

CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0106244
Insp Area: 2

Site Address: 51 BLUE WATER CR SAC
Parcel No: 031-1050-013

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

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

OWNER
MORGAN VERONICA/RANDY ALLEN
51 BLUE WATER CR
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: 31 SQ T/O SHAKE REROOF W MONIER 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 557557 Date 5/18/01 Contractor Signature Billy Coy

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractor 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 5/18/01 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

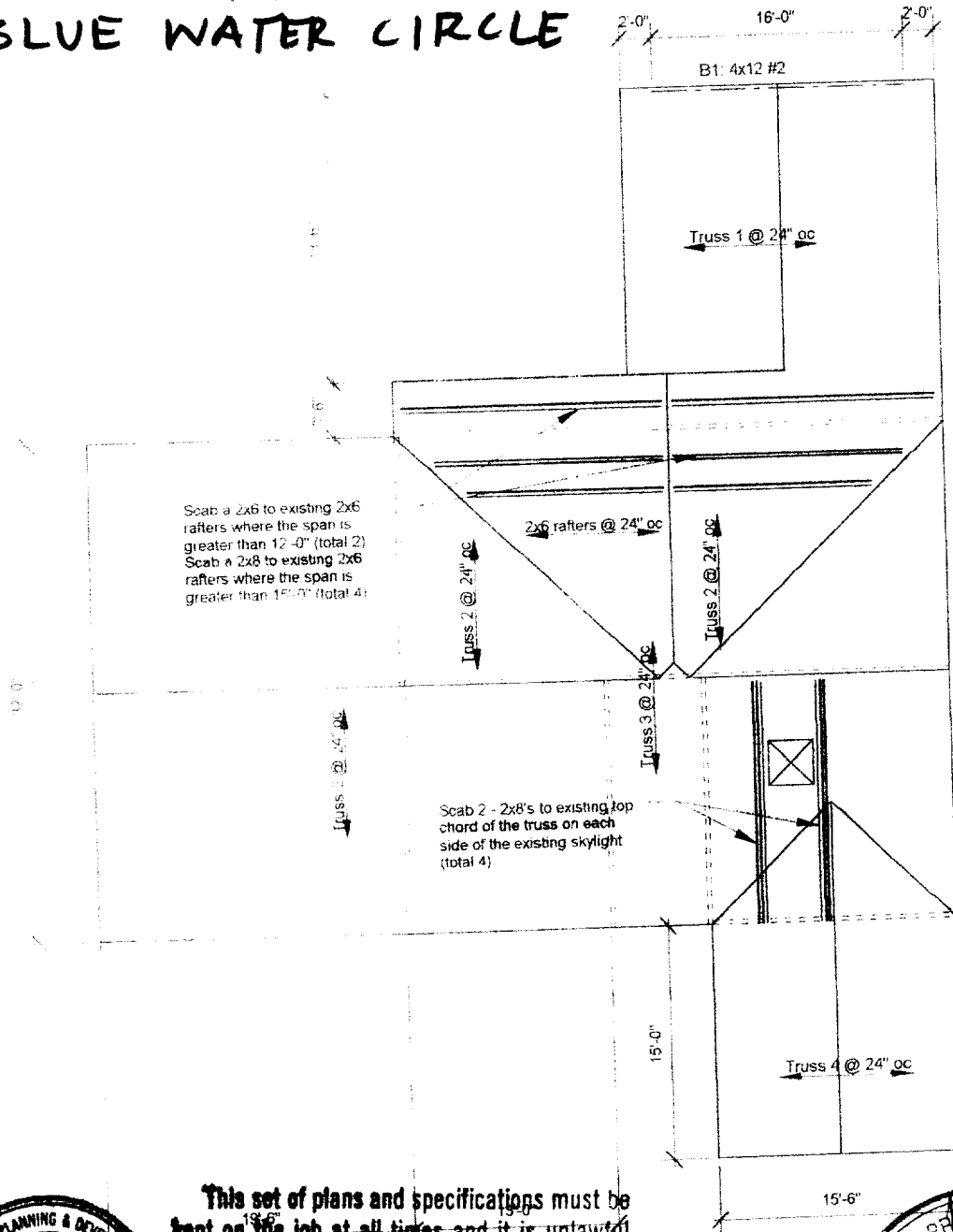
_____, (This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should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

Date 5/18/01 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.

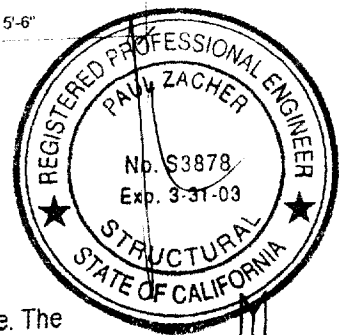
THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

010 6244 R
51 BLUE WATER CIRCLE



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

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



Notes:

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

1

ROOF PLAN - MORGAN

Not to Scale

22



Morgan

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

TEL: 916.961.3960
FAX: 916.961.6552

May 2, 2001

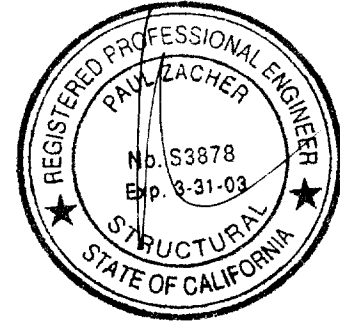
Zimmerman Roofing
3675 R Street
Sacramento, CA 95816
TEL: 916.454.3667
FAX: 916.455.3784

CITY OF SACRAMENTO
PERMIT ASSISTANCE

MAY 16 2001

RECEIVED

C1063-44R



Attn: Mr. Jeff Tucker,

re: Job 2001_109 MORGAN

Subject: Structural Investigation Report of the Roof for the Residence located at 51 Blue Water 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 May 2, 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 area lacks sufficient structural capacity for the applied live and dead loads. The garage has sufficient structural capacity for the applied live and dead loads. See "Recommendations" for location and repair.

Morgan

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 2 2x8 DF#2 rafters to the top chord of the existing truss on each side of the existing skylight. See detail 1.
2. Scab a 2x6 rafter to the existing 2x6 rafters with 16d's @ 12" on center where the span is greater than 12'-0". Scab a 2x8 rafter to the existing 2x6 rafters with 16d's @ 12" on center where the span is greater than 15'-0". See detail 1

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

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

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

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

Sincerely,

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

DESIGN LOADING:

Roof Pitch 6 in 12
 Pitch Adjustment Factor 1.12

LOCATION: ROOF

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.00	psf
Roofing felt	0.30	psf
1/2" OSB/ plywood	1.50	psf
1x4 skip sht'g	1.09	psf
2x6 rafters @ 24" oc	1.00	psf
	Load	10.9 psf
Roof Pitch Adjustment	1.29	psf
Total Load	12.2	psf

LOCATION: TOP CHORD

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.00	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
1/2" OSB/ plywood	1.50	psf
2x4 truss @ 24" oc	0.64	psf
	Load	10.5 psf
Roof Pitch Adjustment	1.24	psf
Total Load	11.8	psf

LOCATION: BOTTOM CHORD

<u>MATERIAL</u>	<u>WEIGHT</u>	
Batt/blown insul	0.50	psf
2x4 truss @ 24" oc	1.28	psf
1/2" Gypboard	2.50	psf
	Load	4.3 psf

P K Zacher S.I.

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

Job #:

Date: 5/8/02

LOADING

RAFTER

2x10 @ 16" o.c. = 200 lf
2x10 @ 16" o.c. = 200 lf

2×10^2

$200 / 14.4 = 13.9$

RAFTER

2x12 @ 16" o.c. = 240 lf
2x12 @ 16" o.c. = 240 lf

2×12^2

$240 / 16 = 15$

RAFTER

2x8 @ 16" o.c. = 200 lf
2x6 @ 16" o.c. = 200 lf

$2 \times 8^2 + 2 \times 6^2$

$200 / 11.3 = 17.7$

RAFTER

2x16 @ 16" o.c. = 240 lf
2x16 @ 16" o.c. = 240 lf

2×16^2

$240 / 4.83 = 49.7$

RAFTER

2x16 @ 16" o.c. = 240 lf
2x16 @ 16" o.c. = 240 lf

4×16^2

$240 / 3.4 = 70.6$

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

Title :
 Dsgnr:
 Description :

Job #
 Date: 2:14PM, 2 MAY 01

Scope :

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 2x6	rafter 2-2x6	rafter 2x6 +2x8	rafter 2-2x8	B1 4x12
Beam Width	in 1.500	3.000	3.000	3.000	3.500
Beam Depth	in 5.500	5.500	6.500	7.250	11.250
Le Unbraced Length	ft 0.00	0.00	0.00	0.00	0.00
Timber Grade	Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch
Fb - Basic Allow	psi 875.0	875.0	875.0	875.0	875.0
Fv - Basic Allow	psi 95.0	95.0	95.0	95.0	95.0
Elastic Modulus	ksi 1,600.0	1,600.0	1,600.0	1,600.0	1,600.0
Load Duration Factor	1.250	1.250	1.250	1.250	1.250
Member Type	Sawn	Sawn	Sawn	Sawn	Sawn
Repetitive Status	Repetitive	Repetitive	Repetitive	Repetitive	No

Center Span Data

	ft	12.00	15.00	17.75	16.50	16.00
Span						
Dead Load	#/ft	24.40	24.40	24.40	48.30	64.00
Live Load	#/ft	32.00	32.00	32.00	48.00	64.00

Results

Ratio = 0.9852 0.7697 0.7716 0.9914 0.5534

Mmax @ Center	in-k	12.18	19.03	26.65	39.33	49.15
@ X =	ft	6.00	7.50	8.87	8.25	8.00
Fb Actual	psi	1,610.9	1,258.5	1,261.7	1,496.4	665.8
Fb Allowable	psi	1,635.2	1,635.2	1,635.2	1,509.4	1,203.1
		Bending OK	Bending OK	Bending OK	Bending OK	Bending OK
Fv Actual	psi	57.1	36.3	36.3	50.8	34.6
Fv Allowable	psi	118.8	118.8	118.8	118.8	118.8
		Shear OK	Shear OK	Shear OK	Shear OK	Shear OK

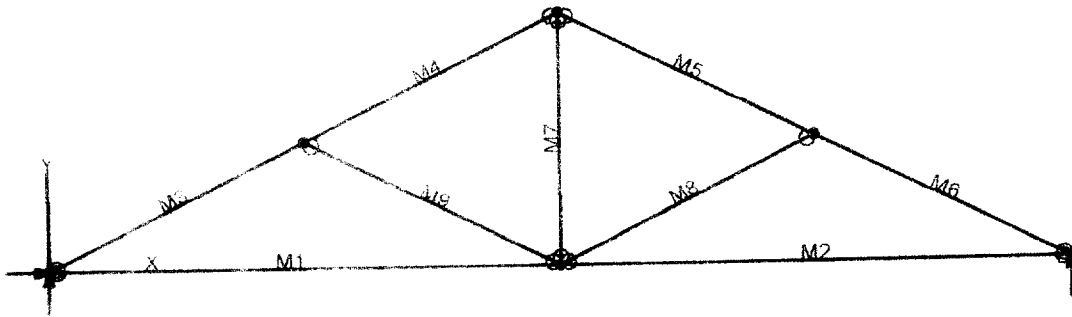
Reactions

@ Left End DL	lbs	146.40	183.00	216.55	398.47	512.00
LL	lbs	192.00	240.00	284.00	396.00	512.00
Max. DL+LL	lbs	338.40	423.00	500.55	794.47	1,024.00
@ Right End DL	lbs	146.40	183.00	216.55	398.47	512.00
LL	lbs	192.00	240.00	284.00	396.00	512.00
Max. DL+LL	lbs	338.40	423.00	500.55	794.47	1,024.00

Deflections

Ratio OK Deflection OK Deflection OK Deflection OK Deflection OK

Center DL Defl	in	-0.342	-0.418	-0.496	-0.528	-0.142
L/Defl Ratio		420.9	431.0	429.4	374.7	1,351.9
Center LL Defl	in	-0.449	-0.548	-0.651	-0.525	-0.142
L/Defl Ratio		320.9	328.7	327.4	377.0	1,351.9
Center Total Defl	in	-0.791	-0.965	-1.147	-1.054	-0.284
Location	ft	8.000	7.500	8.875	8.250	8.000
L/Defl Ratio		182.1	186.5	185.8	187.9	675.9



VisualAnalysis 3.50.c Report

03/02/01 12:55:49

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	10.00	0.00	No		No			
N3	20.00	0.00			Yes			
N4	5.00	7.50			No			
N5	15.00	7.50						
N6	10.00	0.00						

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	10.00
M2	"	"	10.00
M3	"	"	5.59
M4	"	"	5.59
M5	"	"	5.59
M6	"	"	5.59
M7	"	"	5.00
M8	"	"	5.59
M9	"	"	5.59

Section Properties

Category	Section	Ax in ²	Iz in ⁴	Sy+ in ³	Sy- in ³
Wood Sha	SS2x4	5.25	5.36	1.06	3.06

Material Properties

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

Load Combination Summary

Equation Case: Equation Case 1

Combination: +1D+1L+1L3

Contributing Cases & Source

Service Case 1 (Dead loads)

Service Case 3 (Roof Live loads)

Member Uniform Loads

to - am is empty check the selection state, or report properties.

Nodal Reactions

Node	Load Case	FX lbs	FY lbs	MZ lb-ft
W1	Equation Case 1	-0.00	707.63	-NA-
N3	"	-NA-	707.63	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1108.77	52.68	-96.81	0.0676
"	1108.77	-24.01	30.7764	0.1162
"	1108.77	4.6523	63.0465	-0.1161
"	1108.77	33.3190	0.0000	-0.0000
M2	1108.77	-43.32	-0.0000	-0.0000
"	1108.77	-4.6523	63.0465	0.1161
"	1108.77	24.0144	30.7764	-0.1162
"	1108.77	52.6810	-96.81	-0.0676
M3	-1293.28	107.26	0.0000	0.0000
"	-1246.94	14.5950	113.10	0.0739
"	-1200.61	-78.07	53.9607	-0.0828
"	-1154.28	-170.74	-177.42	0.0554
M4	-898.17	170.74	-177.42	-0.0554
"	-851.83	78.0717	53.9607	0.1042
"	-805.50	-14.59	113.10	-0.1167
"	-759.17	-107.26	0.0000	0.0640
M5	-898.17	-170.74	-177.42	-0.0520
"	-851.83	-78.07	53.9607	-0.0909
"	-805.50	14.5950	113.10	-0.1034
"	-759.17	107.26	0.0000	-0.0509
M6	-1293.28	-107.26	-0.0000	0.0133
"	-1246.94	-14.59	113.10	0.0606
"	-1200.61	78.0717	53.9607	-0.0695
"	-1154.28	170.74	-177.42	-0.0520
M7	487.14	0.0000	0.0000	0.0149
"	487.14	0.0000	0.0000	0.0149
"	487.14	0.0000	0.0000	0.0149
"	487.14	0.0000	0.0000	0.0149
M8	-426.85	0.0000	0.0000	-0.0671
"	-426.85	0.0000	0.0000	-0.0647
"	-426.85	0.0000	0.0000	-0.0623
"	-426.85	0.0000	0.0000	-0.0599
M9	-426.85	-0.0000	-0.0000	0.0466
"	-426.85	-0.0000	-0.0000	0.0490
"	-426.85	-0.0000	-0.0000	0.0514
"	-426.85	-0.0000	0.0000	0.0538

BENDING & COMP: TRUSS 1 - MEMBER 3

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

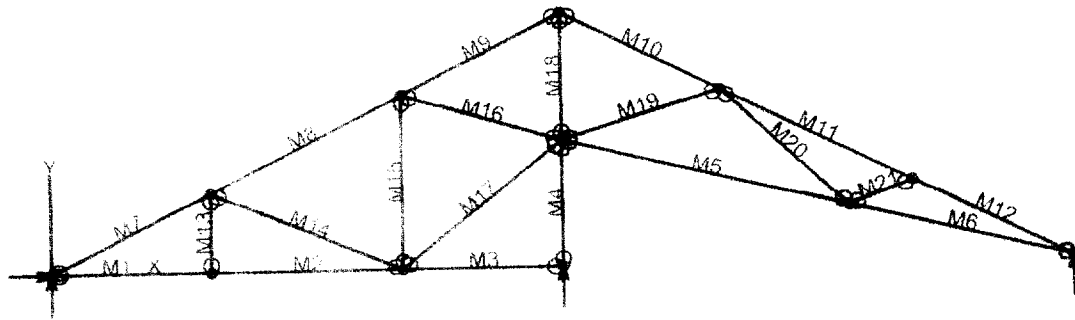
Grading:

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	1.5 inches
Length	5.59 feet
Max Axial Comp. C	1154 lbs
Max Reaction, R	170 lbs
Max Moment, M	177 ft-lbs
Max LL Deflection	0.02 inches
Max TL Deflection	0.06 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.15
F _c =	220 psi
F _{ce} =	1602 psi
F _c * =	2084 psi
F _{ce} =	1239 psi
F _b =	694 psi
F _b * = F _b * =	2156 psi
Shear D/C ratio	0.41 < 1.0, Member OK
interaction equation	
(fc/F'c)^2 +	
(fb / (F'b(1-fc/Fce))) =	0.40 < 1.0, Member OK
Live Load defl ratio	0.07 < 1.0, Member OK
Total Load defl ratio	0.16 < 1.0, Member OK



VisualAnalysis 3.50.c Report

05/02/01 13:47:16

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	5.00	0.00	No		No			
N3	11.00	0.00	"		"			
N4	16.00	0.00	"		Yes			
N5	16.00	4.00	"		No			
N6	5.00	2.50	"		"			
N7	11.00	5.50	"		"			
N8	16.00	8.00	"		"			
N9	21.00	5.50	"		"			
N10	27.00	2.50	"		"			
N11	32.00	0.00	"		Yes			
N12	25.00	1.75	"		No			

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	5.00
M2	"	"	6.00
M3	"	"	5.00
M4	"	"	4.00
M5	"	"	9.28
M6	"	"	7.22
M7	"	"	5.59
M8	"	"	6.71
M9	"	"	5.59
M10	"	"	5.59
M11	"	"	6.71
M12	"	"	5.59
M13	"	"	2.50
M14	"	"	6.50
M15	"	"	5.50
M16	"	"	5.22
M17	"	"	6.40
M18	"	"	4.00
M19	"	"	5.22
M20	"	"	5.48
M21	"	"	2.14

Section Properties

Category	Section	Ax in ²	Iz in ⁴	Sy+ in ³	Sy- in ³
Wood	Sha SS2x4	5.25	5.36	0.06	3.06

Material Properties

Material	Strength psi	Elasticity psi	Poisson psi	Density lb/ft ³
Wood	-NA-	1700000.0	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	367.89	-NA-
N2	"	-NA	1530.75	-NA-
N3	"	-NA	370.80	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	460.77	-24.94	-17.18	0.0251
M2	460.77	-10.60	12.3750	-0.0033
M3	460.77	3.7304	18.1021	-0.0159
M4	460.77	18.0638	0.0000	-0.0000
M5	460.77	-27.21	25.63	0.0171
M6	460.77	-10.01	11.4975	0.0271
M7	460.77	7.1912	14.3151	0.0305
M8	460.77	24.3912	-17.18	-0.0251
M9	0.0000	-16.37	-0.0000	-0.0000
M10	0.0000	-1.0398	15.2845	-0.0112
M11	0.0000	12.2935	6.7398	0.0154
M12	0.0000	26.6268	25.63	0.0171
M13	-1514.38	0.0000	0.0000	-0.0068
M14	-1514.38	0.0000	0.0000	-0.0044
M15	-1514.38	0.0000	0.0000	-0.0020
M16	-1514.38	0.0000	0.0000	0.0004
M17	-43.61	-44.93	-57.84	-0.0715
M18	-37.16	-19.13	45.0251	-0.1245
M19	-30.71	6.6656	60.3039	0.1149
M20	-24.26	32.4656	0.0000	-0.0080
M21	919.51	-22.08	-0.0000	0.0025
M22	924.52	-2.0177	28.8638	0.0414
M23	929.54	18.0490	9.5850	-0.0601
M24	934.56	38.1156	-57.84	-0.0715
M25	-568.57	106.83	0.0000	-0.0000
M26	-522.24	14.1629	112.30	0.0601
M27	-475.90	78.50	52.3505	-0.0557
M28	-429.57	-171.17	-179.84	0.0261
M29	-79.38	164.65	-179.84	-0.0261
M30	-23.78	50.4531	63.3905	0.0618
M31	31.8237	-57.75	58.5898	0.0568

	87.4237	-138.95	-94.24	0.0151
M	799.57	173.75	-94.24	0.0152
	845.90	81.800	40.7491	0.0488
	892.24	11.59	-107.50	0.0634
	938.57	-104.25	-0.0000	0.0167
M	799.30	-174.28	-197.24	-0.0350
	845.63	81.62	40.7496	0.0580
	891.97	11.0501	-106.50	0.0632
	938.30	-103.72	0.0000	-0.0078
M	-613.12	-161.64	-162.59	-0.0715
	-557.52	50.44	73.8873	-0.1065
	501.92	50.7647	62.3386	0.0908
	-446.32	71.96	-197.24	-0.0350
M	-1058.29	-109.91	-0.0000	0.0047
	-1011.90	17.25	118.04	0.0472
	-965.62	75.4189	63.8470	-0.0907
	-919.29	-68.09	-162.59	0.0715
M	49.3274	0.0000	0.0000	0.0031
	49.3274	0.0000	0.0000	0.0048
	49.3274	0.0000	0.0000	0.0066
	49.3274	0.0000	0.0000	0.0083
M	-502.02	0.0000	0.0000	-0.0199
	-502.02	0.0000	0.0000	0.0175
	-502.02	0.0000	0.0000	0.0154
	-502.02	0.0000	-0.0000	0.0132
M	249.03	0.0000	0.0000	0.0068
	249.03	0.0000	0.0000	0.0057
	249.03	0.0000	0.0000	-0.0046
	249.03	0.0000	0.0000	-0.0035
M	-825.01	0.0000	0.0000	0.0136
	-825.01	0.0000	0.0000	-0.0117
	-825.01	0.0000	0.0000	-0.0098
	-825.01	0.0000	0.0000	-0.0079
M	-3.3793	-0.0000	0.0000	0.0061
	-3.3793	-0.0000	0.0000	0.0099
	-3.3793	-0.0000	-0.0000	0.0138
	-3.3793	-0.0000	-0.0000	0.0176
M	-1025.38	0.0000	-0.0000	-0.0004
	-1025.38	0.0000	0.0000	0.0031
	-1025.38	-0.0000	0.0000	0.0065
	-1025.38	-0.0000	0.0000	0.0100
M	-794.97	-0.0000	0.0000	-0.0403
	-794.97	-0.0000	-0.0000	0.0294
	-794.97	-0.0000	-0.0000	-0.0186
	-794.97	-0.0000	0.0000	0.0077
M	695.67	-0.0000	-0.0000	-0.0619
	695.67	-0.0000	-0.0000	-0.0504
	695.67	-0.0000	-0.0000	-0.0389
	695.67	-0.0000	0.0000	-0.0274
M	-449.95	0.0000	0.0000	-0.0609
	-449.95	0.0000	0.0000	-0.0605
	-449.95	0.0000	0.0000	-0.0600
	-449.95	0.0000	0.0000	-0.0595

BENDING & COMP: TRUSS 2 - MEMBER 12

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

Grading:

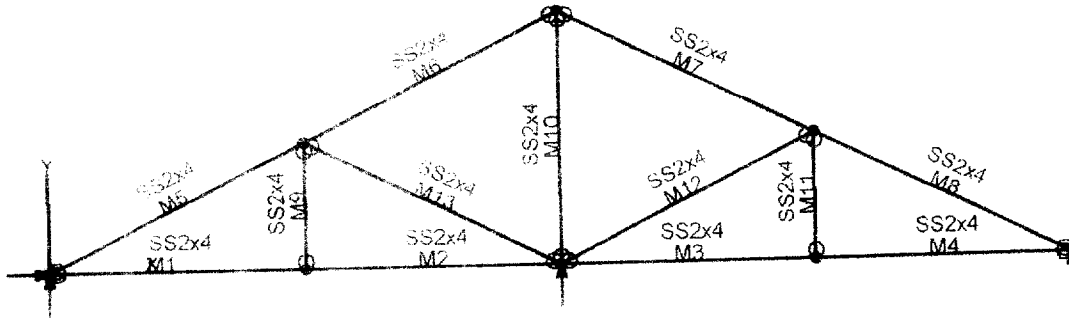
2x or 4x

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	3.5 inches
Depth, d	3.5 inches
Length	5.59 feet
Max Axial Comp. C	919 lbs
Max Reaction, R	168 lbs
Max Moment, M	162 ft-lbs
Max LL Deflection	0.03 inches
Max TL Deflection	0.07 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.15
fc =	175 psi
Fce =	1602 psi
Fc* =	2084 psi
F'c =	1239 psi
fc*	635 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.40 < 1.0, Member OK
interaction equation	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.35 < 1.0, Member OK
Live Load defl ratio	0.11 < 1.0, Member OK
Total Load defl ratio	0.19 < 1.0, Member OK



VisualAnalysis 3.50.c Report

05/02/01 13:59:58
 Project: Truss 3
 File: C:\Program Files\IBS\VA35\truss 3.vap
 Company: PK Associates Engineers
 Engineer: Paul Zacherl
 Default Units: Feet Pounds Degrees Fahrenheit Seconds.

Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes		NO	
N2	8.00	0.00	No		No			
N3	16.00	0.00			Yes			
N4	24.00	0.00			No			
N5	32.00	0.00			Yes			
N6	8.00	4.00			No			
N7	16.00	4.00						
N8	24.00	4.00						

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.00
M2	"	"	8.00
M3	"	"	8.00
M4	"	"	8.00
M5	"	"	8.94
M6	"	"	8.94
M7	"	"	8.94
M8	"	"	8.04
M9	"	"	4.00
M10	"	"	8.00
M11	"	"	4.00
M12	"	"	8.94
M13	"	"	8.94

Section Properties

Category	Section	Ax in ²	Iz in ⁴	Sy+ in ³	Sy- in ³
Wood Sha	SS2x4	5.25	5.10	3.06	3.06

Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft ³
Wood	-NA-	1700000.00	0.35	40.47

Load Combination Summary

Equation Case: Equation Case 1
 Combination: +1D+1L+1W
 Contributing Cases & Source

Service Case 1 (Dead loads)
 Service Case 2 (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
41	Equation Case 1	0.00	357.28	-NA-
42	"	-NA	1549.84	-NA-
43	"	-NA	357.28	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	284.89	-40.85	51.59	-0.0209
M2	284.89	-17.91	26.6116	-0.0508
M3	284.89	5.0183	43.8071	-0.0515
M4	284.89	17.9517	0.0000	0.0000
M5	284.89	-23.97	-48.18	-0.0000
M6	284.89	11.04	11.6898	0.0155
M7	284.89	11.8930	10.5529	-0.0220
M8	284.89	34.8263	51.59	-0.0209
M9	284.89	-34.83	51.59	0.0209
M10	284.89	-11.89	10.5529	-0.0220
M11	284.89	11.0403	11.6898	-0.0155
M12	284.89	30.8737	48.18	-0.0000
M13	284.89	-23.95	0.0000	-0.0000
M14	284.89	-5.0183	43.8071	0.0515
M15	284.89	17.9150	26.6116	-0.0508
M16	284.89	40.8483	51.59	-0.0209
M17	-402.10	167.15	0.0000	-0.0000
M18	-327.97	19.8877	276.23	-0.3188
M19	-253.83	-129.38	111.52	0.2341
M20	-179.70	-277.65	-494.13	0.0217
M21	321.38	277.65	494.13	-0.0217
M22	395.51	129.38	111.52	-0.2375
M23	469.64	18.89	276.23	-0.3258
M24	543.78	167.15	0.0000	-0.0193
M25	321.38	-277.65	-494.13	0.0217
M26	395.51	-129.38	111.52	-0.2321
M27	469.64	19.8877	276.23	-0.3200
M28	543.78	167.15	0.0000	-0.0048
M29	-402.10	167.15	0.0000	0.0055
M30	-327.97	19.89	276.23	0.3134
M31	-253.83	129.38	111.52	-0.2286
M32	-179.70	277.65	-494.13	0.0157
M33	75.6747	0.0000	-0.0000	0.0031
M34	75.6747	0.0000	0.0000	0.0042
M35	75.6747	0.0000	-0.0000	0.0053
M36	75.6747	0.0000	0.0000	0.0063
M37	-785.38	0.0000	0.0000	0.0061
M38	-785.38	0.0000	-0.0000	0.0061
M39	-785.38	0.0000	-0.0000	0.0061
M40	-785.38	0.0000	0.0000	0.0061
M41	75.6747	0.0000	0.0000	0.0059
M42	75.6747	0.0000	0.0000	0.0070
M43	75.6747	0.0000	0.0000	0.0081

	75.6741	0.0000	0.0000	0.0191
41	-778.72	0.0000	0.0000	0.0017
	-778.72	0.0000	0.0000	0.0088
	-778.72	0.0000	0.0000	0.0149
	-778.72	0.0000	0.0000	0.0210
41	-778.72	0.0000	0.0000	0.0017
	-778.72	0.0000	0.0000	0.0034
	-778.72	0.0000	0.0000	0.0099
	-778.72	0.0000	0.0000	0.0155

BENDING & COMP: TRUSS 3 - MEMBER 5

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

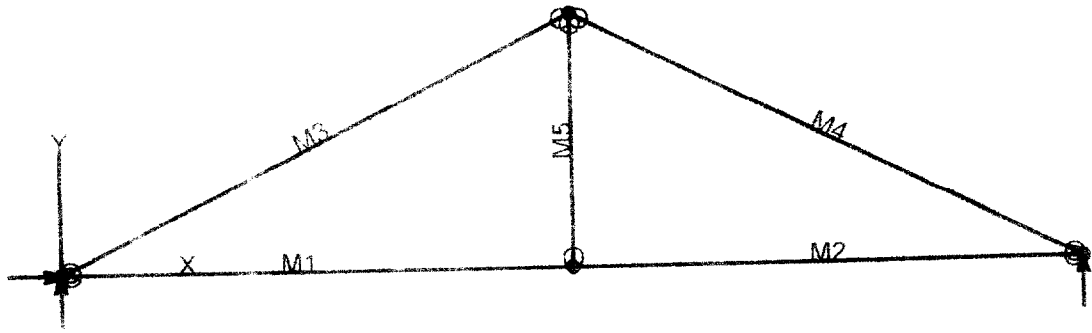
Grading:

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	8.94 feet
Max Axial Comp. C	179 lbs
Max Reaction, R	277 lbs
Max Moment, M	494 ft-lbs
Max LL Deflection	0.01 inches
Max TL Deflection	0.02 inches
LL Defl Criteria = L/240	240
TL Defl Criteria = L/180	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, C _T =	1.25
f _c =	34 psi
F _{ce} =	676 psi
F _c * =	2084 psi
F' _c =	623 psi
f _b =	1936 psi
F' _b = F _b * =	2156 psi
Shear D/C ratio	0.67 < 1.0, Member OK
Interaction equation	
(f _c /F' _c) ² +	
f _b / (F' _b (1-f _c /F _{ce})) =	0.95 < 1.0, Member OK
Live Load defl ratio	0.02 < 1.0, Member OK
Total Load defl ratio	0.03 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08-07-01 14:02:28

Project: Truss 4

File: Untitled.Vap

Company: PK Associates Eng. Inc.

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	7.75	0.00	No	No	"
N3	15.50	0.00	"	Yes	"
N4	7.75	3.88	No	No	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood1	7.75
M2	"	"	7.75
M3	"	"	8.66
M4	"	"	8.66
M5	"	"	3.88

Section Properties

Category	Section	Ax in ²	Iz in ⁴	Sy+ in ³	Sy- in ³
Wood Sha	SS2x4	5.25	5.74	3.06	3.06

Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft ³
Wood	-NA	1700000	0.00	40.34

Load Combination Summary

Equation Case: Equation Case 1
Combination: +D+1L+1LF
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	FY	MZ
------	-----------	----	----	----

		lbs	lbs	lb-ft
N	Equation 2, No. 1	-0.00	548.41	NA
N	"	-NA	548.41	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M	563.13	-48.69	-57.05	-0.0286
	563.13	-18.47	18.2189	-0.0455
	563.13	21.7476	38.2340	-0.0439
	563.13	20.9642	0.0000	0.0000
M1	563.13	-25.96	-0.0000	-0.0000
	563.13	21.7476	38.2340	0.0439
	563.13	18.4691	18.2189	0.0455
	563.13	40.6858	-57.05	-0.0286
M2	-737.33	215.45	0.0000	0.0000
	-665.51	71.8167	413.81	0.6094
	-593.69	71.82	413.81	-0.6187
	-521.88	-215.45	0.0000	-0.0278
M	-737.33	-35.45	0.0000	0.0050
	-665.51	71.82	413.81	-0.6042
	-593.69	71.8167	413.81	-0.6134
	-521.88	215.45	0.0000	-0.0225
M1	81.3716	0.0000	0.0000	0.0059
	81.3716	0.0000	0.0000	0.0059
	81.3716	0.0000	0.0000	0.0059
	81.3716	0.0000	0.0000	0.0059

BENDING & COMP: TRUSS 4 - 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	8.66 feet	
Max Axial Comp. C	665 lbs	
Max Reaction, R	71 lbs	
Max Moment, M	413 ft-lbs	
Max LL Deflection	0.24 inches	
Max TL Deflection	0.60 inches	
LL Defl Criteria = L/	240	
TL Defl Criteria = L/	180	
Duration factor, Cd	1.25	
Repetitive Factor, Cr	1.15	
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6	
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6	
Buckling Factor, C _T	1.24	
f _c =	127 psi	
F _{ce} =	716 psi	
F _c * =	2084 psi	
F' _c =	656 psi	
f _b	1618 psi	
F' _b = F _b * =	2156 psi	
Shear D/C ratio	0.17 < 1.0, Member OK	
Interaction equation:		
(f _c /F' _c) ² +		
f _b / (F' _b (1-f _c /F _{ce})) =	0.95 < 1.0, Member OK	
Live Load defl ratio	0.55 < 1.0, Member OK	
Total Load defl ratio	1.04 > 1.0, Member No Good.	OK, 4% over