

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0111978

Insp Area: 2

Thos Bros: 336H2

Site Address: 18 BLUE WATER CR SAC

Parcel No: 031-1050-023

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR

ZIMMERMAN ROOFING, INC
3675 R STREET
SACRAMENTO, CA 95816

OWNER

HU WENDALL
18 BLUE WATER CR
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: TEAR OFF SHAKE & REROOF 27 SQ'S 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 C31 License Number 557559 Date 9/19/01 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 9/19/01 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 713-00-2021 Exp Date 10/01/2001

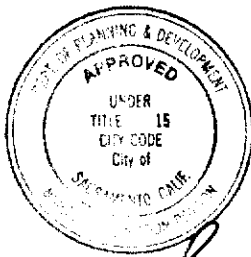
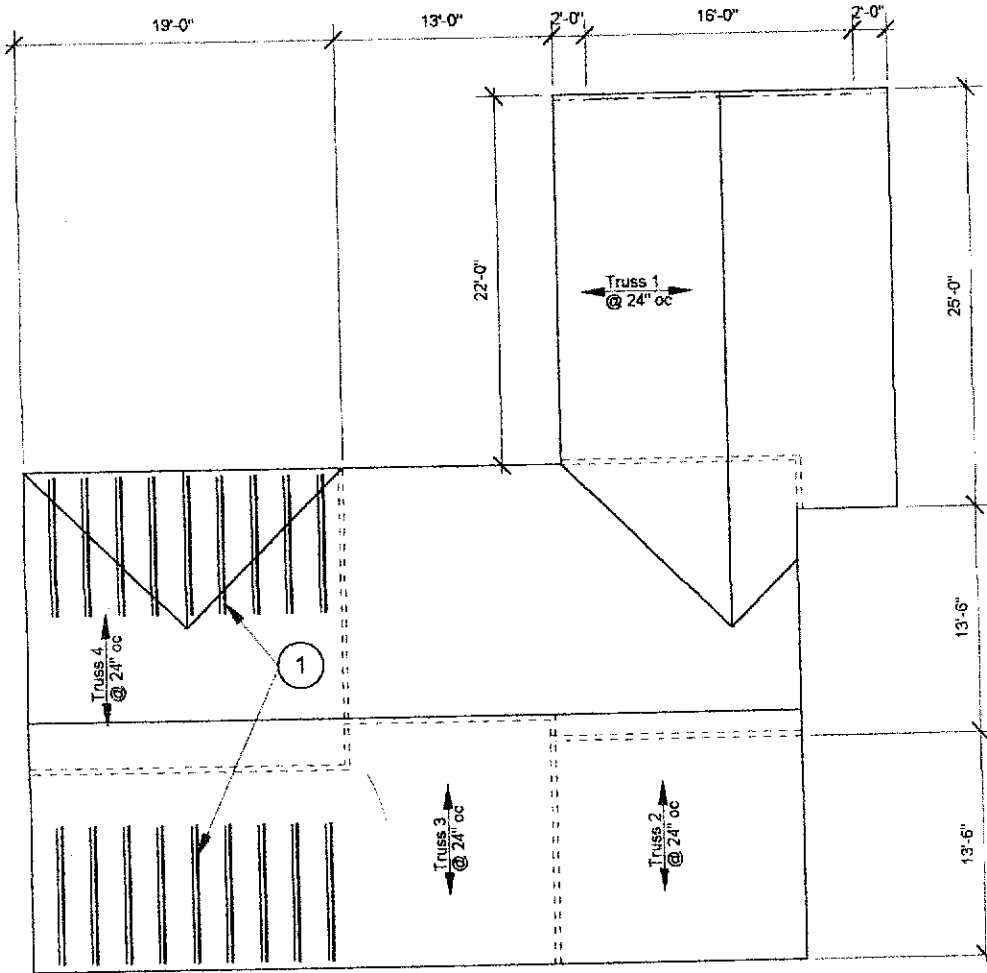
(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become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

Date 9/19/01 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.

18 BLUEWATER CIRCLE



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

The approval of this plan and specifications SHALL NOT be held to permit or constitute a violation of any City Ordinance or Code.

Julian 9/14/01



FRAMING NOTES:

1. Scab a 2x4 DF#2 x 10'-0" long rafter to the top chord of the existing truss #4 (total 18). See detail 2.

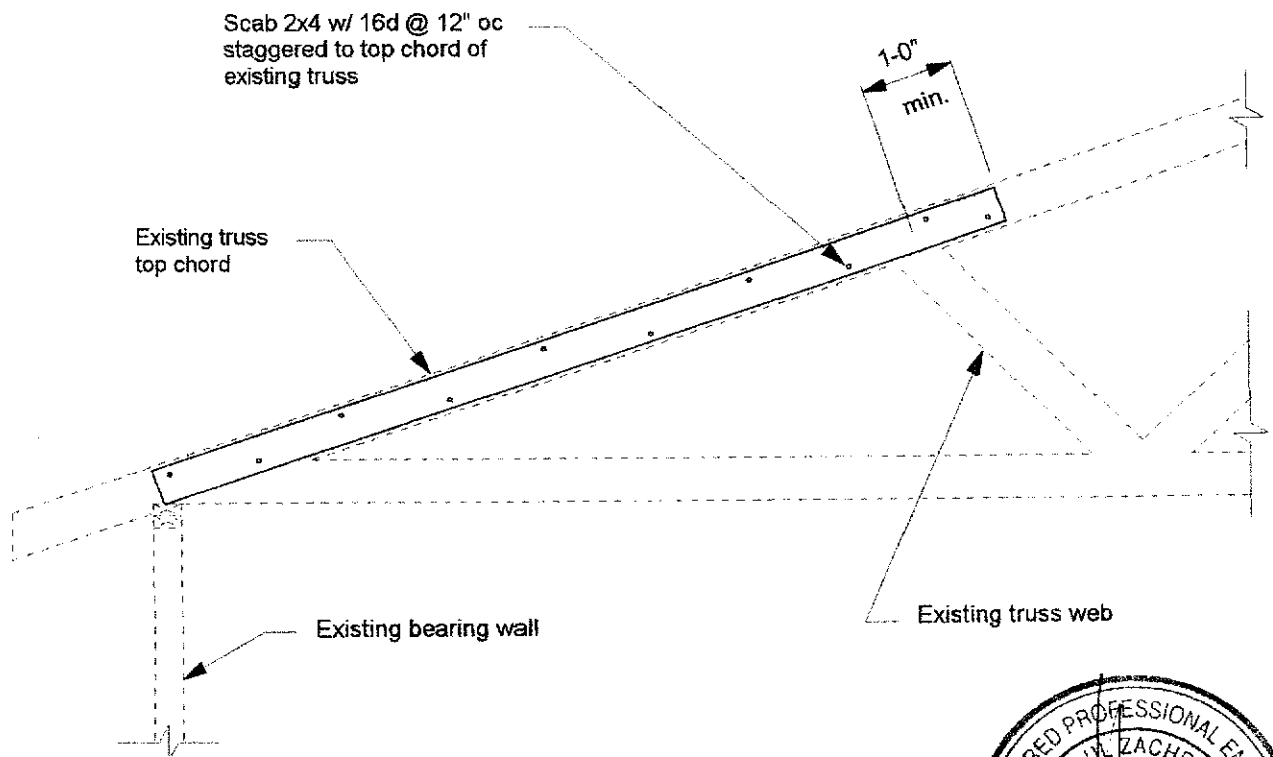
Notes:

- 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 - HU

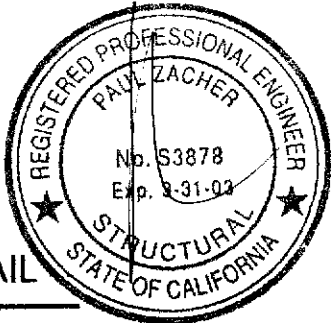
Not to Scale 25



2

TRUSS REINFORCEMENT DETAIL

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



20

Hu

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

TEL: 916.961.3960
FAX: 916.961.6552

August 27, 2001

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

Attn.: Mr. Jeff Tucker,

re: Job 2001_256: HU

Subject: Structural Investigation Report of the Roof for the Residence located at 18 Bluewater Circle, Sacramento, CA 95831.



As requested by Mr. Jeff Tucker, this is a report to determine what needs should be addressed to correct any structural deficiencies of the roof. Paul Zacher visited the site August 27, 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 garage has sufficient structural capacity for the applied live and dead loads. The living area currently lacks sufficient structural capacity for the applied live and dead loads. See "Recommendations" for location and repair to bring the living area up to the required capacity.

PREPARED BY: JEFF TUCKER

Hu



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 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: 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 #: 01-250

Date: 8/27/01

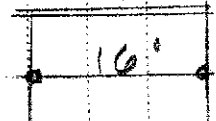
LOADING

B1

$D_p = 15.4 \text{ pcf} \cdot 4' = 62 \text{ pcf}$

4 x 12 #2

02/04



$L_p = 16.0 \cdot \cdot \cdot = 64'$

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

Title :
 Dsgnr:
 Description :

Job #
 Date: 12:34PM, 27 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 BEAMS

Timber Member Information

Calculations are designed to 1997 NDS and 1997 UBC Requirements

Timber Section		B1
Beam Width	in	4x12 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	62.00
Live Load	#/ft	64.00

Results

Ratio = 0.5470

Mmax @ Center	in-k	48.38
@ X =	ft	8.00
fb : Actual	psi	655.4
Fb : Allowable	psi	1,198.1
		Bending OK
fv : Actual	psi	34.1
Fv : Allowable	psi	118.8
		Shear OK

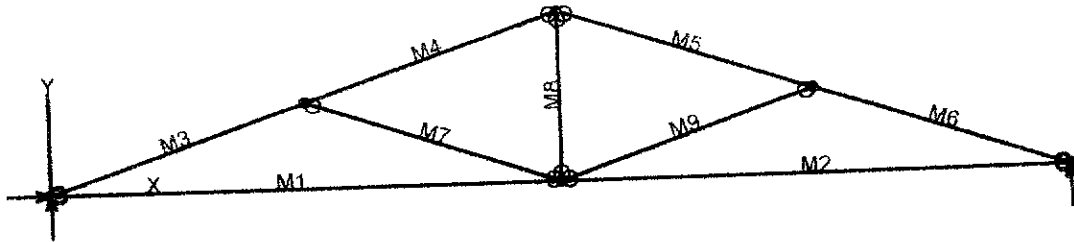
Reactions

@ Left End	DL	lbs	496.00
	LL	lbs	512.00
	Max. DL+LL	lbs	1,008.00
@ Right End	DL	lbs	496.00
	LL	lbs	512.00
	Max. DL+LL	lbs	1,008.00

Deflections

Ratio OK

Center DL Defl	in	-0.138
L/Defl Ratio		1,385.5
Center LL Defl	in	-0.142
L/Defl Ratio		1,351.9
Center Total Defl	in	-0.280
Location	ft	8.000
L/Defl Ratio		686.7



VisualAnalysis 3.50.c Report

08/27/01 12:20:13

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	10.00	0.00	No		No		"	
N3	20.00	0.00	"		Yes		"	
N4	5.00	1.67	"		No		"	
N5	15.00	1.67	"		"		"	
N6	10.00	3.33	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	10.00
M2	"	"	10.00
M3	"	"	5.27
M4	"	"	5.27
M5	"	"	5.27
M6	"	"	5.27
M7	"	"	5.27
M8	"	"	3.33
M9	"	"	5.27

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	657.26	-NA-
N3	"	-NA-	657.26	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1524.86	-51.80	-88.01	-0.1232
"	1524.86	-23.13	36.6440	-0.1636
"	1524.86	5.5324	65.9803	-0.1429
"	1524.86	34.1991	0.0000	-0.0000
M2	1524.86	-34.20	0.0000	-0.0000
"	1524.86	-5.5324	65.9803	-0.1429
"	1524.86	23.1342	36.6440	-0.1635
"	1524.86	51.8009	-88.01	-0.1232
M3	-1643.70	107.90	0.0000	-0.0000
"	-1613.53	17.5659	109.84	-0.0868
"	-1583.36	-72.77	61.3358	-0.1170
"	-1553.19	-163.10	-145.50	-0.1188
M4	-1121.71	163.12	-145.50	-0.1188
"	-1091.72	72.7840	61.2410	-0.1574
"	-1061.73	-17.55	109.74	-0.1677
"	-1031.74	-107.88	0.0000	-0.1215
M5	-1121.71	-163.12	-145.50	-0.1059
"	-1091.72	-72.78	61.2410	-0.1445
"	-1061.73	17.5494	109.74	-0.1548
"	-1031.74	107.88	0.0000	-0.1086
M6	-1643.70	-107.90	0.0000	0.0130
"	-1613.53	-17.57	109.84	-0.0738
"	-1583.36	72.7674	61.3358	-0.1040
"	-1553.19	163.10	-145.50	-0.1058
M7	-539.47	-0.0000	-0.0000	-0.1104
"	-539.47	-0.0000	-0.0000	-0.1075
"	-539.47	-0.0000	-0.0000	-0.1046
"	-539.47	-0.0000	0.0000	-0.1017
M8	445.41	0.0000	0.0000	-0.0205
"	445.41	0.0000	0.0000	-0.0205
"	445.41	0.0000	0.0000	-0.0205
"	445.41	0.0000	0.0000	-0.0205
M9	-539.47	0.0000	0.0000	-0.1234
"	-539.47	0.0000	0.0000	-0.1205
"	-539.47	0.0000	0.0000	-0.1176
"	-539.47	0.0000	0.0000	-0.1147

BENDING & COMP: TRUSS 1 - MEMBER 3

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

Grading:

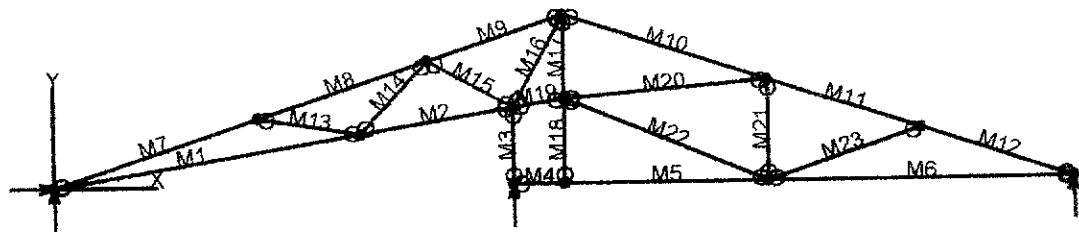
2x or 4x

Doug-fir larch: No. 2

Assumptions:

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

Width, b	1.5 inches
Depth, d	3.5 inches
Length	5.27 feet
Max Axial Comp, C	1553 feet
Max Reaction, R	163 feet
Max Moment, M	145 feet
Max LL Deflection	0.05 feet
Max TL Deflection	0.11 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 =	296 psi
Fce =	1789 psi
Fc* =	2084 psi
F'c =	1326 psi
fb =	568 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.39 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.37 < 1.0, Member OK
Live Load defl ratio	0.19 < 1.0, Member OK
Total Load defl ratio	0.31 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08/27/01 12:26:56

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	9.00	1.50	No	No	"
N3	13.50	2.25	"	"	"
N4	13.50	0.00	"	Yes	"
N5	15.00	2.50	"	No	"
N6	15.00	0.00	"	"	"
N7	21.00	0.00	"	"	"
N8	30.00	0.00	"	Yes	"
N9	6.00	2.00	"	No	"
N10	11.00	3.67	"	"	"
N11	15.00	5.00	"	"	"
N12	21.00	3.00	"	"	"
N13	25.50	1.50	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.12
M2	"	"	4.56
M3	"	"	2.25
M4	"	"	1.50
M5	"	"	6.00
M6	"	"	9.00
M7	"	"	6.32
M8	"	"	5.27
M9	"	"	4.22
M10	"	"	6.32
M11	"	"	4.74
M12	"	"	4.74
M13	"	"	3.04
M14	"	"	2.95
M15	"	"	2.88
M16	"	"	3.13
M17	"	"	2.50
M18	"	"	2.50
M19	"	"	1.52
M20	"	"	6.02
M21	"	"	3.00
M22	"	"	6.50
M23	"	"	4.74

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	272.06	-NA-
N4	"	-NA-	1300.31	-NA-
N8	"	-NA-	401.19	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	583.84	32.6029	0.0000	-0.0000
"	588.14	6.8029	59.7278	-0.0929
"	592.44	-19.00	41.1842	-0.0925
"	596.74	-44.80	-55.63	-0.0310
M2	-486.45	31.5442	-55.63	-0.0310
"	-484.30	18.6442	-17.52	-0.0166
"	-482.15	5.7442	1.0242	-0.0105
"	-480.00	-7.1558	0.0000	-0.0047
M3	-1297.82	0.0000	0.0000	-0.0041
"	-1297.82	0.0000	0.0000	-0.0011
"	-1297.82	0.0000	0.0000	0.0020
"	-1297.82	0.0000	0.0000	0.0050
M4	-0.0000	-10.41	-5.9369	-0.0100
"	-0.0000	-6.1080	-1.8133	-0.0066
"	-0.0000	-1.8080	0.1656	-0.0033
"	-0.0000	2.4920	0.0000	-0.0000
M5	-4.2679	-34.18	-56.22	-0.0412
"	-4.2679	-16.98	-5.1423	-0.0290
"	-4.2679	0.2202	11.6174	-0.0228
"	-4.2679	17.4202	-5.9369	-0.0100
M6	773.05	-32.45	0.0000	-0.0000
"	773.05	-6.6538	58.4678	-0.0920
"	773.05	19.1462	39.7292	-0.0951
"	773.05	44.9462	-56.22	-0.0412
M7	-657.64	134.83	0.0000	-0.0000
"	-621.51	26.4338	169.42	-0.1278
"	-585.38	-81.97	110.88	-0.1289
"	-549.24	-190.37	-175.61	-0.0521

M8	89.3844	147.83	-175.61	-0.0521
"	119.56	57.4974	4.3930	-0.0393
"	149.73	-32.84	26.0602	-0.0314
"	179.90	-123.17	-110.61	-0.0157
M9	1075.76	134.64	-110.61	-0.0157
"	1099.78	62.3727	27.5504	-0.0258
"	1123.81	-9.8940	64.4194	-0.0286
"	1147.84	-82.16	-0.0000	-0.0105
M10	509.54	-192.15	-186.88	-0.0390
"	545.67	-83.75	103.37	-0.1173
"	581.81	24.6509	165.66	-0.1240
"	617.94	133.05	0.0000	-0.0071
M11	-451.76	-99.15	-78.73	-0.0460
"	-424.66	-17.85	13.4431	-0.0394
"	-397.56	63.4508	-22.61	-0.0314
"	-370.46	144.75	-186.88	-0.0390
M12	-849.99	-105.35	-0.0000	0.0017
"	-822.89	-24.05	101.98	-0.0534
"	-795.79	57.2479	75.7379	-0.0651
"	-768.69	138.55	-78.73	-0.0460
M13	-722.70	0.0000	0.0000	-0.0485
"	-722.70	0.0000	0.0000	-0.0413
"	-722.70	0.0000	0.0000	-0.0341
"	-722.70	0.0000	0.0000	-0.0269
M14	506.16	-0.0000	0.0000	-0.0289
"	506.16	-0.0000	-0.0000	-0.0232
"	506.16	-0.0000	-0.0000	-0.0175
"	506.16	-0.0000	-0.0000	-0.0118
M15	-676.97	-0.0000	0.0000	-0.0136
"	-676.97	-0.0000	-0.0000	-0.0094
"	-676.97	-0.0000	-0.0000	-0.0052
"	-676.97	-0.0000	-0.0000	-0.0009
M16	-1075.21	0.0000	0.0000	-0.0091
"	-1075.21	0.0000	0.0000	-0.0081
"	-1075.21	0.0000	0.0000	-0.0072
"	-1075.21	0.0000	0.0000	-0.0063
M17	182.16	-4.2679	-10.67	0.0048
"	182.16	-4.2679	-7.1132	0.0058
"	182.16	-4.2679	-3.5566	0.0058
"	182.16	-4.2679	0.0000	0.0053
M18	27.8281	4.2679	-10.67	0.0048
"	27.8281	4.2679	-7.1132	0.0026
"	27.8281	4.2679	-3.5566	-0.0005
"	27.8281	4.2679	0.0000	-0.0041
M19	-555.99	-0.0000	-0.0000	-0.0105
"	-555.99	-0.0000	-0.0000	-0.0086
"	-555.99	-0.0000	-0.0000	-0.0066
"	-555.99	-0.0000	0.0000	-0.0047
M20	-944.64	0.0000	0.0000	-0.0409
"	-944.64	0.0000	0.0000	-0.0307
"	-944.64	0.0000	0.0000	-0.0205
"	-944.64	0.0000	0.0000	-0.0102
M21	37.1163	-0.0000	-0.0000	-0.0041
"	37.1163	-0.0000	-0.0000	-0.0028
"	37.1163	-0.0000	-0.0000	-0.0015
"	37.1163	-0.0000	0.0000	-0.0002
M22	434.95	0.0000	0.0000	0.0073
"	434.95	0.0000	0.0000	0.0180
"	434.95	0.0000	0.0000	0.0288
"	434.95	0.0000	0.0000	0.0396
M23	-396.16	0.0000	0.0000	-0.0428
"	-396.16	0.0000	0.0000	-0.0412
"	-396.16	0.0000	0.0000	-0.0395
"	-396.16	0.0000	0.0000	-0.0378

BENDING & COMP: TRUSS 2 - MEMBER 7

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

Grading:

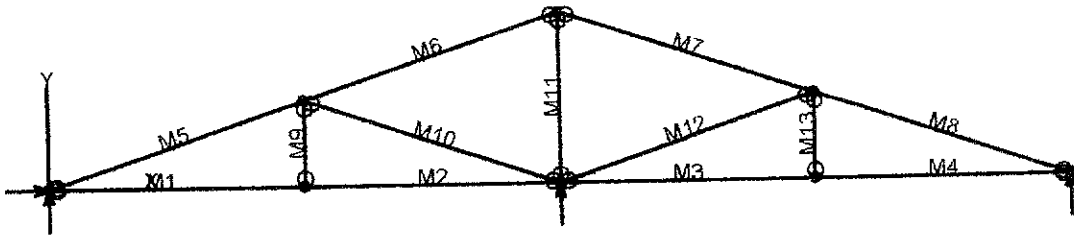
2x or 4x

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	549 feet
Max Reaction, R	190 feet
Max Moment, M	175 feet
Max LL Deflection	0.02 feet
Max TL Deflection	0.05 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 =	105 psi
Fce =	1275 psi
Fc* =	2084 psi
F'c =	1057 psi
fb =	686 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)) =	0.36 < 1.0, Member OK
Live Load defl ratio	0.06 < 1.0, Member OK
Total Load defl ratio	0.12 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08/27/01 12:42:45

Project: Truss 3

File: C:\Program Files\IES\VA35\truss 3.vap

Company: PK Associates Engineers

Engineer: Paul Zacher

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

Nodes

Node	X ft	Y ft	Fix	DX	DY	RZ
N1	0.00	0.00	Yes	Yes	No	
N2	7.50	0.00	No	No	"	
N3	15.00	0.00	"	Yes	"	
N4	22.50	0.00	"	No	"	
N5	30.00	0.00	"	Yes	"	
N6	7.50	2.50	"	No	"	
N7	22.50	2.50	"	"	"	
N8	15.00	5.00	"	"	"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	7.50
M2	"	"	7.50
M3	"	"	7.50
M4	"	"	7.50
M5	"	"	7.91
M6	"	"	7.91
M7	"	"	7.91
M8	"	"	7.91
M9	"	"	2.50
M10	"	"	7.91
M11	"	"	5.00
M12	"	"	7.91
M13	"	"	2.50

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	282.33	-NA-
N3	"	-NA-	1407.29	-NA-
N5	"	-NA-	282.33	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	281.51	-37.58	-39.99	-0.0295
"	281.51	-16.08	26.9525	-0.0516
"	281.51	5.4174	40.2840	-0.0470
"	281.51	26.9174	0.0000	-0.0000
M2	281.51	-33.42	-48.76	-0.0000
"	281.51	-11.92	7.7798	-0.0150
"	281.51	9.5818	10.7004	-0.0260
"	281.51	31.0818	-39.99	-0.0295
M3	281.51	-31.08	-39.99	-0.0295
"	281.51	-9.5818	10.7004	-0.0260
"	281.51	11.9182	7.7798	-0.0150
"	281.51	33.4182	-48.76	-0.0000
M4	281.51	-26.92	0.0000	-0.0000
"	281.51	-5.4174	40.2840	-0.0470
"	281.51	16.0826	26.9525	-0.0516
"	281.51	37.5826	-39.99	-0.0295
M5	-347.84	153.29	0.0000	-0.0000
"	-302.67	17.7881	224.52	-0.2091
"	-257.50	-117.71	92.8587	-0.1618
"	-212.34	-253.21	-394.98	-0.0298
M6	571.46	253.21	-394.98	-0.0298
"	616.63	117.71	92.8587	-0.1639
"	661.80	-17.79	224.52	-0.2135
"	706.96	-153.29	-0.0000	-0.0065
M7	571.46	-253.21	-394.98	-0.0262
"	616.63	-117.71	92.8587	-0.1603
"	661.80	17.7881	224.52	-0.2099
"	706.96	153.29	0.0000	-0.0029
M8	-347.84	-153.29	-0.0000	0.0036
"	-302.67	-17.79	224.52	-0.2056
"	-257.50	117.71	92.8587	-0.1581
"	-212.34	253.21	-394.98	-0.0262
M9	68.6644	0.0000	0.0000	0.0028
"	68.6644	0.0000	0.0000	0.0041
"	68.6644	0.0000	0.0000	0.0054
"	68.6644	0.0000	0.0000	0.0066
M10	-952.61	0.0000	0.0000	-0.0256
"	-952.61	0.0000	0.0000	-0.0165
"	-952.61	0.0000	0.0000	-0.0074
"	-952.61	0.0000	0.0000	0.0018
M11	-737.97	0.0000	0.0000	-0.0057
"	-737.97	0.0000	0.0000	-0.0057
"	-737.97	0.0000	0.0000	-0.0057

"	-737.97	0.0000	0.0000	-0.0057
M12	-952.61	-0.0000	-0.0000	-0.0292
"	-952.61	-0.0000	-0.0000	-0.0201
"	-952.61	-0.0000	-0.0000	-0.0109
"	-952.61	-0.0000	0.0000	-0.0018
M13	68.6644	0.0000	0.0000	0.0047
"	68.6644	0.0000	0.0000	0.0060
"	68.6644	0.0000	0.0000	0.0073
"	68.6644	0.0000	0.0000	0.0085

BENDING & COMP: TRUSS 3 - MEMBER 5

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

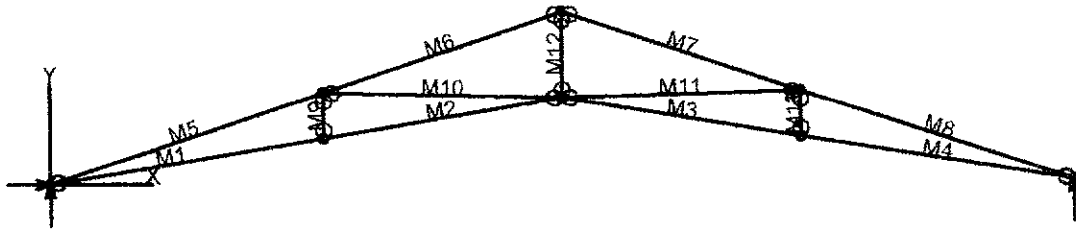
Grading:

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	7.91 feet
Max Axial Comp, C	212 feet
Max Reaction, R	253 feet
Max Moment, M	394 feet
Max LL Deflection	0.08 feet
Max TL Deflection	0.16 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 =	1.22
fc =	40 psi
Fce =	844 psi
Fc* =	2084 psi
F'c =	758 psi
fb =	1544 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.61 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.75 < 1.0, Member OK
Live Load defl ratio	0.20 < 1.0, Member OK
Total Load defl ratio	0.30 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08/27/01 12:46:06

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	1.25	No		No		"	
N3	15.00	2.50	"		"		"	
N4	22.50	1.25	"		"		"	
N5	30.00	0.00	"		Yes		"	
N6	7.50	2.50	"		No		"	
N7	22.50	2.50	"		"		"	
N8	15.00	5.00	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	7.60
M2	"	"	7.60
M3	"	"	7.60
M4	"	"	7.60
M5	"	"	7.91
M6	"	"	7.91
M7	"	"	7.91
M8	"	"	7.91
M9	"	"	1.25
M10	"	"	7.50
M11	"	"	7.50
M12	"	"	2.50
M13	"	"	1.25

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

21

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	987.76	-NA-
N5	"	-NA-	987.76	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	4635.69	45.3712	0.0000	-0.0000
"	4639.27	23.8712	87.6108	-0.4760
"	4642.86	2.3712	120.87	-0.8507
"	4646.44	-19.13	99.7668	-1.0840
M2	4642.06	7.1374	99.7668	-1.0840
"	4645.65	-14.36	90.4744	-1.1871
"	4649.23	-35.86	26.8269	-1.1859
"	4652.81	-57.36	-91.18	-1.1571
M3	4642.06	-7.1374	99.7668	-0.9906
"	4645.65	14.3626	90.4744	-1.0938
"	4649.23	35.8626	26.8269	-1.0925
"	4652.81	57.3626	-91.18	-1.0638
M4	4635.69	-45.37	-0.0000	0.0933
"	4639.27	-23.87	87.6108	-0.3826
"	4642.86	-2.3712	120.87	-0.7573
"	4646.44	19.1288	99.7668	-0.9906
M5	-4884.24	169.26	0.0000	-0.0000
"	-4839.08	33.7581	266.60	-0.6402
"	-4793.91	-101.74	177.03	-0.9685
"	-4748.74	-237.24	-268.73	-1.1017
M6	-3241.08	237.24	-268.73	-1.1017
"	-3195.92	101.74	177.03	-1.3526
"	-3150.75	-33.76	266.60	-1.4086
"	-3105.58	-169.26	-0.0000	-1.1525
M7	-3241.08	-237.24	-268.73	-0.9222
"	-3195.92	-101.74	177.03	-1.1731
"	-3150.75	33.7581	266.60	-1.2290
"	-3105.58	169.26	0.0000	-0.9730
M8	-4884.24	-169.26	-0.0000	0.1796
"	-4839.08	-33.76	266.60	-0.4607
"	-4793.91	101.74	177.03	-0.7889
"	-4748.74	237.24	-268.73	-0.9222
M9	26.6284	0.0000	0.0000	0.2250
"	26.6284	0.0000	0.0000	0.2499
"	26.6284	0.0000	0.0000	0.2749
"	26.6284	0.0000	0.0000	0.2998
M10	-1580.33	0.0000	0.0000	-1.1258
"	-1580.33	0.0000	0.0000	-1.1043
"	-1580.33	0.0000	0.0000	-1.0829
"	-1580.33	0.0000	0.0000	-1.0614
M11	-1580.33	-0.0000	0.0000	-1.1258
"	-1580.33	-0.0000	-0.0000	-1.1043
"	-1580.33	-0.0000	-0.0000	-1.0829
"	-1580.33	-0.0000	-0.0000	-1.0614

M12	1643.00	0.0000	0.0000	-0.2839
"	1643.00	0.0000	0.0000	-0.2839
"	1643.00	0.0000	0.0000	-0.2839
"	1643.00	0.0000	0.0000	-0.2839
M13	26.6284	0.0000	0.0000	0.2680
"	26.6284	0.0000	0.0000	0.2929
"	26.6284	0.0000	0.0000	0.3178
"	26.6284	0.0000	0.0000	0.3428

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	7.91 feet
Max Axial Comp, C	4748 feet
Max Reaction, R	237 feet
Max Moment, M	268 feet
Max LL Deflection	0.08 feet
Max TL Deflection	0.16 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 =	1.22
fc =	452 psi
Fce=	844 psi
Fc*=	2084 psi
F'c=	758 psi
fb=	525 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.29 < 1.0, Member OK
Interaction equation: (fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.88 < 1.0, Member OK
Live Load defl ratio	0.20 < 1.0, Member OK
Total Load defl ratio	0.30 < 1.0, Member OK