

CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0011106
Insp Area: 2

Site Address: 36 ESTUARY CT SAC
Parcel No: 031-0680-073

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

CONTRACTOR
ZIMMERMAN ROOFING
3675 R ST
SACRAMENTO CA 95816

OWNER
IMAI RANDALL K
36 ESTUARY CT
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: REROOF, TEAR OFF, INSTALL 23SQ OF LIGHT WEIGHT 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 55755A Date 9-18-00 Contractor Signature Irish Marting

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 applicant's representations, 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 9-18-00 Applicant/Agent Signature Irish Marting

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 COMP INS FUND Policy Number 713-99-2021 Exp Date 10/01/2000

(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 9-18-00 Applicant Signature Irish Marting

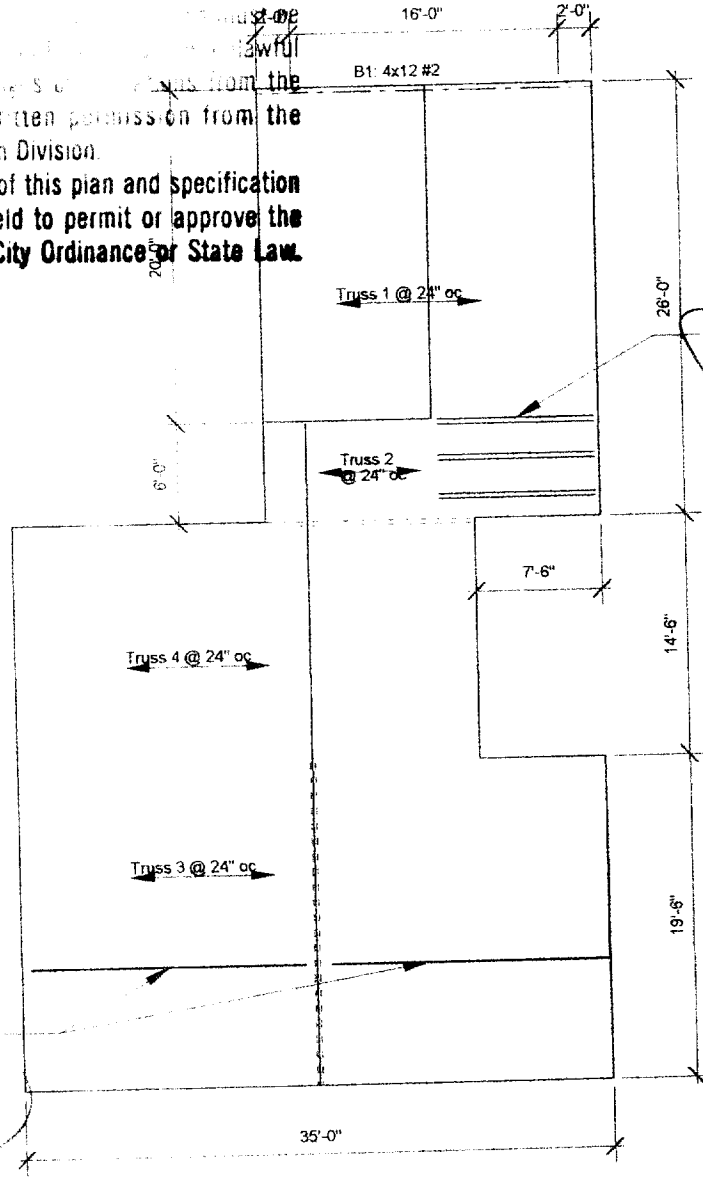
WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S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

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



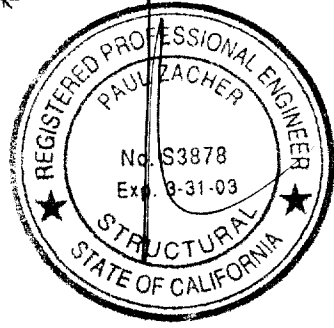
... from the
... written permission from the
Building Inspection Division.

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



Scab a 2x4 DF#2 x 10'-6"
long rafter to the top chord
of the existing truss (total 3)

Add a 2x10 where the existing
truss has been removed for the
installation of the HVAC
(total 2)



Reviewed by Matt P. 9/18/12

- 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.

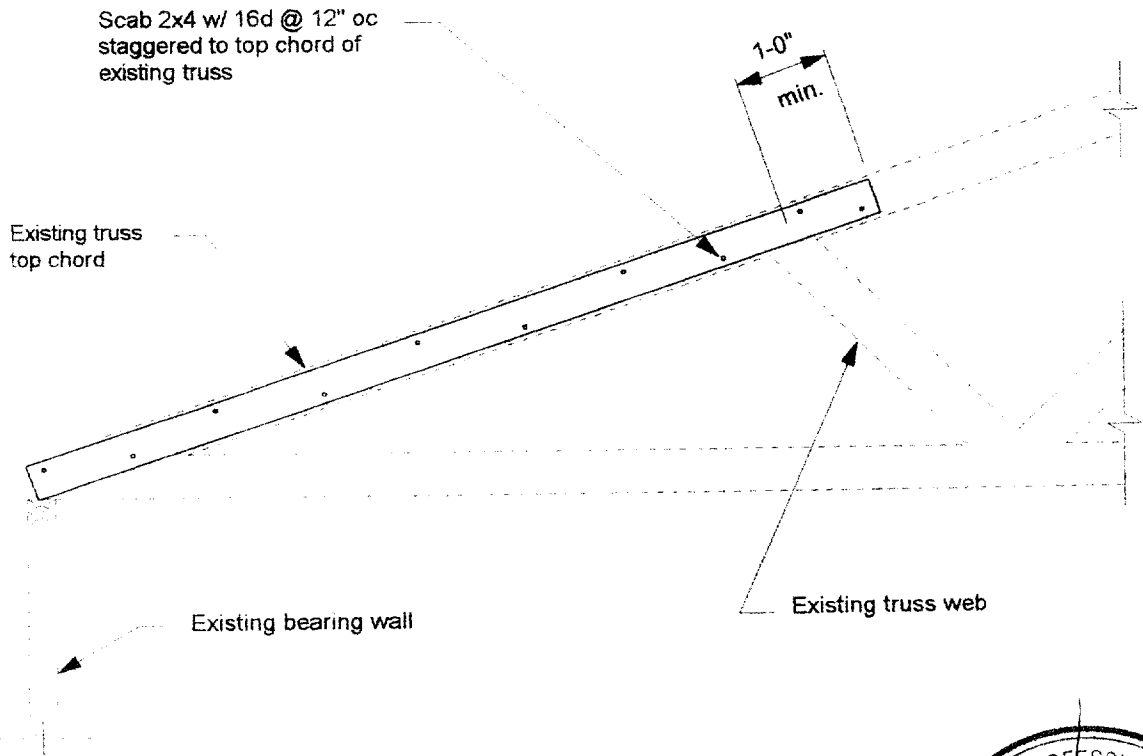


1

ROOF PLAN - IMAI

Not to Scale

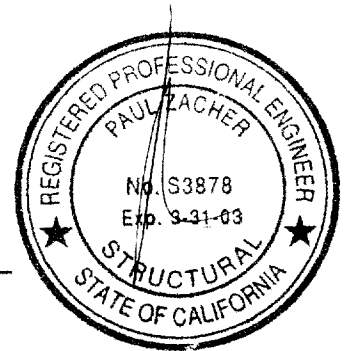
24



2

TRUSS REINFORCEMENT DETAIL

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



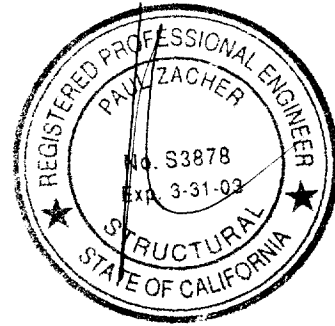
Imai

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

TEL: 916.961.3960
FAX: 916.961.6552

September 4, 2000

Zimmerman Roofing
3675 R Street
Sacramento, CA 95816
TEL: 916.454.3667
FAX: 916.455.3784



Attn: Mr. Jeff Tucker,

re: Job 2000_279: IMAI

Subject: Structural Investigation Report of the Roof for the Residence located at 36 Estuary 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 1, 2000. 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 1970'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 living and garage areas are framed with pre-engineered wood trusses spaced at 24" on center.

CONCLUSIONS:

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

Vertical stamp: 04/14/01 10:00 AM [unclear]

imal

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 Add a 2x10 DF#2 rafter where the existing truss has been removed for the installation of the HVAC unit. See detail 1.
- 2 Scab a 2x4 DF#2 x 10'-6" long rafter to the top chord of the existing truss. 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: 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

P K. Zacher, S E

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

Job # 78 300

Date: 3/4/05

WAD 11/2

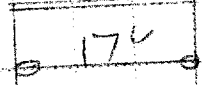
PAFEE

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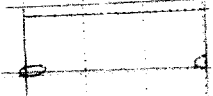
12 10 10 10 10 10

2x10^{#2}

60.8/32



02/04



41

12 15 4 21/2 4 6 2 1/2

12 10 10 10 10 10

4x2^{#2}

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

Title :
 Dsgnr:
 Description :
 Scope :

Job #
 Date: 9:57AM, 4 SEP 00

Timber Beam & Joist

c:\enercalc\test\ecw\Calculations

Rev: 810304
 User: RW-0602844, Ver 5.1.0, 22 Jun-1999, Win32
 ©1983-99 ENERCALC

Description BEAMS

Calculations are designed to 1997 NDS and 1997 UBC Requirements

Timber Member Information

		Rafter	B1
Timber Section		2x10	4x12
Beam Width	in	1.500	3.500
Beam Depth	in	9.250	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	17.50	16.00
Dead Load	#/ft	30.80	62.00
Live Load	#/ft	32.00	64.00

Results

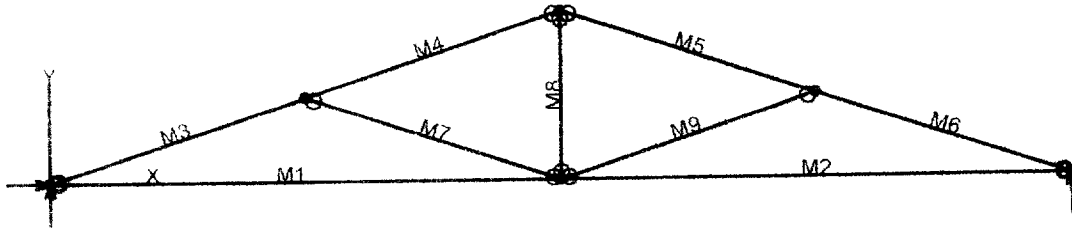
		Ratio =	
Mmax @ Center	in-k	28.85	48.38
@ X =	ft	8.75	8.00
fb Actual	psi	1,348.7	655.4
Fb Allowable	psi	1,383.6	1,203.1
		Bending OK	Bending OK
fv Actual	psi	54.2	34.1
Fv Allowable	psi	118.8	118.8
		Shear OK	Shear OK

Reactions

@ Left End	DL	lbs	269.50
	LL	lbs	280.00
	Max. DL+LL	lbs	549.50
@ Right End	DL	lbs	269.50
	LL	lbs	280.00
	Max. DL+LL	lbs	549.50

Deflections

		Ratio OK	Deflection OK
Center DL Defl	in	-0.411	-0.138
L/Defl Ratio		511.4	1,395.5
Center LL Defl	in	-0.427	-0.142
L/Defl Ratio		492.3	1,351.9
Center Total Defl	in	-0.837	-0.280
Location	ft	8.750	8.000
L/Defl Ratio		250.8	686.7



VisualAnalysis 3.50.c Report

09/04/00 09:51:30

Project: Truss 1

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

Company: PK Associates Engineers

Engineer: Paul Zacher

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

Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	10.00	0.00	No		No		No	
N2	0.00	0.00	Yes		Yes			
N3	20.00	0.00	No		No			
N4	5.00	1.67	"		No			
N5	15.00	1.67	"		"			
N6	10.00	3.33	"		"			

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	10.00
M2	"	"	10.00
M3	"	"	5.27
M4	"	"	5.27
M5	"	"	5.27
M6	"	"	5.27
M7	"	"	5.27
M8	"	"	3.33
M9	"	"	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
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
N2	Equation Case 1	-0.00	628.00	-NA-
N3	"	-NA-	628.00	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1454.99	-51.89	-88.89	-0.1177
"	1454.99	-23.22	36.0571	-0.1588
"	1454.99	5.4444	65.6869	-0.1402
"	1454.99	34.1111	0.0000	-0.0000
M2	1454.99	-34.11	-0.0000	-0.0000
"	1454.99	-5.4444	65.6869	-0.1402
"	1454.99	23.2223	36.0571	-0.1588
"	1454.99	51.8889	-88.89	-0.1177
M3	-1568.19	102.37	0.0000	-0.0000
"	-1539.57	16.6845	104.22	-0.0826
"	-1510.95	-69.00	58.2586	-0.1114
"	-1482.33	-154.68	-137.88	-0.1133
M4	-1073.06	154.77	-137.88	-0.1133
"	-1044.60	69.0375	58.2586	-0.1501
"	-1016.14	-16.69	104.22	-0.1599
"	-987.67	-102.43	0.0000	-0.1160
M5	-1073.06	-154.77	-137.88	-0.1010
"	-1044.60	-69.04	58.2586	-0.1378
"	-1016.14	16.6945	104.22	-0.1475
"	-987.67	102.43	0.0000	-0.1037
M6	-1568.19	-102.37	-0.0000	0.0124
"	-1539.57	-16.68	104.22	-0.0702
"	-1510.95	68.9961	58.2586	-0.0990
"	-1482.33	154.68	-137.88	-0.1009
M7	-511.71	-0.0000	-0.0000	-0.1054
"	-511.71	-0.0000	-0.0000	-0.1026
"	-511.71	-0.0000	-0.0000	-0.0998
"	-511.71	-0.0000	0.0000	-0.0971
M8	427.99	-0.0000	-0.0000	-0.0196
"	427.99	-0.0000	0.0000	-0.0196
"	427.99	-0.0000	-0.0000	-0.0196
"	427.99	-0.0000	-0.0000	-0.0196
M9	-511.71	0.0000	0.0000	-0.1178
"	-511.71	0.0000	0.0000	-0.1150
"	-511.71	0.0000	0.0000	-0.1122
"	-511.71	0.0000	0.0000	-0.1095

BENDING & COMP: TRUSS 1 - MEMBER 3

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

Grading:

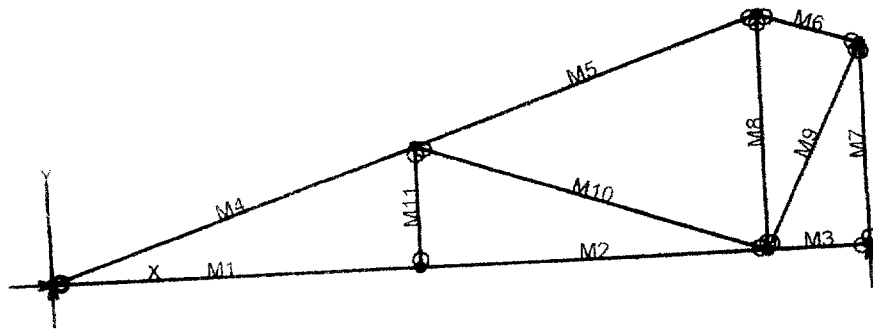
2x or 4x

Doug-fir larch No 2

Assumptions:

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

Width, b	1.5 inches
Depth, d	3.5 inches
Length	5.27 feet
Max Axial Comp. C	1482 lbs
Max Reaction, R	154 lbs
Max Moment, M	137 ft-lbs
Max LL Deflection	0.05 inches
Max TL Deflection	0.11 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 =	282 psi
Fce =	1789 psi
Fc* =	2084 psi
F'c =	1326 psi
fb =	537 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.37 < 1.0, Member OK
Interaction equation: (fc/F'c) ² +	
fb / (F'b(1-fc/Fce)) =	0.34 < 1.0, Member OK
Live Load defl ratio	0.19 < 1.0, Member OK
Total Load defl ratio	0.31 < 1.0, Member OK



VisualAnalysis 3.50.c Report

09/04/00 10:56:47

Project: Truss 2

File: G:\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 Fix
N1	0.00	0.00	Yes	Yes	No	No
N2	9.00	0.00	No	No	"	"
N3	17.50	0.00	"	"	"	"
N4	20.00	0.00	"	Yes	"	"
N5	9.00	3.00	"	No	"	"
N6	17.50	5.83	"	"	"	"
N7	20.00	5.00	"	"	"	"

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.00
M2	"	"	8.50
M3	"	"	2.50
M4	"	"	9.49
M5	"	"	8.96
M6	"	"	2.63
M7	"	"	5.00
M8	"	"	5.83
M9	"	"	5.59
M10	"	"	9.01
M11	"	"	3.00

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	628.00	-NA-
N4	"	-NA-	628.00	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	1222.51	-44.86	-55.42	-0.0999
"	1222.51	-19.06	40.2624	-0.1350
"	1222.51	6.7426	58.7344	-0.1121
"	1222.51	32.5426	0.0000	-0.0000
M2	1222.51	-34.48	-37.80	-0.0258
"	1222.51	-10.11	25.1916	-0.0773
"	1222.51	14.2554	19.3209	-0.0991
"	1222.51	38.6220	-55.42	-0.0999
M3	0.0000	4.3716	-0.0000	-0.0000
"	0.0000	11.5382	-6.6440	-0.0071
"	0.0000	18.7049	-19.25	-0.0152
"	0.0000	25.8716	-37.80	-0.0258
M4	-1348.07	178.31	0.0000	-0.0000
"	-1296.65	24.0541	318.75	-0.4554
"	-1245.23	-130.20	150.91	-0.3834
"	-1193.82	-284.46	-503.50	-0.0996
M5	-346.66	274.76	-503.50	-0.0996
"	-298.15	129.05	98.3492	-0.2746
"	-249.64	-16.65	266.18	-0.3426
"	-201.13	-162.35	-0.0000	-0.0214
M6	-276.46	-64.30	-0.0000	-0.0057
"	-262.23	-21.43	37.5448	-0.0184
"	-248.00	21.4330	37.5448	-0.0261
"	-233.77	64.2990	0.0000	-0.0288
M7	-632.37	0.0000	0.0000	-0.0053
"	-632.37	0.0000	0.0000	0.0061
"	-632.37	0.0000	0.0000	0.0174
"	-632.37	0.0000	0.0000	0.0288
M8	-77.87	0.0000	0.0000	-0.0117
"	-77.87	0.0000	0.0000	0.0018
"	-77.87	0.0000	0.0000	0.0153
"	-77.87	0.0000	0.0000	0.0288
M9	541.39	0.0000	0.0000	-0.0373
"	541.39	0.0000	0.0000	-0.0239
"	541.39	0.0000	0.0000	-0.0105
"	541.39	0.0000	0.0000	0.0028
M10	-1039.66	-0.0000	0.0000	0.0148
"	-1039.66	-0.0000	-0.0000	0.0394
"	-1039.66	-0.0000	-0.0000	0.0640
"	-1039.66	-0.0000	-0.0000	0.0885
M11	83.4794	-0.0000	-0.0000	0.0148
"	83.4794	-0.0000	-0.0000	0.0152
"	83.4794	-0.0000	-0.0000	0.0157
"	83.4794	-0.0000	0.0000	0.0161

BENDING & COMP: TRUSS 2 - MEMBER 4

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

Grading.

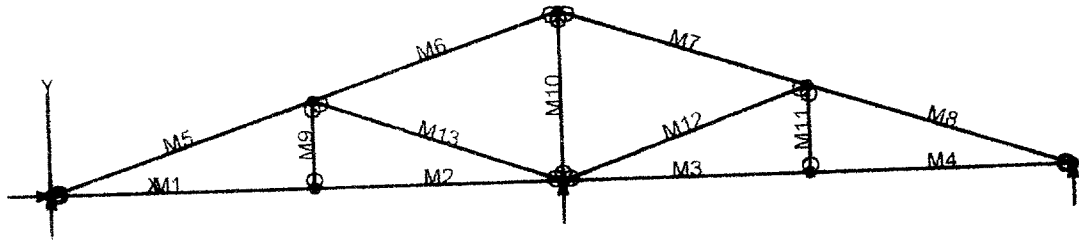
2x or 4x

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	3 inches
Depth, d	3.5 inches
Length	9.49 feet
Max Axial Comp. C	1193 lbs
Max Reaction, R	284 lbs
Max Moment, M	503 ft-lbs
Max LL Deflection	0.18 inches
Max TL Deflection	0.45 inches
LL Defl Criteria = $L/240$	240
TL Defl Criteria = $L/180$	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 =	1.26
fc =	114 psi
Fce =	608 psi
Fc* =	2084 psi
F'c =	565 psi
fb =	985 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.34 < 1.0, Member OK
Interaction equation:	
$(fc/F'c)^2 +$	
$fb / (F'b(1-fc/Fce)) =$	0.60 < 1.0, Member OK
Live Load defl ratio	0.38 < 1.0, Member OK
Total Load defl ratio	0.71 < 1.0, Member OK



VisualAnalysis 3.50.c Report

09/04/00 13:01:50

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	9.00	0.00	No		No		"	
N3	17.50	0.00	"		Yes		"	
N4	26.00	0.00	"		No		"	
N5	35.00	0.00	"		Yes		"	
N6	9.00	3.00	"		No		"	
N7	26.00	3.00	"		"		"	
N8	17.50	5.83	"		"		"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	9.00
M2	"	"	8.50
M3	"	"	8.50
M4	"	"	9.00
M5	"	"	9.49
M6	"	"	8.96
M7	"	"	8.96
M8	"	"	9.49
M9	"	"	3.00
M10	"	"	5.83
M11	"	"	3.00
M12	"	"	9.01
M13	"	"	9.01

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	318.15	-NA-
N3	"	-NA-	1561.69	-NA-
N5	"	-NA-	318.15	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	298.61	-45.57	-61.81	-0.0359
"	298.61	-19.77	35.9976	0.0863
"	298.61	6.0318	56.6020	-0.0860
"	298.61	31.8318	0.0000	-0.0000
M2	298.61	-35.70	-54.63	-0.0000
"	298.61	-11.34	11.8448	-0.0203
"	298.61	13.0290	9.4489	-0.0310
"	298.61	37.3956	-61.81	-0.0359
M3	298.61	-37.40	-61.81	-0.0359
"	298.61	-13.03	9.4489	-0.0310
"	298.61	11.3377	11.8448	-0.0203
"	298.61	35.7044	-54.63	-0.0000
M4	298.61	-31.83	0.0000	-0.0000
"	298.61	-6.0318	56.6020	-0.0860
"	298.61	19.7682	35.9976	-0.0863
"	298.61	45.5682	-61.81	-0.0359
M5	-373.83	177.20	0.0000	-0.0000
"	-322.41	22.9459	315.24	-0.4254
"	-270.99	-131.31	143.90	-0.3301
"	-219.57	-285.57	-514.02	-0.0362
M6	630.17	275.93	-514.02	-0.0363
"	678.68	130.23	91.3405	-0.2182
"	727.19	-15.48	262.68	-0.3047
"	775.70	-161.18	-0.0000	-0.0081
M7	630.17	-275.93	-514.02	-0.0318
"	678.68	-130.23	91.3405	-0.2138
"	727.19	15.4757	262.68	-0.3002
"	775.70	161.18	0.0000	-0.0037
M8	-373.83	-177.20	0.0000	0.0044
"	-322.41	-22.95	315.24	-0.4211
"	-270.99	131.31	143.90	-0.3256
"	-219.57	285.57	-514.02	-0.0318
M9	82.9638	-0.0000	-0.0000	0.0036
"	82.9638	-0.0000	-0.0000	0.0050
"	82.9638	-0.0000	-0.0000	0.0065
"	82.9638	-0.0000	0.0000	0.0079
M10	-795.93	0.0000	0.0000	0.0070
"	-795.93	0.0000	0.0000	0.0070
"	-795.93	0.0000	0.0000	0.0070
"	-795.93	0.0000	0.0000	0.0070
M11	82.9638	0.0000	0.0000	0.0062
"	82.9638	0.0000	0.0000	0.0076
"	82.9638	0.0000	0.0000	0.0090

"	82.9638	0.0000	0.0000	0.0104
M10	-1043.14	0.0000	0.0000	0.0023
"	-1043.14	0.0000	0.0000	0.0134
"	-1043.14	0.0000	0.0000	0.0245
"	-1043.14	0.0000	0.0000	0.0356
M12	-1043.14	-0.0000	0.0000	-0.0023
"	-1043.14	-0.0000	-0.0000	0.0088
"	-1043.14	-0.0000	-0.0000	0.0198
"	-1043.14	-0.0000	-0.0000	0.0309

BENDING & COMP: TRUSS 3 - MEMBER 5

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

Grading:

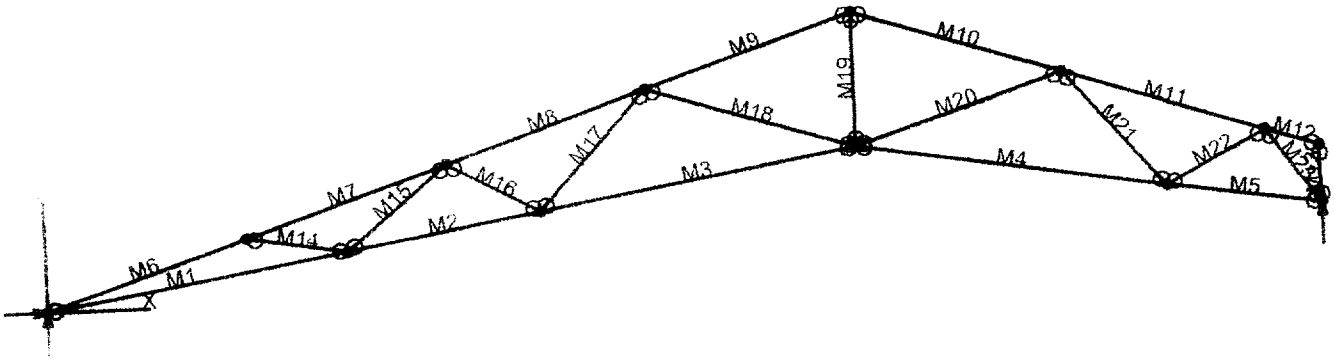
2x or 4x

Doug-fir larch: No 2

Assumptions:

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

Width, b	1.5 inches
Depth, d	3.5 inches
Length	9.49 feet
Max Axial Comp. C	219 lbs
Max Reaction, R	285 lbs
Max Moment, M	514 ft-lbs
Max LL Deflection	0.03 inches
Max TL Deflection	0.08 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 =	1.26
fc =	42 psi
Fce=	608 psi
Fc*=	2084 psi
F'c=	565 psi
fb=	2014 psi
F*b=Fb*=	2156 psi
Shear D/C ratio	0.69 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F*b(1-fc/Fce)) =	1.01 > 1.0, Member No Good. OK 1% over
Live Load defl ratio	0.06 < 1.0, Member OK
Total Load defl ratio	0.13 < 1.0, Member OK



VisualAnalysis 3.50.c Report

09/04/00 13:14:32

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	Y Fix	DX Fix	DY Fix	RZ
N1	0.00	0.00	Yes	Yes	No	
N2	6.50	1.08	No	No	"	
N3	10.67	1.78	"	"	"	
N4	17.50	2.92	"	"	"	
N5	24.17	1.78	"	"	"	
N6	27.50	1.25	"	Yes	"	
N7	4.33	1.44	"	No	"	
N8	8.67	2.89	"	"	"	
N9	13.00	4.33	"	"	"	
N10	17.50	5.83	"	"	"	
N11	22.00	4.33	"	"	"	
N12	26.33	2.89	"	"	"	
N13	27.50	2.50	"	"	"	

Member Elements

Member	Section	Material	Length ft
M1	SS2x4	Wood	6.59
M2	"	"	4.23
M3	"	"	6.92
M4	"	"	6.77
M5	"	"	3.37
M6	"	"	4.56
M7	"	"	4.58
M8	"	"	4.56
M9	"	"	4.74
M10	"	"	4.74
M11	"	"	4.56
M12	"	"	1.23
M13	"	"	1.25
M14	"	"	2.20
M15	"	"	2.83
M16	"	"	2.29
M17	"	"	3.45
M18	"	"	4.72
M19	"	"	2.91
M20	"	"	4.72
M21	"	"	3.35
M22	"	"	2.43
M23	"	"	2.01

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	863.50	-NA-
N6	"	-NA-	863.50	-NA-

Member Results

Member	Axial lbs	Vy lbs	Mz lb-ft	Dy in
M1	4172.92	43.2282	0.0000	-0.0000
"	4175.98	24.8469	74.6582	-0.2884
"	4179.03	6.4656	109.05	-0.5115
"	4182.08	-11.92	103.16	-0.6382
M2	3601.53	-10.33	103.16	-0.6383
"	3603.51	-22.12	80.2547	-0.6692
"	3605.49	-33.91	40.7742	-0.6706
"	3607.47	-45.69	-15.28	-0.6570
M3	2793.75	31.1750	-15.28	-0.6570
"	2796.97	11.8629	34.2769	-0.6307
"	2800.19	-7.4493	39.3706	-0.5734
"	2803.42	-26.76	0.0000	-0.4802
M4	1796.21	-30.90	-17.77	-0.1390
"	1799.43	-12.05	30.5616	-0.2627
"	1802.65	6.7982	36.4834	-0.3604
"	1805.87	25.6456	0.0000	-0.4262
M5	699.63	-8.8723	0.0000	0.0405
"	701.13	0.5551	4.6477	-0.0207
"	702.63	9.9824	-1.2742	-0.0810
"	704.13	19.4097	-17.77	-0.1419
M6	-4387.74	126.66	0.0000	-0.0000
"	-4363.06	52.4253	135.91	-0.2489
"	-4338.37	-21.81	159.20	-0.4424
"	-4313.66	-96.04	69.8603	-0.5701
M7	-3966.39	81.7570	69.8603	-0.5701
"	-3941.54	7.3885	137.56	-0.6514
"	-3916.70	-66.98	92.1156	-0.6762
"	-3891.85	-141.35	-66.48	-0.6645
M8	-3361.35	107.86	-66.48	-0.6646

	-3336.66	23.6294	40.8452	-0.6583
	-3311.98	-40.60	35.5423	-0.6381
	-3287.29	-114.83	-82.39	-0.6064
M9	-2034.81	133.06	-82.39	-0.6064
	-2009.10	55.9330	66.7196	-0.5863
	-1983.39	-21.19	94.1824	-0.5392
	-1957.69	-98.32	0.0000	-0.4524
M10	-2036.06	-136.80	-100.15	-0.2360
	-2010.35	-59.68	54.8806	-0.3214
	-1984.64	17.4512	88.2629	-0.3854
	-1958.93	94.5791	0.0000	-0.4125
M11	-1468.11	-99.00	-43.80	-0.0092
	-1443.42	-24.77	50.0437	-0.1000
	-1418.73	49.4633	31.2624	-0.1729
	-1394.05	123.69	-100.15	-0.2361
M12	1.8124	5.4371	0.0000	0.0608
	8.4968	25.4904	-6.3777	0.0379
	15.1812	45.5436	-20.98	0.0148
	21.8656	65.5969	-43.80	-0.0090
M13	5.7312	0.0000	0.0000	0.1922
"	5.7312	0.0000	0.0000	0.2139
"	5.7312	0.0000	0.0000	0.2356
"	5.7312	0.0000	0.0000	0.2574
M14	-392.80	0.0000	0.0000	-0.5920
"	-392.80	0.0000	0.0000	-0.5669
"	-392.80	0.0000	0.0000	-0.5418
"	-392.80	0.0000	0.0000	-0.5167
M15	242.13	-0.0000	-0.0000	-0.6001
"	242.13	-0.0000	-0.0000	-0.5898
"	242.13	-0.0000	-0.0000	-0.5795
"	242.13	-0.0000	0.0000	-0.5692
M16	-451.27	0.0000	0.0000	-0.4870
"	-451.27	0.0000	0.0000	-0.4842
"	-451.27	0.0000	0.0000	-0.4814
"	-451.27	0.0000	0.0000	-0.4786
M17	585.28	0.0000	0.0000	-0.5522
"	585.28	0.0000	0.0000	-0.5330
"	585.28	0.0000	0.0000	-0.5139
"	585.28	0.0000	0.0000	-0.4947
M18	-914.27	0.0000	0.0000	-0.5335
"	-914.27	0.0000	0.0000	-0.4859
"	-914.27	0.0000	0.0000	-0.4383
"	-914.27	0.0000	0.0000	-0.3907
M19	1055.54	0.0000	0.0000	-0.1610
"	1055.54	0.0000	0.0000	-0.1284
"	1055.54	0.0000	0.0000	-0.0957
"	1055.54	0.0000	0.0000	-0.0631
M20	117.97	0.0000	0.0000	-0.4870
"	117.97	0.0000	0.0000	-0.4258
"	117.97	0.0000	0.0000	-0.3645
"	117.97	0.0000	0.0000	-0.3033
M21	-638.64	-0.0000	0.0000	-0.1030
"	-638.64	-0.0000	-0.0000	-0.0502
"	-638.64	-0.0000	-0.0000	0.0026
"	-638.64	-0.0000	-0.0000	0.0554
M22	752.75	0.0000	0.0000	-0.2628
"	752.75	0.0000	0.0000	-0.2207
"	752.75	0.0000	0.0000	-0.1787
"	752.75	0.0000	0.0000	-0.1366
M23	-1192.08	0.0000	0.0000	0.1000
"	-1192.08	0.0000	0.0000	0.1365
"	-1192.08	0.0000	0.0000	0.1730
"	-1192.08	0.0000	0.0000	0.2095

BENDING & COMP: TRUSS 4 - 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	4.56 feet
Max Axial Comp. C	4313 lbs
Max Reaction, R	96 lbs
Max Moment, M	69 ft-lbs
Max LL Deflection	0.1 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 =	1.13
fc =	822 psi
Fce =	2348 psi
Fc* =	2084 psi
F'c =	1523 psi
fb =	270 psi
F'b = Fb* =	2156 psi
Shear D/C ratio	0.23 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb / (F'b(1-fc/Fce)) =	0.48 < 1.0, Member OK
Live Load defl ratio	0.44 < 1.0, Member OK
Total Load defl ratio	0.79 < 1.0, Member OK