

**CITY OF SACRAMENTO**  
1231 I Street, Sacramento, CA 95814

**Permit No: 0406281**

**Insp Area: 2**  
**Thos Bros: 337A2**

**Site Address: 952 SHELLWOOD WY SAC**  
Parcel No: 031-0730-018

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

**CONTRACTOR**  
MONARCH ROOFING INC  
8262 ALPINE AVE SUITE A  
SACRAMENTO, CA 95826

**OWNER**  
KWONG KENNY K LUNG PING  
727 CECILYN WY  
SACRAMENTO CA 95831

**ARCHITECT**

**Nature of Work: REROOF T/O INSTALL METAL BATTEN SYSTEM & EAGLE TILE SNGL STRY 22 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'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-37 License Number 806787 Date \_\_\_\_\_ Contractor Signature Paul Rosendo

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

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

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

\_\_\_\_ I am exempt under Sec. \_\_\_\_\_ B & PC for this reason: \_\_\_\_\_

Date \_\_\_\_\_ Owner Signature \_\_\_\_\_

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

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

Date 4/26/04 Applicant/Agent Signature Paul Rosendo

**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 VIRGINIA SURETY COMPANY, INC Policy Number 005-00016796 Exp Date 01/01/2005

\_\_\_\_ (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 4/26/04 Applicant Signature Paul Rosendo

**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.**

0406281

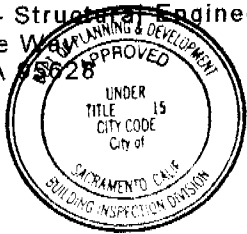
Wong

Paul Zacher - Structural Engineers. 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.

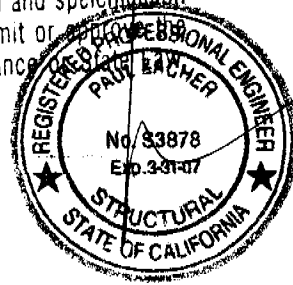
TEL: 916.961.3960  
FAX: 916.961.6552

April 20, 2004

Monarch Roofing  
8262 Alpine Avenue, Suite A  
Sacramento, CA 95826  
TEL: (916) 978-3182  
FAX: (916) 456-1703



The approval of this plan and specification SHALL NOT be held to permit or violation of any City Ordinance



Attn.: Mr. Neal Weber,

re: Job 2004201: WONG

Subject: Structural Investigation Report of the Roof for the Residence located at 952 Shellwood Way, Sacramento, CA 95831.

As requested by Mr. Neal Weber, this is a report to determine what needs should be addressed to correct any structural deficiencies of the roof. Paul Zacher visited the site April 20, 2004. 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: Two  
Dimensions: Approximately 2000 square feet.

ISSUED  
City of Sacramento  
APR 28 2004  
NORTH PERMIT  
CENTER

**CONSTRUCTION:**

Roof:  
The roof covering will consist of a Light Weight Concrete Tile over a batten system. 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.

RECEIVED PERMIT CENTER

Wong



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

TEL: 916.961.3960  
FAX: 916.961.6552

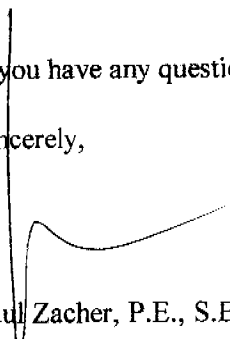
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and 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	4	in 12
Pitch Adjustment Factor	1.05	

**LOCATION: ROOF BATTEN SYTEM**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.30	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
Batten system	0.50	psf
2x6 rafters @ 24" oc	<u>1.00</u>	psf
Load	10.2	psf
Roof Pitch Adjustment	<u>0.55</u>	psf
Total Load	10.7	psf

**LOCATION: VAULT BATTEN SYSTEM**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.30	psf
Roofing felt	0.30	psf
Batten system	0.50	psf
1x4 skip sht'g	1.09	psf
2x10 rafters @ 24" oc	1.69	psf
Batt/blown insul	0.50	psf
1/2" Gypboard	<u>2.50</u>	psf
Load	13.9	psf
Roof Pitch Adjustment	<u>0.75</u>	psf
Total Load	14.6	psf

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	15.2	psf
------------------------	------	-----

**LOCATION: TOP CHORD BATTEN SYSTEM**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.30	psf
Roofing felt	0.30	psf
Batten system	0.50	psf
1x4 skip sht'g	1.09	psf
2x4 truss @ 24" oc	<u>0.64</u>	psf
Total Load	9.8	psf

**LOCATION: BOTTOM CHORD BATTEN SYSTEM**

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

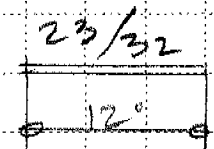
Job #: \_\_\_\_\_

Date: \_\_\_\_\_

LOADINGS:

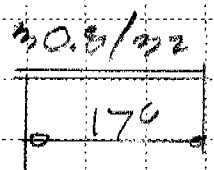
RAFTER

Op: 11.5 p.s.f. x 2' = 23 p.s.f.      2x6 #2  
Lr = 16.0      "      "      = 32



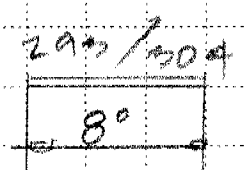
VAULT

Op: 15.4 p.s.f. x 2' = 30.8 p.s.f.      2x10 #2  
Lr = 16.0      "      "      = 52



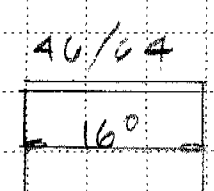
#1

Op: 15.4 p.s.f. x 19' = 292.6 p.s.f.      6x12 #1  
Lr = 16.0      "      "      = 304



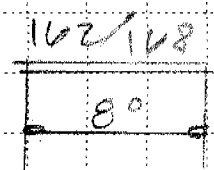
#2

Op: 11.5 p.s.f. x 4' = 46 p.s.f.      4x12 #2  
Lr = 16.0      "      "      = 64



#3

Op: 15.4 p.s.f. x 10' = 154 p.s.f.      4x12 #2  
Lr = 16.0      "      "      = 168



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

Title :  
 Dsgnr:  
 Description :

Job #  
 Date: 5:18PM, 9 AUG 00

Scope :

Rev. 510304  
 User: KW-0602844, Ver 5.1.3. 22-Jun-1999, Win32  
 (c) 1983-99 ENERCALC

**Timber Beam & Joist**

c:\enercalc\test ecw\Calculations

**Description RAFTERS AND BEAMS**

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

Timber Section		rafter 2x6	vault 2x10	B1 6x12	B2 4x12	B3 4x12
Beam Width	in	1.500	1.500	5.500	3.500	3.500
Beam Depth	in	5.500	9.250	11.500	11.250	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	1,350.0	875.0	875.0
Fv - Basic Allow	psi	95.0	95.0	85.0	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	No	No	No

**Center Span Data**

Span	ft	12.00	17.50	8.00	16.00	8.00
Dead Load	#/ft	23.00	30.80	293.00	46.00	162.00
Live Load	#/ft	32.00	32.00	304.00	64.00	168.00

**Results** Ratio = 0.9607 0.9748 0.4094 0.4755 0.3567

Mmax @ Center	in-k	11.88	28.85	57.31	42.24	31.68
@ X =	ft	6.00	8.75	4.00	8.00	4.00
Fb : Actual	psi	1,570.9	1,348.7	472.8	572.1	429.1
Fb : Allowable	psi	1,635.2	1,383.6	1,687.5	1,203.1	1,203.1
		Bending OK	Bending OK	Bending OK	Bending OK	Bending OK
Fv : Actual	psi	55.7	54.2	43.5	29.8	38.6
Fv : Allowable	psi	118.8	118.8	106.3	118.8	118.8
		Shear OK	Shear OK	Shear OK	Shear OK	Shear OK

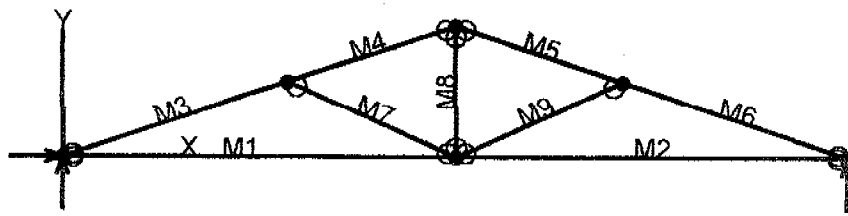
**Reactions**

@ Left End	DL	lbs	138.00	269.50	1,172.00	368.00	648.00
	LL	lbs	192.00	280.00	1,216.00	512.00	672.00
	Max. DL+LL	lbs	330.00	549.50	2,388.00	880.00	1,320.00
@ Right End	DL	lbs	138.00	269.50	1,172.00	368.00	648.00
	LL	lbs	192.00	280.00	1,216.00	512.00	672.00
	Max. DL+LL	lbs	330.00	549.50	2,388.00	880.00	1,320.00

**Deflections** Ratio OK Deflection OK Deflection OK Deflection OK Deflection OK

Center DL Defl	in	-0.322	-0.411	-0.024	-0.102	-0.022
L/Defl Ratio		446.5	511.4	3,965.2	1,880.9	4,272.6
Center LL Defl	in	-0.449	-0.427	-0.025	-0.142	-0.023
L/Defl Ratio		320.9	492.3	3,821.7	1,351.9	4,120.0
Center Total Defl	in	-0.771	-0.837	-0.049	-0.244	-0.046
Location	ft	6.000	8.750	4.000	8.000	4.000
L/Defl Ratio		186.7	250.8	1,946.1	786.5	2,097.4

5



# VisualAnalysis 3.50.c Report

08/09/00 17:31:59

Project: Truss 1

File: C:\Program Files\IES\VA35\truss 1.vap

Company: PK Associates Engineers

Engineer: Paul Zacher

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

## Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	10.50	0.00	No	No	"
N3	21.00	0.00	"	Yes	"
N4	6.00	2.00	"	No	"
N5	15.00	2.00	"	"	"
N6	10.50	3.50	"	"	"

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	10.50
M2	"	"	10.50
M3	"	"	6.32
M4	"	"	4.74
M5	"	"	4.74
M6	"	"	6.32
M7	"	"	4.92
M8	"	"	3.50
M9	"	"	4.92

## Section Properties

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

## Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft <sup>3</sup>
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	663.60	-NA-
N3	"	-NA-	663.60	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1482.99	-48.11	-86.24	-0.1289
"	1482.99	-21.51	35.3721	-0.1727
"	1482.99	5.0864	64.1197	-0.1518
"	<b>1482.99</b>	31.6864	0.0000	-0.0000
M2	1482.99	-31.69	0.0000	-0.0000
"	1482.99	-5.0864	64.1197	-0.1519
"	1482.99	21.5136	35.3721	-0.1727
"	1482.99	48.1136	-86.24	-0.1289
M3	<b>-1606.71</b>	130.52	0.0000	-0.0000
"	-1571.55	25.0306	<b>163.41</b>	-0.1477
"	-1536.38	-80.46	104.98	<b>-0.1732</b>
"	-1501.22	<b>-185.96</b>	<b>-175.29</b>	-0.1255
M4	-1127.10	155.64	-175.29	-0.1255
"	-1100.72	76.5151	7.9254	-0.1341
"	-1074.35	-2.6051	66.3563	-0.1436
"	-1047.98	-81.73	0.0000	-0.1267
M5	-1127.10	-155.64	-175.29	-0.1122
"	-1100.72	-76.52	7.9254	-0.1208
"	-1074.35	2.6051	66.3563	-0.1304
"	<b>-1047.98</b>	81.7253	0.0000	-0.1134
M6	-1606.71	-130.52	0.0000	<b>0.0132</b>
"	-1571.55	-25.03	163.41	-0.1345
"	-1536.38	80.4630	104.98	-0.1600
"	-1501.22	<b>185.96</b>	-175.29	-0.1122
M7	-506.61	0.0000	0.0000	-0.1093
"	-506.61	0.0000	0.0000	-0.1067
"	-506.61	0.0000	0.0000	-0.1041
"	-506.61	0.0000	0.0000	-0.1016
M8	507.74	0.0000	0.0000	-0.0209
"	507.74	0.0000	0.0000	-0.0209
"	507.74	0.0000	0.0000	-0.0209
"	507.74	0.0000	0.0000	-0.0209
M9	-506.61	-0.0000	0.0000	-0.1263
"	-506.61	-0.0000	-0.0000	-0.1237
"	-506.61	-0.0000	-0.0000	-0.1212
"	-506.61	-0.0000	-0.0000	-0.1186

**BENDING & COMP: TRUSS 1 - MEMBER 3**

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

Grading:

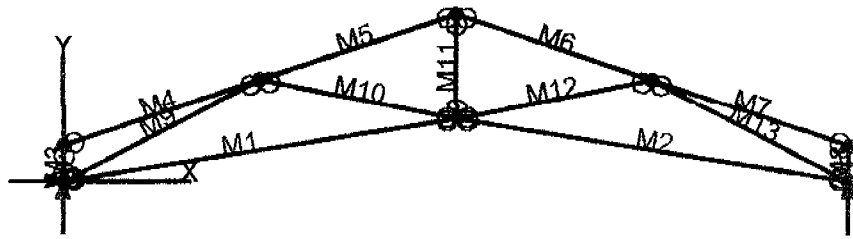
2x or 4x                      Doug-fir larch: No. 2

Assumptions:

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

Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	3.5 inches
Length	6.32 feet
Max Axial Comp, C	1501 lbs
Max Reaction, R	186 lbs
Max Moment, M	175 ft-lbs
Max LL Deflection	0.06 inches
Max TL Deflection	0.13 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 =	1.18
fc =	286 psi
Fce=	1211 psi
Fc*=	1869 psi
F'c=	989 psi
fb=	686 psi
F'b=Fb*=	1887 psi
Shear D/C ratio	0.45 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.56 < 1.0, Member OK
Live Load defl ratio	0.19 < 1.0, Member OK
Total Load defl ratio	0.31 < 1.0, Member OK



# VisualAnalysis 3.50.c Report

08/09/00 17:39:59

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	11.00	1.75	No		No		"	
N3	22.00	0.00	"		Yes		"	
N4	0.00	1.00	"		No		"	
N5	5.50	2.83	"		"		"	
N6	16.50	2.83	"		"		"	
N7	22.00	1.00	"		"		"	
N8	11.00	4.67	"		"		"	

## Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	11.14
M2	"	"	11.14
M3	"	"	1.00
M4	"	"	5.80
M5	"	"	5.80
M6	"	"	5.80
M7	"	"	5.80
M8	"	"	1.00
M9	"	"	6.19
M10	"	"	5.61
M11	"	"	2.92
M12	"	"	5.61
M13	"	"	6.19

## Section Properties

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

## Material Properties

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

## Load Combination Summary

Equation Case: Equation Case 2

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 2	-0.00	695.20	-NA-
N3	"	-NA-	695.20	-NA-

## Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1512.77	41.2809	0.0000	-0.0000
"	1517.15	13.7603	101.92	-0.2974
"	1521.53	-13.76	101.92	-0.3507
"	1525.91	-41.28	0.0000	-0.1596
M2	1512.77	-41.28	0.0000	0.0149
"	1517.15	-13.76	101.92	-0.2825
"	1521.53	13.7603	101.92	-0.3357
"	1525.91	41.2809	0.0000	-0.1446
M3	-120.05	-0.0000	-0.0000	-0.0085
"	-120.05	-0.0000	-0.0000	-0.0057
"	-120.05	-0.0000	-0.0000	-0.0028
"	-120.05	-0.0000	0.0000	-0.0000
M4	-37.90	113.91	0.0000	-0.0028
"	-5.7199	17.1909	126.19	-0.1140
"	26.4615	-79.53	65.9638	-0.1468
"	58.6429	-176.25	-180.67	-0.1436
M5	-1439.72	176.15	-180.67	-0.1436
"	-1407.38	79.4857	65.9638	-0.1989
"	-1375.04	-17.18	126.19	-0.2181
"	-1342.70	-113.85	0.0000	-0.1588
M6	-1439.72	-176.15	-180.67	-0.1135
"	-1407.38	-79.49	65.9638	-0.1687
"	-1375.04	17.1816	126.19	-0.1879
"	-1342.70	113.85	0.0000	-0.1286
M7	-37.90	-113.91	-0.0000	0.0272
"	-5.7199	-17.19	126.19	-0.0840
"	26.4615	79.5291	65.9638	-0.1168
"	58.6429	176.25	-180.67	-0.1136
M8	-120.05	0.0000	0.0000	0.0866
"	-120.05	0.0000	0.0000	0.0894
"	-120.05	0.0000	0.0000	0.0923
"	-120.05	0.0000	0.0000	0.0951
M9	-1687.45	-0.0000	-0.0000	0.0000
"	-1687.45	-0.0000	-0.0000	0.0477
"	-1687.45	-0.0000	-0.0000	0.0954
"	-1687.45	-0.0000	0.0000	0.1432
M10	-194.67	0.0000	0.0000	-0.1420
"	-194.67	0.0000	0.0000	-0.1350
"	-194.67	0.0000	0.0000	-0.1280
"	-194.67	0.0000	0.0000	-0.1210
M11	636.04	0.0000	0.0000	-0.0475
"	636.04	0.0000	0.0000	-0.0475
"	636.04	0.0000	0.0000	-0.0475
"	636.04	0.0000	0.0000	-0.0475

M12	-194.67	-0.0000	0.0000	-0.1603
"	-194.67	-0.0000	-0.0000	-0.1533
"	-194.67	-0.0000	-0.0000	-0.1463
"	-194.67	-0.0000	-0.0000	-0.1393
M13	<b>-1687.45</b>	0.0000	0.0000	-0.0997
"	-1687.45	0.0000	0.0000	-0.0519
"	-1687.45	0.0000	0.0000	-0.0042
"	-1687.45	0.0000	0.0000	0.0435

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**BENDING & COMP: TRUSS 2 - MEMBER 5**

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

Grading:

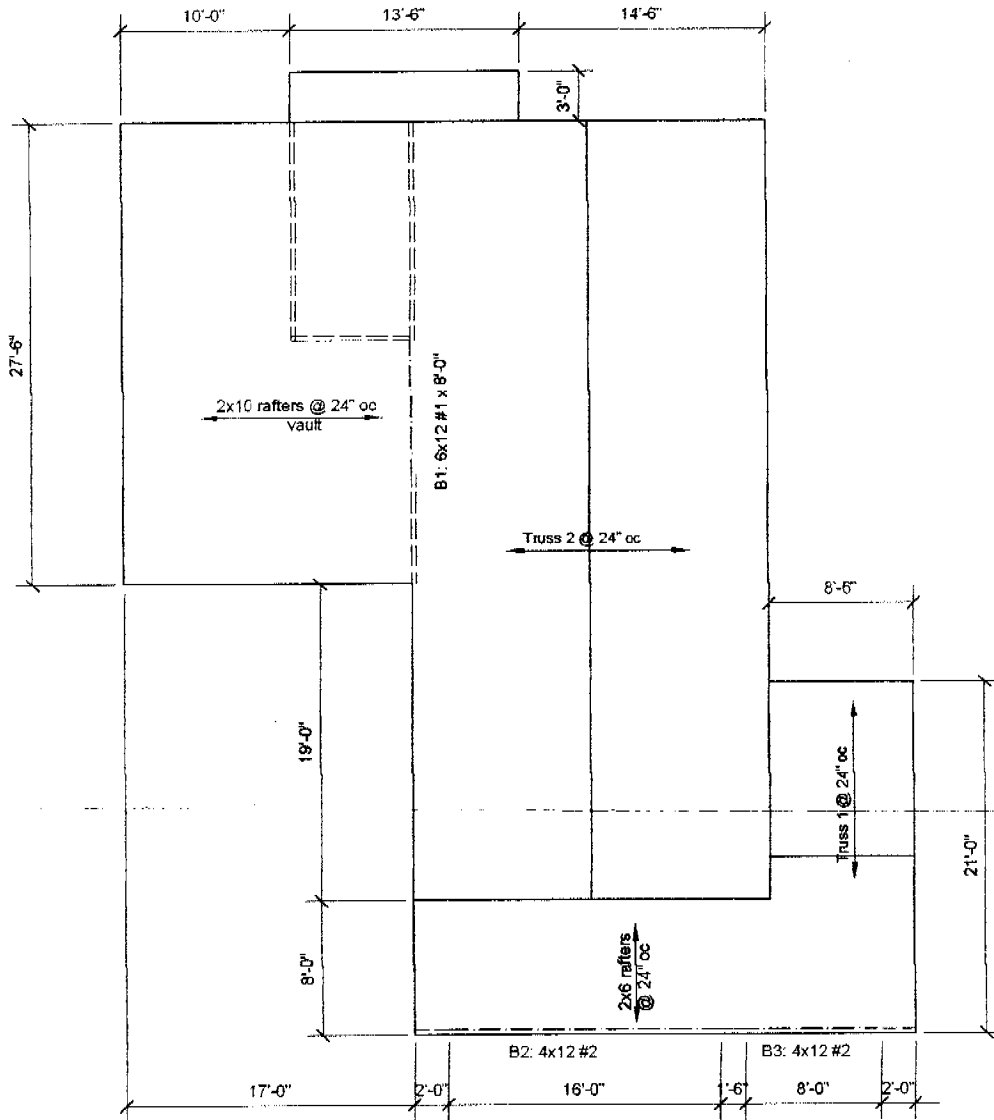
2x or 4x

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	5.8 feet
Max Axial Comp, C	1439 lbs
Max Reaction, R	176 lbs
Max Moment, M	181 ft-lbs
Max LL Deflection	0.06 inches
Max TL Deflection	0.14 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 =	274 psi
Fce=	1420 psi
Fc*=	1869 psi
F'c=	1102 psi
fb=	709 psi
F'b=Fb*=	1887 psi
Shear D/C ratio	0.42 < 1.0, Member OK
Interaction equation: (fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.53 < 1.0, Member OK
Live Load defl ratio	0.21 < 1.0, Member OK
Total Load defl ratio	0.36 < 1.0, Member OK



**NOTES:**

- A. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.0 psf.
- B. All rafters are 2x6 DF#2 and hips and valleys are 2x8 DF#2 unless otherwise noted.
- C. All existing rafter, hips, valleys, rafter ties, and purlins are braced per UBC Section 2320.1 "Roof and Ceiling Framing" unless otherwise shown.
- D. All structural wood members that were observed appear to be in sound condition and without structural defect.

1

**ROOF PLAN - WONG**

Not to Scale

15





ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office ■ 5360 Workman Mill Road, Whittier, California 90601 ■ (562) 699-0543
Regional Office ■ 900 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 599-9800
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Legacy report on the 1997 Uniform Building Code™

DIVISION: 07—THERMAL AND MOISTURE PROTECTOR
Section: 07320—Roof Tile

EAGLE AND EAGLELITE INTERLOCKING CONCRETE ROOFING TILES

EAGLE ROOFING PRODUCTS
3546 NORTH RIVERSIDE AVENUE
RIALTO, CALIFORNIA 92377

1.0 SUBJECT

Eagle and Eaglelite™ Interlocking Concrete Roofing Tiles.

2.0 DESCRIPTION

2.1 General:

2.1.1 Eagle Tiles: Eagle conventional-weight interlocking concrete roofing tiles are produced in high-profile (Capistrano), low-profile (Malibu), and flat-profile styles with either smooth surfaces (Bel Air Standard, Bel Air Estate or Bel Air Double Eagle) or textured surfaces (Ponderosa Standard, Ponderosa Estate, Ponderosa Double Eagle or Ponderosa Golden Eagle). Ridge and rake trim units are produced to match each product.

The tiles are composed of Type II portland cement, washed sand, and proprietary additives. Mineral coloring oxides are added to or are mixed with portland cement and water for surface application following extrusion. Units are cured under controlled temperature and humidity conditions. Tiles are 17 inches (432 mm) long, 12 3/8 inches (315 mm) wide, and nominally 1/2 inch (12.7 mm) thick. They are manufactured in either flat or profile style with 3/4-inch-wide (19 mm) interlocking sidelaps designed to resist surface water penetration and maintain proper alignment. All tiles have protruding head lugs on the underside, which provide for mechanical attachment over wooden battens, or provide a stable foundation for nail attachment to solid decking. Two nail holes are provided in each tile for use where half tiles are needed at roof edges, chimneys, skylights, etc. Approximate installed dry weights with 3-inch (76 mm) head laps are 9.5 psf (46 kg/m²) for Capistrano tiles, 9.5 psf (46 kg/m²) for Malibu tiles and 10.0 psf (49 kg/m²) for Ponderosa and Bel Air tiles.

2.1.2 Eaglelite Tiles: Eaglelite tiles are produced in the same size, manner and shapes as the conventional-weight Eagle tiles described in Section 2.1.1, except for substitution of lightweight aggregates and additives for sand. Approximate installed dry weights with 3-inch (76 mm) head laps are 5.7 psf (28 kg/m²) for Capistrano tiles, 5.5 psf (27 kg/m²) for

Malibu tiles and 7.0 psf (34 kg/m²) for Ponderosa and Bel Air tiles.

2.2 Installation:

2.2.1 New Construction: Installation shall be in accordance with the Concrete and Clay Roof Tile Installation Manual for Moderate Climate Regions. See evaluation report ER-6034P.

2.2.2 Reroofing: Eagle tiles, as described in Section 2.1.1, provide a Class A roof when installed over existing asphalt shingle roofs. Care should be taken to ensure both horizontal and vertical alignment on the roof. Foreign matter must be cleaned from all interlocking areas. Cracked or broken tiles must be removed from the roof. Damaged or rusted flashing should be replaced. Existing framing must be adequate for the additional load. Structural data verifying adequacy should be submitted to the building official. The existing roof must be inspected in accordance with Appendix Chapter 15, Section 1515, of the 1997 Uniform Building Code™ (UBC). When reroofing wood shake roofs, existing shakes must be removed and solid decking and tile must be installed, as with new construction. When installed over existing spaced sheathing boards, underlayment complying with the UBC or an underlayment recognized specifically for this type of use in an ICC-ES evaluation report, installed with or without battens, may be used. One layer of No. 30 felt or approved equal underlayment must be installed on the roof prior to application of tile. In lieu of this underlayment's being provided, the building official may determine that the existing roof covering provides the required underlayment protection.

Details not covered under this section are identical to those described in Section 2.2.1.

2.3 Roof Classification:

When installed over solid sheathing in accordance with this report, Eagle and Eaglelite roofing tiles are Class A roof coverings in accordance with Section 1504.1 of the UBC. When installed over spaced or solid sheathing in accordance with this report, the tiles are noncombustible roof coverings in accordance with Section 1504.2 of the UBC. The tiles are Class A roof coverings when installed over existing asphalt shingles in accordance with Section 2.2.2 of this report.

2.4 Identification:

The name EAGLE and the evaluation report number (ER-4660) are imprinted on each tile. A tag on each shipping pallet indicates the producing plant location, product identification and the installed weight. Each Eaglelite tile is identified by the product name "Eaglelite" on a tag and a light-colored strip across the headlap area.

ICC-ES legacy reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, Inc., express or implied, as to any finding or other matter in this report, or as to any product covered by the report.



3.0 EVIDENCE SUBMITTED

Results of tests in accordance with the ICC-ES Interim Criteria for Clay and Concrete Roof Tiles (AC180), dated January 2002, and a quality control manual.

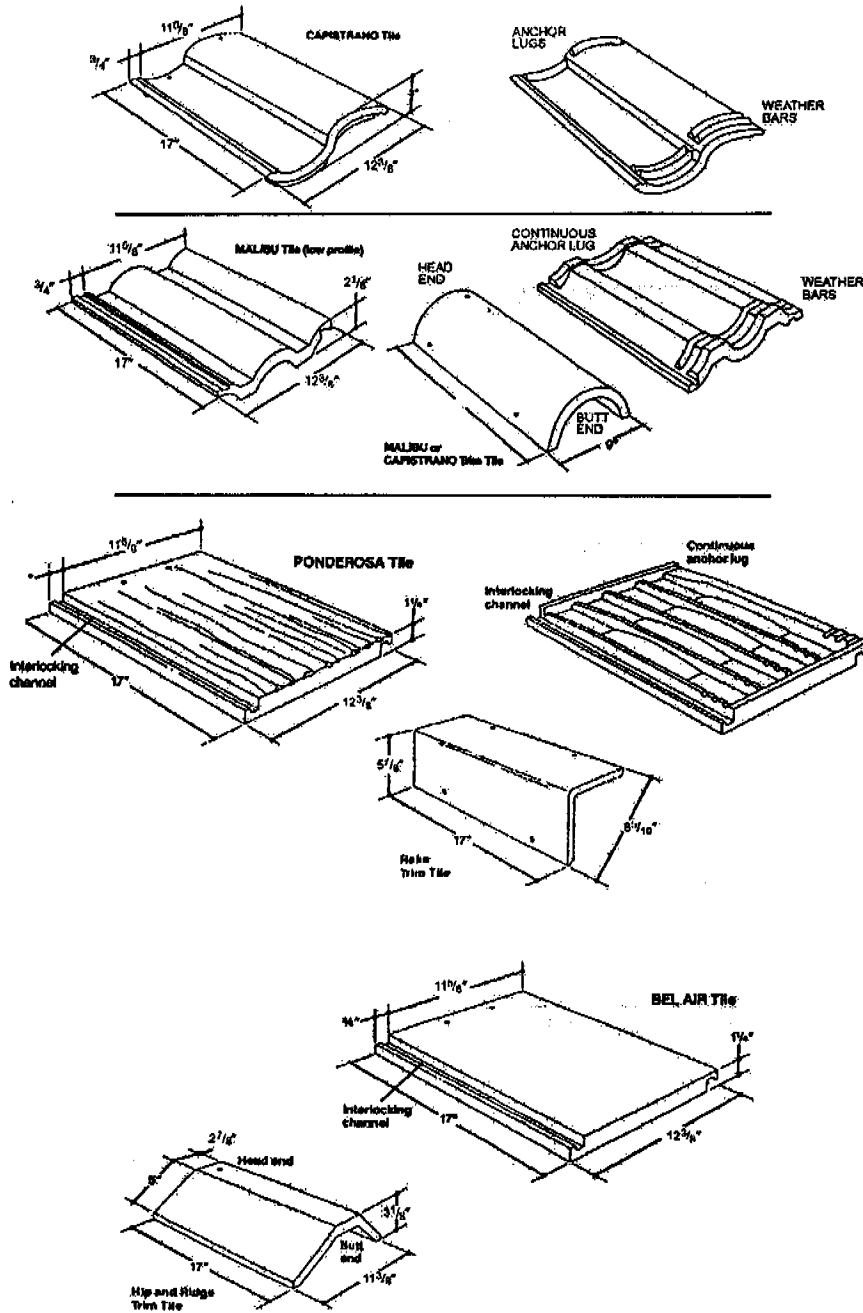
4.0 FINDINGS

That the Eagle Concrete Roofing Tiles described in this report comply with the 1997 *Uniform Building Code*™, subject to the following conditions:

4.1 Tiles are manufactured, identified and installed in accordance with this report and the manufacturer's instructions.

4.2 Tiles are manufactured at Eagle Roofing Products facilities located in Rialto, California, and Phoenix, Arizona.

This report is subject to re-examination in two years.



FIELD AND TRIM SPECIFICATIONS