CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0013379

Insp Area: 2

Site Address: 345 RIVERGATE WY SAC
Parcel No: 031-0380-022

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

CONTRACTOR	*OWNER*	*ARCHITECT*
WEATHERTITE ROOFING	UYEDA CLIFFORD J/JEANNIE	
4661 SUMMERCREEK	345 RIVERGATE WY	
SHINGLE SPRINGS, CA 95682	SACRAMENTO CA 95831	

Nature of Work: T\O SHEET REROOF WITH LIGHTWEIGHT 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'sAddress _____

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 39 License Number 420375 Date 11/7/00 Contractor Signature Carolyn Peer

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code; any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500.00);

_____ I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code. The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

_____ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code. The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law).

_____ I am exempt under Sec _____ B & PC for this reason: _____

Date _____ Owner Signature _____

IN ISSUING THIS BUILDING PERMIT, the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and herby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

Date 11/7/00 Applicant/Agent Signature Carolyn Peer

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:

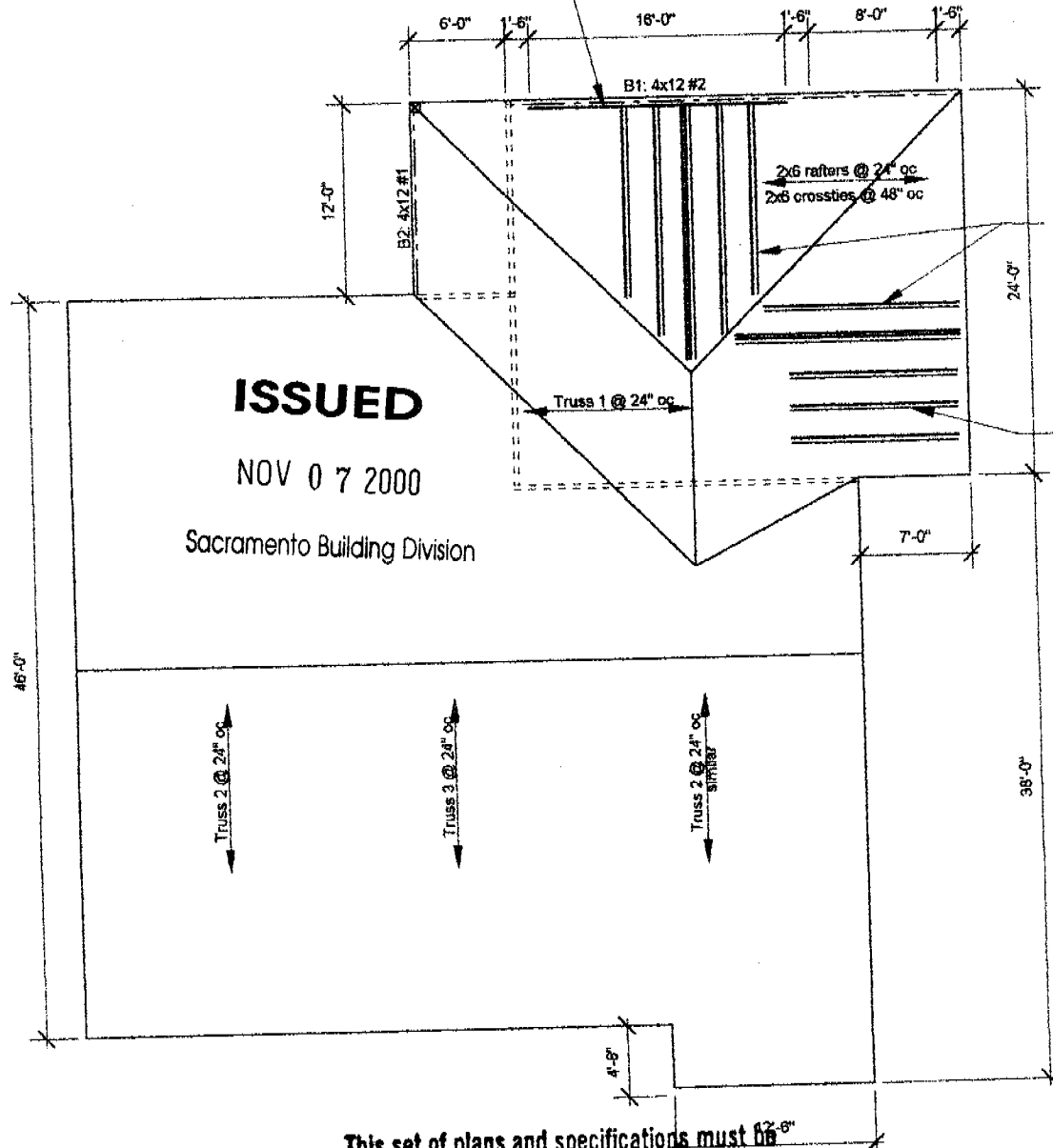Carrier STATE FUND Policy Number 1271896-00 Exp Date 10/01/2001

_____ (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 11/7/00 Applicant Signature Carolyn Peer

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.

Scab a 1 3/4" x 11 1/4" LVL
to the existing 4x12 beam.
See detail 2.

6'-0" | 1'-6" | 16'-0" | 1'-6" | 8'-0" | 1'-6"

B1: 4x12 #2

12'-0"

B2: 4x12 #1

2x6 rafters @ 24" oc
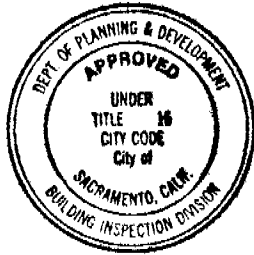2x6 crossties @ 48" oc

24'-0"

Scab a 2x6 to existing 2x6
rafters where the span is
greater than 12'-0" (total 5).
Scab 2 - 2x6's to the existing
2x6 rafters where the span is
greater than 15'-2" (total 2).

ISSUED

NOV 0 7 2000

Sacramento Building Division

Truss 1 @ 24" oc

Scab a 2x4 x 10'-0" to the top
chord of the existing truss
(total 3). See detail 3.

7'-0"

46'-0"

Truss 2 @ 24" oc

Truss 3 @ 24" oc

Truss 2 @ 24" oc (similar)

36'-0"

4'-8"

12'-6"

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.

REVIEWED BY: 11/6/00

REGISTERED PROFESSIONAL ENGINEER
PAUL ZACHER
No. S3878
Exp. 3-31-03
STRUCTURAL
STATE OF CALIFORNIA

N

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.

ROOF PLAN - UYEDA

(1)

Not to Scale

22

Existing header or beam

○ ○ ○ ○ ○ ○ ○ ○

2" typ

○ ○ ○ ○ ○ ○ ○ ○

2"

○ ○ ○ ○ ○ ○ ○ ○

○ ○ ○ ○ ○ ○ ○

3" 2"
max

2"
typ

LVL (microlam)

Support post or stud

ELEVATION

Existing header or beam

1 3/4" x 11 1/4" LVL (microlam)
x length of existing header or beam

2"

Apply 3 continuous beads (rows)
of "Liquid Nail"or equal along
length of beams.

2"

16d's @ 2" oc,
staggered
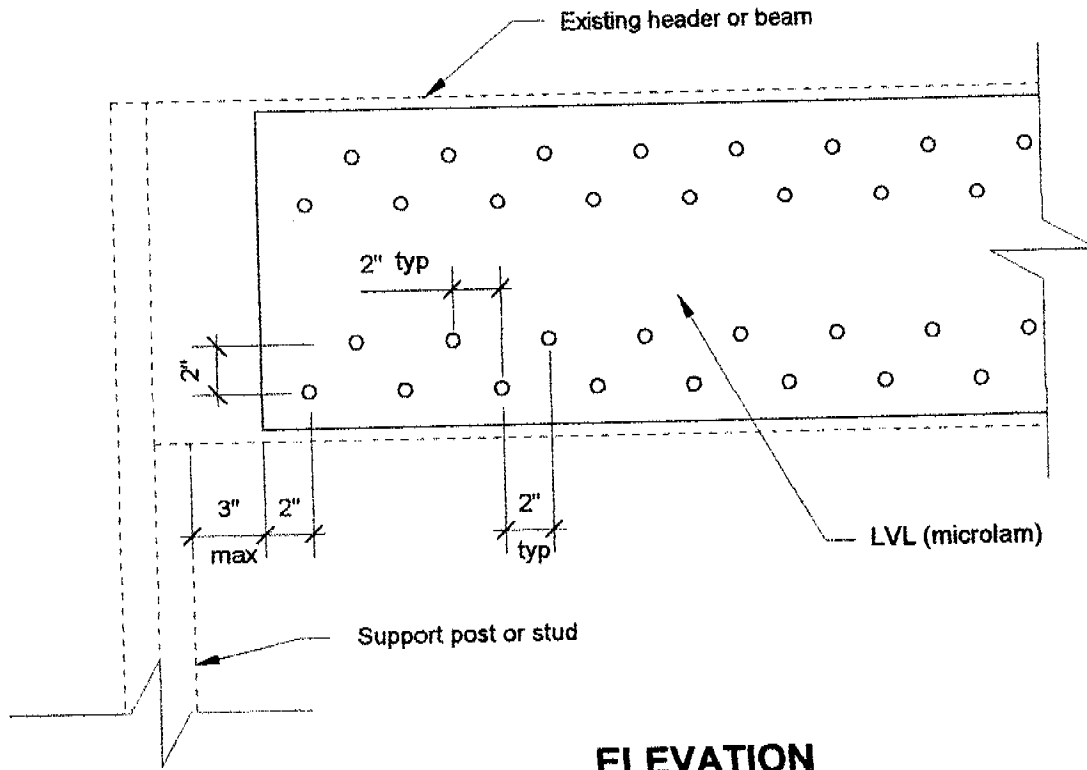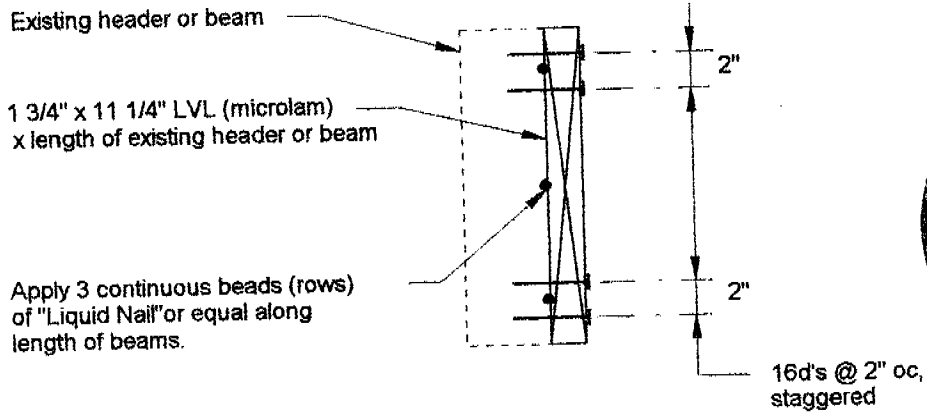
SECTION
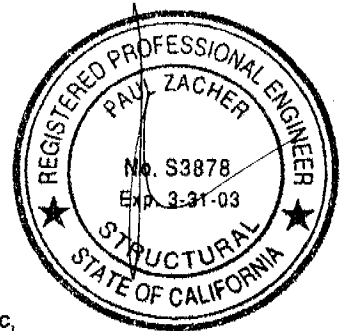
(2) ## HEADER DETAIL

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

Scab 2x4 w/ 16d @ 12" oc
staggered to top chord of
existing truss

1'-0"

min.

Existing truss
top chord

Existing truss web

Existing bearing wall
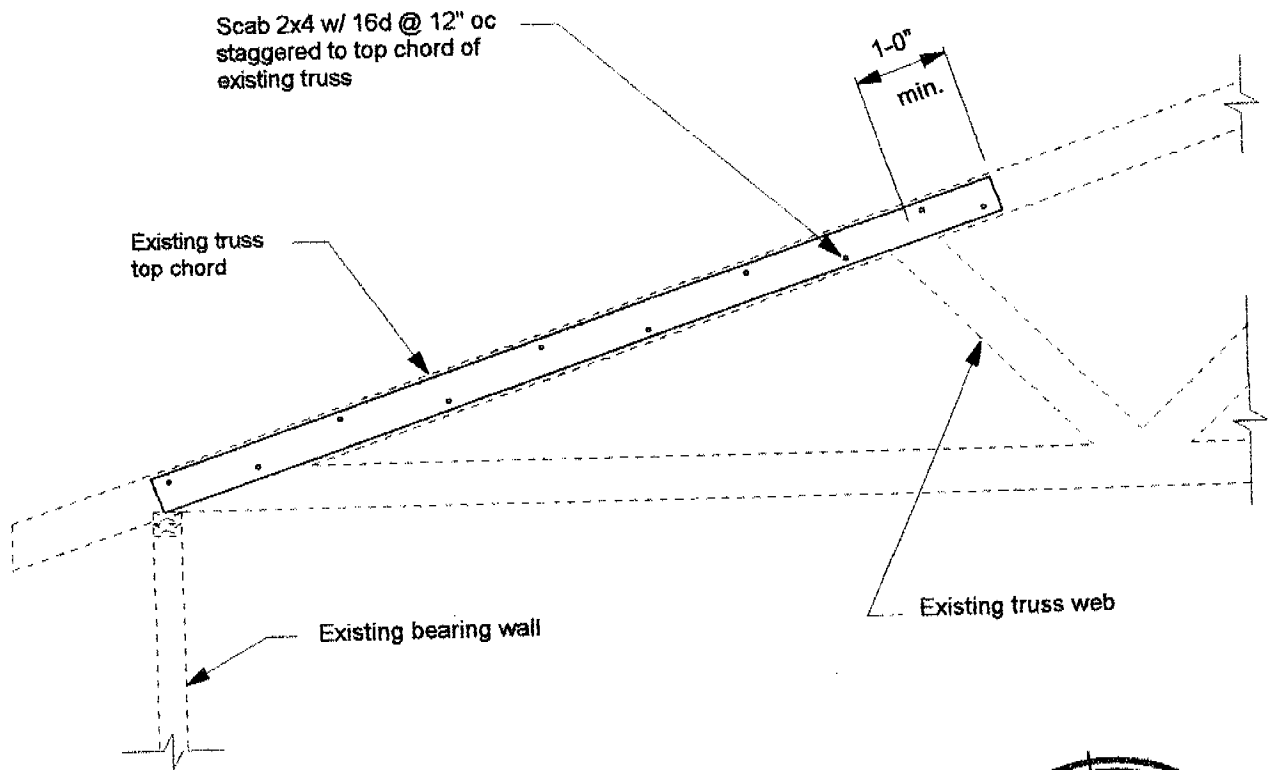
TRUSS REINFORCEMENT DETAIL

3

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

REGISTERED PROFESSIONAL ENGINEER
PAUL ZACHER
No. S3878
Exp. 3-31-03
STRUCTURAL
STATE OF CALIFORNIA

2-4
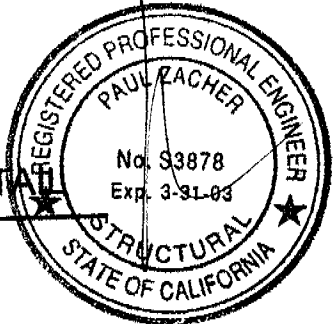
Uyeda

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

TEL: 916.961.3960
FAX: 916.961.6552

September 29, 2000

Weather-Tite Roofing Company
P.O. Box 6068
Folsom, CA 95673
TEL: (916) 635-9810
FAX: (916) 635-9810

Attn.: Mr. Larry Peer,

re: Job 2000_328: UYEDA

Subject: Structural Investigation Report of the Roof for the Residence located at 345 River Gate Way, Sacramento, CA 95831.

As requested by Mr. Larry Peer, this is a report to determine what needs should be addressed to correct any structural deficiencies of the roof. Paul Zacher visited the site September 28, 2000. 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 2500 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 area is framed with pre-engineered wood trusses spaced at 24" on center. The garage area is framed with 2x6 rafters spaced at 24" on center and 2x6 cross ties spaced at 4'-0" on center and with pre-engineered wood trusses spaced at 24" on center.

CONCLUSIONS:
Roof:
The living area has sufficient structural capacity for the applied live and dead loads. The garage lacks sufficient structural capacity for the applied live and dead loads.

1 /24

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.

Garage:

1. Scab a 1 3/4" x 11 1/4" LVL beam to the existing garage door header. See details 1 and 2.
2. Scab a 2x4 DF#2 x 10'-0" long rafter to the top chord of the existing truss. See details 1 and 3.
3. Scab a 2x6 rafter to the existing 2x6 rafters with 16d's @ 12" on center where the span is greater than 12'-0". Scab 2 - 2x6 rafters to the existing 2x6 rafters with 16d's @ 12" on center where the span is greater than 15'-2". See detail 1.
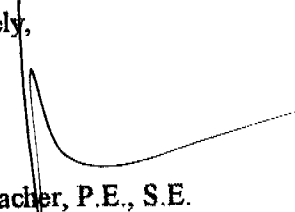
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and 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

MATERIAL	WEIGHT	
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	1.00	psf
Load	10.9	psf
Roof Pitch Adjustment	1.29	psf
Total Load	12.2	psf

LOCATION: VAULT

MATERIAL	WEIGHT	
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
Batt/blown insul	0.50	psf
1/2" Gypboard	2.50	psf
Load	13.9	psf
Roof Pitch Adjustment	1.64	psf
Total Load	15.5	psf

LOCATION: TOP CHORD

MATERIAL	WEIGHT	
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	0.64	psf
Load	10.5	psf
Roof Pitch Adjustment	1.24	psf
Total Load	11.8	psf

LOCATION: BOTTOM CHORD

MATERIAL	WEIGHT	
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.E.

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

Job #: 00-528

Date: 9/29/00

LOADING

RAFTER

$D_L = 12.2 \text{ psf} \times 2' = 24.4 \text{ plf}$ $2 \times 6 \text{ #2}$
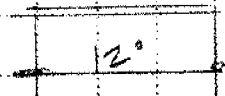
$L_L = 16.0 \quad " \quad " = 32 \quad "$

24.4/32

12'

RAFTER

$D_L = 12.2 \text{ psf} \times 2' = 24.4 \text{ plf}$ $2 - 2 \times 6 \text{ #2}$

$L_L = 16.0 \quad " \quad " = 32 \quad "$

24.4/32

15'

RAFTER

$D_L = 12.2 \text{ psf} \times 2' = 24.4 \text{ plf}$ $3 - 2 \times 6 \text{ #2}$

$L_L = 16.0 \quad " \quad " = 32 \quad "$

24.4/32

17'

B1

$D_L = 12.2 \text{ psf} \times 12' = 146 \text{ plf}$ $4 \times 12 \text{ #2}$

$L_L = 16.0 \quad " \quad " = 192 \quad "$ $+ 1\frac{3}{4} \times 11\frac{1}{4} \text{ LVL}$

146/192

16'

B2

$D_L = 12.2 \text{ psf} \times 4' = 49 \text{ plf}$ $4 \times 12 \text{ #1}$

$L_L = 16.0 \quad " \quad " = 64 \quad "$

49/64

12'

Page: 4
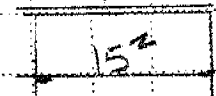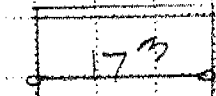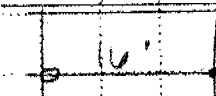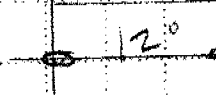
'Paul Zacher - Structural Engineers
4701 Lakeside Way
Fair Oaks
TEL: (916) 961-3960
FAX: (916) 961-6552

Title :
Dsgnr:
Description :

Scope :

Job #
Date: 4:25PM, 29 SEP 00

| Rev. 510304 User: KW-0602844, Ver 5.1.3, 22-Jun-1999, Win32 (c) 1983-99 ENERCALC | **Timber Beam & Joist** | c:\enercalc\test.ecw:Calculations |

Description   RAFTERS AND BEAMS

Timber Member Information   Calculations are designed to 1997 NDS and 1997 UBC Requirements

		rafter	rafter	rafter	B1	B2
Timber Section		2x6	2-2x6	3-2x6	4x12 + 1.7	4x12
Beam Width	in	1.500	3.000	4.500	5.250	3.500
Beam Depth	in	5.500	5.500	5.500	11.250	11.250
Le: Unbraced Length	ft	0.00	0.00	0.00	0.00	0.00
Timber Grade		ouglas Fir - Larch,	ouglas Fir - Larch	Douglas Fir - Larch	ustom, DF#2 + LVL	Douglas Fir - Larch,
Fb - Basic Allow	psi	875.0	875.0	875.0	1,450.0	875.0
Fv - Basic Allow	psi	95.0	95.0	95.0	158.0	95.0
Elastic Modulus	ksi	1,600.0	1,600.0	1,600.0	1,666.7	1,600.0
Load Duration Factor		1.250	1.250	1.250	1.250	1.250
Member Type		Sawn	Sawn	Sawn	Manuf/Pine	Sawn
Repetitive Status		Repetitive	Repetitive	Repetitive	No	No

Center Span Data

Span	ft	12.00	15.17	17.25	16.00	12.00
Dead Load	#/ft	24.40	24.40	24.40	146.00	49.00
Live Load	#/ft	32.00	32.00	32.00	192.00	64.00

Results   Ratio =   0.9652   0.7872   0.6786   0.6466   0.2748

Mmax @ Center	in-k	12.18	19.47	25.17	129.79	24.41
@ X =	ft	6.00	7.58	8.62	8.00	6.00
fb : Actual	psi	1,610.9	1,287.2	1,109.6	1,172.0	330.6
Fb : Allowable	psi	1,635.2	1,635.2	1,635.2	1,812.5	1,203.1
		Bending OK	Bending OK	Bending OK	Bending OK	Bending OK
fv : Actual	psi	57.1	36.7	28.1	61.0	21.9
Fv : Allowable	psi	118.8	118.8	118.8	197.5	118.8
		Shear OK	Shear OK	Shear OK	Shear OK	Shear OK

Reactions

@ Left End DL	lbs	146.40	185.07	210.45	1,168.00	294.00
LL	lbs	192.00	242.72	276.00	1,536.00	384.00
Max. DL+LL	lbs	338.40	427.79	486.45	2,704.00	678.00
@ Right End DL	lbs	146.40	185.07	210.45	1,168.00	294.00
LL	lbs	192.00	242.72	276.00	1,536.00	384.00
Max. DL+LL	lbs	338.40	427.79	486.45	2,704.00	678.00

Deflections   Ratio OK   Deflection OK Deflection OK Deflection OK Deflection OK

Center DL Defl	in	-0.342	-0.437	-0.487	-0.207	-0.034
L/Defl Ratio		420.9	416.7	425.1	925.9	4,185.4
Center LL Defl	in	-0.449	-0.573	-0.639	-0.273	-0.045
L/Defl Ratio		320.9	317.7	324.1	704.1	3,204.4
Center Total Defl	in	-0.791	-1.010	-1.126	-0.460	-0.079
Location	ft	6.000	7.585	8.625	8.000	6.000
L/Defl Ratio		182.1	180.3	183.9	400.0	1,814.9

VisualAnalysis 3.50.c Report

09/29/00 15:21:09
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	8.00	0.00	No	No	"
N3	16.00	0.00	"	"	"
N4	24.00	0.00	"	"	"
N5	28.50	0.00	"	Yes	"
N6	8.00	4.00	"	No	"
N7	16.00	8.00	"	"	"
N8	24.00	4.00	"	"	"
N9	28.50	1.75	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.00
M2	"	"	8.00
M3	"	"	8.00
M4	"	"	4.50
M5	"	"	1.75
M6	"	"	5.03
M7	"	"	8.94
M8	"	"	8.94
M9	"	"	8.94
M10	"	"	4.00
M11	"	"	8.00
M12	"	"	4.00
M13	"	"	8.94
M14	"	"	8.94
M15	"	"	4.83

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

Y

M8   M7

M9   M10   M11   M12   M6

M13   M14   M15

M1   M2   M3   M4

6

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	1008.37	-NA-
N5	"	-NA-	1008.37	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1461.02	-39.59	-41.55	-0.1076
"	1461.02	-16.66	33.3059	-0.1161
"	1461.02	6.2735	47.1543	-0.0864
"	**1461.02**	29.2069	0.0000	-0.0000
M2	1461.02	-35.24	-48.30	-0.0923
"	1461.02	-12.31	14.9571	-0.1119
"	1461.02	10.6228	17.2073	**-0.1180**
"	1461.02	33.5562	-41.55	-0.1076
M3	962.33	-31.88	-28.13	-0.0521
"	962.33	-8.9453	26.1540	-0.0910
"	962.33	13.9880	19.4305	-0.1014
"	962.33	36.9213	-48.30	-0.0923
M4	-0.0000	-13.10	-0.0000	-0.0000
"	-0.0000	-0.2000	9.9266	-0.0196
"	-0.0000	12.7000	0.5516	-0.0356
"	-0.0000	25.6000	-28.13	-0.0521
M5	-995.27	0.0000	0.0000	-0.0418
"	-995.27	0.0000	0.0000	-0.0377
"	-995.27	0.0000	0.0000	-0.0337
"	-995.27	0.0000	0.0000	-0.0296
M6	-1138.46	-125.10	-0.0000	-0.0112
"	-1096.76	-41.70	-139.52	0.0750
"	-1055.06	41.7000	-139.52	0.0930
"	-1013.36	125.10	0.0000	0.0428
M7	-1148.54	-166.87	0.0000	0.0428
"	-1074.40	-18.60	-275.37	0.3636
"	-1000.27	129.67	-109.80	0.2823
"	-926.14	**277.93**	**496.71**	0.0756
M8	-1148.54	166.87	-0.0000	0.1100
"	-1074.40	18.5999	-275.37	0.4110
"	-1000.27	-129.67	-109.80	0.3097
"	-926.14	**-277.93**	496.71	0.0832
M9	**-1744.67**	222.40	-0.0000	0.0000
"	-1670.54	74.1333	-440.94	0.7181
"	-1596.40	-74.13	**-440.94**	**0.7547**
"	-1522.27	-222.40	0.0000	0.1100
M10	73.1493	-0.0000	-0.0000	0.0157
"	73.1493	-0.0000	-0.0000	0.0210
"	73.1493	-0.0000	-0.0000	0.0263
"	73.1493	-0.0000	0.0000	0.0316
M11	331.18	0.0000	0.0000	0.0085

"	331.18	0.0000	0.0000	0.0161
"	331.18	0.0000	0.0000	0.0238
"	331.18	0.0000	0.0000	0.0314
M12	-316.76	0.0000	0.0000	0.0120
"	-316.76	0.0000	0.0000	0.0219
"	-316.76	0.0000	0.0000	0.0319
"	-316.76	0.0000	0.0000	0.0418
M13	-568.37	-0.0000	0.0000	-0.0817
"	-568.37	-0.0000	-0.0000	-0.0773
"	-568.37	-0.0000	-0.0000	-0.0729
"	-568.37	-0.0000	-0.0000	-0.0685
M14	-10.81	-0.0000	0.0000	-0.0967
"	-10.81	-0.0000	-0.0000	-0.0823
"	-10.81	-0.0000	-0.0000	-0.0679
"	-10.81	-0.0000	-0.0000	-0.0535
M15	1032.54	-0.0000	0.0000	-0.0637
"	1032.54	-0.0000	-0.0000	-0.0468
"	1032.54	-0.0000	-0.0000	-0.0298
"	1032.54	-0.0000	-0.0000	-0.0129

BENDING & COMP: TRUSS 1 - MEMBER 9

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

Grading:

2x or 4x   Doug-fir larch: No. 2

Assumptions:

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

Width, b	3	inches
Depth, d	3.5	inches
Length	8.94	feet
Max Axial Comp, C	1596	lbs
Max Reaction, R	74	lbs
Max Moment, M	440	ft-lbs
Max LL Deflection	0.38	inches
Max TL Deflection	0.16	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 =	1.25	
fc =	152	psi
Fce=	676	psi
Fc*=	2084	psi
F'c=	623	psi
fb=	862	psi
F'b=Fb*=	2156	psi
Shear D/C ratio	0.09	< 1.0, Member OK
Interaction equation:		
(fc/F'c)^2 +		
fb/ (F'b(1-fc/Fce)) =	0.58	< 1.0, Member OK
Live Load defl ratio	0.85	< 1.0, Member OK
Total Load defl ratio	0.27	< 1.0, Member OK

M9
M10
M8
M19
M16
M11
M7
M14
M15
M20
M21
M17
M22
M12
M18
M23
Y
M1 X
M2
M3
M4
M5
M6

11
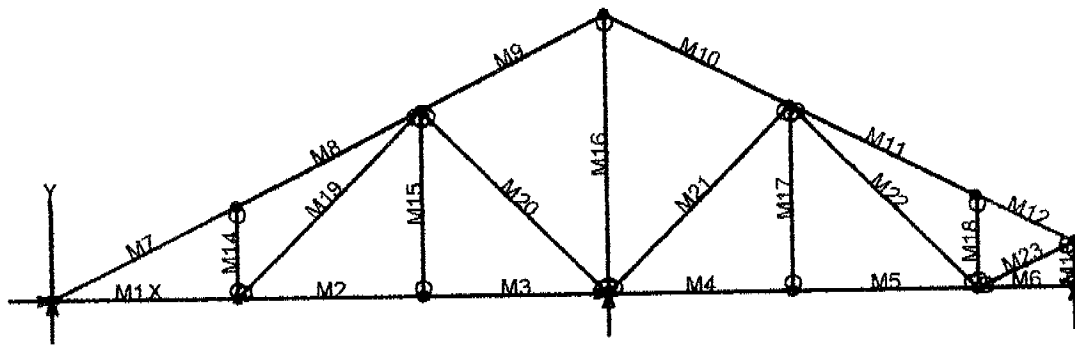
VisualAnalysis 3.50.c Report

09/29/00 15:33:36
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	8.33	0.00	No	No	"
N3	16.67	0.00	"	"	"
N4	25.00	0.00	Yes	Yes	"
N5	33.33	0.00	No	No	"
N6	41.67	0.00	"	"	"
N7	46.00	0.00	"	Yes	"
N8	8.33	4.17	"	No	"
N9	41.67	4.17	"	"	"
N10	16.67	8.33	"	"	"
N11	33.33	8.33	"	"	"
N12	25.00	12.50	"	"	"
N13	46.00	2.00	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.33
M2	"	"	8.34
M3	"	"	8.33
M4	"	"	8.33
M5	"	"	8.34
M6	"	"	4.33
M7	"	"	9.32
M8	"	"	9.32
M9	"	"	9.32
M10	"	"	9.32
M11	"	"	9.32
M12	"	"	4.84
M13	"	"	2.00
M14	"	"	4.17
M15	"	"	8.33
M16	"	"	12.50
M17	"	"	8.33
M18	"	"	4.17
M19	"	"	11.79
M20	"	"	11.78
M21	"	"	11.78
M22	"	"	11.79
M23	"	"	4.77

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	374.94	643.71	-NA-
N4	"	-374.94	2155.08	-NA-
N7	"	-NA-	456.30	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	440.47	-67.30	-95.50	-0.0660
"	440.47	-43.42	58.0351	-0.1634
"	440.47	-19.54	145.44	-0.1837
"	440.47	4.3422	166.70	-0.0000
M2	-220.10	-28.84	-36.98	-0.0303
"	-220.10	-4.9363	9.8119	-0.0392
"	-220.10	18.9717	-9.6973	-0.0416
"	-220.10	42.8797	-95.50	-0.0660
M3	-220.10	-38.31	-57.73	-0.0000
"	-220.10	-14.43	15.3286	-0.0280
"	-220.10	9.4486	22.2454	-0.0415
"	-220.10	33.3280	-36.98	-0.0303
M4	64.4801	-35.02	-51.11	-0.0149
"	64.4801	-11.15	12.8224	-0.0198
"	64.4801	12.7339	10.6171	-0.0137
"	64.4801	36.6132	-57.73	-0.0000
M5	64.4801	-33.62	-32.42	-0.0208
"	64.4801	-9.7133	27.6450	-0.0483
"	64.4801	14.1947	21.4158	-0.0434
"	64.4801	38.1027	-51.11	-0.0149
M6	0.0000	-11.13	-0.0000	-0.0000
"	0.0000	1.2819	7.0629	-0.0077
"	0.0000	13.6945	-3.7451	-0.0132
"	0.0000	26.1072	-32.42	-0.0208
M7	-1015.36	206.71	-166.70	-0.0000
"	-938.07	52.3304	**234.29**	-0.3334
"	-860.79	-102.05	157.09	-0.3107
"	-783.51	**-256.43**	**-398.29**	-0.0716

M8	-1029.19	236.51	-398.29	-0.0716
"	-952.09	81.9400	95.1641	-0.1666
"	-874.99	-72.63	109.63	-0.1589
"	-797.90	-227.20	-354.89	-0.0218
M9	385.79	231.56	-354.89	-0.0218
"	463.08	77.1821	123.26	-0.1719
"	540.36	-77.20	123.23	-0.1680
"	617.65	-231.58	-354.98	-0.0099
M10	384.19	-234.77	-384.74	-0.0136
"	461.47	-80.39	103.37	-0.1393
"	538.76	73.9972	113.28	-0.1470
"	616.04	228.38	-354.98	-0.0190
M11	-542.77	-219.74	-271.81	-0.0265
"	-465.67	-65.17	169.53	-0.2379
"	-388.57	89.4003	131.89	-0.2107
"	-311.47	243.97	-384.74	-0.0136
M12	-465.77	-64.25	0.0000	-0.0031
"	-425.55	15.9962	38.6301	-0.0099
"	-385.34	96.2455	-51.97	-0.0028
"	-345.12	176.49	-271.81	-0.0265
M13	-445.17	0.0000	0.0000	-0.0046
"	-445.17	0.0000	0.0000	-0.0026
"	-445.17	0.0000	0.0000	-0.0006
"	-445.17	0.0000	0.0000	0.0014
M14	-549.60	0.0000	0.0000	0.0049
"	-549.60	0.0000	0.0000	0.0106
"	-549.60	0.0000	0.0000	0.0163
"	-549.60	0.0000	0.0000	0.0220
M15	62.1723	-0.0000	0.0000	-0.0105
"	62.1723	-0.0000	-0.0000	-0.0062
"	62.1723	-0.0000	-0.0000	-0.0019
"	62.1723	-0.0000	-0.0000	0.0025
M16	-963.56	0.0000	0.0000	-0.0102
"	-963.56	0.0000	0.0000	-0.0068
"	-963.56	0.0000	0.0000	-0.0034
"	-963.56	0.0000	0.0000	0.0000
M17	73.1275	-0.0000	0.0000	-0.0021
"	73.1275	-0.0000	-0.0000	-0.0012
"	73.1275	-0.0000	-0.0000	-0.0002
"	73.1275	-0.0000	-0.0000	0.0007
M18	-442.06	-0.0000	0.0000	-0.0127
"	-442.06	-0.0000	-0.0000	-0.0080
"	-442.06	-0.0000	-0.0000	-0.0033
"	-442.06	-0.0000	-0.0000	0.0014
M19	933.63	0.0000	0.0000	0.0135
"	933.63	0.0000	0.0000	0.0258
"	933.63	0.0000	0.0000	0.0380
"	933.63	0.0000	0.0000	0.0502
M20	-853.45	-0.0000	0.0000	-0.0284
"	-853.45	-0.0000	-0.0000	-0.0189
"	-853.45	-0.0000	-0.0000	-0.0095
"	-853.45	-0.0000	-0.0000	-0.0000
M21	-725.66	0.0000	0.0000	-0.0085
"	-725.66	0.0000	0.0000	-0.0056
"	-725.66	0.0000	0.0000	-0.0028
"	-725.66	0.0000	0.0000	-0.0000
M22	456.71	0.0000	0.0000	-0.0137
"	456.71	0.0000	0.0000	-0.0129
"	456.71	0.0000	0.0000	-0.0122
"	456.71	0.0000	0.0000	-0.0115
M23	426.97	-0.0000	0.0000	-0.0195
"	426.97	-0.0000	-0.0000	-0.0127
"	426.97	-0.0000	-0.0000	-0.0059
"	426.97	-0.0000	-0.0000	0.0008

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	9.32 feet	
Max Axial Comp, C	783 lbs	
Max Reaction, R	256 lbs	
Max Moment, M	398 ft-lbs	
Max LL Deflection	0.07 inches	
Max TL Deflection	0.03 inches	
LL Defl Criteria = L/	240	
TL Defl Criteria = L/	180	
Duration factor, C_d	1.25	
Repetitive Factor, C_r	1.15	
Size Factor, C_f bending	1.5 1.5 for 2x4, 1.3 for 2x6	
Size Factor, C_f comp	1.15 1.15 for 2x4, 1.1 for 2x6	
Buckling Factor, CT =	1.26	
f_c =	149 psi	
F_{ce} =	628 psi	
F_c^* =	2084 psi	
F'_c =	582 psi	
f_b =	1560 psi	
$F'_b = F_b^*$ =	2156 psi	
Shear D/C ratio	0.62 < 1.0, Member OK	
Interaction equation:		
$(f_c/F'_c)^2$ +		
$f_b/(F'_b(1-f_c/F_{ce}))$ =	1.01 > 1.0, Member No Good.	OK 1 % over
Live Load defl ratio	0.15 < 1.0, Member OK	
Total Load defl ratio	0.05 < 1.0, Member OK	

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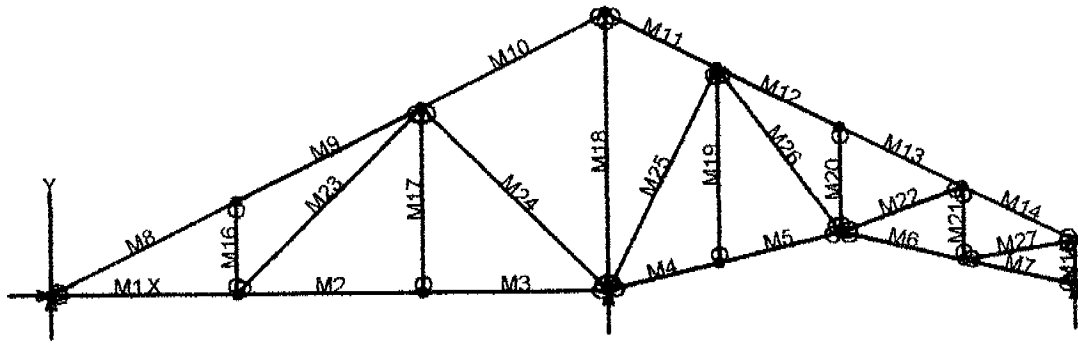
VisualAnalysis 3.50.c Report

09/29/00 15:42:34
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	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	8.33	0.00	No	No	"
N3	16.67	0.00	"	"	"
N4	25.00	0.00	"	Yes	"
N5	30.00	1.19	"	No	"
N6	35.50	2.50	"	"	"
N7	41.00	1.19	"	"	"
N8	46.00	0.00	"	Yes	"
N9	8.33	4.17	"	No	"
N10	16.67	8.33	"	"	"
N11	25.00	12.50	"	"	"
N12	30.00	10.00	"	"	"
N13	35.50	7.25	"	"	"
N14	41.00	4.50	"	"	"
N15	46.00	2.00	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.33
M2	"	"	8.34
M3	"	"	8.33
M4	"	"	5.14
M5	"	"	5.65
M6	"	"	5.65
M7	"	"	5.14
M8	"	"	9.32
M9	"	"	9.32
M10	"	"	9.32
M11	"	"	5.59
M12	"	"	6.15
M13	"	"	6.15
M14	"	"	5.59
M15	"	"	2.00
M16	"	"	4.17
M17	"	"	8.33
M18	"	"	12.50
M19	"	"	8.81
M20	"	"	4.75
M21	"	"	3.31
M22	"	"	5.85
M23	"	"	11.79
M24	"	"	11.78
M25	"	"	11.18
M26	"	"	9.30
M27	"	"	5.07

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	559.31	-NA-
N4	"	-NA-	2342.45	-NA-
N8	"	-NA-	358.37	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	640.77	-41.64	-48.45	-0.0630
"	640.77	-17.76	33.8406	-0.0914
"	640.77	6.1236	49.9899	-0.0782
"	640.77	30.0029	0.0000	-0.0000
M2	-1.0832	-37.53	-62.33	-0.0325
"	-1.0832	-13.62	8.5943	-0.0496
"	-1.0832	10.2893	13.2222	-0.0620
"	-1.0832	34.1973	-48.45	-0.0630
M3	-1.0832	-28.34	-0.0000	-0.0000
"	-1.0832	-4.4569	45.3620	-0.0590
"	-1.0832	19.4225	24.5847	-0.0598
"	-1.0832	43.3018	-62.33	-0.0325
M4	-370.29	15.7358	0.0000	-0.0017
"	-366.88	1.4025	14.6195	-0.0106
"	-363.46	-12.93	4.7441	-0.0126
"	-360.05	-27.26	-29.63	-0.0131
M5	-373.44	28.8899	-29.63	-0.0131
"	-369.68	13.1233	9.8893	-0.0232
"	-365.93	-2.6434	19.7646	-0.0282
"	-362.17	-18.41	-0.0000	-0.0216
M6	336.41	-28.22	-25.82	-0.0160
"	340.17	-12.45	12.4285	-0.0255

"	343.92	3.3171	21.0342	-0.0283
"	347.68	19.0837	0.0000	-0.0186
M7	-3.9215	-16.48	-0.0000	0.0033
"	-0.5102	-2.1436	15.8891	-0.0093
"	2.9012	12.1898	7.2834	-0.0141
"	6.3125	26.5231	-25.82	-0.0160
M8	-809.93	186.48	0.0000	-0.0000
"	-732.65	32.0952	**338.15**	**-0.4839**
"	-655.36	-122.29	198.12	-0.4225
"	-578.08	**-276.67**	-420.09	-0.0696
M9	-830.78	229.99	-420.09	-0.0696
"	-753.68	75.4171	53.0967	-0.0777
"	-676.58	-79.15	47.2970	-0.0599
"	-599.49	-233.72	-437.49	-0.0265
M10	587.95	**278.54**	**-437.49**	-0.0265
"	665.24	124.16	186.52	-0.3807
"	742.52	-30.23	332.35	-0.4648
"	819.81	-184.61	0.0000	-0.0140
M11	641.31	-171.81	-183.43	-0.0067
"	687.64	-79.15	49.9572	-0.0467
"	733.97	13.5208	111.10	-0.0629
"	780.31	106.19	0.0000	-0.0154
M12	-70.89	-146.15	-141.92	-0.0198
"	-19.92	-44.22	52.6579	-0.0402
"	31.0434	57.7169	38.8217	-0.0321
"	82.0101	159.65	-183.43	-0.0067
M13	-76.94	-158.24	-174.76	-0.0157
"	-25.97	-56.31	44.6000	-0.0420
"	24.9979	45.6260	55.5470	-0.0462
"	75.9646	147.56	-141.92	-0.0198
M14	-427.07	-107.74	-0.0000	0.0033
"	-380.73	-15.07	113.99	-0.0560
"	-334.40	77.5954	55.7355	-0.0496
"	-288.07	170.26	-174.76	-0.0157
M15	-341.43	0.0000	0.0000	0.0092
"	-341.43	0.0000	0.0000	0.0108
"	-341.43	0.0000	0.0000	0.0125
"	-341.43	0.0000	0.0000	0.0142
M16	-565.26	0.0000	0.0000	0.0072
"	-565.26	0.0000	0.0000	0.0126
"	-565.26	0.0000	0.0000	0.0180
"	-565.26	0.0000	0.0000	0.0234
M17	80.8285	-0.0000	0.0000	-0.0039
"	80.8285	-0.0000	-0.0000	-0.0002
"	80.8285	-0.0000	-0.0000	0.0035
"	80.8285	-0.0000	-0.0000	0.0072
M18	**-976.00**	0.0000	0.0000	-0.0016
"	-976.00	0.0000	0.0000	0.0013
"	-976.00	0.0000	0.0000	0.0042
"	-976.00	0.0000	0.0000	0.0072
M19	57.7887	0.0000	0.0000	0.0071
"	57.7887	0.0000	0.0000	0.0072
"	57.7887	0.0000	0.0000	0.0073
"	57.7887	0.0000	0.0000	0.0073
M20	-328.38	0.0000	0.0000	0.0013
"	-328.38	0.0000	0.0000	0.0030
"	-328.38	0.0000	0.0000	0.0048
"	-328.38	0.0000	0.0000	0.0066
M21	-77.31	0.0000	0.0000	0.0031
"	-77.31	0.0000	0.0000	0.0053
"	-77.31	0.0000	0.0000	0.0075
"	-77.31	0.0000	0.0000	0.0097
M22	-357.26	-0.0000	0.0000	0.0190
"	-357.26	-0.0000	-0.0000	0.0199
"	-357.26	-0.0000	-0.0000	0.0208
"	-357.26	-0.0000	-0.0000	0.0217
M23	**907.18**	0.0000	0.0000	0.0196
"	907.18	0.0000	0.0000	0.0296
"	907.18	0.0000	0.0000	0.0396

"	907.18	0.0000	0.0000	**0.0496**
M24	-918.33	-0.0000	0.0000	-0.0251
"	-918.33	-0.0000	-0.0000	-0.0150
"	-918.33	-0.0000	-0.0000	-0.0050
"	-918.33	-0.0000	-0.0000	0.0051
M25	-657.09	-0.0000	-0.0000	0.0064
"	-657.09	-0.0000	-0.0000	0.0080
"	-657.09	-0.0000	-0.0000	0.0096
"	-657.09	-0.0000	0.0000	0.0112
M26	599.68	0.0000	0.0000	-0.0069
"	599.68	0.0000	0.0000	-0.0049
"	599.68	0.0000	0.0000	-0.0028
"	599.68	0.0000	0.0000	-0.0008
M27	338.15	0.0000	0.0000	-0.0201
"	338.15	0.0000	0.0000	-0.0142
"	338.15	0.0000	0.0000	-0.0083
"	338.15	0.0000	0.0000	-0.0024

BENDING & COMP: TRUSS 3 - MEMBER 8
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	9.32	feet
Max Axial Comp, C	578	lbs
Max Reaction, R	276	lbs
Max Moment, M	420	ft-lbs
Max LL Deflection	0.07	inches
Max TL Deflection	0.03	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 =	1.26	
fc =	110	psi
Fce=	628	psi
Fc*=	2084	psi
F'c=	582	psi
fb=	1646	psi
F'b=Fb*=	2156	psi
Shear D/C ratio	0.66	< 1.0, Member OK
Interaction equation:		
(fc/F'c)^2 +		
fb/ (F'b(1-fc/Fce)) =	0.96	< 1.0, Member OK
Live Load defl ratio	0.15	< 1.0, Member OK
Total Load defl ratio	0.05	< 1.0, Member OK