

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0403496

Insp Area: 2

Thos Bros: 337A2

Site Address: 976 SHELLWOOD WY SAC

Parcel No: 031-0730-012

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR

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

OWNER

GEBALA SOLOMAN & RICHARD PACHECO
976 SHELLWOOD WY
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: T/O EXISTING SHAKE, INSTALL REINFORCEMENT TO EXISTING TRUSSES TO MEET LOAD REQUIREMENTS, INSTALL METAL BATTENS AND THERMOSHEETING, REROOF W/ EAGLE LITE TILE

CONSTRUCTION LENDING AGENCY: I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C).

Lender's Name _____ Lender's Address _____

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class C-39 License Number 806787 Date MAR 10, 04 Contractor Signature PAUL RUSHING

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 _____

PAID
CITY OF SACRAMENTO
MAR 10 2004
BIRTH PERMIT

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 above mentioned property for inspection purposes.

Date MAR 10th 2004 Applicant/Agent Signature PAUL RUSHING

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.

X 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 MAR 10th 2004 Applicant Signature PAUL RUSHING

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.

Pacheco

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

TEL: 916.961.3960
FAX: 916.961.6552

March 5, 2004

Monarch Roofing
8262 Alpine Avenue, Suite A
Sacramento, CA 95826
TEL: (916) 978-3182
FAX: (916) 452-5140



This set of plans and specifications must be kept on the job at all times and it is understood that the contractor shall not make any changes or alterations to 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 a violation of any City Ordinance or State Law.

Attn.: Mr. Neal Weber,

re: Job 2004092: PACHECO

Subject: Structural Investigation Report of the Roof for the Residence located at 976 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 March 4, 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.

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 currently lacks sufficient structural capacity for the applied live and dead loads. See "Recommendations" for location and repair to bring the roof structure up to the required capacity.

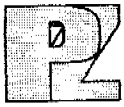
PC# 0403496

1/21

MICROFILM AT FINAL

CITY COPY

976 SHELLWOOD WAY SACRAMENTO, CA 95831



Pacheco



Paul Zacher - Structural Engineers, Inc.
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.

Roof Structure:

1. Scab a 1 3/4" x 11 1/4" LVL to the existing header. See details 1 and 2.

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

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

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

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

Sincerely,

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

DESIGN LOADING:

Roof Pitch	6	in 12
Pitch Adjustment Factor	1.12	

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>1.20</u>	psf
	Total Load	11.4	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	14.3	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 #: 04_092

TEL: (916) 961-3960

Date: 03/05/2004

FAX: (916) 961-3938

LOADING:

Rafter:

Dr = 11.4 psf x 2'-0" = 22.8 plf

2x6 #2

22.8 / 32.0

Lr = 16.0 psf x 2'-0" = 32.0 plf

12'-0"

B2:

Dr = 14.1 psf x 11'-0" = 155 plf

4x12 #2 + 1-3/4"x11-1/4" LVL

155 / 176

Lr = 16.0 psf x 11'-0" = 176 plf

16'-0"

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

Title :
 Dsgnr:
 Description :

Job #
 Date: 12:58PM, 5 MAR 04

Scope :

Rev. 560100
 User: KW-0602844, Ver 5.8.1, 25-Oct-2002
 (c)1983-2002 ENERCALC Engineering Software

Timber Beam & Joist

c:\documents and settings\paul zacher\desktop

Description RAFTERS AND BEAMS

Timber Member Information

Calculations are designed to 1997 NDS and 1997 UBC Requirements

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

Center Span Data

Span	ft	12.00	16.00
Dead Load	#/ft	22.80	155.00
Live Load	#/ft	32.00	176.00

Results

Ratio = 0.9572 0.6332

Mmax @ Center	in-k	11.84	127.10
@ X =	ft	6.00	8.00
Fb : Actual	psi	1,565.2	1,147.7
Fb : Allowable	psi	1,635.2	1,812.5
		Bending OK	Bending OK
Fv : Actual	psi	55.5	59.7
Fv : Allowable	psi	118.8	197.5
		Shear OK	Shear OK

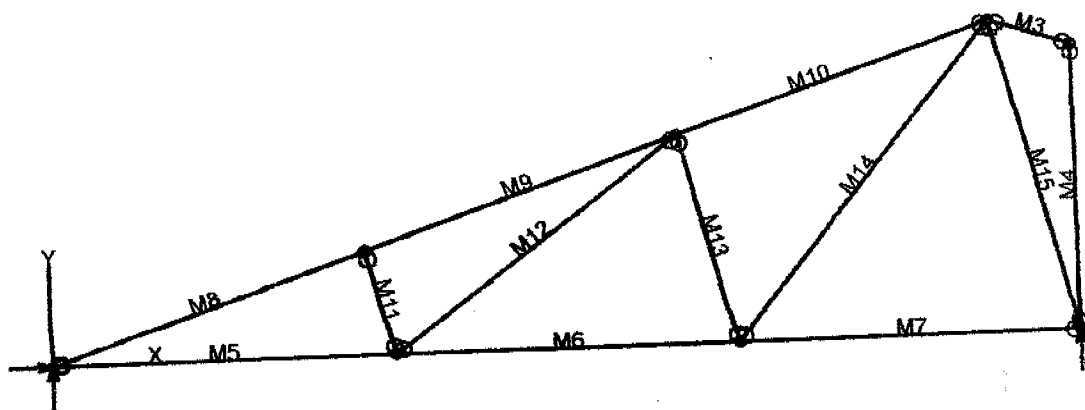
Reactions

@ Left End	DL	lbs	136.80	1,240.00
	LL	lbs	192.00	1,408.00
	Max. DL+LL	lbs	328.80	2,648.00
@ Right End	DL	lbs	136.80	1,240.00
	LL	lbs	192.00	1,408.00
	Max. DL+LL	lbs	328.80	2,648.00

Deflections

Ratio OK Deflection OK

Center DL Defl	in	-0.320	-0.220
L/Defl Ratio		450.5	872.2
Center LL Defl	in	-0.449	-0.250
L/Defl Ratio		320.9	768.1
Center Total Defl	in	-0.768	-0.470
Location	ft	6.000	8.000
L/Defl Ratio		187.4	408.4



VisualAnalysis 3.50.c Report

08/03/02 17:09:10

Project: Truss 1

File: Untitled.Vap

Company: PK Associates Engineers

Engineer: Paul Zacher

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

Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes		No	
N2	22.00	0.00	No					
N3	20.25	6.75	"		No			
N4	22.00	6.17	"		"			
N5	7.33	0.00	"		"			
N6	14.67	0.00	"		"			
N7	6.75	2.25	"		"			
N8	13.50	4.50	"		"			

Member Elements

Member	Section	Material	Length ft
M3	SS2x4	Wood	1.84
M4	"	"	6.17
M5	"	"	7.33
M6	"	"	7.33
M7	"	"	7.33
M8	"	"	7.12
M9	"	"	7.12
M10	"	"	7.12
M11	"	"	2.32
M12	"	"	7.63
M13	"	"	4.65
M14	"	"	8.76
M15	"	"	6.97

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	697.54	-NA-
N2	"	-NA-	697.49	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M3	-15.08	-45.50	0.0000	-0.0084
"	-5.0267	-15.17	18.5943	-0.0170
"	5.0267	15.1667	18.5943	-0.0243
"	15.0800	45.5000	0.0000	-0.0304
M4	-47.93	0.0000	0.0000	-0.0255
"	-47.93	0.0000	0.0000	-0.0085
"	-47.93	0.0000	0.0000	0.0084
"	-47.93	0.0000	0.0000	0.0254
M5	1550.64	-34.33	-20.50	-0.1270
"	1550.64	-13.31	37.5912	-0.1250
"	1550.64	7.7154	44.4252	-0.0853
"	1550.64	28.7376	0.0000	-0.0000
M6	866.97	-35.22	-47.53	-0.0810
"	866.97	-14.20	12.7418	-0.1095
"	866.97	6.8261	21.7495	-0.1281
"	866.97	27.8484	-20.50	-0.1270
M7	161.91	-25.05	-0.0000	-0.0000
"	161.91	-4.0304	35.4175	-0.0564
"	161.91	16.9918	19.5757	-0.0774
"	161.91	38.0140	-47.53	-0.0810
M8	-1682.56	144.12	0.0000	-0.0000
"	-1643.56	27.1239	202.38	-0.2074
"	-1604.56	-89.88	127.97	-0.2236
"	-1565.56	-206.88	-223.25	-0.1272
M9	-1591.37	171.63	-223.25	-0.1272
"	-1552.37	54.6295	44.3712	-0.1336
"	-1513.37	-62.37	35.1914	-0.1168
"	-1474.37	-179.37	-250.78	-0.0864
M10	-822.00	210.75	-250.78	-0.0864
"	-783.00	93.7467	109.61	-0.1834
"	-744.00	-23.25	193.20	-0.1874
"	-705.00	-140.25	0.0000	-0.0099
M11	-379.38	-0.0000	-0.0000	-0.0171
"	-379.38	-0.0000	-0.0000	-0.0137
"	-379.38	-0.0000	-0.0000	-0.0103
"	-379.38	-0.0000	0.0000	-0.0069
M12	728.49	-0.0000	0.0000	-0.1116
"	728.49	-0.0000	-0.0000	-0.0988
"	728.49	-0.0000	-0.0000	-0.0860
"	728.49	-0.0000	-0.0000	-0.0731
M13	-612.83	0.0000	0.0000	-0.0243
"	-612.83	0.0000	0.0000	-0.0153
"	-612.83	0.0000	0.0000	-0.0063

"	-612.83	0.0000	0.0000	0.0027
M14	864.90	0.0000	0.0000	-0.0700
"	864.90	0.0000	0.0000	-0.0429
"	864.90	0.0000	0.0000	-0.0157
"	864.90	0.0000	0.0000	0.0115
M15	-645.15	0.0000	0.0000	-0.0367
"	-645.15	0.0000	0.0000	-0.0163
"	-645.15	0.0000	0.0000	0.0042
"	-645.15	0.0000	0.0000	0.0246

BENDING & COMP: TRUSS 1 - MEMBER 8

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

Grading:

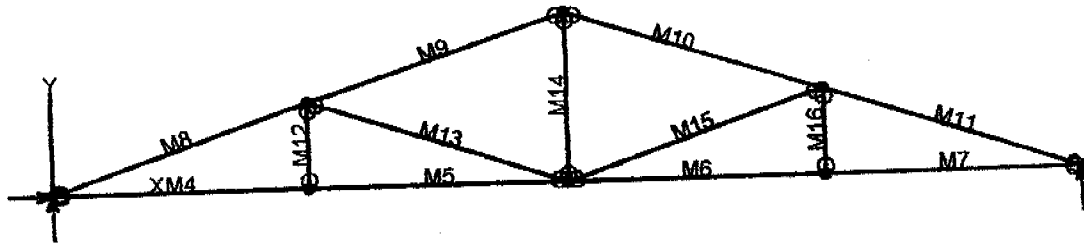
2x or 4x

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	7.12 feet
Max Axial Comp, C	1565 feet
Max Reaction, R	206 lbs
Max Moment, M	223 ft-lbs
Max LL Deflection	0.06 feet
Max TL Deflection	0.12 feet
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.20
fc =	298 psi
Fce =	1023 psi
Fc* =	2084 psi
F'c =	891 psi
fb =	874 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.50 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.68 < 1.0, Member OK
Live Load defl ratio	0.17 < 1.0, Member OK
Total Load defl ratio	0.25 < 1.0, Member OK



VisualAnalysis 3.50.c Report

08/03/02 17:13:13

Project: Truss 2

File: Untitled.Vap

Company: PK Associates Engineers

Engineer: Paul Zacher

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

Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes			No
N2	25.00	0.00	No		"			"
N3	12.50	4.17	"		No			"
N4	6.25	0.00	"		"			"
N5	12.50	0.00	"		"			"
N6	18.75	0.00	"		"			"
N7	6.25	2.09	"		"			"
N8	18.75	2.09	"		"			"

Member Elements

Member	Section	Material	Length ft
M4	SS2x4	Wood	6.25
M5	"	"	6.25
M6	"	"	6.25
M7	"	"	6.25
M8	"	"	6.59
M9	"	"	6.59
M10	"	"	6.59
M11	"	"	6.59
M12	"	"	2.09
M13	"	"	6.59
M14	"	"	4.17
M15	"	"	6.59
M16	"	"	2.09

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	792.71	-NA-
N2	"	-NA-	792.71	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M4	1893.38	-26.44	2.7049	-0.1807
"	1893.38	-8.5255	39.0363	-0.1498
"	1893.38	9.3911	38.1347	-0.0893
"	1893.38	27.3078	0.0000	-0.0000
M5	1893.38	-33.66	-39.73	-0.1896
"	1893.38	-15.75	11.6492	-0.1976
"	1893.38	2.1690	25.7936	-0.1984
"	1893.38	20.0857	2.7049	-0.1807
M6	1893.38	-20.09	2.7049	-0.1807
"	1893.38	-2.1690	25.7936	-0.1985
"	1893.38	15.7476	11.6492	-0.1976
"	1893.38	33.6643	-39.73	-0.1896
M7	1893.38	-27.31	0.0000	-0.0000
"	1893.38	-9.3911	38.1347	-0.0893
"	1893.38	8.5255	39.0363	-0.1498
"	1893.38	26.4422	2.7049	-0.1807
M8	-2038.29	126.90	0.0000	-0.0000
"	-2002.15	18.5683	159.15	-0.1653
"	-1966.01	-89.77	80.9647	-0.2031
"	-1929.87	-198.10	-234.54	-0.1844
M9	-1328.62	198.10	-234.54	-0.1844
"	-1292.48	89.7650	80.9647	-0.2655
"	-1256.34	-18.57	159.15	-0.2900
"	-1220.20	-126.90	0.0000	-0.1871
M10	-1328.62	-198.10	-234.54	-0.1643
"	-1292.48	-89.77	80.9647	-0.2454
"	-1256.34	18.5683	159.15	-0.2699
"	-1220.20	126.90	0.0000	-0.1669
M11	-2038.29	-126.90	0.0000	0.0201
"	-2002.15	-18.57	159.15	-0.1452
"	-1966.01	89.7650	80.9647	-0.1830
"	-1929.87	198.10	-234.54	-0.1643
M12	46.5279	0.0000	0.0000	0.0159
"	46.5279	0.0000	0.0000	0.0245
"	46.5279	0.0000	0.0000	0.0331
"	46.5279	0.0000	0.0000	0.0417
M13	-733.42	-0.0000	-0.0000	-0.1698
"	-733.42	-0.0000	-0.0000	-0.1659
"	-733.42	-0.0000	-0.0000	-0.1620
"	-733.42	-0.0000	0.0000	-0.1581
M14	531.52	-0.0000	-0.0000	-0.0318
"	531.52	-0.0000	0.0000	-0.0318
"	531.52	-0.0000	-0.0000	-0.0318

13

"	531.52	-0.0000	-0.0000	-0.0318
M15	-733.42	0.0000	0.0000	-0.1899
"	-733.42	0.0000	0.0000	-0.1860
"	-733.42	0.0000	0.0000	-0.1821
"	-733.42	0.0000	0.0000	-0.1782
M16	46.5279	-0.0000	0.0000	0.0219
"	46.5279	-0.0000	-0.0000	0.0305
"	46.5279	-0.0000	-0.0000	0.0391
"	46.5279	-0.0000	-0.0000	0.0477

BENDING & COMP: TRUSS 2 - 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	6.59 feet
Max Axial Comp, C	1929 feet
Max Reaction, R	198 lbs
Max Moment, M	234 ft-lbs
Max LL Deflection	0.09 feet
Max TL Deflection	0.18 feet
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.18
fc =	367 psi
Fce=	1180 psi
Fc*=	2084 psi
F'c=	997 psi
fb=	917 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.48 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.75 < 1.0, Member OK
Live Load defl ratio	0.27 < 1.0, Member OK
Total Load defl ratio	0.41 < 1.0, Member OK

VisualAnalysis 3.50.c Report

10/02/02 11:23:02

Project: Truss 3

File: Untitled.Vap

Company: PK Associates Engineers

Engineer: Paul Zacher

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

Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	18.50	6.17	No	No	"
N3	18.50	2.50	"	Yes	"
N4	9.25	1.25	"	No	"
N5	6.17	2.06	"	"	"
N6	12.33	4.11	"	"	"

Member Elements

Member	Section	Material	Length ft
M3	SS2x4	Wood	9.33
M4	"	"	9.33
M5	"	"	6.50
M6	"	"	6.50
M7	"	"	6.50
M8	"	"	3.67
M9	"	"	3.19
M10	"	"	4.21
M11	"	"	6.37

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	587.32	-NA-
N3	"	-NA-	587.32	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M3	2060.03	25.9036	56.8057	-0.0000
"	2063.61	-0.6131	95.9434	-0.2010
"	2067.19	-27.13	52.7844	-0.2388
"	2070.78	-53.65	-72.67	-0.1919
M4	1062.72	47.5606	-72.67	-0.1919
"	1066.31	21.0439	33.8492	-0.1943
"	1069.89	-5.4728	58.0729	-0.1468
"	1073.47	-31.99	-0.0000	-0.0053
M5	-2204.87	147.52	-56.81	-0.0000
"	-2169.22	40.6311	146.46	-0.1755
"	-2133.57	-66.26	118.70	-0.2377
"	-2097.93	-173.15	-140.10	-0.2110
M6	-1603.39	149.30	-140.10	-0.2110
"	-1567.75	42.4119	67.0286	-0.2221
"	-1532.10	-64.48	43.1227	-0.1905
"	-1496.45	-171.37	-211.82	-0.1371
M7	-64.34	192.92	-211.82	-0.1371
"	-28.69	86.0288	89.8227	-0.1721
"	6.9571	-20.86	160.43	-0.1439
"	42.6060	-127.75	0.0000	0.0101
M8	-134.67	-0.0000	0.0000	-0.0340
"	-134.67	-0.0000	-0.0000	-0.0094
"	-134.67	-0.0000	-0.0000	0.0151
"	-134.67	-0.0000	-0.0000	0.0397
M9	-590.37	0.0000	0.0000	-0.1870
"	-590.37	0.0000	0.0000	-0.1805
"	-590.37	0.0000	0.0000	-0.1740
"	-590.37	0.0000	0.0000	-0.1676
M10	565.36	-0.0000	0.0000	-0.1717
"	565.36	-0.0000	-0.0000	-0.1516
"	565.36	-0.0000	-0.0000	-0.1315
"	565.36	-0.0000	-0.0000	-0.1114
M11	-1095.18	0.0000	0.0000	-0.1325
"	-1095.18	0.0000	0.0000	-0.0850
"	-1095.18	0.0000	0.0000	-0.0375
"	-1095.18	0.0000	0.0000	0.0100

BENDING & COMP: TRUSS 3 - MEMBER 5

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

Grading:

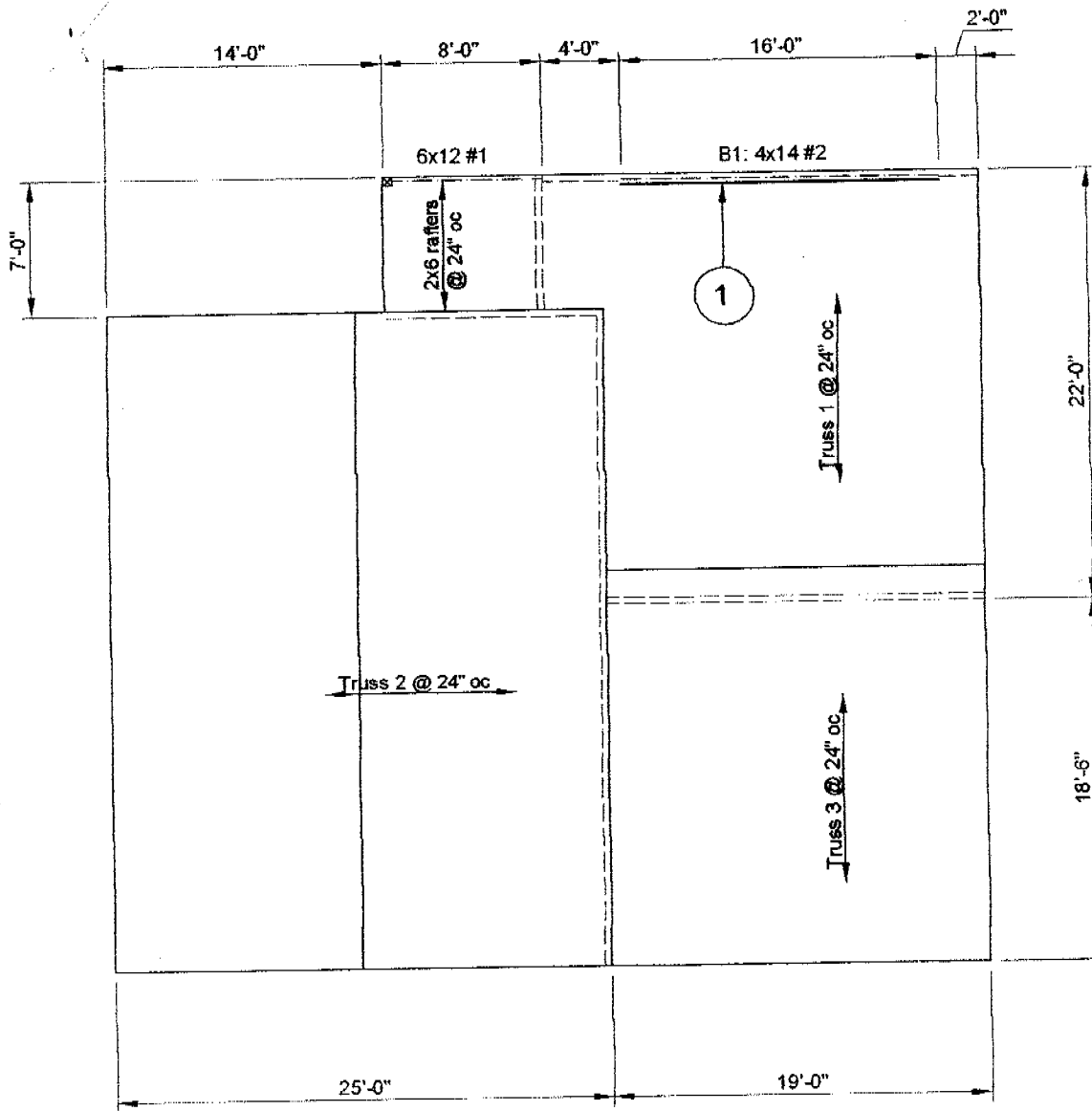
2x or 4x

Doug-fir larch: No. 2

Assumptions:

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

Width, b	1.5 inches
Depth, d	3.5 inches
Length	6.5 feet
Max Axial Comp, C	2097 feet
Max Reaction, R	173 lbs
Max Moment, M	140 ft-lbs
Max LL Deflection	0.11 feet
Max TL Deflection	0.21 feet
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.18
fc =	399 psi
Fce =	1211 psi
Fc* =	2084 psi
F'c =	1017 psi
fb =	549 psi
F'b = Fb* =	2156 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	0.34 < 1.0, Member OK
Total Load defl ratio	0.48 < 1.0, Member OK



FRAMING NOTES:

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



NOTES:

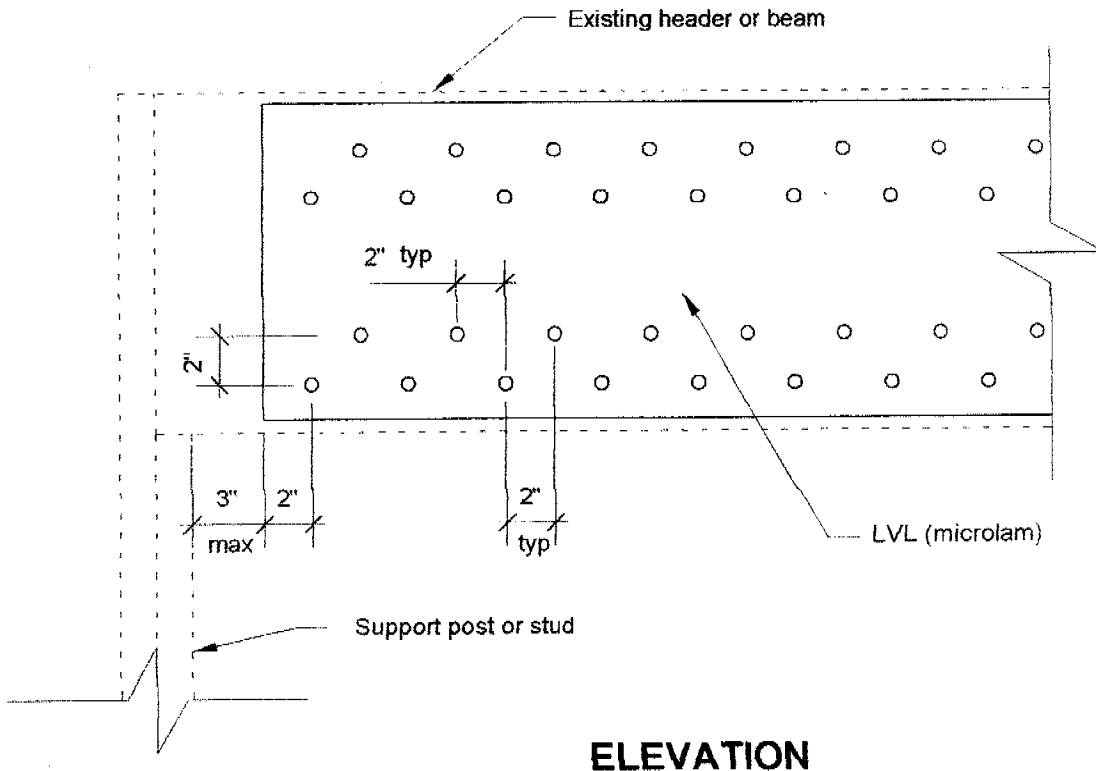
- A. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.3 psf.
- B. All structural wood members that were observed appear to be in sound condition and without structural defect.



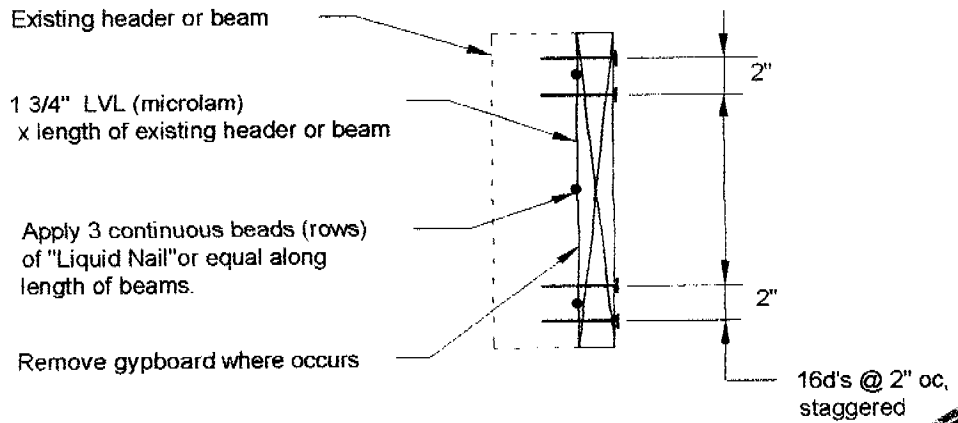
ROOF PLAN - PACHECO

Not to Scale

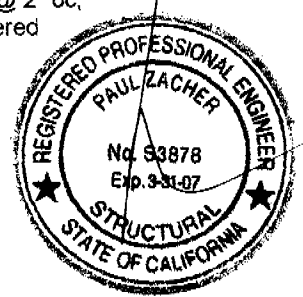
20



ELEVATION



SECTION



2

HEADER DETAIL

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

21

Filing Category: ROOF COVERING AND ROOF DECK CONSTRUCTION—Roof Covering (202)

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, 12³/₈ 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.

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

2.2 Installation:

2.2.1 New Construction:

2.2.1.1 Sheathing: Sheathing must be structurally adequate to support the loads involved but not less than solid sheathing boards of nominal 1-inch-thick or nominal 1/2-inch-thick (12.7 mm) plywood or nominal 1-inch spaced sheathing or other decking material recognized in an ICBO ES evaluation

report or by the *Uniform Building Code™* (UBC) and approved by the local building official.

2.2.1.2 Underlayment: Tiles installed on roof slopes of less than 2¹/₂:12 (21% slope) are considered decorative only and must be applied over an approved roof covering, subject to local building official approval.

On roof slopes from 2¹/₂:12 (21% slope) to below 3:12 (25% slope), an approved built-up roof, applied in accordance with Table 15-D-1 of the code, or a single-ply roof membrane assembly is first installed.

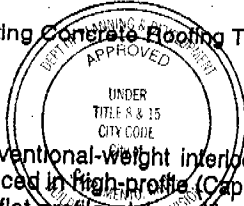
Where roof slopes fall between 3:12 (25% slope) and 4:12 (33% slope), underlayment may be as described above in this section or may be a single layer, No. 90, granular-surfaced, asphalt roll roofing, or two layers of No. 30 felt installed in a single fashion, or an approved single-ply system installed per code or an ICBO ES evaluation report.

Where roof slopes are 4:12 (33% slope) or greater, one layer of minimum No. 30 felt installed using 6-inch (152 mm) side and 2-inch (51 mm) head laps, complying with ASTM D 226 or equal and recognized in an ICBO ES evaluation report, shall completely cover the deck and be lapped over hips and ridges and laced through valleys. Hip and ridge nailer boards must also be covered. When installed over spaced sheathing, an underlayment recognized specifically for this type of use in an ICBO ES evaluation report must be installed with 6-inch (152 mm) side and head laps.

2.2.1.3 Battens: Nominal 1-by-2 wood batten strips are required where roof pitches fall below 3:12 (25% slope), in order to minimize membrane penetration, and are required where roof pitches exceed 7:12 (58.3% slope), to provide positive tile anchoring. Battens are nailed to the deck with 8d corrosion-resistant box nails at 24 inches (610 mm) on center, or No. 16 gage [0.063-inch (1.6 mm)] by 7/16-inch-crown (11.1 mm) by 1 1/2-inch-long (38 mm) corrosion-resistant staples on 12-inch (305 mm) centers, allowing a 1/2-inch (12.7 mm) separation at batten ends to provide drainage.

On roof slopes from 2¹/₂:12 (21% slope) to below 3:12 (25% slope), nominal 3/8-inch-thick (9.5 mm), decay-resistant wood lath strips, installed vertically, are attached from eave to ridge at 24 inches (610 mm) on center using 8d corrosion-resistant box nails. Horizontal nominal 1-by-2 wood battens are then nailed through the vertical battens into the deck at proper coursing, not exceeding 14 inches (356 mm) on center. Where attaching tiles to horizontal battens, nails shall penetrate the full thickness of the battens but not the roof membrane.

Battens installed on roof slopes of 4:12 (33% slope) to 21:12 (175% slope) shall be nailed to the deck using 8d corrosion-resistant box nails at no more than 24 inches (610 mm) on center, and shall have provisions for drainage by providing a 1/2-inch (12.7 mm) separation at the batten ends every 4 feet (1219 mm), or by shimming with moisture-resistant, nominal 3/8-inch-thick (9.5 mm), decay-resistant wood lath strips or 2-inch-square (51 mm square) shims, cut from asphalt



This set of plans and specifications kept on the job site to make any changes or additions the same without written permission of the Building Inspector. The approval of any City Ordinance or other regulation of any City, County, State or Federal Agency shall not 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 ICBO 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.

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PC# 0403496



shingles, placed between the battens and deck to provide drainage beneath the battens. Batten placement shall not exceed 14 inches (356 mm) on center.

2.2.1.4 Eave: Metal eave closure strips must be installed when using Eagle Capistrano tiles. The use of eave closures with Malibu tiles is an aesthetic option. Eave riser strips of wood or metal must be installed at eaves when using Eagle Bel Air, Malibu or Ponderosa tile. Eave closures and/or eave risers elevate eave tiles to the proper height; block wind, fire, snow, vermin, or birds; and allow drainage of moisture accumulated beneath the tiles to escape through weep holes in metal or slots in wood. Where solid fascia material is attached to rafter ends and extends above the plane of the deck to act as a first course tile riser, an anti-ponding device must be used to support the underlayment.

2.2.1.5 Fastening: Tiles are attached in accordance with Table 15-D-1 of the UBC for roof slopes less than 4:12 and Table 15-D-2 of the UBC for roof slopes 4:12 and over. All tile nails are minimum No. 11 gage, corrosion-resistant steel having a minimum $\frac{5}{16}$ -inch-diameter (7.9 mm) head and sufficient length to penetrate $\frac{3}{4}$ inch (19 mm) into framing, battens or through the thickness of the sheathing, whichever is less.

When attaching tiles to overhang areas where the nail points may be visible from underneath the sheathing, nominal 1-by-2 wood batten strips are nailed through the sheathing into rafters with one 8d nail in each rafter. Tiles are nailed into batten strips with minimum No. 11 gage nails of sufficient length to penetrate through the full thickness of the batten strip.

2.2.1.6 Trim Tile: Each hip or ridge tile is secured to nailer boards with one nail at the head end and a dab of roofer's mastic or other permanent adhesive placed over the nailing area to secure succeeding tile. When installing Capistrano tiles, all hip, ridge and head wall intersections must be protected, to prevent moisture penetration, with mortar, metal, metal-backed tape, rubber or other ultraviolet-resistant materials. All rake tiles are attached with two nails into the barge board.

Nailer boards of sufficient height to adequately support hip or ridge tiles are nailed into framing every 24 inches (610 mm) with 10d steel nails or are secured using galvanized steel strapping or special galvanized steel attachment devices at 48 inches (1219 mm) on center.

2.2.1.7 Flashings: Valley flashing must be in accordance with Section 1508 of the UBC. All other flashing must comply with Section 1509 of the UBC. Openings through the tile for penetrations such as vents must be flashed and supported by additional blocking or roof framing as required. Flashing for profile tiles must be made of lead or other approved flexible materials, and must be formed to the contours of the tile.

2.2.1.8 Broken Tile Replacement: The broken tile is first removed. If battens were used originally, existing nails, if any, are cut and new tile inserted. If no battens were used, a 6-inch-by-6-inch-by- $\frac{1}{2}$ -inch (152 mm by 152 mm by 12.7 mm) plywood piece is nailed to the deck to act as a batten. The new tile is then inserted. As an alternate, new tiles may be inserted using roofer's mastic to form a bond at the head lap area.

2.2.1.9 Severe Climate Considerations: In areas designated by local building departments as subject to rooftop accumulations of sand, snow or rain driven by high winds, openings at hips, ridges and walls must be closed with metal or mortar, or approved sealant material. In areas subject to severe ice build-up at the eaves, tiles must not be installed on roof slopes below 4:12 (33% slope). Roof ventilation described in Section 1505.3 of the UBC must be provided.

Horizontal battens must be installed on top of nominal 1-by-4 vertical battens, to allow airflow between the roof deck and the installed tile. Vertical battens must be installed at 12 or 16 inches (305 or 406 mm) on center, or at up to 24 inches (610 mm) on center if fastened into rafters. Horizontal battens must be minimum 1-by-4, fastened through the vertical battens. All tiles are nailed through horizontal battens. In areas where basic wind speeds exceeding 80 mph (129 km/h) exist, directions in Table 15-D-1 or Table 15-D-2 of the UBC must be followed. Underlayment application must comply with Table 15-D-1 of the UBC for slopes less than 4:12 or Table 15-D-2 of the UBC for slopes 4:12 and greater.

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 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 ICBO 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.

3.0 EVIDENCE SUBMITTED

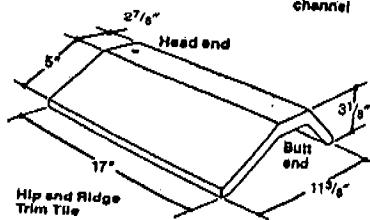
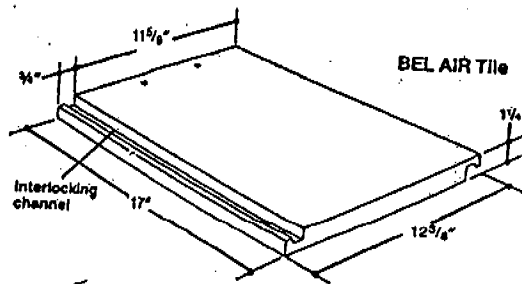
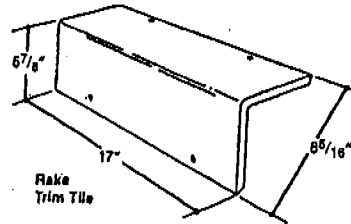
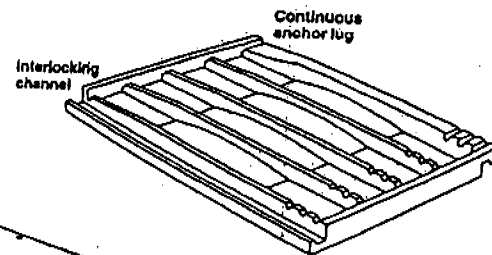
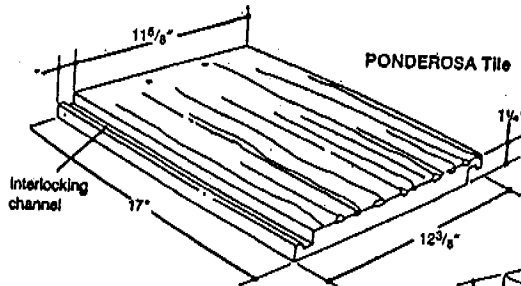
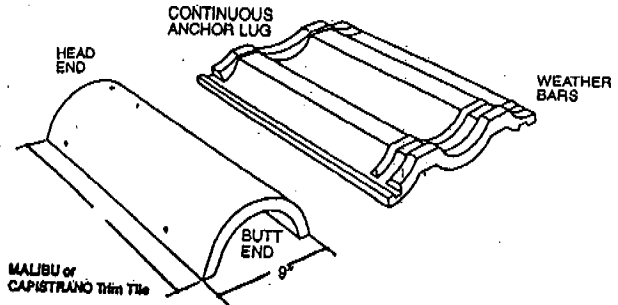
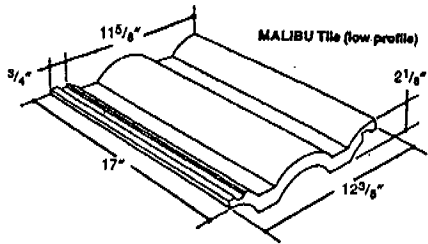
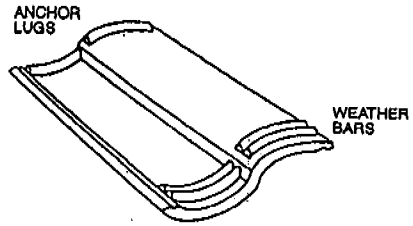
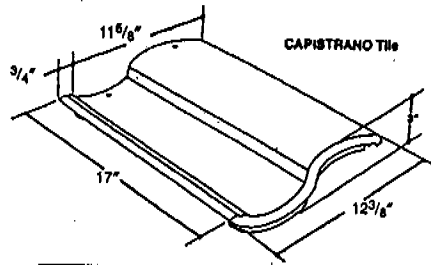
Results of tests in accordance with the ICBO ES Acceptance Criteria for Special Roofing Systems (AC07), dated April 1999; installation instructions; and quality control manual.

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:

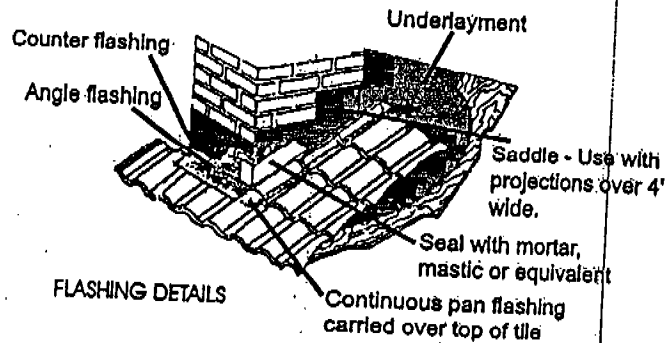
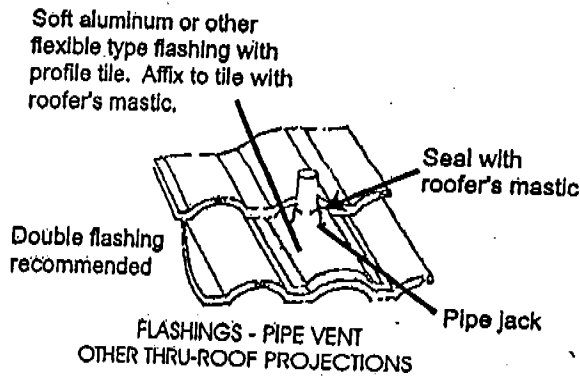
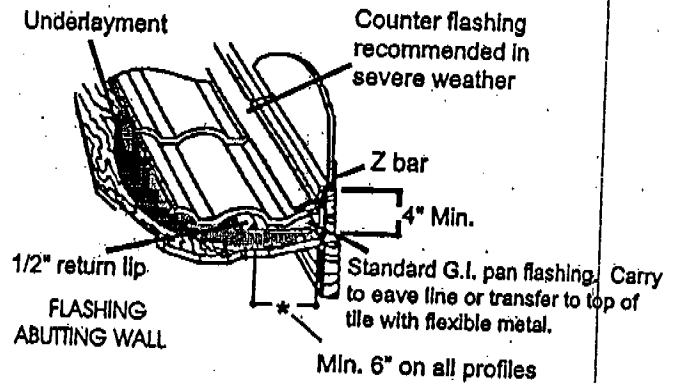
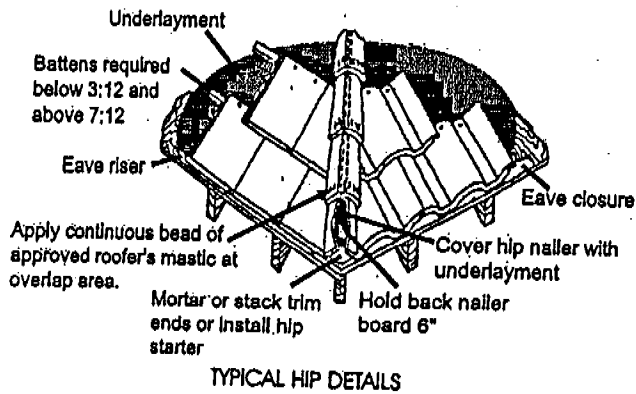
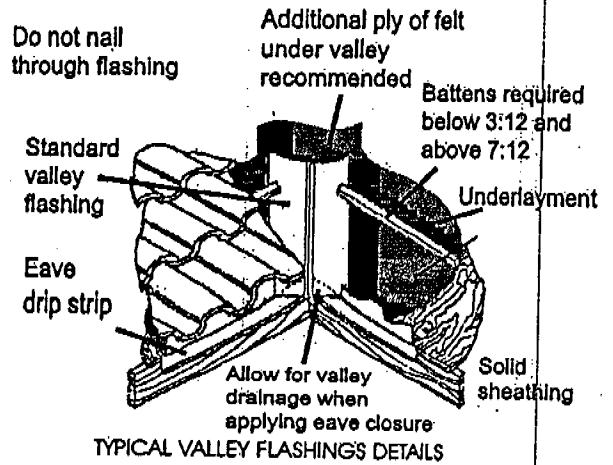
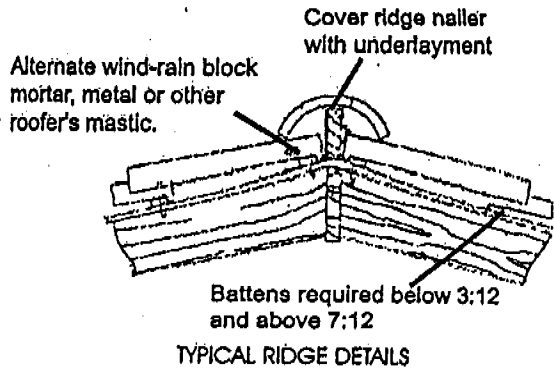
- 4.1 Tiles are manufactured, identified and installed in accordance with this report and the manufacturer's instructions.
- 4.2 Tiles are manufactured at Eagle Roofing Products facilities located in Rialto, California, and Phoenix, Arizona.

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



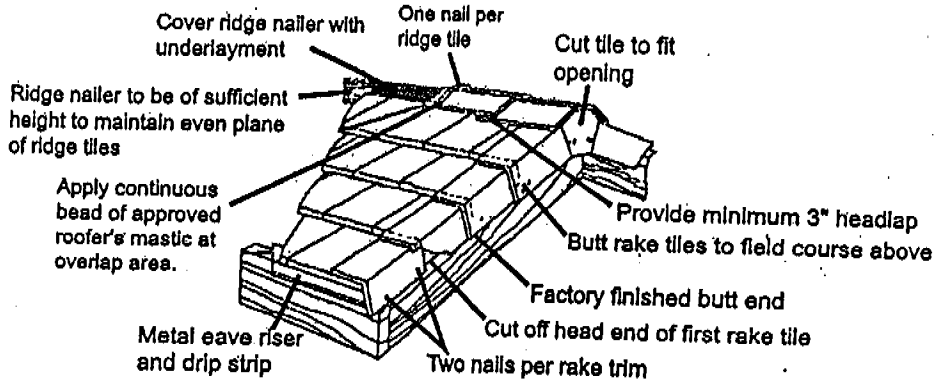
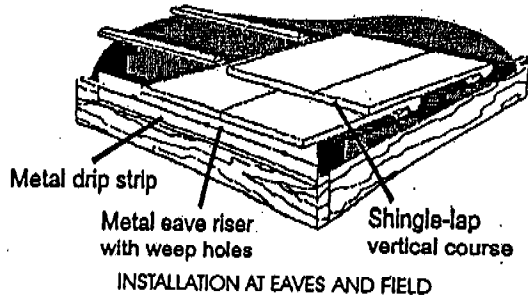
FIELD AND TRIM TILE SPECIFICATIONS

Note: Hip nailer boards are to be of sufficient height to maintain even plane of trim tiles. Height of nailer boards will vary due to roof pitch and type of tile.

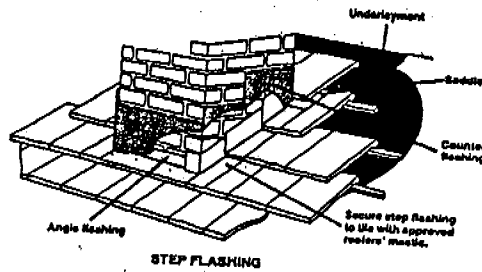
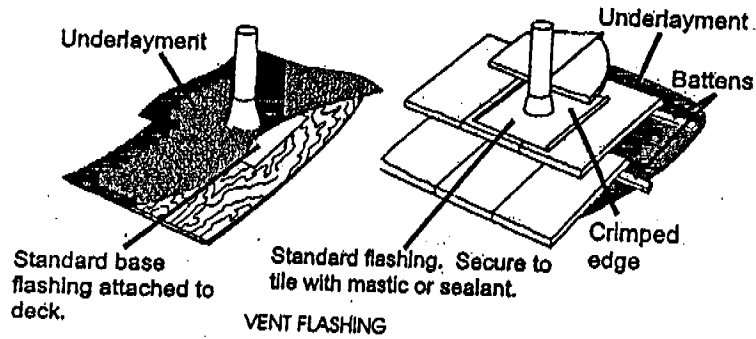


APPLICATION DETAILS

Battens required on roof pitches below 3:12 and above 7:12



TYPICAL RIDGE AND GABLE



APPLICATION DETAILS