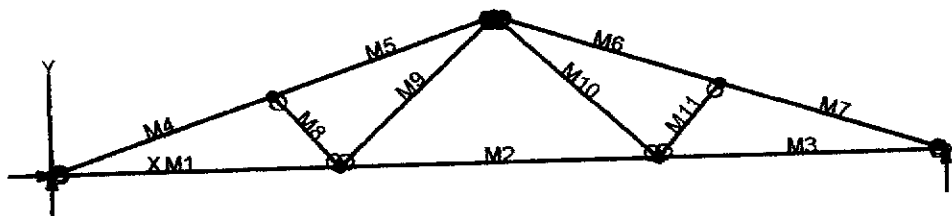
Reactions

@ Left End	DL	lbs	138.00	536.00
	LL	lbs	192.00	640.00
	Max. DL+LL	lbs	330.00	1,176.00
@ Right End	DL	lbs	138.00	536.00
	LL	lbs	192.00	640.00
	Max. DL+LL	lbs	330.00	1,176.00

Deflections

Ratio OK Deflection OK

Center DL Defl	in	-0.322	-0.149
L/Defl Ratio		446.5	1,291.3
Center LL Defl	in	-0.449	-0.178
L/Defl Ratio		320.9	1,081.5
Center Total Defl	in	-0.771	-0.326
Location	ft	6.000	8.000
L/Defl Ratio		186.7	588.6



VisualAnalysis 3.50.c Report

10/08/01 13:12:58

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 Fix
N1	0.00	0.00	Yes	Yes	No	No
N2	9.00	0.00	No	No	No	"
N3	19.00	0.00	"	"	"	"
N4	28.00	0.00	"	Yes	"	"
N5	7.00	2.33	"	No	"	"
N6	21.00	2.33	"	"	"	"
N7	14.00	4.67	"	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.00
M2	"	"	10.00
M3	"	"	9.00
M4	"	"	7.38
M5	"	"	7.38
M6	"	"	7.38
M7	"	"	7.38
M8	"	"	3.07
M9	"	"	6.84
M10	"	"	6.84
M11	"	"	3.07

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-
N4	"	-NA-	920.30	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2204.57	-45.33	-59.70	-0.2423
"	2204.57	-19.53	37.4058	-0.2259
"	2204.57	6.2666	57.3062	-0.1564
"	2204.57	32.0666	0.0000	-0.0000
M2	1369.36	-43.00	-59.70	-0.2423
"	1369.36	-14.33	35.6156	-0.3009
"	1369.36	14.3333	35.6156	-0.3009
"	1369.36	43.0000	-59.70	-0.2423
M3	2204.57	-32.07	0.0000	-0.0000
"	2204.57	-6.2666	57.3062	-0.1564
"	2204.57	19.5334	37.4058	-0.2259
"	2204.57	45.3334	-59.70	-0.2423
M4	-2372.26	146.52	0.0000	-0.0000
"	-2330.17	20.0577	204.05	-0.2404
"	-2288.07	-106.41	97.8741	-0.2765
"	-2245.98	-232.88	-318.53	-0.2290
M5	-2054.84	232.86	-318.53	-0.2290
"	-2012.56	106.39	98.0072	-0.3573
"	-1970.29	-20.08	204.18	-0.4018
"	-1928.01	-146.54	-0.0000	-0.2417
M6	-2054.84	-232.86	-318.53	-0.2062
"	-2012.56	-106.39	98.0072	-0.3345
"	-1970.29	20.0762	204.18	-0.3791
"	-1928.01	146.54	0.0000	-0.2189
M7	-2372.26	-146.52	0.0000	0.0227
"	-2330.17	-20.06	204.05	-0.2178
"	-2288.07	106.41	97.8741	-0.2538
"	-2245.98	232.88	-318.53	-0.2064
M8	-505.99	0.0000	0.0000	-0.1376
"	-505.99	0.0000	0.0000	-0.1277
"	-505.99	0.0000	0.0000	-0.1178
"	-505.99	0.0000	0.0000	-0.1079
"	-505.99	0.0000	0.0000	-0.2020
M9	691.90	0.0000	0.0000	-0.1997
"	691.90	0.0000	0.0000	-0.1975
"	691.90	0.0000	0.0000	-0.1953
"	691.90	0.0000	0.0000	-0.1530
M10	691.90	-0.0000	-0.0000	-0.1508
"	691.90	-0.0000	-0.0000	-0.1485
"	691.90	-0.0000	-0.0000	-0.1463
"	691.90	-0.0000	0.0000	-0.1920
M11	-505.99	-0.0000	-0.0000	-0.1821
"	-505.99	-0.0000	-0.0000	-0.1722
"	-505.99	-0.0000	-0.0000	-0.1623

BENDING & COMP: TRUSS 1 - MEMBER 4

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

Grading:

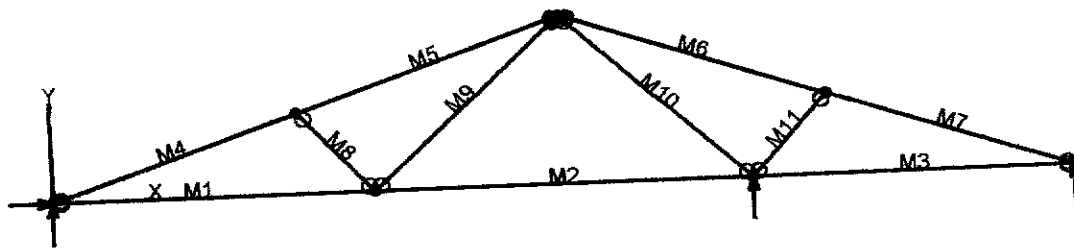
2x or 4x

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	7.38 feet
Max Axial Comp, C	2245 feet
Max Reaction, R	232 feet
Max Moment, M	318 feet
Max LL Deflection	0.11 feet
Max TL Deflection	0.22 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 =	214 psi
Fce =	958 psi
Fc* =	2084 psi
F'c =	844 psi
fb =	623 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.28 < 1.0, Member OK
Interaction equation:	
(fc/F'c) ² +	0.44 < 1.0, Member OK
fb / (F'b(1-fc/Fce)) =	0.30 < 1.0, Member OK
Live Load defl ratio	
Total Load defl ratio	0.45 < 1.0, Member OK



VisualAnalysis 3.50.c Report

10/08/01 13:41:27

Project: Truss 2

File: C:\Program Files\IES\VA35\truss 2.vap

Company: PK Associates Engineers

Engineer: Paul Zacher

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

Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	8.50	0.00	No	No	"
N3	18.50	0.00	"	Yes	"
N4	27.00	0.00	"	"	"
N5	6.50	2.17	"	No	"
N6	20.50	2.17	"	"	"
N7	13.50	4.50	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.50
M2	"	"	10.00
M3	"	"	8.50
M4	"	"	6.85
M5	"	"	7.38
M6	"	"	7.38
M7	"	"	6.85
M8	"	"	2.95
M9	"	"	6.73
M10	"	"	6.73
M11	"	"	2.95

Section Properties

Category	Section	Ax in ²	Iz in ⁴	Sy+ in ³	Sy- in ³
Wood Sha	SS2x4	5.25	5.36	3.06	3.06

Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft ³
Wood	-NA-	1700000.00	0.36	40.47

Load Combination Summary

Equation Case: Equation Case 1

Combination: +1D+1L+1Lr

Contributing Cases & Source

Service Case 1 (Dead loads)

Service Case 2 (Roof Live loads)

Member Uniform Loads

This item is empty. Check the selection state, or report properties.

Nodal Reactions

Node	Load Case	FX lbs	FY lbs	MZ lb-ft
N1	Equation Case 1	0.00	527.69	-NA-
N3	"	-NA-	1142.54	-NA-
N4	"	-NA-	104.53	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1078.21	-43.43	-58.47	-0.0681
"	1078.21	-19.06	29.8886	-0.0922
"	1078.21	5.3049	49.3774	-0.0793
"	1078.21	29.6716	0.0000	-0.0000
M2	243.84	-45.53	-83.82	-0.0000
"	243.84	-16.87	19.9509	-0.0543
"	243.84	11.7985	28.4005	-0.0829
"	243.84	40.4651	-58.47	-0.0681
M3	-169.59	-26.69	0.0000	-0.0000
"	-169.59	-2.3227	40.9278	-0.0395
"	-169.59	22.0440	12.9894	-0.0254
"	-169.59	46.4106	-83.82	-0.0000
M4	-1180.43	130.96	0.0000	-0.0000
"	-1141.23	13.5227	164.34	-0.1304
"	-1102.02	-103.91	61.1071	-0.1202
"	-1062.82	-221.34	-309.70	-0.0709
M5	-859.32	231.68	-309.70	-0.0709
"	-817.23	105.21	103.76	-0.1881
"	-775.13	-21.26	207.00	-0.2150
"	-733.03	-147.72	0.0000	-0.0342
M6	460.82	-234.86	-333.15	0.0044
"	502.92	-108.39	88.1284	-0.1244
"	545.01	18.0762	199.18	-0.1807
"	587.11	144.54	0.0000	-0.0383
M7	136.21	-127.53	0.0000	0.0043
"	175.41	-10.10	156.52	-0.0921
"	214.62	107.33	45.4721	-0.0557
"	253.82	224.77	-333.15	0.0044
M8	-495.85	-0.0000	0.0000	-0.0385
"	-495.85	-0.0000	-0.0000	-0.0380
"	-495.85	-0.0000	-0.0000	-0.0376
"	-495.85	-0.0000	-0.0000	-0.0371
M9	670.44	0.0000	0.0000	-0.0589
"	670.44	0.0000	0.0000	-0.0473
"	670.44	0.0000	0.0000	-0.0357
"	670.44	0.0000	0.0000	-0.0241
M10	-1016.08	0.0000	0.0000	-0.0327
"	-1016.08	0.0000	0.0000	-0.0183
"	-1016.08	0.0000	0.0000	-0.0039
"	-1016.08	0.0000	0.0000	0.0104
M11	-504.37	-0.0000	0.0000	-0.0115
"	-504.37	-0.0000	-0.0000	-0.0104
"	-504.37	-0.0000	-0.0000	-0.0094
"	-504.37	-0.0000	-0.0000	-0.0084

BENDING & COMP: TRUSS 2 - MEMBER 4

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

Grading:

2x or 4x

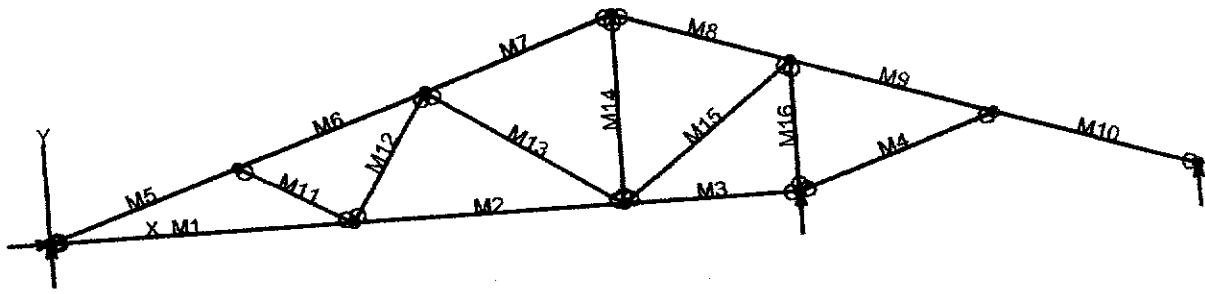
Doug-fir larch: No. 2

Assumptions:

Solid sheathing on top chord of truss. Therefore,
continuous lateral support is provided along compression face

Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	3.5 inches
Length	6.85 feet
Max Axial Comp, C	1062 feet
Max Reaction, R	221 feet
Max Moment, M	309 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 =	1.19
fc =	202 psi
Fce =	1099 psi
Fc* =	2084 psi
F'c =	943 psi
fb =	1211 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.53 < 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	0.09 < 1.0, Member OK
Total Load defl ratio	0.15 < 1.0, Member OK



VisualAnalysis 3.50.c Report

10/08/01 13:24:00

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 ft	Fix	DY ft	Fix	RZ
N1	0.00	0.00	Yes		Yes		No	
N2	9.50	0.00	No		No		"	
N3	18.00	0.00	"		"		"	
N4	23.50	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	23.50	4.17	"		"		"	
N10	29.75	2.08	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.50
M2	"	"	8.50
M3	"	"	5.50
M4	SS2x6	"	6.59
M5	SS2x4	"	6.32
M6	"	"	6.32
M7	"	"	6.32
M8	SS2x6	"	5.80
M9	"	"	6.59
M10	"	"	6.59
M11	SS2x4	"	4.03
M12	"	"	4.72
M13	"	"	7.21
M14	"	"	6.00
M15	"	"	6.90
M16	"	"	4.17

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	639.86	-NA-
N4	"	-NA-	1567.65	-NA-
N5	"	-NA-	164.63	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1394.78	-47.66	-64.72	-0.1003
"	1394.78	-20.43	42.8742	-0.1486
"	1394.78	6.8037	64.4488	-0.1288
"	1394.78	34.0370	0.0000	-0.0000
M2	785.74	-33.26	-36.73	-0.0499
"	785.74	-8.8902	22.8035	-0.0881
"	785.74	15.4764	13.4731	-0.1002
"	785.74	39.8431	-64.72	-0.1003
M3	-696.85	-16.97	0.0000	-0.0000
"	-696.85	-1.2047	16.5892	-0.0231
"	-696.85	14.5619	4.3451	-0.0371
"	-696.85	30.3286	-36.73	-0.0499
M4	-743.37	26.8750	0.0000	-0.0068
"	-737.40	8.9583	39.2408	-0.0129
"	-731.44	-8.9583	39.2408	-0.0105
"	-725.48	-26.87	0.0000	0.0003
M5	-1514.78	133.66	0.0000	-0.0000
"	-1478.65	25.2611	166.95	-0.1417
"	-1442.52	-83.14	105.94	-0.1587
"	-1406.38	-191.54	-183.03	-0.1021
M6	-1092.69	159.06	-183.03	-0.1021
"	-1056.56	50.6616	37.4708	-0.1116
"	-1020.42	-57.74	30.0112	-0.1053
"	-984.29	-166.14	-205.40	-0.0892
M7	-224.12	195.08	-205.40	-0.0892
"	-187.99	86.6773	91.0197	-0.1551
"	-151.85	-21.72	159.49	-0.1600
"	-115.72	-130.12	-0.0000	-0.0464
M8	-220.57	-184.86	-207.58	-0.0047
"	-187.51	-85.49	53.1261	-0.0311
"	-154.45	13.8721	122.32	-0.0506
"	-121.39	113.24	0.0000	-0.0507
M9	675.29	-177.90	-263.74	0.0101
"	713.05	-64.98	2.4081	0.0079
"	750.80	47.9363	21.1287	0.0015
"	788.56	160.85	-207.58	-0.0047

M10	-51.99	-156.21	-0.0000	0.0043
"	-8.4456	-25.38	198.64	-0.0281
"	35.0957	105.46	110.72	-0.0193
"	78.6371	236.29	-263.74	0.0101
M11	-470.45	-0.0000	-0.0000	-0.0782
"	-470.45	-0.0000	-0.0000	-0.0779
"	-470.45	-0.0000	-0.0000	-0.0776
"	-470.45	-0.0000	0.0000	-0.0773
M12	378.44	-0.0000	0.0000	-0.0683
"	378.44	-0.0000	-0.0000	-0.0639
"	378.44	-0.0000	-0.0000	-0.0596
"	378.44	-0.0000	-0.0000	-0.0552
M13	-762.95	0.0000	0.0000	-0.0715
"	-762.95	0.0000	0.0000	-0.0566
"	-762.95	0.0000	0.0000	-0.0416
"	-762.95	0.0000	0.0000	-0.0266
M14	-155.97	0.0000	0.0000	-0.0268
"	-155.97	0.0000	0.0000	-0.0156
"	-155.97	0.0000	0.0000	-0.0043
"	-155.97	0.0000	0.0000	0.0069
M15	1063.90	0.0000	0.0000	-0.0559
"	1063.90	0.0000	0.0000	-0.0406
"	1063.90	0.0000	0.0000	-0.0252
"	1063.90	0.0000	0.0000	-0.0099
M16	-1290.45	-0.0000	0.0000	0.0068
"	-1290.45	-0.0000	-0.0000	0.0118
"	-1290.45	-0.0000	-0.0000	0.0167
"	-1290.45	-0.0000	-0.0000	0.0216

BENDING & COMP: TRUSS 3 - MEMBER 5

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

Grading:

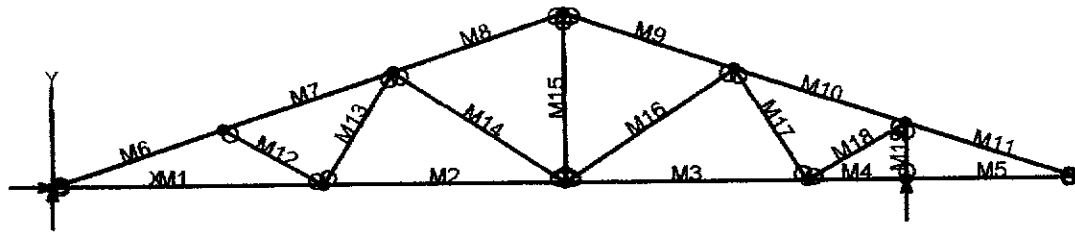
2x or 4x

Doug-fir larch: No. 2

Assumptions:

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

Width, b	1.5 inches
Depth, d	3.5 inches
Length	6.32 feet
Max Axial Comp, C	1406 feet
Max Reaction, R	191 feet
Max Moment, M	183 feet
Max LL Deflection	0.05 feet
Max TL Deflection	0.10 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 =	268 psi
Fce =	1275 psi
Fc* =	2084 psi
F'c =	1057 psi
fb =	717 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)) =	0.49 < 1.0, Member OK
Live Load defl ratio	0.16 < 1.0, Member OK
Total Load defl ratio	0.24 < 1.0, Member OK



VisualAnalysis 3.50.c Report

10/08/01 13:29:24

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	9.50	0.00	No	No	"
N3	18.00	0.00	"	"	"
N4	26.50	0.00	"	"	"
N5	30.00	0.00	"	Yes	"
N6	36.00	0.00	"	No	"
N7	6.00	2.00	"	"	"
N8	30.00	2.00	"	"	"
N9	12.00	4.00	"	"	"
N10	24.00	4.00	"	"	"
N11	18.00	6.00	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.50
M2	"	"	8.50
M3	"	"	8.50
M4	"	"	3.50
M5	"	"	6.00
M6	"	"	6.32
M7	"	"	6.32
M8	"	"	6.32
M9	"	"	6.32
M10	"	"	6.32
M11	"	"	6.32
M12	"	"	4.03
M13	"	"	4.72
M14	"	"	7.21
M15	"	"	6.00
M16	"	"	7.21
M17	"	"	4.72
M18	"	"	4.03
M19	"	"	2.00

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 Elasticity Poisson Density

	psi	psi	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	946.54	-NA-
N5	"	-NA-	1419.81	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2303.93	-46.24	-51.24	-0.2061
"	2303.93	-19.01	51.8611	-0.2334
"	2303.93	8.2226	68.9422	-0.1754
"	2303.93	35.4560	0.0000	-0.0000
M2	1703.88	-36.77	-53.14	-0.1574
"	1703.88	-12.41	16.3561	-0.1903
"	1703.88	11.9598	16.9896	-0.2068
"	1703.88	36.3264	-51.24	-0.2061
M3	987.52	-33.34	-25.89	-0.0609
"	987.52	-8.9775	33.8891	-0.1314
"	987.52	15.3892	24.8059	-0.1590
"	987.52	39.7558	-53.14	-0.1574
M4	-461.25	-19.77	-42.42	-0.0000
"	-461.25	-9.7386	-25.24	-0.0140
"	-461.25	0.2948	-19.73	-0.0348
"	-461.25	10.3281	-25.89	-0.0609
M5	-461.25	-18.73	0.0000	0.0399
"	-461.25	-1.5299	20.1738	0.0170
"	-461.25	15.6701	6.0336	0.0073
"	-461.25	32.8701	-42.42	-0.0000
M6	-2473.81	135.76	0.0000	-0.0000
"	-2437.68	27.3620	171.38	-0.1771
"	-2401.54	-81.04	114.80	-0.2257
"	-2365.41	-189.44	-169.74	-0.1933
M7	-2055.06	157.43	-169.74	-0.1933
"	-2018.92	49.0266	47.3114	-0.2169
"	-1982.79	-59.37	36.4050	-0.2164
"	-1946.66	-167.77	-202.46	-0.2007
M8	-1196.66	194.61	-202.46	-0.2007
"	-1160.53	86.2113	92.9844	-0.2642
"	-1124.40	-22.19	160.47	-0.2649
"	-1088.26	-130.59	-0.0000	-0.1464
M9	-1196.25	-193.36	-194.53	-0.0891
"	-1160.11	-84.96	98.2664	-0.1932

"	-1123.98	23.4414	163.11	-0.2301
"	-1087.85	131.84	0.0000	-0.1455
M10	-715.71	-166.35	-218.25	0.0077
"	-679.58	-57.95	17.6105	-0.0261
"	-643.45	50.4501	25.5161	-0.0605
"	-607.31	158.85	-194.53	-0.0891
M11	443.50	-128.09	0.0000	0.0550
"	479.64	-19.69	155.21	-0.0553
"	515.77	88.7085	82.4553	-0.0508
"	551.90	197.11	-218.25	0.0077
M12	-465.44	-0.0000	-0.0000	-0.1643
"	-465.44	-0.0000	-0.0000	-0.1576
"	-465.44	-0.0000	-0.0000	-0.1509
"	-465.44	-0.0000	0.0000	-0.1442
M13	369.69	-0.0000	0.0000	-0.1342
"	369.69	-0.0000	-0.0000	-0.1330
"	369.69	-0.0000	-0.0000	-0.1319
"	369.69	-0.0000	-0.0000	-0.1308
M14	-757.37	0.0000	0.0000	-0.1529
"	-757.37	0.0000	0.0000	-0.1365
"	-757.37	0.0000	0.0000	-0.1202
"	-757.37	0.0000	0.0000	-0.1038
M15	439.18	0.0000	0.0000	-0.0489
"	439.18	0.0000	0.0000	-0.0331
"	439.18	0.0000	0.0000	-0.0173
"	439.18	0.0000	0.0000	-0.0014
M16	103.59	-0.0000	0.0000	-0.1581
"	103.59	-0.0000	-0.0000	-0.1342
"	103.59	-0.0000	-0.0000	-0.1104
"	103.59	-0.0000	-0.0000	-0.0865
M17	-681.41	-0.0000	0.0000	-0.0431
"	-681.41	-0.0000	-0.0000	-0.0224
"	-681.41	-0.0000	-0.0000	-0.0018
"	-681.41	-0.0000	-0.0000	0.0188
M18	1252.68	0.0000	0.0000	-0.0827
"	1252.68	0.0000	0.0000	-0.0620
"	1252.68	0.0000	0.0000	-0.0414
"	1252.68	0.0000	0.0000	-0.0207
M19	-1367.17	0.0000	0.0000	0.0353
"	-1367.17	0.0000	0.0000	0.0429
"	-1367.17	0.0000	0.0000	0.0505
"	-1367.17	0.0000	0.0000	0.0580

BENDING & COMP: TRUSS 4 - MEMBER 6

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

Grading:

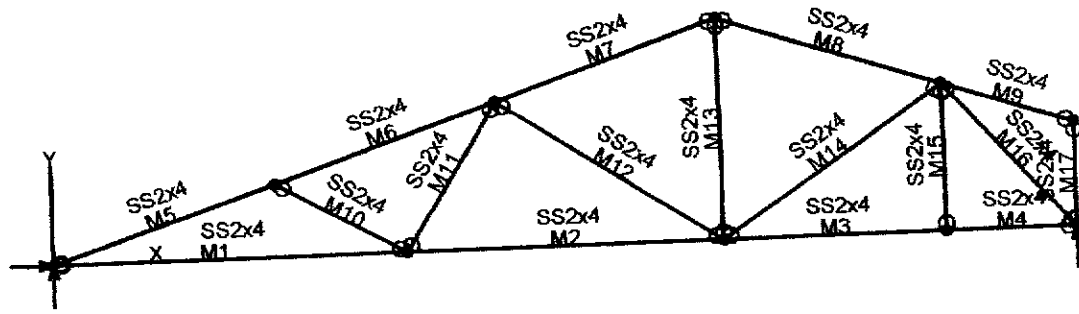
2x or 4x

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	2365 feet
Max Reaction, R	189 feet
Max Moment, M	169 feet
Max LL Deflection	0.09 feet
Max TL Deflection	0.19 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 =	450 psi
Fce =	1275 psi
Fc* =	2084 psi
F'c =	1057 psi
fb =	662 psi
F*b = Fb* =	2156 psi
Shear D/C ratio	0.45 < 1.0, Member OK
Interaction equation:	
(fc/F'c) ² +	
fb / (F*b(1-fc/Fce)) =	0.66 < 1.0, Member OK
Live Load defl ratio	0.28 < 1.0, Member OK
Total Load defl ratio	0.45 < 1.0, Member OK



VisualAnalysis 3.50.c Report

10/08/01 13:36:34

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	Yes		Yes			No
N2	9.50	0.00	No		No			"
N3	18.00	0.00	"		"			"
N4	24.00	0.00	"		"			"
N5	27.50	0.00	"		Yes			"
N6	6.00	2.00	"		No			"
N7	12.00	4.00	"		"			"
N8	18.00	6.00	"		"			"
N9	24.00	4.00	"		"			"
N10	27.50	2.83	"		"			"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.50
M2	"	"	8.50
M3	"	"	6.00
M4	"	"	3.50
M5	"	"	6.32
M6	"	"	6.32
M7	"	"	6.32
M8	"	"	6.32
M9	"	"	3.69
M10	"	"	4.03
M11	"	"	4.72
M12	"	"	7.21
M13	"	"	6.00
M14	"	"	7.21
M15	"	"	4.00
M16	"	"	5.32
M17	"	"	2.83

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	903.82	-NA-
N5	"	-NA-	903.87	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2178.15	-46.73	-55.91	-0.1798
"	2178.15	-19.50	48.7532	-0.2109
"	2178.15	7.7319	67.3883	-0.1627
"	2178.15	34.9653	0.0000	-0.0000
M2	1575.60	-34.56	-39.01	-0.1204
"	1575.60	-10.20	24.2263	-0.1657
"	1575.60	14.1713	18.5937	-0.1826
"	1575.60	38.5380	-55.91	-0.1798
M3	738.91	-20.80	-9.0137	-0.0549
"	738.91	-3.6010	15.3023	-0.0837
"	738.91	13.5990	5.3044	-0.1030
"	738.91	30.7990	-39.01	-0.1204
M4	738.91	-12.47	-0.0000	-0.0000
"	738.91	-2.4413	8.6717	-0.0200
"	738.91	7.5920	5.6671	-0.0381
"	738.91	17.6254	-9.0137	-0.0549
M5	-2341.13	135.47	0.0000	-0.0000
"	-2305.00	27.0727	170.77	-0.1696
"	-2268.86	-81.33	113.58	-0.2113
"	-2232.73	-189.73	-171.57	-0.1729
M6	-1921.92	157.65	-171.57	-0.1729
"	-1885.79	49.2494	45.9508	-0.1920
"	-1849.65	-59.15	35.5140	-0.1880
"	-1813.52	-167.55	-202.88	-0.1697
M7	-1059.10	194.68	-202.88	-0.1697
"	-1022.97	86.2779	92.7034	-0.2310
"	-986.84	-22.12	160.33	-0.2297
"	-950.70	-130.52	0.0000	-0.1093
M8	-1058.20	-191.98	-185.81	-0.0504
"	-1022.07	-83.58	104.08	-0.1609
"	-985.94	24.8206	166.02	-0.1993
"	-949.80	133.22	0.0000	-0.1138
M9	-14.88	-44.50	-0.0000	0.0072
"	6.2624	18.7336	15.6534	-0.0087
"	27.4004	81.9669	-46.28	-0.0220
"	48.5384	145.20	-185.81	-0.0504
M10	-466.13	-0.0000	-0.0000	-0.1423

"	-466.13	-0.0000	-0.0000	-0.1381
"	-466.13	-0.0000	-0.0000	-0.1339
"	-466.13	-0.0000	0.0000	-0.1298
M11	373.27	-0.0000	0.0000	-0.1189
"	373.27	-0.0000	-0.0000	-0.1154
"	373.27	-0.0000	-0.0000	-0.1119
"	373.27	-0.0000	-0.0000	-0.1084
M12	-760.07	0.0000	0.0000	-0.1321
"	-760.07	0.0000	0.0000	-0.1130
"	-760.07	0.0000	0.0000	-0.0939
"	-760.07	0.0000	0.0000	-0.0748
M13	350.78	0.0000	0.0000	-0.0458
"	350.78	0.0000	0.0000	-0.0282
"	350.78	0.0000	0.0000	-0.0106
"	350.78	0.0000	0.0000	0.0071
M14	245.51	-0.0000	0.0000	-0.1256
"	245.51	-0.0000	-0.0000	-0.0998
"	245.51	-0.0000	-0.0000	-0.0740
"	245.51	-0.0000	-0.0000	-0.0483
M15	38.4264	0.0000	0.0000	0.0049
"	38.4264	0.0000	0.0000	0.0205
"	38.4264	0.0000	0.0000	0.0362
"	38.4264	0.0000	0.0000	0.0518
M16	-1122.11	0.0000	0.0000	-0.0324
"	-1122.11	0.0000	0.0000	-0.0077
"	-1122.11	0.0000	0.0000	0.0169
"	-1122.11	0.0000	0.0000	0.0416
M17	-46.92	0.0000	0.0000	-0.0553
"	-46.92	0.0000	0.0000	-0.0446
"	-46.92	0.0000	0.0000	-0.0339
"	-46.92	0.0000	0.0000	-0.0232

BENDING & COMP: TRUSS 5 - MEMBER 5

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

Grading:

2x or 4x

Doug-fir larch: No. 2

Assumptions:

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

Width, b	1.5 inches
Depth, d	3.5 inches
Length	6.32 feet
Max Axial Comp, C	2232 feet
Max Reaction, R	189 feet
Max Moment, M	171 feet
Max LL Deflection	0.08 feet
Max TL Deflection	0.17 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 =	425 psi
Fce =	1275 psi
Fc* =	2084 psi
F'c =	1057 psi
fb =	670 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.45 < 1.0, Member OK
Interaction equation: (fc/Fc)^2 +	
fb / (F'b(1-fc/Fce)) =	0.63 < 1.0, Member OK
Live Load defl ratio	0.25 < 1.0, Member OK
Total Load defl ratio	0.40 < 1.0, Member OK