

CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0113374
Insp Area: 2
Thos Bros: 337 A1

Site Address: 15 RIVERGLADE CT SAC
Parcel No: 031-0260-010

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

CONTRACTOR
ZIMMERMAN ROOFING, INC
3675 R STREET
SACRAMENTO, CA 95816

OWNER
GISLER JOEL E & CHERI R
15 RIVERGLADE CT
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: 32 SQ T/O REROOF W PIONEER 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 C39 License Number 557559 Date 10/26/01 Contractor Signature Billy Coy

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

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

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

____ I am exempt under Sec. _____ B & PC for this reason: _____

Date _____ Owner Signature _____

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

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

Date 10/26/01 Applicant/Agent Signature Billy Coy

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 713-2021-01 Exp Date 10/01/2002

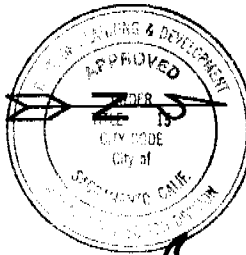
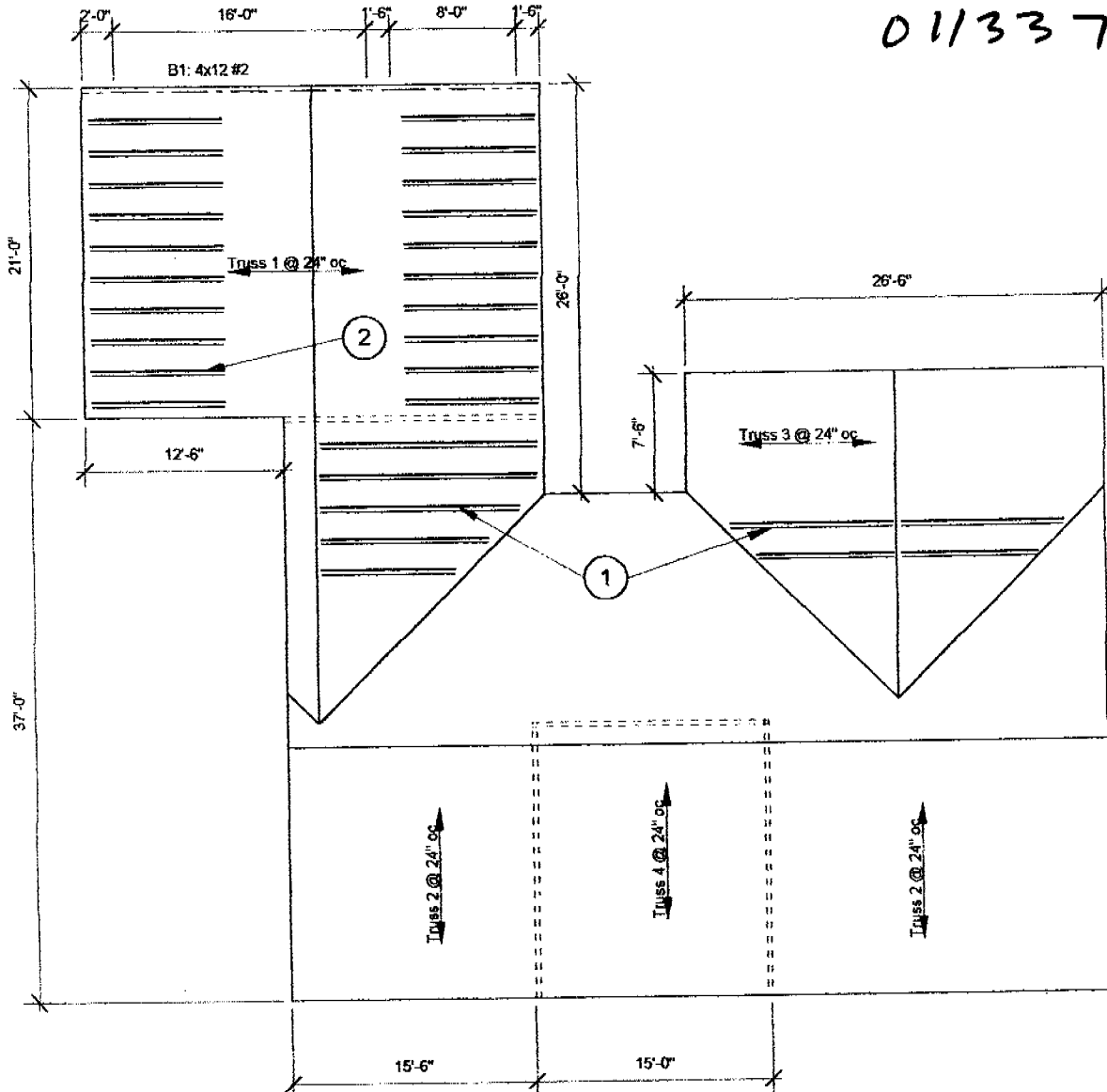
____ (This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date 10/26/01 Applicant Signature Billy Coy

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.

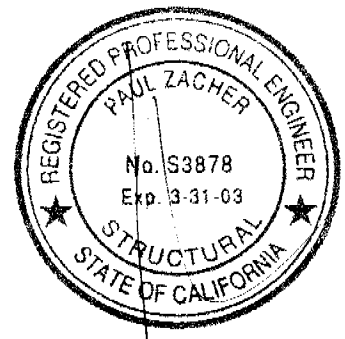
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This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the Building Inspection Division.

The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law.

Julal 10/17/01



FRAMING NOTES:

1. Scab a 2x6 to existing 2x4 rafters where the span is greater than 7'-9" (total 9).
2. Scab a 2x4 DF#2 x 9'-6" long rafter to the top chord of the existing truss #1 (total 20). See detail 2.

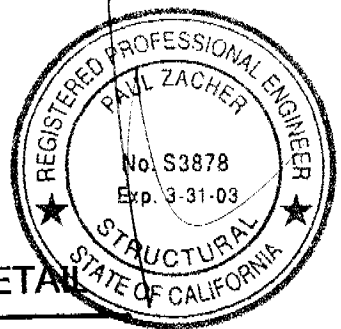
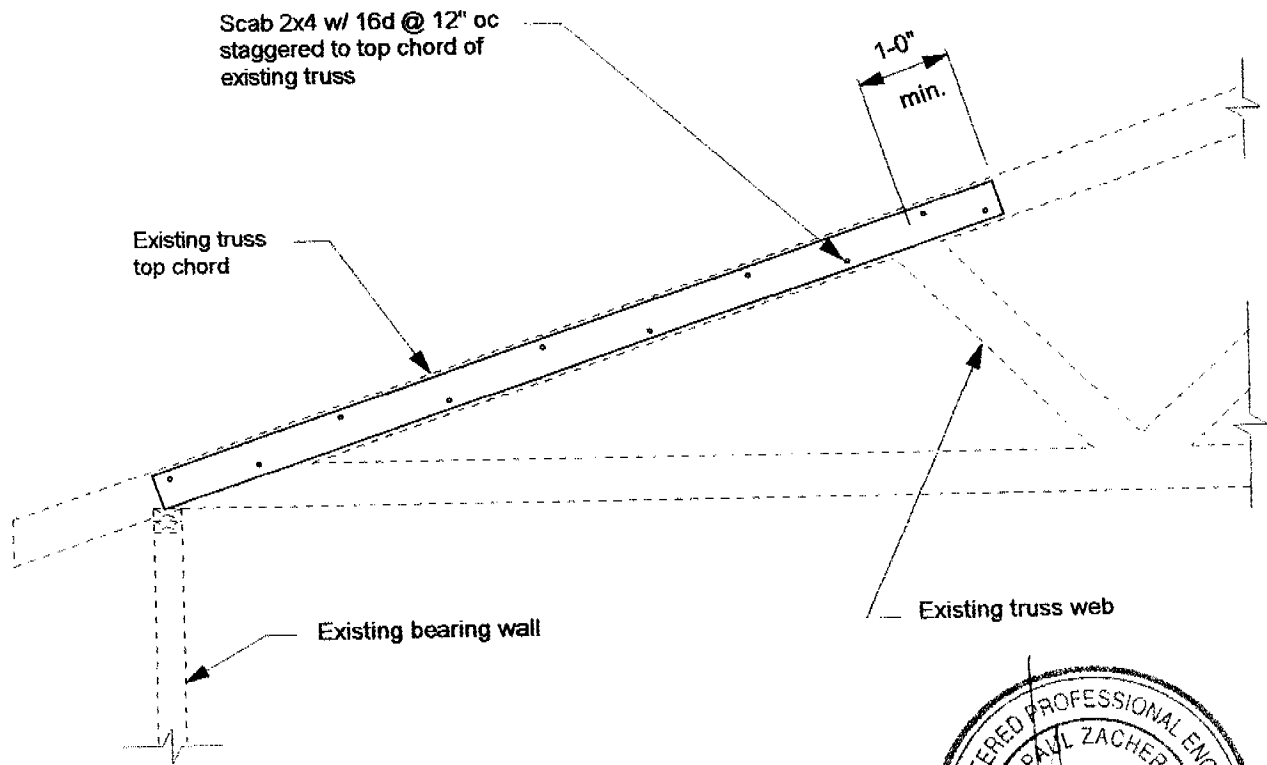
Notes:

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



ROOF PLAN - GISLER

Not to Scale *LM*



2

TRUSS REINFORCEMENT DETAIL

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

24

Gisler



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

TEL: 916.961.3960
FAX: 916.961.6552

September 17, 2001

Zimmerman Roofing
3675 R Street
Sacramento, CA 95816
TEL: (916) 454-3667
FAX: (916) 392-6853



Attn.: Mr. Jeff Tucker,

re: Job 2001_275: GISLER

Subject: Structural Investigation Report of the Roof for the Residence located at 15 Riverglade Court, Sacramento, CA 95831.

As requested by Mr. Jeff Tucker, this is a report to determine what needs should be addressed to correct any structural deficiencies of the roof. Paul Zacher visited the site September 17, 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 2000 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 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.

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1/24



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

TEL: 916.961.3960
FAX: 916.961.8552

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 2x6 rafter to the existing 2x4 rafters with 16d's @ 12" on center where the span is greater than 7'-9". See detail 1.
2. Scab a 2x4 DF#2 x 9'-6" long rafter to the top chord of the existing truss #1. See details 1 and 2.

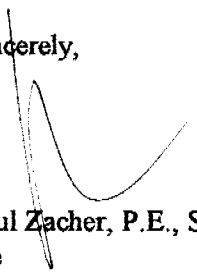
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and 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	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
1x4 skip sht'g	1.09	psf
1/2" OSB/ plywood	1.50	psf
2x6 rafters @ 24" oc	<u>1.00</u>	psf
Load	10.9	psf
Roof Pitch Adjustment	<u>0.59</u>	psf
Total Load	11.5	psf

LOCATION: TOP CHORD

<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 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

17

P.K. Zacher, S.E.

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

Job #: 01-275

Date: 9/17/01

LOADING

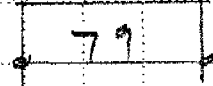
ROFFER

Op = 11.5 pcf · 2' = 23 pcf

2x4^{#2}

Lp = 16.0 · · · = 32 ·

23/32



RAFFER

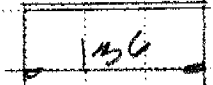
Op = 11.5 pcf · 2' = 23 pcf

2x4^{#2} +

Lp = 16.0 · · · = 32 ·

2x4^{#2}

23/32



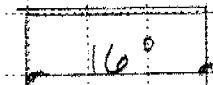
COL

Op = 11.5 pcf · 4' = 46 pcf

4x12^{#2} L

Lp = 16.0 · · · = 64 ·

46/64



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

Title :
 Dsgnr:
 Description :
 Scope :

Job #
 Date: 11:25AM, 17 SEP 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

Timber Section		rafter	rafter	B1
		2x4	2x4 + 2x6	4x12
Beam Width	in	1.500	2.120	3.500
Beam Depth	in	3.500	5.500	11.250
Le: Unbraced Length	ft	0.00	0.00	0.00
Timber Grade		Douglas Fir - Larch, Douglas Fir - Larch, Douglas Fir - Larch,		
Fb - Basic Allow	psi	875.0	875.0	875.0
Fv - Basic Allow	psi	95.0	95.0	95.0
Elastic Modulus	ksi	1,600.0	1,600.0	1,600.0
Load Duration Factor		1.250	1.250	1.250
Member Type		Sawn	Sawn	Sawn
Repetitive Status		Repetitive	No	No

Center Span Data

Span	ft	7.75	13.50	16.00
Dead Load	#/ft	23.00	23.00	46.00
Live Load	#/ft	32.00	32.00	64.00

Results

Ratio = 0.8576 0.9893 0.4755

Mmax @ Center	in-k	4.96	15.04	42.24
@ X =	ft	3.87	6.75	8.00
fb : Actual	psi	1,618.0	1,406.7	572.1
Fb : Allowable	psi	1,886.7	1,421.9	1,203.1
		Bending OK	Bending OK	Bending OK
fv : Actual	psi	56.5	44.7	29.8
Fv : Allowable	psi	118.8	118.8	118.8
		Shear OK	Shear OK	Shear OK

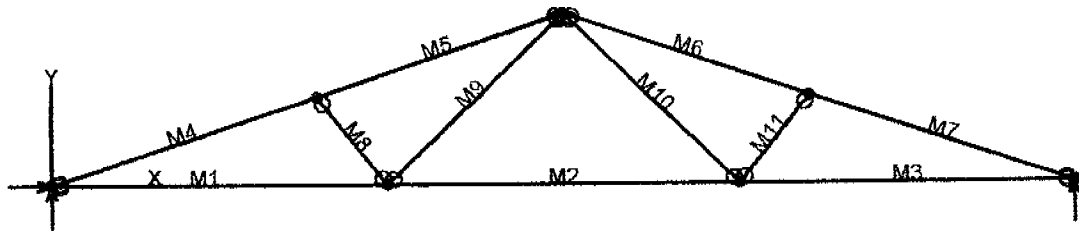
Reactions

@ Left End	DL	lbs	89.12	155.25	368.00
	LL	lbs	124.00	216.00	512.00
	Max. DL+LL	lbs	213.12	371.25	880.00
@ Right End	DL	lbs	89.12	155.25	368.00
	LL	lbs	124.00	216.00	512.00
	Max. DL+LL	lbs	213.12	371.25	880.00

Deflections

Ratio > 180 ! Deflection OK Deflection OK

Center DL Defl	in	-0.218	-0.365	-0.102
L/Defl Ratio		427.2	443.2	1,880.9
Center LL Defl	in	-0.303	-0.509	-0.142
L/Defl Ratio		307.0	318.6	1,351.9
Center Total Defl	in	-0.521	-0.874	-0.244
Location	ft	3.875	6.750	8.000
L/Defl Ratio		178.6	185.4	786.5



6

VisualAnalysis 3.50.c Report

09/17/01 10:56:52

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	9.50	0.00	No	No	"
N3	19.50	0.00	"	"	"
N4	29.00	0.00	"	Yes	"
N5	7.50	2.50	"	No	"
N6	21.50	2.50	"	"	"
N7	14.50	4.83	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.50
M2	"	"	10.00
M3	"	"	9.50
M4	"	"	7.91
M5	"	"	7.38
M6	"	"	7.38
M7	"	"	7.91
M8	"	"	3.20
M9	"	"	6.95
M10	"	"	6.95
M11	"	"	3.20

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	953.05	-NA-
N4	"	-NA-	953.05	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2252.55	-47.58	-63.94	-0.2583
"	2252.55	-20.35	43.3936	-0.2548
"	2252.55	6.8857	64.7084	-0.1821
"	2252.55	34.1190	0.0000	-0.0000
M2	1421.51	-43.00	-63.94	-0.2583
"	1421.51	-14.33	31.3721	-0.3080
"	1421.51	14.3333	31.3721	-0.3080
"	1421.51	43.0000	-63.94	-0.2583
M3	2252.55	-34.12	0.0000	-0.0000
"	2252.55	-6.8857	64.7084	-0.1821
"	2252.55	20.3477	43.3936	-0.2548
"	2252.55	47.5810	-63.94	-0.2583
M4	-2427.55	159.46	0.0000	-0.0000
"	-2382.38	23.9609	240.79	-0.3096
"	-2337.21	-111.54	125.39	-0.3413
"	-2292.05	-247.04	-346.18	-0.2457
M5	-2114.09	236.62	-346.18	-0.2457
"	-2071.99	110.16	79.4404	-0.3559
"	-2029.90	-16.31	194.83	-0.4036
"	-1987.80	-142.78	0.0000	-0.2575
M6	-2114.09	-236.62	-346.18	-0.2215
"	-2071.99	-110.16	79.4404	-0.3317
"	-2029.90	16.3098	194.83	-0.3794
"	-1987.80	142.78	0.0000	-0.2333
M7	-2427.55	-159.46	-0.0000	0.0242
"	-2382.38	-23.96	240.79	-0.2854
"	-2337.21	111.54	125.39	-0.3170
"	-2292.05	247.04	-346.18	-0.2215
M8	-514.48	0.0000	0.0000	-0.1389
"	-514.48	0.0000	0.0000	-0.1288
"	-514.48	0.0000	0.0000	-0.1186
"	-514.48	0.0000	0.0000	-0.1085
M9	708.61	0.0000	0.0000	-0.2127
"	708.61	0.0000	0.0000	-0.2104
"	708.61	0.0000	0.0000	-0.2081
"	708.61	0.0000	0.0000	-0.2058
M10	708.61	0.0000	0.0000	-0.1594
"	708.61	0.0000	0.0000	-0.1571
"	708.61	0.0000	0.0000	-0.1548
"	708.61	0.0000	0.0000	-0.1525
M11	-514.48	-0.0000	0.0000	-0.1987
"	-514.48	-0.0000	-0.0000	-0.1886
"	-514.48	-0.0000	-0.0000	-0.1785
"	-514.48	-0.0000	-0.0000	-0.1683

BENDING & COMP: TRUSS 1 - MEMBER 4

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

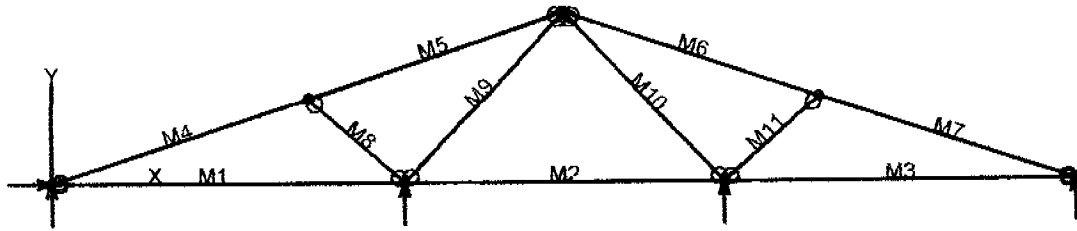
Grading:

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	7.91 feet
Max Axial Comp, C	2292 feet
Max Reaction, R	247 feet
Max Moment, M	346 feet
Max LL Deflection	0.12 feet
Max TL Deflection	0.24 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 =	1.22
fc =	218 psi
Fce=	844 psi
Fc*=	2084 psi
F'c=	758 psi
fb=	678 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)) =	0.51 < 1.0, Member OK
Live Load defl ratio	0.30 < 1.0, Member OK
Total Load defl ratio	0.46 < 1.0, Member OK



VisualAnalysis 3.50.c Report

09/17/01 11:16:25

Project: Truss 2

File: C:\Program Files\IES\VA35\truss 2.vap

Company: PK Associates Engineers

Engineer: Paul Zacher

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

Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	11.00	0.00	No	"	"
N3	21.00	0.00	"	"	"
N4	32.00	0.00	"	"	"
N5	8.00	2.67	"	No	"
N6	24.00	2.67	"	"	"
N7	16.00	5.33	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	11.00
M2	"	"	10.00
M3	"	"	11.00
M4	"	"	8.43
M5	"	"	8.43
M6	"	"	8.43
M7	"	"	8.43
M8	"	"	4.02
M9	"	"	7.31
M10	"	"	7.31
M11	"	"	4.02

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)

BENDING & COMP: TRUSS 2 - MEMBER 4

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

Grading:

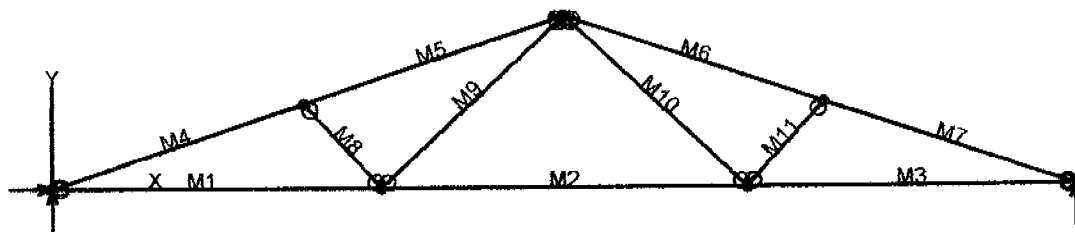
2x or 4x

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	1.5 inches
Depth, d	3.5 inches
Length	8.43 feet
Max Axial Comp, C	111 feet
Max Reaction, R	270 feet
Max Moment, M	455 feet
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 =	1.23
fc =	21 psi
Fce=	752 psi
Fc*=	2084 psi
F'c=	685 psi
fb=	1783 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.65 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.85 < 1.0, Member OK
Live Load defl ratio	0.21 < 1.0, Member OK
Total Load defl ratio	0.32 < 1.0, Member OK



VisualAnalysis 3.50.c Report

09/17/01 11:04:33

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	8.50	0.00	No		No		"	
N3	18.00	0.00	"		"		"	
N4	26.50	0.00	"		Yes		"	
N5	6.50	2.17	"		No		"	
N6	20.00	2.17	"		"		"	
N7	13.25	4.42	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	8.50
M2	"	"	9.50
M3	"	"	8.50
M4	"	"	6.85
M5	"	"	7.12
M6	"	"	7.12
M7	"	"	6.85
M8	"	"	2.95
M9	"	"	6.49
M10	"	"	6.49
M11	"	"	2.95

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	871.00	-NA-
N4	"	-NA-	871.00	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	2091.59	-42.65	-51.86	-0.2161
"	2091.59	-18.28	34.2952	-0.1965
"	2091.59	6.0826	51.5808	-0.1331
"	2091.59	30.4492	0.0000	-0.0000
M2	1295.26	-40.85	-51.86	-0.2161
"	1295.26	-13.62	34.1667	-0.2677
"	1295.26	13.6167	34.1667	-0.2677
"	1295.26	40.8500	-51.86	-0.2161
M3	2091.59	-30.45	0.0000	-0.0000
"	2091.59	-6.0826	51.5808	-0.1331
"	2091.59	18.2841	34.2952	-0.1964
"	2091.59	42.6508	-51.86	-0.2161
M4	-2250.13	134.96	0.0000	-0.0000
"	-2210.92	17.5290	173.49	-0.1865
"	-2171.72	-99.90	79.4094	-0.2235
"	-2132.51	-217.34	-282.25	-0.2032
M5	-1935.06	222.59	-282.25	-0.2032
"	-1894.41	100.64	100.34	-0.3227
"	-1853.76	-21.31	194.43	-0.3602
"	-1813.11	-143.26	0.0000	-0.2158
M6	-1935.06	-222.59	-282.25	-0.1828
"	-1894.41	-100.64	100.34	-0.3024
"	-1853.76	21.3067	194.43	-0.3398
"	-1813.11	143.26	0.0000	-0.1955
M7	-2250.13	-134.96	0.0000	0.0204
"	-2210.92	-17.53	173.49	-0.1662
"	-2171.72	99.9044	79.4094	-0.2030
"	-2132.51	217.34	-282.25	-0.1828
M8	-481.35	0.0000	0.0000	-0.1289
"	-481.35	0.0000	0.0000	-0.1198
"	-481.35	0.0000	0.0000	-0.1108
"	-481.35	0.0000	0.0000	-0.1017
M9	642.16	-0.0000	-0.0000	-0.1806
"	642.16	-0.0000	-0.0000	-0.1786
"	642.16	-0.0000	-0.0000	-0.1765
"	642.16	-0.0000	0.0000	-0.1745
M10	642.16	0.0000	0.0000	-0.1368
"	642.16	0.0000	0.0000	-0.1347
"	642.16	0.0000	0.0000	-0.1327
"	642.16	0.0000	0.0000	-0.1307
M11	-481.35	-0.0000	0.0000	-0.1762
"	-481.35	-0.0000	-0.0000	-0.1671
"	-481.35	-0.0000	-0.0000	-0.1581
"	-481.35	-0.0000	-0.0000	-0.1490

BENDING & COMP: TRUSS 3 - MEMBER 4

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

Grading:

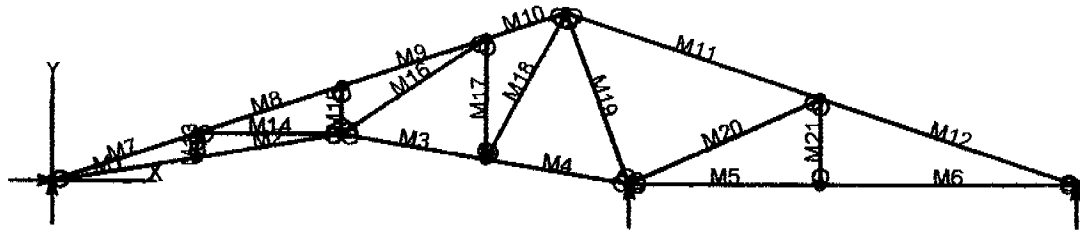
2x or 4x

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	1.5 inches
Depth, d	3.5 inches
Length	6.85 feet
Max Axial Comp, C	2132 feet
Max Reaction, R	217 feet
Max Moment, M	282 feet
Max LL Deflection	0.1 feet
Max TL Deflection	0.20 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 =	1.19
fc =	406 psi
Fce=	1099 psi
Fc*=	2084 psi
F'c=	943 psi
fb=	1105 psi
F*b=Fb*=	2156 psi
Shear D/C ratio	0.52 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F*b(1-fc/Fce)) =	1.00 < 1.0, Member OK
Live Load defl ratio	0.29 < 1.0, Member OK
Total Load defl ratio	0.44 < 1.0, Member OK



VisualAnalysis 3.50.c Report

09/17/01 11:10:43

Project: Truss 4

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	4.50	0.75	No	No	"
N3	9.00	1.50	"	"	"
N4	13.50	0.75	"	"	"
N5	18.00	0.00	"	Yes	"
N6	24.00	0.00	"	No	"
N7	32.00	0.00	"	Yes	"
N8	4.50	1.50	"	No	"
N9	9.00	3.00	"	"	"
N10	13.50	4.50	"	"	"
N11	16.00	5.33	"	"	"
N12	24.00	2.67	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	4.56
M2	"	"	4.56
M3	"	"	4.56
M4	"	"	4.56
M5	"	"	6.00
M6	"	"	8.00
M7	"	"	4.74
M8	"	"	4.74
M9	"	"	4.74
M10	"	"	2.63
M11	"	"	8.43
M12	"	"	8.43
M13	"	"	0.75
M14	"	"	4.50
M15	"	"	1.50
M16	"	"	5.41
M17	"	"	3.75
M18	"	"	5.22
M19	"	"	5.69
M20	"	"	6.57
M21	"	"	2.67

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

"	-84.79	-130.69	-106.06	-0.0871
M9	-171.15	128.40	-106.06	-0.0871
"	-144.05	47.0985	32.3614	-0.0849
"	-116.95	-34.20	42.5574	-0.0723
"	-89.85	-115.50	-75.47	-0.0444
M10	470.39	96.4010	-75.47	-0.0444
"	485.38	51.2343	-10.75	-0.0360
"	500.38	6.0677	14.4026	-0.0296
"	515.38	-39.10	0.0000	-0.0216
M11	1131.44	-271.42	-460.49	0.0093
"	1179.50	-126.89	98.1608	-0.1751
"	1227.56	17.6457	251.66	-0.2612
"	1275.62	162.18	0.0000	-0.0211
M12	287.72	-162.20	0.0000	0.0085
"	335.96	-17.67	251.81	-0.2419
"	384.20	126.87	98.3127	-0.1655
"	432.43	271.40	-460.49	0.0093
M13	23.9006	-0.0000	-0.0000	0.0254
"	23.9006	-0.0000	-0.0000	0.0275
"	23.9006	-0.0000	-0.0000	0.0296
"	23.9006	-0.0000	0.0000	0.0316
M14	-858.39	0.0000	0.0000	-0.1156
"	-858.39	0.0000	0.0000	-0.1052
"	-858.39	0.0000	0.0000	-0.0948
"	-858.39	0.0000	0.0000	-0.0844
M15	-273.11	0.0000	0.0000	-0.0264
"	-273.11	0.0000	0.0000	-0.0245
"	-273.11	0.0000	0.0000	-0.0225
"	-273.11	0.0000	0.0000	-0.0206
M16	719.39	0.0000	0.0000	-0.0849
"	719.39	0.0000	0.0000	-0.0702
"	719.39	0.0000	0.0000	-0.0554
"	719.39	0.0000	0.0000	-0.0407
M17	-423.48	-0.0000	0.0000	0.0063
"	-423.48	-0.0000	-0.0000	0.0143
"	-423.48	-0.0000	-0.0000	0.0223
"	-423.48	-0.0000	-0.0000	0.0304
M18	493.34	-0.0000	0.0000	-0.0471
"	493.34	-0.0000	-0.0000	-0.0352
"	493.34	-0.0000	-0.0000	-0.0233
"	493.34	-0.0000	-0.0000	-0.0114
M19	-1269.84	-0.0000	0.0000	-0.0072
"	-1269.84	-0.0000	-0.0000	0.0055
"	-1269.84	-0.0000	-0.0000	0.0182
"	-1269.84	-0.0000	-0.0000	0.0309
M20	-913.96	0.0000	0.0000	-0.0134
"	-913.96	0.0000	0.0000	-0.0115
"	-913.96	0.0000	0.0000	-0.0095
"	-913.96	0.0000	0.0000	-0.0076
M21	76.6721	-0.0000	0.0000	0.0233
"	76.6721	-0.0000	-0.0000	0.0256
"	76.6721	-0.0000	-0.0000	0.0280
"	76.6721	-0.0000	-0.0000	0.0304

BENDING & COMP: TRUSS 4 - MEMBER 12

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	8.43 feet
Max Axial Comp, C	432 feet
Max Reaction, R	271 feet
Max Moment, M	460 feet
Max LL Deflection	0.08 feet
Max TL Deflection	0.16 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 =	1.23
fc =	82 psi
Fce =	752 psi
Fc* =	2084 psi
F'c =	685 psi
fb =	1802 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.65 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.95 < 1.0, Member OK
Live Load defl ratio	0.19 < 1.0, Member OK
Total Load defl ratio	0.28 < 1.0, Member OK