

CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0104648

Insp Area: 1

Site Address: 232 HARTNELL PI. SAC

Parcel No: 295-0290-006

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR

ERIC SCNEIDER
14434 HWY 160
WALNUT GROVE CA 95690

OWNER

BARD FRANCES I
232 HARTNELL PI
SACRAMENTO CA 95825

ARCHITECT

Nature of Work: DRY ROT RPR REPLACE 16 SHTS SIDING AND TRIM

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 B License Number 36712 Date 8-4-16-01 Contractor Signature [Signature]

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

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

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

I am exempt under Sec _____ B & P for this reason: 2001

Date _____ Owner's Signature _____

**NEIGHBORHOODS PLANNING
AND DEVELOPMENT SERVICES**

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 8-16-01 Applicant-Agent Signature [Signature]

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury one of the following declarations:

_____, I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued

_____, I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier State Fund Policy Number 1519058-98 Exp Date 1/1/2

_____, (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 8-16-01 Applicant Signature [Signature]

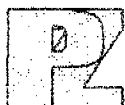
WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

Takahara

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

TEL: 916.961.3960
FAX: 916.961.6552



March 21, 2001

Brazil Roofing
11300 Coloma Road
Gold River, CA 95670
TEL: (916) 858-8050
FAX: (916) 858-8050



Attn.: Mr. Mike Brazil,

re: Job 2001_061: TAKAHARA

Subject: Structural Investigation Report of the Roof for the Residence located at 27 Six Rivers Circle, Sacramento, CA 95831.

As requested by Mr. Mike Brazil, 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 19, 2001. The investigation was made to determine the existing condition of the structure. All information, data and analysis contained within this report are based on the 1997 Uniform Building Code.

The following is based on visual observations with no subsurface investigation being made.

DESCRIPTION:

Type of Facility: Residence.
Year Built: Estimated 1980's vintage.
Occupancy: Residential.
No. of Stories: One.
Dimensions: Approximately 2500 square feet with a first story plate height of 8 feet.

CONSTRUCTION:

Roof:
The roof covering will consist of a Light Weight Concrete Tile over 1/2" solid sheathing. The living and garage areas are framed with pre-engineered wood trusses spaced at 24" on center.

CONCLUSIONS:

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

ISSUED

APR 13 2001

Sacramento Building Division



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Vertical stamp on the left side of the page, containing the word 'RECEIVED' and other illegible text.

Takahara



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

TEL: 916.961.3960
FAX: 916.961.6552

RECOMMENDATIONS:

If any of the following recommendations do not correspond to actual field conditions, the engineer of record shall be notified for further investigation and evaluation before continuing work.

Living Area:

1. Scab a 2x4 DF#2 x 9'-0" long rafter to the top chord of the existing truss. See details 1 and 2.

Garage:

2. Scab a 2x4 DF#2 x 9'-0" long rafter to the top chord of the existing truss. See details 1 and 2.
3. Scab a 2x4 rafter to the existing 2x4 rafters with 16d's @ 12" on center where the span is greater than 7'-9". 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	4	in 12
Pitch Adjustment Factor	1.05	

LOCATION: ROOF

<u>MATERIAL</u>		<u>WEIGHT</u>	
Light Weight Tile	7.00	psf	
Roofing felt	0.30	psf	
1/2" OSB/ plywood	1.50	psf	
1x4 skip sht'g	1.09	psf	
2x4 rafters @ 24" oc	<u>0.64</u>	psf	
	Load	10.5	psf
Roof Pitch Adjustment	<u>0.57</u>	psf	
Total Load	11.1	psf	

LOCATION: TOP CHORD

<u>MATERIAL</u>		<u>WEIGHT</u>	
Light Weight Tile	7.00	psf	
Roofing felt	0.30	psf	
1x4 skip sht'g	1.09	psf	
1/2" OSB/ plywood	1.50	psf	
2x4 truss @ 24" oc	<u>0.64</u>	psf	
	Load	10.5	psf
Roof Pitch Adjustment	<u>0.57</u>	psf	
Total Load	11.1	psf	

LOCATION: BOTTOM CHORD

<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

P.K. Zacher, S.E.

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

Job #: 01-001

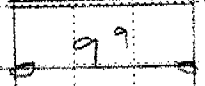
Date: 3/21/01

LOADING

RAFTER

OP = 11.1 pcf 2" = 22.2 pcf 1-2-4#2
LP = 16.0 " " " "

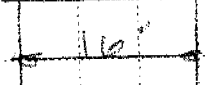
22.2/m²



SL

OP = 11.1 pcf 5" = 56 pcf 4-12#2
LP = 16.0 " " " "

56/80



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

Title :
 Dsgnr:
 Description :
 Scope :

Job #
 Date: 7:54AM, 21 MAR 01

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

Timber Beam & Joist

c:\enercalc\test.ecw\Calculations

Description RAFTERS AND BEAMS

Timber Member Information

Calculations are designed to 1997 NDS and 1997 UBC Requirements

		rafter	B1
Timber Section		2-2x4	4x12
Beam Width	in	3.000	3.500
Beam Depth	in	3.500	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	9.75	16.00
Dead Load	#/ft	22.20	56.00
Live Load	#/ft	32.00	80.00

Results Ratio = 0.6688 0.5879

Mmax @ Center	in-k	7.73	52.22
@ X =	ft	4.87	8.00
fb : Actual	psi	1,261.8	707.4
Fb : Allowable	psi	1,886.7	1,203.1
		Bending OK	Bending OK
fv : Actual	psi	35.6	36.8
Fv : Allowable	psi	118.8	118.8
		Shear OK	Shear OK

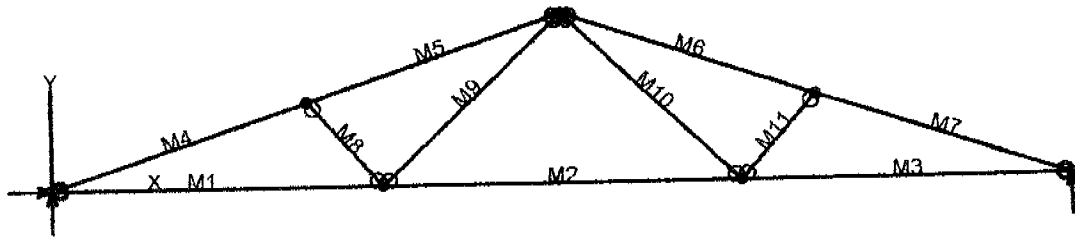
Reactions

@ Left End	DL	lbs	108.22	448.00
	LL	lbs	156.00	640.00
	Max. DL+LL	lbs	264.22	1,088.00
@ Right End	DL	lbs	108.22	448.00
	LL	lbs	156.00	640.00
	Max. DL+LL	lbs	264.22	1,088.00

Deflections

Ratio OK Deflection OK

Center DL Defl	in	-0.263	-0.124
L/Defl Ratio		444.5	1,545.0
Center LL Defl	in	-0.379	-0.178
L/Defl Ratio		308.4	1,081.5
Center Total Defl	in	-0.643	-0.302
Location	ft	4.875	8.000
L/Defl Ratio		182.1	636.2



VisualAnalysis 3.50.c Report

03/21/01 07:00:16

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	8.75	0.00	No		No		"	
N3	18.25	0.00	"		"		"	
N4	27.00	0.00	"		Yes		"	
N5	6.75	2.25	"		No		"	
N6	20.25	2.25	"		"		"	
N7	13.50	4.50	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.75
M2	"	"	9.50
M3	"	"	8.75
M4	"	"	7.12
M5	"	"	7.12
M6	"	"	7.12
M7	"	"	7.12
M8	"	"	3.01
M9	"	"	6.54
M10	"	"	6.54
M11	"	"	3.01

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	887.38	-NA-
N4	"	-NA-	887.38	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2119.99	-43.77	-53.74	-0.2245
"	2119.99	-18.68	37.1475	-0.2095
"	2119.99	6.3995	55.0622	-0.1443
"	2119.99	31.4828	0.0000	-0.0000
M2	1321.45	-40.85	-53.74	-0.2245
"	1321.45	-13.62	32.2793	-0.2725
"	1321.45	13.6167	32.2793	-0.2725
"	1321.45	40.8500	-53.74	-0.2245
M3	2119.99	-31.48	-0.0000	-0.0000
"	2119.99	-6.3995	55.0622	-0.1443
"	2119.99	18.6838	37.1475	-0.2095
"	2119.99	43.7672	-53.74	-0.2245
M4	-2281.86	141.58	0.0000	-0.0000
"	-2241.21	19.6257	190.44	-0.2135
"	-2200.56	-102.32	92.3696	-0.2495
"	-2159.91	-224.27	-294.21	-0.2118
M5	-1967.67	224.27	-294.21	-0.2118
"	-1927.02	102.32	92.3696	-0.3241
"	-1886.37	-19.63	190.44	-0.3628
"	-1845.72	-141.58	0.0000	-0.2240
M6	-1967.67	-224.27	-294.21	-0.1907
"	-1927.02	-102.32	92.3696	-0.3031
"	-1886.37	19.6257	190.44	-0.3417
"	-1845.72	141.58	0.0000	-0.2029
M7	-2281.86	-141.58	0.0000	0.0211
"	-2241.21	-19.63	190.44	-0.1924
"	-2200.56	102.32	92.3696	-0.2283
"	-2159.91	224.27	-294.21	-0.1907
M8	-488.01	0.0000	0.0000	-0.1305
"	-488.01	0.0000	0.0000	-0.1213
"	-488.01	0.0000	0.0000	-0.1121
"	-488.01	0.0000	0.0000	-0.1030
M9	653.38	0.0000	0.0000	-0.1863
"	653.38	0.0000	0.0000	-0.1842
"	653.38	0.0000	0.0000	-0.1822
"	653.38	0.0000	0.0000	-0.1801
M10	653.38	-0.0000	0.0000	-0.1404
"	653.38	-0.0000	-0.0000	-0.1383
"	653.38	-0.0000	-0.0000	-0.1363
"	653.38	-0.0000	-0.0000	-0.1342
M11	-488.01	-0.0000	0.0000	-0.1804
"	-488.01	-0.0000	-0.0000	-0.1712
"	-488.01	-0.0000	-0.0000	-0.1620
"	-488.01	-0.0000	-0.0000	-0.1529

BENDING & COMP: TRUSS 1 - MEMBER 4

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

Grading:

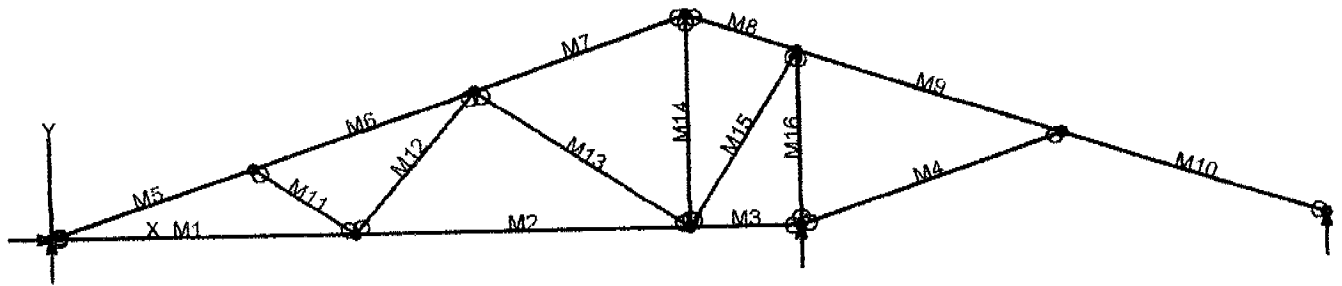
2x or 4x

Doug-fir larch: No. 2

Assumptions:

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

Width, b	3 inches
Depth, d	3.5 inches
Length	7.12 feet
Max Axial Comp, C	2159 lbs
Max Reaction, R	224 lbs
Max Moment, M	294 ft-lbs
Max LL Deflection	0.16 inches
Max TL Deflection	0.37 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 =	1.20
fc =	206 psi
Fce =	1023 psi
Fc* =	2084 psi
F'c =	891 psi
fb =	576 psi
F*b = Fb* =	2156 psi
Shear D/C ratio	0.27 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F*b(1-fc/Fce)) =	0.39 < 1.0, Member OK
Live Load defl ratio	0.45 < 1.0, Member OK
Total Load defl ratio	0.78 < 1.0, Member OK



VisualAnalysis 3.50.c Report

03/21/01 07:18:04

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	7.50	0.00	No		No		"	
N3	15.75	0.00	"		"		"	
N4	18.50	0.00	"		Yes		"	
N5	25.00	2.17	"		No		"	
N6	31.50	0.00	"		Yes		"	
N7	5.00	1.67	"		No		"	
N8	10.50	3.50	"		"		"	
N9	15.75	5.25	"		"		"	
N10	18.50	4.33	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	7.50
M2	"	"	8.25
M3	"	"	2.75
M4	SS2x6	"	6.85
M5	SS2x4	"	5.27
M6	"	"	5.80
M7	"	"	5.53
M8	SS2x6	"	2.90
M9	"	"	6.85
M10	"	"	6.85
M11	SS2x4	"	3.01
M12	"	"	4.61
M13	"	"	6.31
M14	"	"	5.25
M15	"	"	5.13
M16	"	"	4.33

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
"	SS2x6	8.25	20.80	7.56	7.56

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	439.48	-NA-
N4	"	-NA-	1431.96	-NA-
N6	"	-NA-	146.24	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	892.32	-38.52	-46.99	-0.0528
"	892.32	-17.02	22.2871	-0.0626
"	892.32	4.4843	37.9514	-0.0511
"	892.32	25.9843	0.0000	-0.0000
M2	323.96	-33.97	-34.60	-0.0199
"	323.96	-10.32	26.1440	-0.0588
"	323.96	13.3271	22.0131	-0.0678
"	323.96	36.9771	-46.99	-0.0528
M3	-680.76	0.7568	0.0000	-0.0000
"	-680.76	8.6402	-4.3250	-0.0052
"	-680.76	16.5235	-15.86	-0.0113
"	-680.76	24.4068	-34.60	-0.0199
M4	-727.02	27.9500	0.0000	-0.0032
"	-720.80	9.3167	42.4562	-0.0147
"	-714.58	-9.3167	42.4562	-0.0163
"	-708.36	-27.95	0.0000	-0.0080
M5	-977.36	109.52	0.0000	-0.0000
"	-947.19	19.1836	112.68	-0.0673
"	-917.02	-71.15	67.0211	-0.0763
"	-886.84	-161.48	-136.97	-0.0537
M6	-650.68	143.65	-136.97	-0.0537
"	-617.62	44.2823	44.1059	-0.0679
"	-584.55	-55.08	33.6704	-0.0619
"	-551.49	-154.45	-168.28	-0.0432
M7	182.70	172.68	-168.28	-0.0431
"	214.31	77.8329	62.3443	-0.0785
"	245.93	-17.02	118.44	-0.0828
"	277.55	-111.87	0.0000	-0.0199
M8	195.73	-133.36	-170.61	-0.0056
"	212.35	-83.68	-65.83	-0.0086
"	228.97	-33.99	-8.9650	-0.0149
"	245.59	15.6911	0.0000	-0.0217
M9	654.65	-188.70	-256.56	-0.0032
"	693.68	-71.26	39.5429	-0.0110
"	732.70	46.1684	68.1926	-0.0142
"	771.72	163.60	-170.61	-0.0056
M10	-46.31	-138.71	0.0000	0.0031

"	-7.1035	-21.28	182.05	-0.0325
"	32.1012	96.1556	96.5353	-0.0274
"	71.3058	213.59	-256.56	-0.0032
M11	-385.16	0.0000	0.0000	-0.0389
"	-385.16	0.0000	0.0000	-0.0386
"	-385.16	0.0000	0.0000	-0.0384
"	-385.16	0.0000	0.0000	-0.0381
M12	381.21	-0.0000	0.0000	-0.0412
"	381.21	-0.0000	-0.0000	-0.0379
"	381.21	-0.0000	-0.0000	-0.0345
"	381.21	-0.0000	-0.0000	-0.0312
M13	-663.29	0.0000	0.0000	-0.0354
"	-663.29	0.0000	0.0000	-0.0268
"	-663.29	0.0000	0.0000	-0.0182
"	-663.29	0.0000	0.0000	-0.0096
M14	-286.69	0.0000	0.0000	-0.0126
"	-286.69	0.0000	0.0000	-0.0075
"	-286.69	0.0000	0.0000	-0.0024
"	-286.69	0.0000	0.0000	0.0027
M15	844.64	0.0000	0.0000	0.0061
"	844.64	0.0000	0.0000	0.0112
"	844.64	0.0000	0.0000	0.0162
"	844.64	0.0000	0.0000	0.0213
M16	-1175.99	-0.0000	0.0000	0.0029
"	-1175.99	-0.0000	-0.0000	0.0053
"	-1175.99	-0.0000	-0.0000	0.0077
"	-1175.99	-0.0000	-0.0000	0.0101

BENDING & COMP: TRUSS 2 - MEMBER 5

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

Grading:

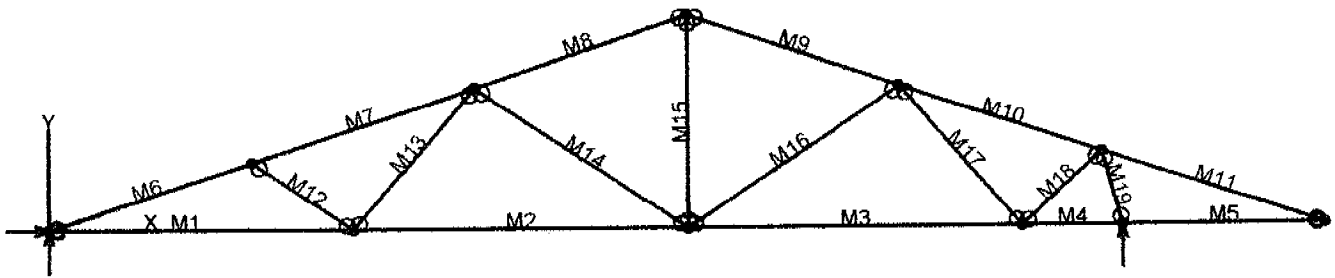
2x or 4x

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	5.27 feet
Max Axial Comp, C	886 lbs
Max Reaction, R	161 lbs
Max Moment, M	137 ft-lbs
Max LL Deflection	0.03 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 =	169 psi
Fce=	1789 psi
Fc*=	2084 psi
F'c=	1326 psi
fb=	537 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.39 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.29 < 1.0, Member OK
Live Load defl ratio	0.11 < 1.0, Member OK
Total Load defl ratio	0.14 < 1.0, Member OK



VisualAnalysis 3.50.c Report

03/21/01 07:27:49

Project: Truss 3

File: C:\Program Files\IES\VA35\truss 3.vap

Company: PK Associates Engineers

Engineer: Paul Zacher

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

Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	7.50	0.00	No	No	"
N3	15.75	0.00	"	"	"
N4	24.00	0.00	"	"	"
N5	26.50	0.00	"	Yes	"
N6	31.50	0.00	"	No	"
N7	5.00	1.67	"	"	"
N8	10.50	3.50	"	"	"
N9	15.75	5.25	"	"	"
N10	21.00	3.50	"	"	"
N11	26.00	1.83	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	7.50
M2	"	"	8.25
M3	"	"	8.25
M4	"	"	2.50
M5	"	"	5.00
M6	"	"	5.27
M7	"	"	5.80
M8	"	"	5.53
M9	"	"	5.53
M10	"	"	5.27
M11	"	"	5.80
M12	"	"	3.01
M13	"	"	4.61
M14	"	"	6.31
M15	"	"	5.25
M16	"	"	6.31
M17	"	"	4.61
M18	"	"	2.71
M19	"	"	1.90

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
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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	839.96	-NA-
N5	"	-NA-	1230.59	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2071.27	-35.84	-26.94	-0.1611
"	2071.27	-14.34	35.6541	-0.1480
"	2071.27	7.1577	44.6348	-0.0978
"	2071.27	28.6577	0.0000	-0.0000
M2	1522.60	-38.74	-53.91	-0.1242
"	1522.60	-15.09	19.9549	-0.1618
"	1522.60	8.5563	28.9437	-0.1784
"	1522.60	32.2063	-26.94	-0.1611
M3	929.03	-32.19	-26.83	-0.0373
"	929.03	-8.5431	29.0163	-0.0960
"	929.03	15.1069	19.9912	-0.1206
"	929.03	38.7569	-53.91	-0.1242
M4	-97.94	-12.87	-32.14	-0.0000
"	-97.94	-5.7052	-24.41	-0.0092
"	-97.94	1.4614	-22.64	-0.0218
"	-97.94	8.6281	-26.83	-0.0373
M5	-423.01	-15.07	-0.0000	0.0356
"	-423.01	-0.7390	13.1164	0.0197
"	-423.01	13.5943	2.4036	0.0097
"	-423.01	27.9277	-32.14	-0.0000
M6	-2221.61	113.35	0.0000	-0.0000
"	-2191.43	23.0131	119.41	-0.1043
"	-2161.26	-67.32	80.4790	-0.1465
"	-2131.09	-157.65	-116.78	-0.1491
M7	-1901.17	140.87	-116.78	-0.1491
"	-1868.10	41.5016	58.9200	-0.1788
"	-1835.04	-57.87	43.1116	-0.1778
"	-1801.98	-157.23	-164.21	-0.1573
M8	-1087.36	171.95	-164.21	-0.1573
"	-1055.75	77.0977	65.0565	-0.1879
"	-1024.13	-17.75	119.79	-0.1856
"	-992.51	-112.60	0.0000	-0.1154
M9	-1085.76	-167.13	-137.57	-0.0714
"	-1054.14	-72.28	82.8159	-0.1399
"	-1022.52	22.5660	128.67	-0.1642

"	-990.91	117.42	0.0000	-0.1148
M10	-571.72	-142.17	-172.74	-0.0003
"	-541.55	-51.84	-2.6835	-0.0172
"	-511.38	38.4944	9.0409	-0.0432
"	-481.21	128.83	-137.57	-0.0713
M11	406.14	-119.25	-0.0000	0.0480
"	439.20	-19.88	133.93	-0.0382
"	472.26	79.4847	76.3500	-0.0408
"	505.32	178.85	-172.74	-0.0004
M12	-374.98	0.0000	0.0000	-0.1224
"	-374.98	0.0000	0.0000	-0.1161
"	-374.98	0.0000	0.0000	-0.1098
"	-374.98	0.0000	0.0000	-0.1035
M13	363.96	-0.0000	0.0000	-0.1207
"	363.96	-0.0000	-0.0000	-0.1203
"	363.96	-0.0000	-0.0000	-0.1200
"	363.96	-0.0000	-0.0000	-0.1196
M14	-655.50	0.0000	0.0000	-0.1201
"	-655.50	0.0000	0.0000	-0.1075
"	-655.50	0.0000	0.0000	-0.0950
"	-655.50	0.0000	0.0000	-0.0824
M15	409.00	0.0000	0.0000	-0.0378
"	409.00	0.0000	0.0000	-0.0255
"	409.00	0.0000	0.0000	-0.0132
"	409.00	0.0000	0.0000	-0.0009
M16	57.8824	0.0000	0.0000	-0.1243
"	57.8824	0.0000	0.0000	-0.1058
"	57.8824	0.0000	0.0000	-0.0872
"	57.8824	0.0000	0.0000	-0.0687
M17	-663.49	-0.0000	0.0000	-0.0450
"	-663.49	-0.0000	-0.0000	-0.0259
"	-663.49	-0.0000	-0.0000	-0.0068
"	-663.49	-0.0000	-0.0000	0.0122
M18	806.72	-0.0000	0.0000	-0.0600
"	806.72	-0.0000	-0.0000	-0.0481
"	806.72	-0.0000	-0.0000	-0.0363
"	806.72	-0.0000	-0.0000	-0.0245
M19	-1233.40	0.0000	0.0000	0.0229
"	-1233.40	0.0000	0.0000	0.0307
"	-1233.40	0.0000	0.0000	0.0384
"	-1233.40	0.0000	0.0000	0.0461

BENDING & COMP: TRUSS 3 - MEMBER 6

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

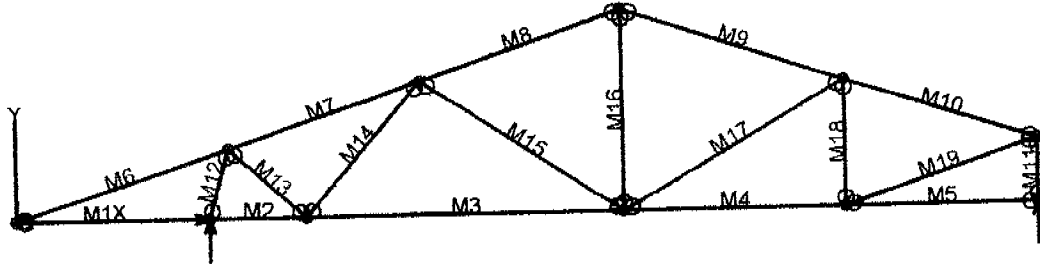
Grading:

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	5.27 feet
Max Axial Comp, C	2131 lbs
Max Reaction, R	157 lbs
Max Moment, M	116 ft-lbs
Max LL Deflection	0.07 inches
Max TL Deflection	0.15 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 =	406 psi
Fce=	1789 psi
Fc*=	2084 psi
F'c=	1326 psi
fb=	455 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.38 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.37 < 1.0, Member OK
Live Load defl ratio	0.27 < 1.0, Member OK
Total Load defl ratio	0.43 < 1.0, Member OK



VisualAnalysis 3.50.c Report

03/21/01 07:41:30

Project: Truss 4

File: C:\Program Files\IES\VA35\truss 4.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	No	No	No
N2	5.00	0.00	Yes	Yes	"
N3	7.50	0.00	No	No	"
N4	15.75	0.00	"	"	"
N5	21.50	0.00	"	"	"
N6	26.50	0.00	"	Yes	"
N7	5.50	1.83	"	No	"
N8	10.50	3.50	"	"	"
N9	15.75	5.25	"	"	"
N10	21.50	3.33	"	"	"
N11	26.50	1.67	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	5.00
M2	"	"	2.50
M3	"	"	8.25
M4	"	"	5.75
M5	"	"	5.00
M6	"	"	5.80
M7	"	"	5.27
M8	"	"	5.53
M9	"	"	6.06
M10	"	"	5.27
M11	"	"	1.67
M12	"	"	1.90
M13	"	"	2.71
M14	"	"	4.61
M15	"	"	6.31
M16	"	"	5.25
M17	"	"	6.64
M18	"	"	3.33
M19	"	"	5.27

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
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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 4 (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
N2	Equation Case 1	-0.00	1073.49	-NA-
N6	"	-NA-	668.35	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	-424.62	-27.51	-30.05	-0.0000
"	-424.62	-13.18	3.7957	-0.0045
"	-424.62	1.1566	13.8124	-0.0080
"	-424.62	15.4900	0.0000	-0.0052
M2	-141.45	-11.95	-33.05	-0.0156
"	-141.45	-4.7842	-26.09	-0.0070
"	-141.45	2.3824	-25.09	-0.0018
"	-141.45	9.5491	-30.05	-0.0000
M3	682.65	-36.54	-41.86	-0.0386
"	682.65	-12.89	25.9522	-0.0620
"	682.65	10.7577	28.8873	-0.0557
"	682.65	34.4077	-33.05	-0.0156
M4	820.25	-19.35	-10.96	-0.0350
"	820.25	-2.8677	10.2564	-0.0392
"	820.25	13.6156	-0.0437	-0.0380
"	820.25	30.0990	-41.86	-0.0386
M5	0.0000	-19.31	-0.0000	-0.0000
"	0.0000	-4.9752	20.1766	-0.0206
"	0.0000	9.3582	16.5241	-0.0316
"	0.0000	23.6915	-10.96	-0.0350
M6	407.80	119.36	0.0000	-0.0059
"	440.86	19.9939	134.15	-0.0763
"	473.92	-79.37	76.7824	-0.0630
"	506.98	-178.74	-172.09	-0.0064
M7	-408.60	141.64	-172.09	-0.0064
"	-378.43	51.3039	-2.9750	-0.0082
"	-348.26	-39.03	7.8091	-0.0194
"	-318.09	-129.36	-139.74	-0.0334
M8	-744.38	167.53	-139.74	-0.0334
"	-712.77	72.6765	81.3680	-0.0883
"	-681.15	-22.17	127.95	-0.0999
"	-649.53	-117.02	0.0000	-0.0383
M9	-751.71	-188.83	-200.10	-0.0330
"	-717.03	-84.95	75.9931	-0.0957
"	-682.34	18.9336	142.69	-0.1126

"	-647.65	122.82	0.0000	-0.0325
M10	-896.65	-97.52	0.0000	0.0014
"	-866.66	-7.1856	91.5402	-0.0430
"	-836.67	83.1478	24.8409	-0.0416
"	-806.68	173.48	-200.10	-0.0331
M11	-649.04	0.0000	0.0000	0.0087
"	-649.04	0.0000	0.0000	0.0103
"	-649.04	0.0000	0.0000	0.0119
"	-649.04	0.0000	0.0000	0.0134
M12	-1074.42	-0.0000	-0.0000	-0.0074
"	-1074.42	-0.0000	-0.0000	-0.0049
"	-1074.42	-0.0000	-0.0000	-0.0025
"	-1074.42	-0.0000	0.0000	-0.0000
M13	656.22	0.0000	0.0000	-0.0119
"	656.22	0.0000	0.0000	-0.0076
"	656.22	0.0000	0.0000	-0.0033
"	656.22	0.0000	0.0000	0.0009
M14	-522.39	0.0000	0.0000	-0.0297
"	-522.39	0.0000	0.0000	-0.0231
"	-522.39	0.0000	0.0000	-0.0165
"	-522.39	0.0000	0.0000	-0.0098
M15	-35.39	0.0000	0.0000	-0.0282
"	-35.39	0.0000	0.0000	-0.0251
"	-35.39	0.0000	0.0000	-0.0220
"	-35.39	0.0000	0.0000	-0.0189
M16	183.01	0.0000	0.0000	-0.0092
"	183.01	0.0000	0.0000	-0.0085
"	183.01	0.0000	0.0000	-0.0078
"	183.01	0.0000	0.0000	-0.0071
M17	-193.04	-0.0000	0.0000	-0.0370
"	-193.04	-0.0000	-0.0000	-0.0357
"	-193.04	-0.0000	-0.0000	-0.0343
"	-193.04	-0.0000	-0.0000	-0.0330
M18	-230.92	0.0000	0.0000	0.0036
"	-230.92	0.0000	0.0000	0.0069
"	-230.92	0.0000	0.0000	0.0102
"	-230.92	0.0000	0.0000	0.0134
M19	864.80	0.0000	0.0000	-0.0374
"	864.80	0.0000	0.0000	-0.0263
"	864.80	0.0000	0.0000	-0.0152
"	864.80	0.0000	0.0000	-0.0041

BENDING & COMP; TRUSS 4 - MEMBER 10

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

Grading:

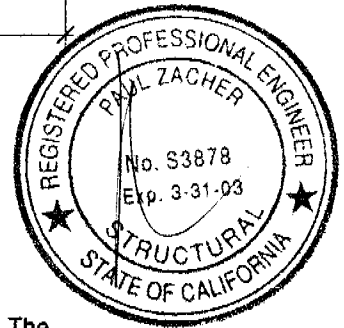
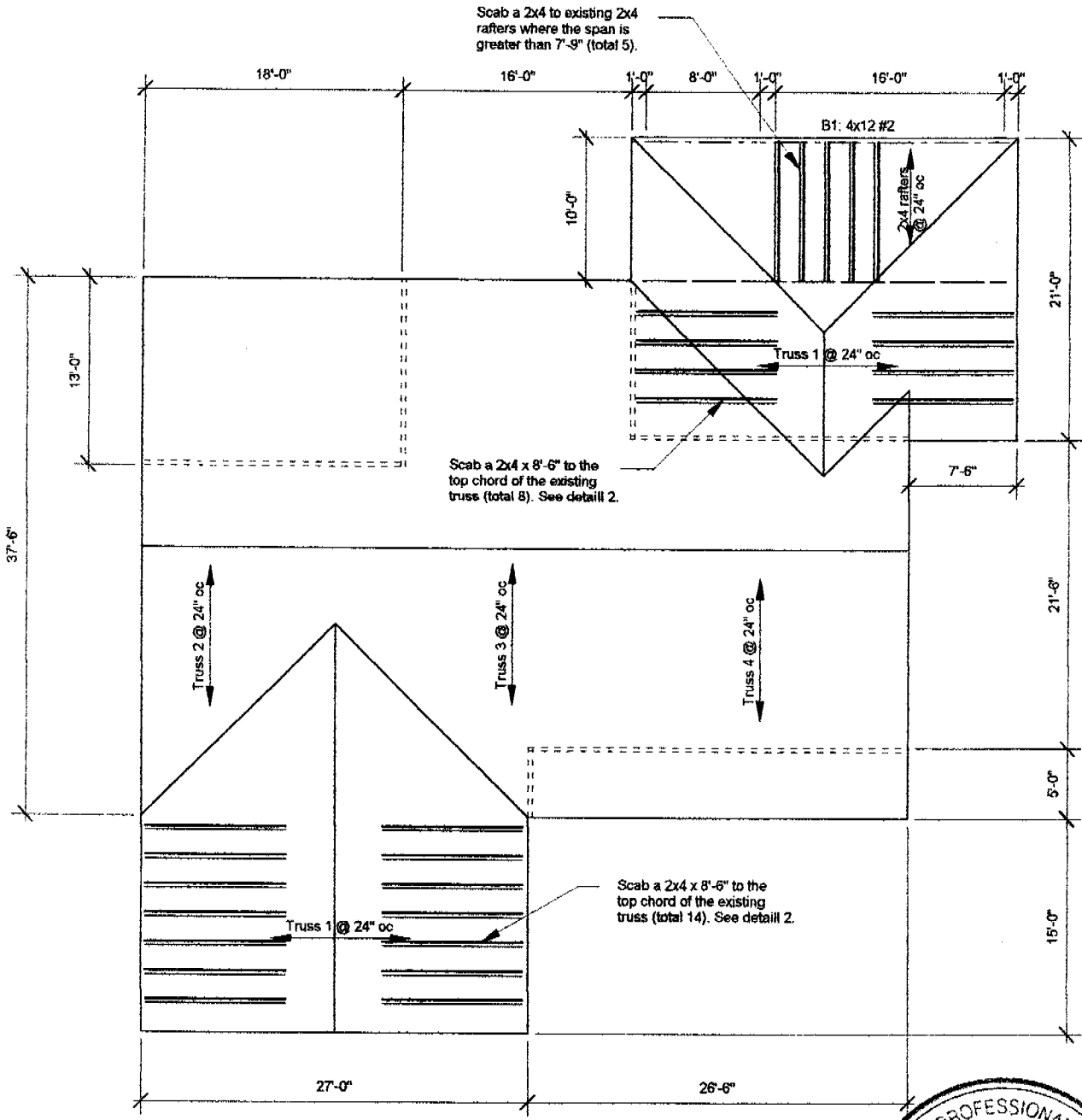
2x or 4x

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	5.27 feet
Max Axial Comp, C	806 lbs
Max Reaction, R	173 lbs
Max Moment, M	200 ft-lbs
Max LL Deflection	0.01 inches
Max TL Deflection	0.03 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.15
fc =	154 psi
Fce =	1789 psi
Fc* =	2084 psi
F'c =	1326 psi
fb =	784 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)) =	0.41 < 1.0, Member OK
Live Load defl ratio	0.04 < 1.0, Member OK
Total Load defl ratio	0.09 < 1.0, Member OK



Notes:

1. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.0 psf.
2. All structural wood members that were observed appear to be in sound condition and without structural defect.

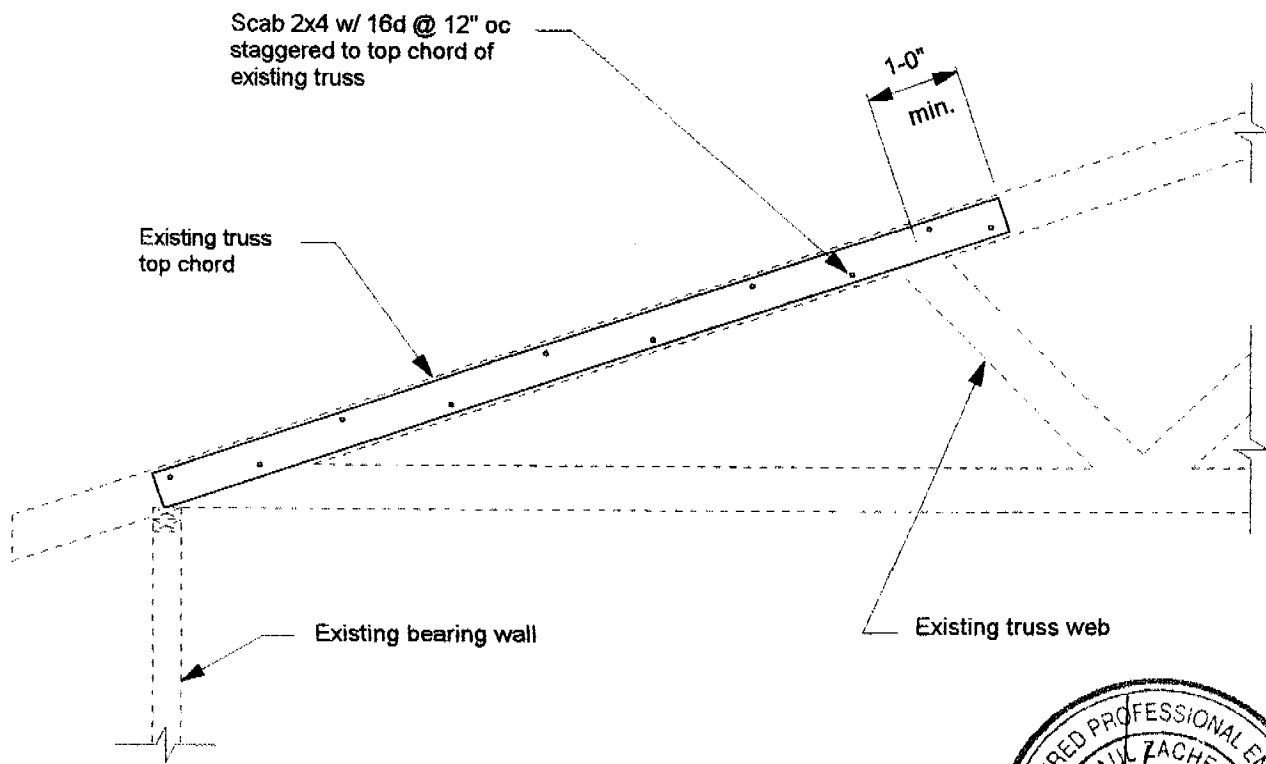
1

ROOF PLAN - TAKAHARA

Not to Scale

25

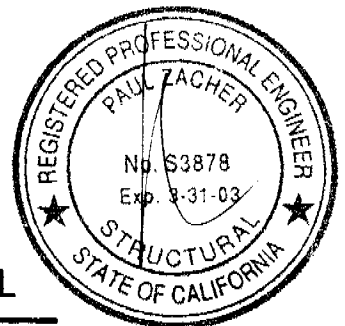
OK Bryan
Nakashima



2

TRUSS REINFORCEMENT DETAIL

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



26

OK
Bryon Natash, m/a