

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0411612

Insp Area: 2

Thos Bros: 336H2

Site Address: 128 BLUE WATER CR SAC

Parcel No: 031-1050-029

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR

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

OWNER

WONG DAVID TAK-YAN
992 S BEACH DR
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: T/O SHAKE INSTALL METAL BATTEN SYSTEM REROOF WITH LT WT TILE SNGL STRY 26 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 July 23, 04 Contractor Signature PAUL FUSHINO

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 project 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 July 23, 04 Applicant/Agent Signature PAUL FUSHINO

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 July 23, 04 Applicant Signature PAUL FUSHINO

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.



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
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 799-2305

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 3/4 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.

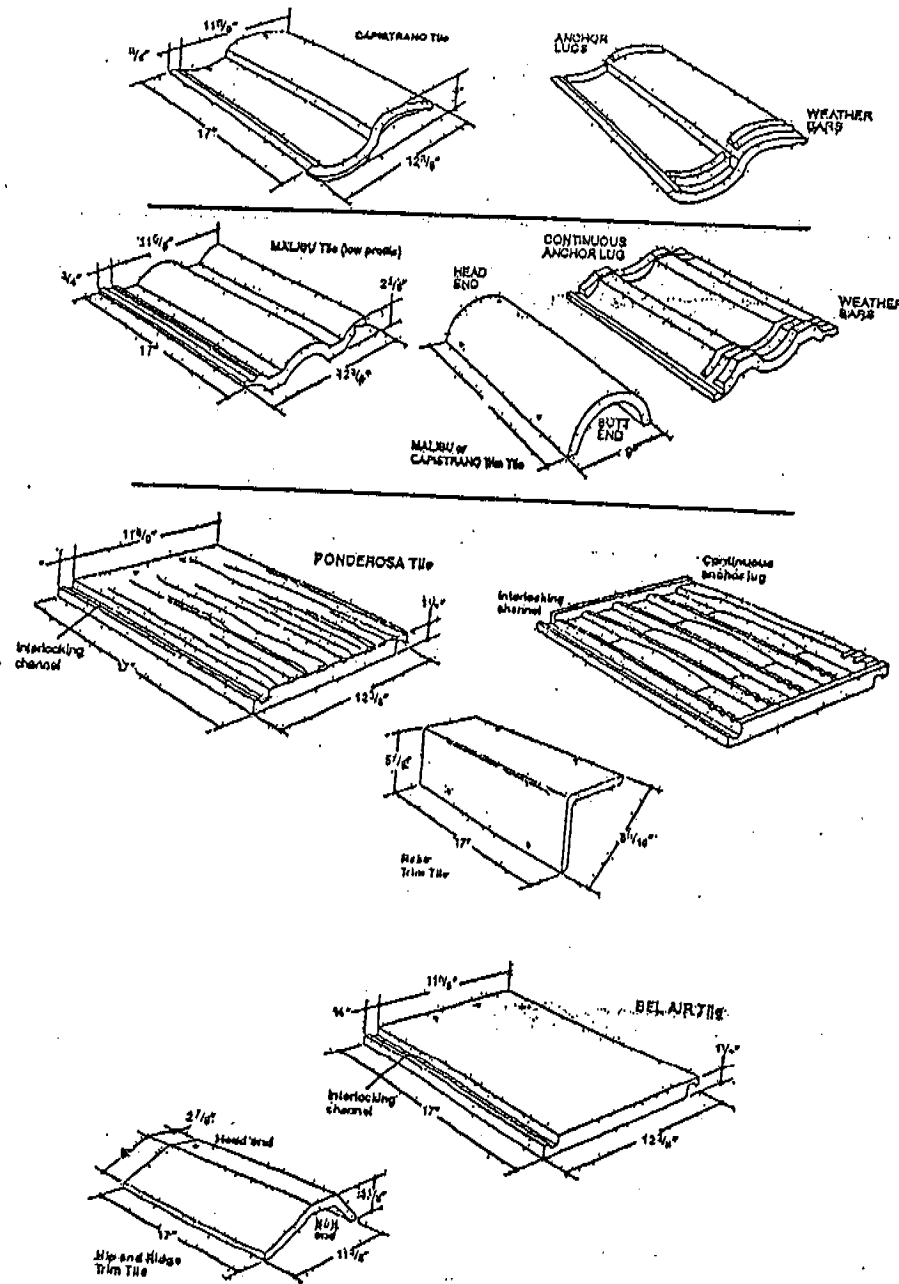
4.0 FINDINGS

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



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. Provide a 2x4 strut from the existing 2x6 rafter to the bearing walls below where the span is greater than 12'-0". The minimum slope of the struts shall not be less than 45 degrees from the horizontal. See detail 1.

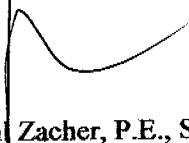
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and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

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

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

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

Sincerely,



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

DESIGN LOADING:

Roof Pitch	6	in 12
Pitch Adjustment Factor	1.12	

LOCATION: ROOF 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
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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

PAUL ZACHER- STRUCTURAL ENGINEERS, INC.

Job #: 04_391

Date: 07/11/2004

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

LOADING:

Rafter:

Dr = 11.4 psf x 2'-0" = 22.8 plf
Lr = 16.0 psf x 2'-0" = 32.0 plf

2x6 #2

22.8 / 32.0

12'-0"

B1:

Dr = 11.4 psf x 7'-0" = 80 plf
Lr = 16.0 psf x 7'-0" = 112 plf

4x12 #2

80 / 112

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: 9:31AM, 11 JUL 04

Scope :

Rev: 560100
 User: KW-0602844, Ver 5.6.1, 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

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

Center Span Data

Span	ft	12.00	16.00
Dead Load	#/ft	22.80	80.00
Live Load	#/ft	32.00	112.00

Results Ratio = 0.9572 0.8300

Mmax @ Center	in-k	11.84	73.73
@ X =	ft	6.00	8.00
fb : Actual	psi	1,565.2	998.6
Fb : Allowable	psi	1,635.2	1,203.1
		Bending OK	Bending OK
fv : Actual	psi	55.5	52.0
Fv : Allowable	psi	118.8	118.8
		Shear OK	Shear OK

Reactions

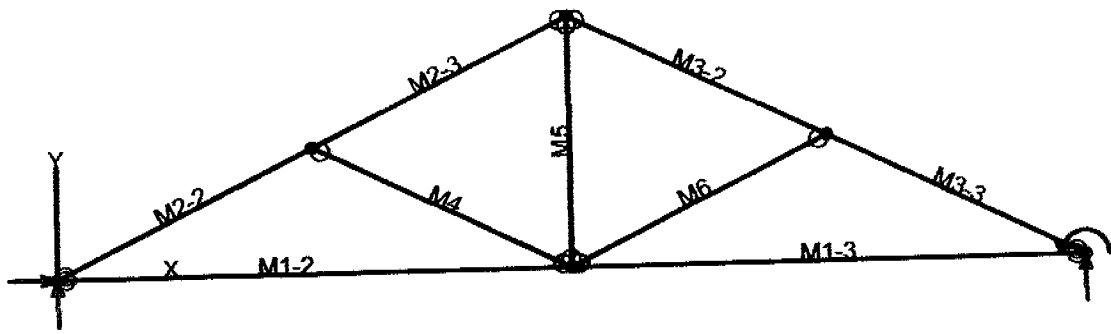
@ Left End	DL	lbs	136.80	640.00
	LL	lbs	192.00	896.00
	Max. DL+LL	lbs	328.80	1,536.00
@ Right End	DL	lbs	136.80	640.00
	LL	lbs	192.00	896.00
	Max. DL+LL	lbs	328.80	1,536.00

Deflections

Ratio OK Deflection OK

Center DL Defl	in	-0.320	-0.178
L/Defl Ratio		450.5	1,081.5
Center LL Defl	in	-0.449	-0.249
L/Defl Ratio		320.9	772.5
Center Total Defl	in	-0.768	-0.426
Location	ft	6.000	8.000
L/Defl Ratio		187.4	450.6

5



Truss 1

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Paul Zacher\Desktop\Wong04_391\Truss 1.vap

Nodes

Node	X ft	Y ft	Fix	DX Fix	DY Fix	RZ Fix
N1	0.00	0.00	Yes	Yes	No	No
N2	20.00	0.00	No	"	Yes	Yes
N3	10.00	5.00	"	No	No	No
N4	10.00	0.00	"	"	"	"
N5	5.00	2.50	"	"	"	"
N6	15.00	2.50	"	"	"	"

Member Elements

Member	Section	Material	Length ft
M1-2	SS2x4	Wood	10.00
M1-3	"	"	10.00
M2-2	"	"	5.59
M2-3	"	"	5.59
M3-2	"	"	5.59
M3-3	"	"	5.59
M4	"	"	5.59
M5	"	"	5.00
M6	"	"	5.59

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

Node	Load Case	FX lb	FY lb	MZ lb-ft
N1	UBC97 12.8a	0.00	584.00	-NA-
N2	"	-NA-	584.00	0.00

Member Results

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1-2	909.47	-52.87	-98.70	0.01	-0.06
"	909.47	-24.20	29.72	0.01	-0.11
"	909.47	4.46	62.62	0.00	-0.11
"	909.47	33.13	0.00	0.00	0.00
M1-3	909.47	-33.13	0.00	0.02	0.00
"	909.47	-4.46	62.62	0.02	-0.11
"	909.47	24.20	29.72	0.02	-0.11
"	909.47	52.87	-98.70	0.01	-0.06
M2-2	-1059.8	85.99	0.00	0.00	0.00
"	-1022.6	11.75	91.00	-0.00	-0.06
"	-985.57	-62.49	43.73	-0.01	-0.07
"	-948.45	-136.73	-141.82	-0.01	-0.05
M2-3	-743.36	136.73	-141.82	-0.01	-0.05
"	-706.25	62.49	43.73	-0.01	-0.08
"	-669.13	-11.75	91.00	-0.01	-0.10
"	-632.01	-85.99	0.00	-0.01	-0.05
M3-2	-743.36	-136.73	-141.82	0.03	-0.04
"	-706.25	-62.49	43.73	0.03	-0.07
"	-669.13	11.75	91.00	0.03	-0.08
"	-632.01	85.99	0.00	0.03	-0.04
M3-3	-1059.8	-85.99	0.00	0.02	0.01
"	-1022.6	-11.75	91.00	0.02	-0.05
"	-985.57	62.49	43.73	0.03	-0.06
"	-948.45	136.73	-141.82	0.03	-0.04
M4	-341.82	0.00	0.00	0.04	-0.04
"	-341.82	0.00	0.00	0.04	-0.04
"	-341.82	0.00	0.00	0.04	-0.04
"	-341.82	0.00	0.00	0.04	-0.04
M5	411.47	0.00	0.00	-0.06	-0.01
"	411.47	0.00	0.00	-0.05	-0.01
"	411.47	0.00	0.00	-0.05	-0.01
"	411.47	0.00	0.00	-0.05	-0.01
M6	-341.82	0.00	0.00	-0.02	-0.05
"	-341.82	0.00	0.00	-0.02	-0.05
"	-341.82	0.00	0.00	-0.01	-0.06
"	-341.82	0.00	0.00	-0.01	-0.05

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BENDING & COMP: TRUSS 1 - MEMBER 2-2

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

Grading:

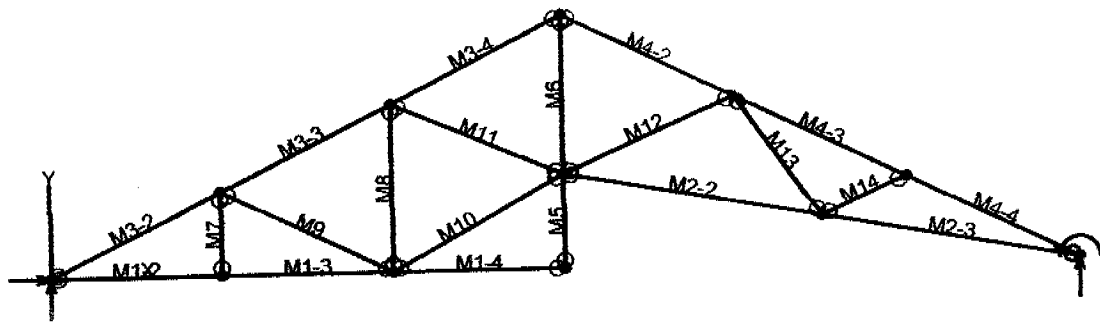
2x or 4x

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	5.59 feet
Max Axial Comp, C	948 lbs
Max Reaction, R	136 lbs
Max Moment, M	141 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 =	181 psi
Fce =	1602 psi
Fc* =	2084 psi
F'c =	1239 psi
fb =	552 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.33 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.31 < 1.0, Member OK
Live Load defl ratio	0.07 < 1.0, Member OK
Total Load defl ratio	0.13 < 1.0, Member OK



Truss 2

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Paul Zacher\Desktop\Wong04_391\Truss 2.vap

Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes		No	
N2	16.00	0.00	No		No		"	
N3	16.00	3.00	"		"		"	
N4	32.00	0.00	"		Yes		Yes	
N5	16.00	8.00	"		No		No	
N6	24.00	1.50	"		"		"	
N7	5.33	0.00	"		"		"	
N8	10.67	0.00	"		"		"	
N9	5.33	2.67	"		"		"	
N10	10.67	5.33	"		"		"	
N11	21.33	5.33	"		"		"	
N12	26.67	2.67	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1-2	SS2x4	Wood	5.33
M1-3	"	"	5.33
M1-4	"	"	5.33
M2-2	"	"	8.14
M2-3	"	"	8.14
M3-2	"	"	5.96
M3-3	"	"	5.96
M3-4	"	"	5.96
M4-2	"	"	5.96
M4-3	"	"	5.96
M4-4	"	"	5.96
M5	"	"	3.00
M6	"	"	5.00
M7	"	"	2.67
M8	"	"	5.33
M9	"	"	5.96
M10	"	"	6.12
M11	"	"	5.82
M12	"	"	5.82
M13	"	"	4.67
M14	"	"	2.91

Section Properties

Category	Section	Ax in ²	Ix 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 Elasticity Poisson Density

	psi	psi	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	934.40	-NA-
N4	"	-NA-	934.40	0.00

Member Results

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1-2	1603.62	-23.05	-0.62	0.01	-0.16
"	1603.62	-7.76	26.75	0.01	-0.12
"	1603.62	7.53	26.96	0.00	-0.07
"	1603.62	22.82	0.00	0.00	0.00
M1-3	1603.62	-27.60	-25.50	0.02	-0.23
"	1603.62	-12.31	9.96	0.02	-0.21
"	1603.62	2.98	18.25	0.02	-0.19
"	1603.62	18.27	-0.62	0.01	-0.16
M1-4	6.27	-18.15	0.00	0.02	-0.29
"	6.27	-2.86	18.67	0.02	-0.28
"	6.27	12.43	10.17	0.02	-0.26
"	6.27	27.71	-25.50	0.02	-0.23
M2-2	2050.68	-37.85	-32.90	0.14	-0.27
"	2054.90	-15.31	39.20	0.14	-0.32
"	2059.13	7.23	50.17	0.13	-0.33
"	2063.36	29.77	0.00	0.12	-0.27
M2-3	2562.23	-29.77	0.00	0.17	0.03
"	2566.46	-7.23	50.17	0.16	-0.13
"	2570.68	15.31	39.20	0.15	-0.22
"	2574.91	37.85	-32.90	0.14	-0.27
M3-2	-1841.9	98.18	0.00	0.00	0.00
"	-1802.4	19.00	116.39	-0.00	-0.12
"	-1762.8	-60.19	75.46	-0.01	-0.17
"	-1723.2	-139.38	-122.81	-0.01	-0.17
M3-3	-1485.2	116.27	-122.81	-0.01	-0.17
"	-1445.6	37.08	29.53	-0.02	-0.21
"	-1406.1	-42.10	24.54	-0.02	-0.23
"	-1366.5	-121.29	-137.78	-0.03	-0.25
M3-4	-1738.2	141.89	-137.78	-0.03	-0.25
"	-1698.6	62.70	65.48	-0.03	-0.32
"	-1659.0	-16.49	111.40	-0.03	-0.34
"	-1619.4	-95.67	0.00	-0.04	-0.29
M4-2	-1742.3	-141.65	-136.37	0.20	-0.24
"	-1702.7	-62.46	66.42	0.20	-0.28
"	-1663.1	16.72	111.87	0.21	-0.28
"	-1623.5	95.91	0.00	0.21	-0.21
M4-3	-2549.7	-111.46	-92.72	0.18	-0.19

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Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
"	-2510.1	-32.27	50.06	0.19	-0.23
"	-2470.5	46.91	35.51	0.19	-0.25
"	-2430.9	126.10	-136.37	0.20	-0.24
M4-4	-2873.3	-103.23	0.00	0.16	0.08
"	-2833.7	-24.04	126.42	0.16	-0.09
"	-2794.1	55.14	95.51	0.17	-0.17
"	-2754.5	134.33	-92.72	0.18	-0.19
M5	18.15	6.27	-18.80	0.29	0.07
"	18.15	6.27	-12.53	0.29	0.06
"	18.15	6.27	-6.27	0.29	0.04
"	18.15	6.27	0.00	0.29	0.02
M6	1278.96	-3.76	0.00	-0.28	-0.10
"	1278.96	-3.76	6.27	-0.28	-0.09
"	1278.96	-3.76	12.53	-0.29	-0.08
"	1278.96	-3.76	18.80	-0.29	-0.07
M7	41.32	0.00	0.00	0.16	0.01
"	41.32	0.00	0.00	0.16	0.03
"	41.32	0.00	0.00	0.16	0.05
"	41.32	0.00	0.00	0.16	0.06
M8	-495.61	0.00	0.00	0.23	0.02
"	-495.61	0.00	0.00	0.23	0.05
"	-495.61	0.00	0.00	0.24	0.07
"	-495.61	0.00	0.00	0.24	0.09
M9	-365.75	0.00	0.00	0.12	-0.20
"	-365.75	0.00	0.00	0.13	-0.17
"	-365.75	0.00	0.00	0.13	-0.14
"	-365.75	0.00	0.00	0.13	-0.11
M10	1457.38	0.00	0.00	-0.09	-0.26
"	1457.38	0.00	0.00	-0.09	-0.24
"	1457.38	0.00	0.00	-0.09	-0.21
"	1457.38	0.00	0.00	-0.08	-0.29
M11	234.46	0.00	0.00	-0.18	0.18
"	234.46	0.00	0.00	-0.18	0.20
"	234.46	0.00	0.00	-0.18	0.22
"	234.46	0.00	0.00	-0.18	0.24
M12	-575.76	0.00	0.00	-0.06	-0.31
"	-575.76	0.00	0.00	-0.06	-0.30
"	-575.76	0.00	0.00	-0.05	-0.30
"	-575.76	0.00	0.00	-0.05	-0.29
M13	364.55	0.00	0.00	0.29	-0.12
"	364.55	0.00	0.00	0.29	-0.11
"	364.55	0.00	0.00	0.29	-0.10
"	364.55	0.00	0.00	0.29	-0.09
M14	-319.95	0.00	0.00	-0.04	-0.26
"	-319.95	0.00	0.00	-0.03	-0.30
"	-319.95	0.00	0.00	-0.03	-0.29
"	-319.95	0.00	0.00	-0.03	-0.28

BENDING & COMP: TRUSS 2 - MEMBER 4-3

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

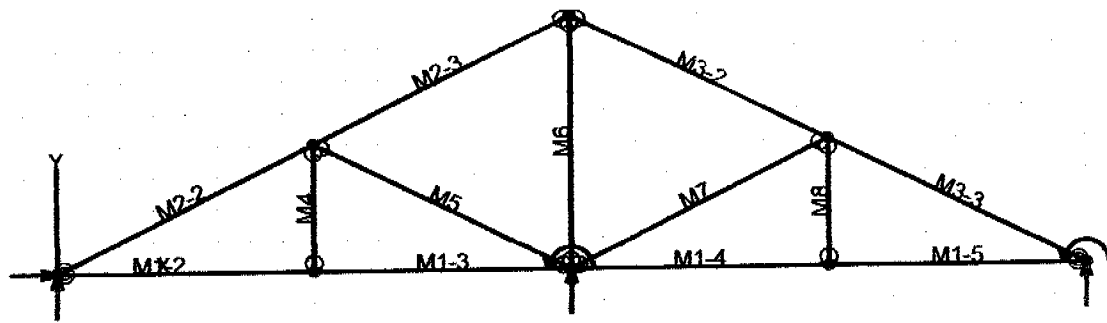
Grading:

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	5.96 feet
Max Axial Comp, C	2430 lbs
Max Reaction, R	126 lbs
Max Moment, M	136 ft-lbs
Max LL Deflection	0.12 inches
Max TL Deflection	0.24 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 =	1.16
fc =	463 psi
Fce =	1422 psi
Fc* =	2084 psi
F'c =	1144 psi
fb =	533 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.30 < 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	0.40 < 1.0, Member OK
Total Load defl ratio	0.60 < 1.0, Member OK



Truss 3

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Paul Zacher\Desktop\Wong04_391\Truss 3.vap

Nodes

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

Member Elements

Member	Section	Material	Length ft
M1-2	SS2x4	Wood	8.00
M1-3	"	"	8.00
M1-4	"	"	8.00
M1-5	"	"	8.00
M2-2	"	"	8.94
M2-3	"	"	8.94
M3-2	"	"	8.94
M3-3	"	"	8.94
M4	"	"	4.00
M5	"	"	8.94
M6	"	"	8.00
M7	"	"	8.94
M8	"	"	4.00

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)

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Nodal Reactions

Node	Load Case	FX lb	FY lb	MZ lb-ft
N1	UBC97 12.8a	0.00	294.42	-NA-
N2	"	-NA-	294.42	0.00
N5	"	-NA-	1279.96	0.00

Member Results

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1-2	233.81	-41.01	-52.87	0.00	-0.02
"	233.81	-18.08	25.88	0.00	-0.05
"	233.81	4.86	43.51	0.00	-0.05
"	233.81	27.79	0.00	0.00	0.00
M1-3	233.81	-33.62	-46.63	0.01	0.00
"	233.81	-10.69	12.42	0.00	-0.01
"	233.81	12.25	10.34	0.00	-0.02
"	233.81	35.18	-52.87	0.00	-0.02
M1-4	233.81	-35.18	-52.87	0.01	-0.02
"	233.81	-12.25	10.34	0.01	-0.02
"	233.81	10.69	12.42	0.01	-0.01
"	233.81	33.62	-46.63	0.01	0.00
M1-5	233.81	-27.79	0.00	0.01	0.00
"	233.81	-4.86	43.51	0.01	-0.05
"	233.81	18.08	25.88	0.01	-0.05
"	233.81	41.01	-52.87	0.01	-0.02
M2-2	-328.37	133.92	0.00	0.00	0.00
"	-268.98	15.14	222.06	-0.00	-0.26
"	-209.59	-103.64	90.13	-0.00	-0.19
"	-150.20	-222.42	-395.79	-0.00	-0.02
M2-3	268.62	222.42	-395.79	-0.00	-0.02
"	328.01	103.64	90.13	-0.00	-0.19
"	387.40	-15.14	222.06	-0.00	-0.26
"	446.79	-133.92	0.00	0.00	-0.01
M3-2	268.62	-222.42	-395.79	0.01	-0.01
"	328.01	-103.64	90.13	0.01	-0.19
"	387.40	15.14	222.06	0.01	-0.26
"	446.79	133.92	0.00	0.01	-0.00
M3-3	-328.37	-133.92	0.00	0.01	0.00
"	-268.98	-15.14	222.06	0.01	-0.25
"	-209.59	103.64	90.13	0.01	-0.18
"	-150.20	222.42	-395.79	0.01	-0.01
M4	76.19	0.00	0.00	0.02	0.00
"	76.19	0.00	0.00	0.02	0.00
"	76.19	0.00	0.00	0.02	0.00
"	76.19	0.00	0.00	0.02	0.01
M5	-641.23	0.00	0.00	0.00	0.00
"	-641.23	0.00	0.00	0.01	-0.01
"	-641.23	0.00	0.00	0.01	-0.01
"	-641.23	0.00	0.00	0.01	-0.00
M6	-639.18	0.00	0.00	-0.01	-0.01
"	-639.18	0.00	0.00	-0.00	-0.01
"	-639.18	0.00	0.00	-0.00	-0.01
"	-639.18	0.00	0.00	0.00	-0.01
M7	-641.23	0.00	0.00	-0.00	-0.02
"	-641.23	0.00	0.00	-0.00	-0.01
"	-641.23	0.00	0.00	0.00	-0.01
"	-641.23	0.00	0.00	0.00	-0.00

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M8	76.19	0.00	0.00	0.02	0.00
"	76.19	0.00	0.00	0.02	0.01
"	76.19	0.00	0.00	0.02	0.01
"	76.19	0.00	0.00	0.02	0.01

BENDING & COMP: TRUSS 3 - MEMBER 2-3

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

Grading:

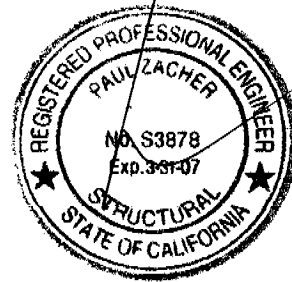
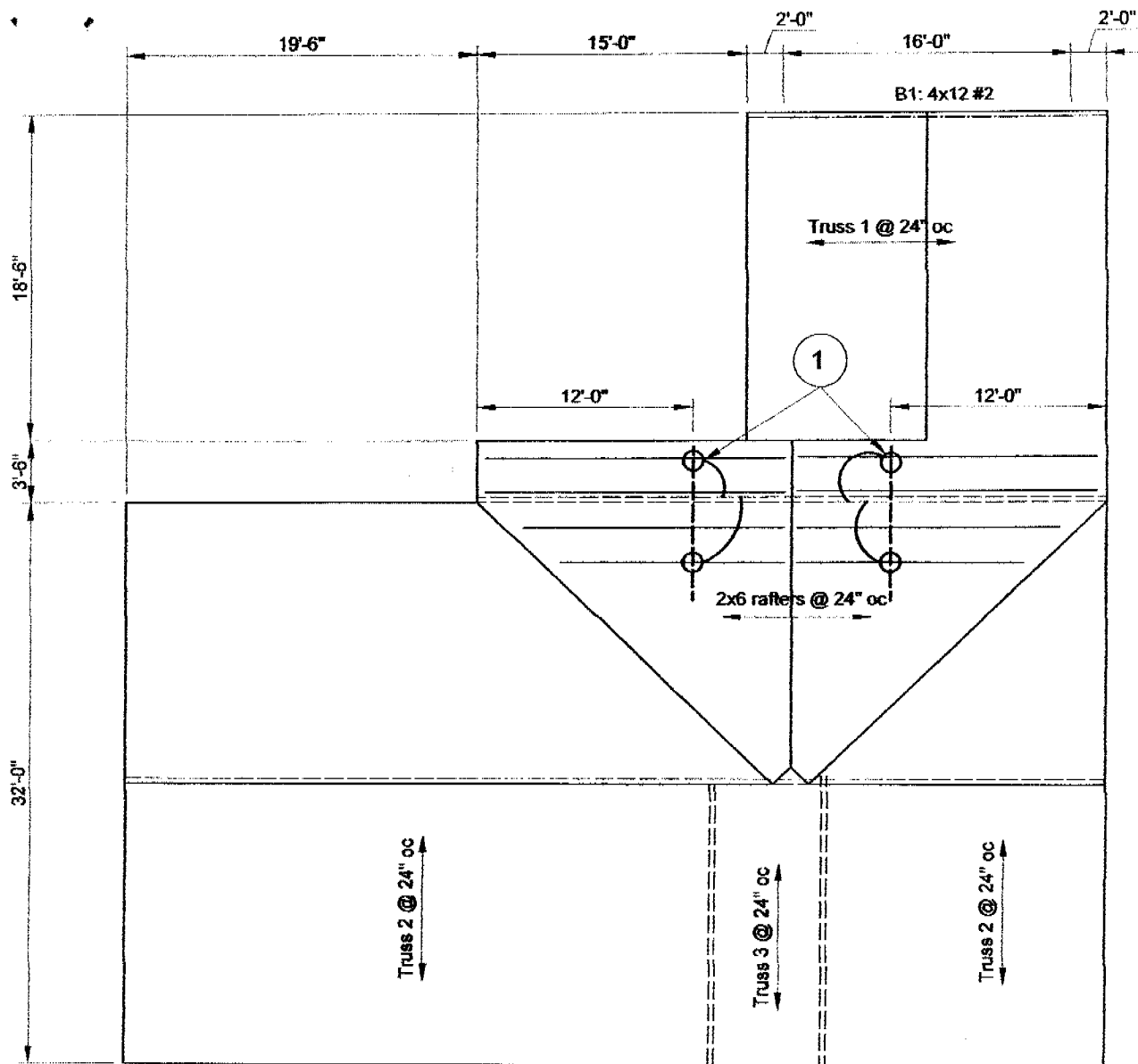
2x or 4x

Doug-fir larch: No. 2

Assumptions:

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

Width, b	1.5 inches
Depth, d	3.5 inches
Length	8.94 feet
Max Axial Comp, C	268 lbs
Max Reaction, R	222 lbs
Max Moment, M	395 ft-lbs
Max LL Deflection	0.01 inches
Max TL Deflection	0.02 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.25
fc =	51 psi
Fce =	676 psi
Fc* =	2084 psi
F'c =	623 psi
fb =	1548 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.53 < 1.0, Member OK
Interaction equation:	
(fc/F'c) ² +	
fb / (F'b(1-fc/Fce)) =	0.78 < 1.0, Member OK
Live Load defl ratio	0.02 < 1.0, Member OK
Total Load defl ratio	0.03 < 1.0, Member OK



FRAMING NOTES:

1. Add a 2x6 DF#2 x 10'-0" long purlin with 2x4 struts to bearing below.

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 - WONG
Not to Scale

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