CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0318720
Insp Area: 2
Thos Bros: 336 H2

Site Address: 7295 RUSH RIVER DR SAC
Parcel No: 031-0980-116

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

CONTRACTOR
CRUZ ROOFING
170 VISTA CREEK CIR
SAC CA 95835

OWNER
SWANNER CHARLES D JR/CLAIR
7295 RUSH RIVER DR
SACRAMENTO, CA 95831

ARCHITECT

Nature of Work: RR,T/O, RESHEET,CONVERT WOOD SHAKE TO LITE WTG. US TILE (CLAY MIX), 1 STORY, HOUSE 28 SQ

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 C39 License Number 795408 Date 12/4/03 Contractor Signature _____

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 the projects with a contractor(s) licensed pursuant to the Contractors License Law).

PAID
CITY OF SACRAMENTO
DEC 05 2003
NORTH PERMIT CENTER

_____ 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 above-mentioned property for inspection purposes.

Date 12/4/03 Applicant/Agent Signature _____

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.

RC 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 NO EMPLOYEES Policy Number Exp Date

_____ (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 12/04/03 Applicant Signature _____

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.

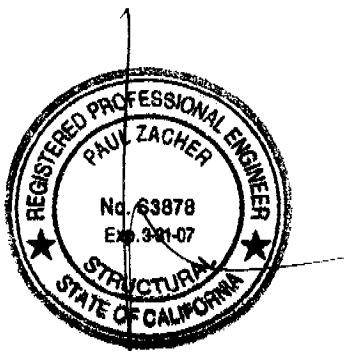
0318720

Swanner

Paul Zacher – Structural Engineers, Inc
4701 Lakeside Way
Fair Oaks, CA 95628
TEL: 916.961.3960
FAX: 916.961.6552

Paul Zacher...Structural Engineer

December 2, 2003



Cruz Roofing
170 Vista Creek Circle
Sacramento, CA 95835
TEL: (916) 419-9658; M: 296-1080
FAX:

Attn.: Mr. Ray Cruz,

re: Job 2003579: SWANNER

Subject: Structural Investigation Report of the Roof for the Residence located at 7295 Rush River Drive, Sacramento, CA 95831.

As requested by Mr. Ray Cruz, this is a report to determine what needs should be addressed to correct any structural deficiencies of the roof. Paul Zacher visited the site December 2, 2003. 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 with 2001 CBC Title 24 Amendments.

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.

CONSTRUCTION:

Roof:
The roof covering will consist of a Light Weight Concrete Tile over 7/16" solid sheathing. The roof structure is framed with pre-engineered wood trusses spaced at 24" on center.

CONCLUSIONS:

Roof:
The roof structure has sufficient structural capacity for the applied live and dead loads.

RECOMMENDATIONS:

None.

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

TEL: 916.961.3960
FAX: 916.961.6552

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	

The dead and live load on truss top chord is placed along the length of the top chord. Therefore, the live load is as follows:

Live Load on top chord	14.3

LOCATION: TOP CHORD			
MATERIAL		WEIGHT	
Light Weight Tile		7.30	psf
Roofing felt		0.30	psf
7/16" OSB/ plywood		1.30	psf
1x4 skip sht'g		1.09	psf
2x4 truss @ 24" oc		0.64	psf
	Total Load	10.6	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
Fair Oaks, CA 95628
TEL: (916) 961-3960
FAX: (916) 961-6552

Job #: 03_579

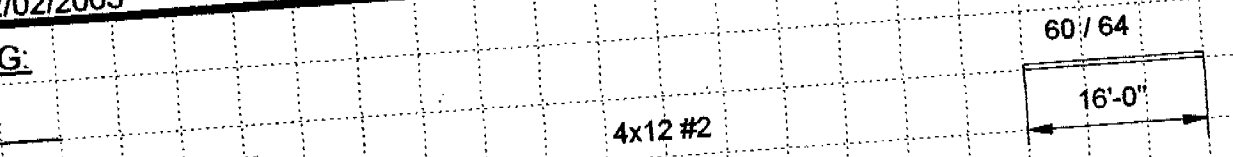
Date: 12/02/2003

LOADING:

B1

Dr = 14.9 psf x 4'-0" = 60 plf

Lr = 16.0 psf x 4'-0" = 64 plf



Paul Zacher - Structural Engr's
4701 Lakeside Way
Fair Oaks, CA 95628
TEL: (916) 961-3960
FAX: (916) 961-6552

Title :
Dsgnr:
Description :
Scope :

Job #
Date: 4:51PM, 2 DEC 03

Timber Beam & Joist

c:\documents and settings\paul zacher\desktop

Description RAFTERS AND BEAMS

Calculations are designed to 1997 NDS and 1997 UBC Requirements

Timber Member Information

		B1
Timber Section		4x12
Beam Width	in	3.500
Beam Depth	in	11.250
Le: Unbraced Length	ft	0.00
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	60.00
Live Load	#/ft	64.00

Results

Ratio = 0.5361

Mmax @ Center	in-k	47.62
@ X =	ft	8.00
fb : Actual	psi	645.0
Fb : Allowable	psi	1,203.1
		Bending OK
fv : Actual	psi	33.6
Fv : Allowable	psi	118.8
		Shear OK

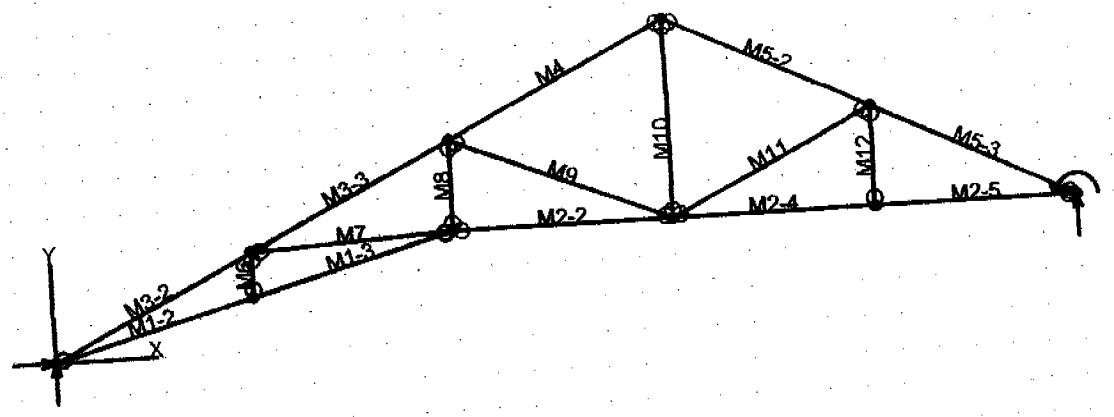
Reactions

@ Left End	DL	lbs	480.00
	LL	lbs	512.00
	Max. DL+LL	lbs	992.00
@ Right End	DL	lbs	480.00
	LL	lbs	512.00
	Max. DL+LL	lbs	992.00

Deflections

Ratio OK

Center DL Defl	in	-0.133
L/Defl Ratio		1,442.0
Center LL Defl	in	-0.142
L/Defl Ratio		1,351.9
Center Total Defl	in	-0.275
Location	ft	8.000
L/Defl Ratio		697.7


M4
M5-2
M5-3
M3-3
M8
M9
M10
M11
M12
M2-4
M2-5
M7
M2-2
M6
M1-3
M3-2
M1-2
Y
X

Truss 1

VisualAnalysis 4.00 Report
Company: Paul Zacher - Structural Engineers Engineer: Paul Zacher
File: C:\Documents and Settings\Paul Zacher\Desktop\Swanner03_579\Truss 1.vap

Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	11.00	3.00	No	No	"
N3	28.00	3.00	"	Yes	Yes
N4	17.00	8.50	"	No	No
N5	11.00	5.50	"	"	"
N6	5.50	1.50	"	"	"
N7	17.00	3.00	"	"	"
N8	5.50	2.75	"	"	"
N9	22.50	5.75	"	"	"
N10	22.50	3.00	"	"	"

Member Elements

Member	Section	Material	Length ft
M1-2	SS2x4	Wood	5.70
M1-3	"	"	5.70
M2-2	"	"	6.00
M2-4	"	"	5.50
M2-5	"	"	5.50
M3-2	"	"	6.15
M3-3	"	"	6.15
M4	"	"	6.71
M5-2	"	"	6.15
M5-3	"	"	6.15
M6	"	"	1.25
M7	"	"	5.51
M8	"	"	2.50
M9	"	"	6.50
M10	"	"	5.50
M11	"	"	6.15
M12	"	"	2.75

Section Properties

Category	Section	Ax in^2	Iz in^4	Sz(+y) in^3	Sz(-y) 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: UBC97 12.8a
Combination: 1D+1Lr
Contributing Cases & Source
Dead Load (Dead loads)
Roof Live Load (Roof Live loads)

Nodal Reactions

Node	Load Case	FX lb	FY lb	MZ lb-ft
N1	UBC97 12.8a	**0.00**	**817.60**	-NA-
N3	"	-NA-	817.60	**0.00**

Member Results

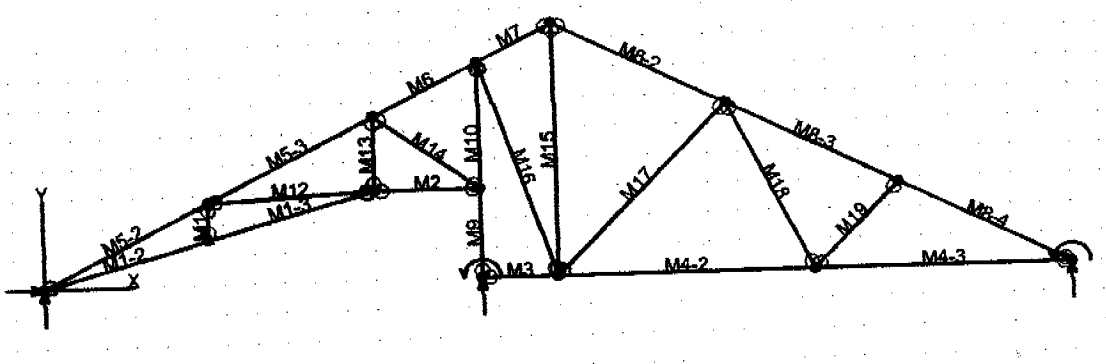
Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1-2	2989.75	33.13	0.00	0.00	0.00
"	2993.90	17.92	48.49	0.01	-0.17
"	2998.05	2.71	68.09	0.02	-0.31
"	3002.20	-12.50	58.79	0.02	-0.40
M1-3	2995.38	12.50	58.79	0.02	-0.40
"	2999.53	-2.71	68.09	0.03	-0.45
"	3003.68	-17.92	48.49	0.04	-0.45
"	**3007.82**	-33.13	0.00	0.05	-0.42
M2-2	2251.29	-31.25	-32.71	0.17	-0.29
"	2251.29	-14.05	12.58	0.17	-0.33
"	2251.29	3.15	23.48	0.16	-0.37
"	2251.29	20.35	0.00	0.16	-0.40
M2-4	1377.11	-18.46	-4.19	0.18	-0.18
"	1377.11	-2.70	15.20	0.18	-0.22
"	1377.11	13.07	5.69	0.18	-0.26
"	1377.11	28.84	-32.71	0.17	-0.29
M2-5	1377.11	-22.89	0.00	0.19	0.00
"	1377.11	-7.12	27.50	0.19	-0.08
"	1377.11	8.64	26.10	0.19	-0.14
"	1377.11	24.41	-4.19	0.18	-0.18
M3-2	**-3290.8**	112.46	0.00	0.00	0.00
"	-3250.0	30.80	**146.75**	-0.01	-0.24
"	-3209.1	-50.86	126.18	-0.02	-0.37
"	-3168.3	-132.53	-61.70	-0.03	-0.41
M3-3	-2569.6	105.23	-61.70	-0.03	-0.41
"	-2528.8	23.57	70.25	-0.03	-0.45
"	-2487.9	-58.09	34.88	-0.04	-0.44
"	-2447.1	-139.75	-167.81	-0.05	-0.42
M4	-1195.9	**158.64**	-167.81	-0.05	**-0.46**
"	-1151.4	69.56	87.24	-0.05	-0.43
"	-1106.8	-19.53	143.18	-0.06	-0.29
"	-1062.3	-108.61	0.00	0.19	-0.11
M5-2	-1191.6	**-150.03**	**-169.36**	0.19	-0.19
"	-1150.8	-68.37	54.41	0.19	-0.25
"	-1109.9	13.29	110.86	0.20	-0.22
"	-1069.1	94.95	0.00	0.17	0.09
M5-3	-1587.1	-94.95	0.00	0.18	-0.04
"	-1546.3	-13.29	110.86	0.18	-0.09
"	-1505.4	68.37	54.41	0.19	-0.11
"	-1464.6	150.03	-169.36	0.38	0.13
M6	25.92	0.00	0.00	0.38	0.14
"	25.92	0.00	0.00		

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
"	25.92	0.00	0.00	0.38	0.15
"	25.92	0.00	0.00	**0.38**	0.16
M7	-642.50	0.00	0.00	0.14	-0.40
"	-642.50	0.00	0.00	0.14	-0.40
"	-642.50	0.00	0.00	0.14	-0.39
"	-642.50	0.00	0.00	0.14	-0.39
M8	814.55	0.00	0.00	**-0.40**	-0.16
"	814.55	0.00	0.00	-0.39	-0.15
"	814.55	0.00	0.00	-0.39	-0.15
"	814.55	0.00	0.00	-0.39	-0.14
M9	-1356.9	0.00	0.00	0.27	-0.20
"	-1356.9	0.00	0.00	0.28	-0.31
"	-1356.9	0.00	0.00	0.28	-0.27
"	-1356.9	0.00	0.00	0.28	-0.24
M10	771.16	0.00	0.00	-0.29	-0.17
"	771.16	0.00	0.00	-0.29	-0.14
"	771.16	0.00	0.00	-0.28	-0.11
"	771.16	0.00	0.00	-0.28	-0.08
M11	-423.02	0.00	0.00	0.02	-0.26
"	-423.02	0.00	0.00	0.02	-0.22
"	-423.02	0.00	0.00	0.03	-0.34
"	-423.02	0.00	0.00	0.03	-0.30
M12	42.88	0.00	0.00	0.18	0.12
"	42.88	0.00	0.00	0.18	0.14
"	42.88	0.00	0.00	0.18	0.16
"	42.88	0.00	0.00	0.18	**0.18**

BENDING & COMP: TRUSS 1 - MEMBER 3-2
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	6.15	feet
Max Axial Comp, C	3168	lbs
Max Reaction, R	132	lbs
Max Moment, M	61	ft-lbs
Max LL Deflection	0.20	inches
Max TL Deflection	0.41	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 =	1.17	
fc =	603	psi
Fce=	1341	psi
Fc*=	2084	psi
F'c=	1097	psi
fb=	239	psi
F'b=Fb*=	2156	psi
Shear D/C ratio	0.32 < 1.0, Member OK	
Interaction equation:		
(fc/F'c)^2 +		
fb/ (F'b(1-fc/Fce)) =	0.50 < 1.0, Member OK	
Live Load defl ratio	0.65 < 1.0, Member OK	
Total Load defl ratio	1.00 < 1.0, Member OK	


Y
X
M1-1
M1-2
M2
M3
M4-2
M4-3
M5-2
M5-3
M6
M7
M8-2
M8-3
M8-4
M8
M10
M12
M13
M14
M15
M16
M17
M18
M19

Truss 2

VisualAnalysis 4.00 Report
Company: Paul Zacher - Structural Engineers Engineer: Paul Zacher
File: C:\Documents and Settings\Paul Zacher\Desktop\Swanner03_579\Truss 2.vap

Nodes

Node	X *ft*	Y *ft*	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	11.00	3.00	No	No	"
N3	11.00	5.50	"	"	"
N4	17.00	8.50	"	"	"
N5	34.00	0.00	"	Yes	Yes
N6	14.50	7.25	"	No	No
N7	14.50	3.00	"	"	"
N8	14.50	0.00	"	Yes	Yes
N9	17.00	0.00	"	No	No
N10	5.50	1.50	"	"	"
N11	5.50	2.75	"	"	"
N12	25.50	0.00	"	"	"
N13	22.67	5.67	"	"	"
N14	28.33	2.83	"	"	"

Member Elements

Member	Section	Material	Length *ft*
M1-2	SS2x4	Wood	5.70
M1-3	"	"	5.70
M2	"	"	3.50
M3	"	"	2.50
M4-2	"	"	8.50
M4-3	"	"	8.50
M5-2	"	"	6.15
M5-3	"	"	6.15
M6	"	"	3.91
M7	"	"	2.80
M8-2	"	"	6.34
M8-3	"	"	6.34
M8-4	"	"	6.34
M9	"	"	3.00
M10	"	"	4.25
M11	"	"	1.25
M12	"	"	5.51
M13	"	"	2.50
M14	"	"	4.30
M15	"	"	8.50
M16	"	"	7.67
M17	"	"	8.01
M18	"	"	6.34
M19	"	"	4.01

Section Properties

Category	Section	Ax *in^2*	Iz *in^4*	Sz(+y) *in^3*	Sz(-y) *in^3*
Wood Sha	SS2x4	5.25	5.36	3.06	3.06

12

Category	Section	Ax in^2	Iz in^4	Sz(+y) in^3	Sz(-y) in^3

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: UBC97 12.8a

Combination: 1D+1Lr

Contributing Cases & Source

Dead Load (Dead loads)

Roof Live Load (Roof Live loads)

Nodal Reactions

Node	Load Case	FX lb	FY lb	MZ lb-ft
N1	UBC97 12.8a	**0.00**	**406.77**	-NA-
N5	"	-NA-	557.03	**0.00**
N8	"	-NA-	**1021.80**	0.00

Member Results

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1-2	1214.68	24.35	0.00	0.00	0.00
"	1218.83	9.14	31.81	0.00	-0.06
"	1222.98	-6.07	34.74	0.01	-0.10
"	1227.13	-21.28	8.76	0.01	-0.11
M1-3	1215.52	21.28	8.76	0.01	-0.11
"	1219.67	6.07	34.74	0.01	-0.12
"	1223.82	-9.14	31.81	0.02	-0.10
"	**1227.97**	-24.35	0.00	0.02	-0.06
M2	413.03	-15.05	0.00	0.03	-0.00
"	413.03	-5.02	11.70	0.03	-0.02
"	413.03	5.02	11.70	0.03	-0.04
"	413.03	15.05	0.00	0.03	-0.05
M3	-23.48	-23.05	-30.74	-0.03	-0.02
"	-23.48	-15.88	-14.52	-0.03	-0.01
"	-23.48	-8.71	-4.28	-0.03	-0.01
"	-23.48	-1.55	0.00	-0.03	0.00
M4-2	477.39	-40.28	-62.47	-0.02	-0.04
"	477.39	-15.92	17.12	-0.03	-0.06
"	477.39	8.45	27.70	-0.03	-0.06
"	477.39	32.82	-30.74	-0.03	-0.02
M4-3	826.26	-29.20	0.00	-0.01	0.00
"	826.26	-4.83	48.19	-0.02	-0.07
"	826.26	19.53	27.37	-0.02	-0.07
"	826.26	43.90	-62.47	-0.02	-0.04
M5-2	**-1368.2**	101.72	0.00	0.00	0.00
"	-1327.4	20.06	124.75	-0.00	-0.11
"	-1286.5	-61.60	82.18	-0.01	**-0.14**

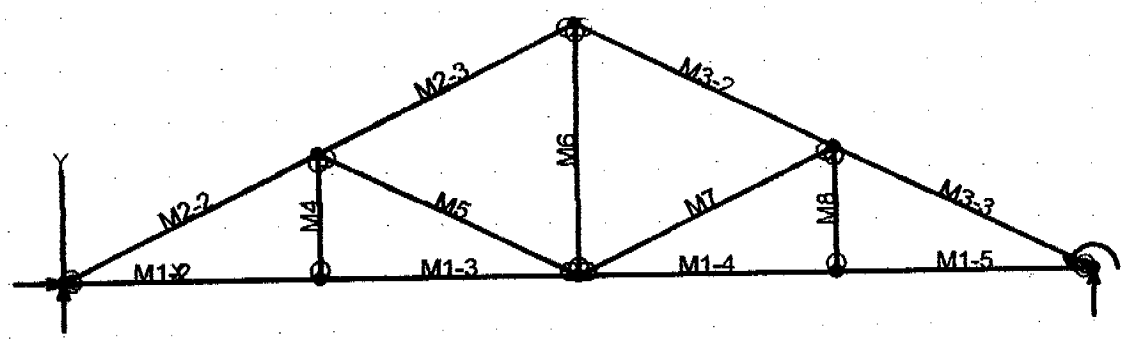
Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
"	-1245.7	-143.26	-127.71	-0.01	-0.11
M5-3	-525.98	128.41	-127.71	-0.01	-0.11
"	-485.15	46.75	51.73	-0.01	-0.12
"	-444.32	-34.91	63.86	-0.01	-0.11
"	-403.49	-116.58	-91.33	-0.01	-0.05
M6	3.20	83.15	-91.33	-0.01	-0.05
"	29.18	31.19	-16.79	-0.01	-0.02
"	55.17	-20.78	-10.00	-0.01	-0.01
"	81.15	-72.75	-70.97	-0.01	-0.00
M7	-180.15	81.07	-70.97	-0.01	-0.00
"	-161.60	43.95	-12.74	-0.01	-0.00
"	-143.04	6.83	10.91	-0.01	-0.01
"	-124.48	-30.29	0.00	-0.01	-0.01
M8-2	-215.34	**-151.45**	**-159.93**	0.00	-0.04
"	-173.28	-67.31	70.99	0.00	-0.10
"	-131.21	16.82	124.30	0.00	-0.11
"	-89.14	100.96	0.00	0.00	-0.02
M8-3	-757.41	-124.57	-149.58	-0.01	-0.05
"	-715.35	-40.43	24.58	-0.00	-0.05
"	-673.28	43.70	21.13	-0.00	-0.05
"	-631.21	127.84	-159.93	0.00	-0.04
M8-4	-975.08	-102.59	0.00	-0.01	-0.01
"	-933.01	-18.46	**127.75**	-0.01	-0.10
"	-890.94	65.68	77.89	-0.01	-0.10
"	-848.87	**149.81**	-149.58	-0.01	-0.05
M9	-1023.3	23.48	-70.43	0.00	0.03
"	-1023.3	23.48	-46.95	0.00	0.02
"	-1023.3	23.48	-23.48	0.00	-0.00
"	-1023.3	23.48	0.00	0.00	-0.03
M10	-684.67	-16.57	0.00	-0.01	0.01
"	-684.67	-16.57	23.48	-0.01	-0.02
"	-684.67	-16.57	46.95	-0.01	-0.03
"	-684.67	-16.57	70.43	-0.00	-0.03
M11	44.11	0.00	0.00	0.11	0.04
"	44.11	0.00	0.00	0.11	0.04
"	44.11	0.00	0.00	0.11	0.04
"	44.11	0.00	0.00	**0.11**	**0.04**
M12	-766.06	0.00	0.00	0.03	-0.09
"	-766.06	0.00	0.00	0.03	-0.07
"	-766.06	0.00	0.00	0.03	-0.05
"	-766.06	0.00	0.00	0.04	-0.11
M13	326.86	0.00	0.00	**-0.05**	-0.03
"	326.86	0.00	0.00	-0.05	-0.02
"	326.86	0.00	0.00	-0.05	-0.02
"	326.86	0.00	0.00	-0.05	-0.01
M14	-556.79	0.00	0.00	0.03	-0.03
"	-556.79	0.00	0.00	0.03	-0.02
"	-556.79	0.00	0.00	0.03	-0.00
"	-556.79	0.00	0.00	0.03	0.02
M15	-21.86	0.00	0.00	0.02	-0.03
"	-21.86	0.00	0.00	0.02	-0.02
"	-21.86	0.00	0.00	0.02	-0.01
"	-21.86	0.00	0.00	0.02	-0.01
M16	455.10	0.00	0.00	-0.01	0.02
"	455.10	0.00	0.00	-0.01	0.03
"	455.10	0.00	0.00	-0.01	0.03
"	455.10	0.00	0.00	-0.00	0.01
M17	-498.53	0.00	0.00	-0.04	-0.01
"	-498.53	0.00	0.00	-0.04	-0.01
"	-498.53	0.00	0.00	-0.04	0.00
"	-498.53	0.00	0.00	-0.03	0.01
M18	322.77	0.00	0.00	0.03	-0.04

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
"	322.77	0.00	0.00	0.03	-0.04
"	322.77	0.00	0.00	0.03	-0.04
"	322.77	0.00	0.00	0.03	-0.03
M19	-289.23	0.00	0.00	-0.05	-0.01
"	-289.23	0.00	0.00	-0.05	-0.01
"	-289.23	0.00	0.00	-0.05	-0.01
"	-289.23	0.00	0.00	-0.05	-0.01

BENDING & COMP: TRUSS 2 - MEMBER 5-2
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	6.15	feet
Max Axial Comp, C	1245	lbs
Max Reaction, R	143	lbs
Max Moment, M	127	ft-lbs
Max LL Deflection	0.06	inches
Max TL Deflection	0.11	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 =	1.17	
fc =	237	psi
Fce=	1341	psi
Fc*=	2084	psi
F'c=	1097	psi
fb=	498	psi
F'b=Fb*=	2156	psi
Shear D/C ratio	0.34 < 1.0, Member OK	
Interaction equation: (fc/F'c)^2 + fb/ (F'b(1-fc/Fce)) =	0.33 < 1.0, Member OK	
Live Load defl ratio	0.20 < 1.0, Member OK	
Total Load defl ratio	0.27 < 1.0, Member OK	


M2-2
M2-3
M3-2
M3-3
M4
M5
M6
M7
M8
M1-2
M1-3
M1-4
M1-5

Truss 3

VisualAnalysis 4.00 Report
Company: Paul Zacher - Structural Engineers Engineer: Paul Zacher
File: C:\Documents and Settings\Paul Zacher\Desktop\Swanner03_579\Truss 3.vap

Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	19.00	0.00	No	"	Yes
N3	9.50	4.75	"	No	No
N4	4.75	0.00	"	"	"
N5	9.50	0.00	"	"	"
N6	14.25	0.00	"	"	"
N7	4.75	2.38	"	"	"
N8	14.25	2.38	"	"	"

Member Elements

Member	Section	Material	Length ft
M1-2	SS2x4	Wood	4.75
M1-3	"	"	4.75
M1-4	"	"	4.75
M1-5	"	"	4.75
M2-2	"	"	5.31
M2-3	"	"	5.31
M3-2	"	"	5.31
M3-3	"	"	5.31
M4	"	"	2.38
M5	"	"	5.31
M6	"	"	4.75
M7	"	"	5.31
M8	"	"	2.38

Section Properties

Category	Section	Ax in^2	Iz in^4	Sz(+y) in^3	Sz(-y) 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: UBC97 12.8a
Combination: 1D+1Lr
Contributing Cases & Source
Dead Load (Dead loads)
Roof Live Load (Roof Live loads)

Nodal Reactions

Node	Load Case	FX lb	FY lb	MZ lb-ft
N1	UBC97 12.8a	**0.00**	**558.60**	-NA-
N2	"	-NA-	558.60	**0.00**

Member Results

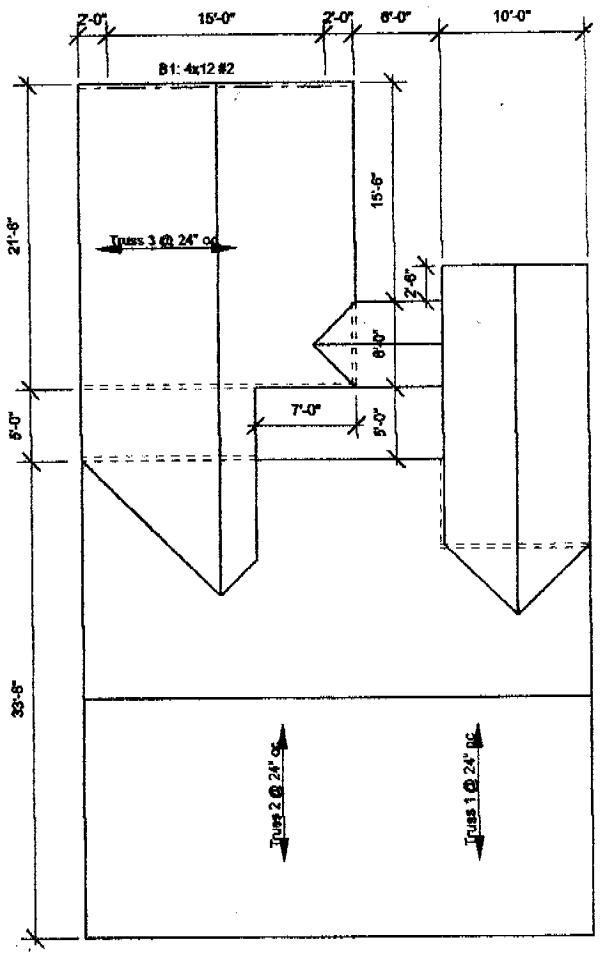
Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1-2	892.96	-21.17	-3.54	0.01	-0.05
"	892.96	-7.55	19.19	0.00	-0.04
"	892.96	6.06	20.37	0.00	-0.02
"	**892.96**	19.68	0.00	0.00	0.00
M1-3	892.96	-23.93	-20.20	0.01	-0.05
"	892.96	-10.32	6.90	0.01	-0.05
"	892.96	3.30	12.46	0.01	-0.05
"	892.96	16.92	-3.54	0.01	-0.05
M1-4	892.96	-16.92	-3.54	0.02	-0.05
"	892.96	-3.30	12.46	0.02	-0.05
"	892.96	10.32	6.90	0.01	-0.05
"	892.96	23.93	-20.20	0.01	-0.05
M1-5	892.96	-19.68	0.00	0.02	0.00
"	892.96	-6.06	20.37	0.02	-0.02
"	892.96	7.55	19.19	0.02	-0.04
"	892.96	21.17	-3.54	0.02	-0.05
M2-2	**-1039.7**	82.68	0.00	0.00	0.00
"	-1004.1	11.59	**83.39**	-0.00	-0.05
"	-968.61	-59.50	40.98	-0.00	-0.06
"	-933.06	**-130.60**	**-127.23**	-0.01	-0.05
M2-3	-694.59	**130.60**	-127.23	-0.01	-0.05
"	-659.04	59.50	40.98	-0.01	**-0.08**
"	-623.49	-11.59	83.39	-0.01	-0.08
"	-587.95	-82.68	0.00	-0.01	-0.05
M3-2	-694.59	-130.60	-127.23	0.03	-0.04
"	-659.04	-59.50	40.98	0.03	-0.07
"	-623.49	11.59	83.39	0.03	-0.07
"	-587.95	82.68	0.00	0.03	-0.04
M3-3	-1039.7	-82.68	0.00	0.02	0.01
"	-1004.1	-11.59	83.39	0.02	-0.04
"	-968.61	59.50	40.98	0.03	-0.05
"	-933.06	130.60	-127.23	0.03	-0.04
M4	38.09	0.00	0.00	0.05	0.01
"	38.09	0.00	0.00	0.05	0.01
"	38.09	0.00	0.00	0.05	0.01
"	38.09	0.00	0.00	**0.05**	**0.02**
M5	-369.07	0.00	0.00	0.03	-0.04
"	-369.07	0.00	0.00	0.03	-0.04
"	-369.07	0.00	0.00	0.03	-0.04
"	-369.07	0.00	0.00	0.04	-0.04
M6	377.97	0.00	0.00	**-0.05**	-0.01
"	377.97	0.00	0.00	-0.05	-0.01
"	377.97	0.00	0.00	-0.05	-0.01
"	377.97	0.00	0.00	-0.05	-0.01
M7	-369.07	0.00	0.00	-0.02	-0.05
"	-369.07	0.00	0.00	-0.01	-0.05
"	-369.07	0.00	0.00	-0.01	-0.05
"	-369.07	0.00	0.00	-0.01	-0.05

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M8	38.09	0.00	0.00	0.05	0.01
"	38.09	0.00	0.00	0.05	0.01
"	38.09	0.00	0.00	0.05	0.01
"	38.09	0.00	0.00	0.05	0.02

BENDING & COMP: TRUSS 3 - MEMBER 2-2
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	5.31	feet
Max Axial Comp, C	933	lbs
Max Reaction, R	130	lbs
Max Moment, M	127	ft-lbs
Max LL Deflection	0.02	inches
Max TL Deflection	0.05	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 =	178	psi
Fce=	1764	psi
Fc*=	2084	psi
F'c=	1315	psi
fb=	498	psi
F'b=Fb*=	2156	psi
Shear D/C ratio	0.31 < 1.0, Member OK	
Interaction equation:		
(fc/F'c)^2 +		
fb/ (F'b(1-fc/Fce)) =	0.27 < 1.0, Member OK	
Live Load defl ratio	0.08 < 1.0, Member OK	
Total Load defl ratio	0.14 < 1.0, Member OK	



N

REGISTERED PROFESSIONAL ENGINEER
PAUL ZACHER
No. S3878
Exp. 3-31-07
STRUCTURAL
STATE OF CALIFORNIA

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 7.3 psf.
B. All structural wood members that were observed appear to be in sound condition and without structural defect.

1 ROOF PLAN - SWANNER

Not to Scale

22