

CITY OF SACRAMENTO

Permit No: 9807870

1231 I Street, Sacramento, CA 95814

Insp Area: 2

Site Address: 5 DOWNRIVER CT SAC

Sub-Type: RES

Parcel No: 0310391007

Housing (Y/N): N

CONTRACTOR

ZIMMERMAN ROOFING
3560 RAMONA AV
SACRAMENTO, CA

95826

OWNER

KNEDEL JERRY H & DANA R
5 DOWNRIVER CT
SACRAMENTO CA

95831

ARCHITECT

Nature of Work: REROOF

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

Lender's Name Lender's Address

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

License Class C-39 License Number 557559 Date 8-14-98 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 8-14-98 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.

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

Carrier State Fund

Policy Number 10-98 713 97 0007071 EXP 10-1-98

(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 8-14-98 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.



DEPARTMENT OF
PLANNING AND DEVELOPMENT

CITY OF SACRAMENTO
CALIFORNIA

1231 I STREET
ROOM 200
SACRAMENTO, CA
95814-2998

Permit Services
916-264-7619
FAX 916-264-7046

*Kneidel at
S Down River*

TILE ROOF WORKSHEET

This worksheet must be filled out whenever any type of tile roof is applied for.

If the answer to question #5 is yes, a written engineering report from a registered engineer must be provided with each application.

- 1 BRAND AND MODEL OF TILE Pioneer Shale
- 2 TILE WEIGHT PER SQUARE 730
- 3 WEIGHT OF ROOF SYSTEM PER SQUARE 780
- 4 TOTAL WEIGHT OF ROOF SYSTEM 910
- 5 DOES TOTAL WEIGHT OF ROOF SYSTEM EXCEED 750# PER SQUARE? YES NO
- 6 ROOF SLOPE 4/12

PLEASE PROVIDE A SEPARATE WORKSHEET FOR EACH APPLICATION INVOLVING A TILE

ROOF

*see attached
engineering*

Knedel

Paul Zacher-Structural Engineers

4701 Lakeside Way
Fair Oaks, CA 95628

TEL: 916.961.3960
FAX: 916.961.3960
e-mail: pzacher@softcom.net

August 10, 1998

Zimmerman Roofing
3560 Ramona Avenue
Sacramento, CA 95826
TEL: 916.454.3667
FAX: 916.455.3784
TEL (Jeff): 916.392.1971
FAX (Jeff): 916.392.6853
FAX (Framer) : 916.383.5308

Attn.: Mr. Jeff Tucker,

re: Job 98171: KNEDEL

Subject: Structural Investigation Report of the Roof for the Residence located at 5 Down River 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 August 7, 1998. The investigation was made to determine the existing condition of the structure. All information, data and analysis contained within this report is based on the 1994 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 Pioneer Everwest Light Weight Concrete Tile over 1/2" solid sheathing. The living area is framed with pre-engineered trusses spaced at 24" on center. The vaulted ceiling in the living room appears to be constructed of double 2x6 rafters spaced at 24" on center. The garage area is framed with 2x6 rafters and 2-2x6 rafters spaced at 24" on center and 2x6 cross ties spaced at 4'-0" on center.

1/14

John Tang

Knedel

CONCLUSIONS:

Roof:

The living and garage areas have sufficient structural capacity for the applied live and dead

RECOMMENDATIONS:

None.

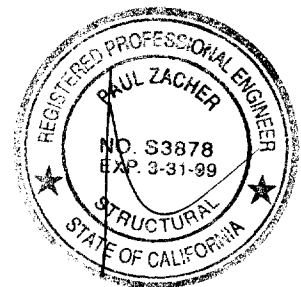
The inspection consisted of visual observation only, made solely to determine the structural capacity of the existing roof. Analysis does not determine any effects on the overall structure under lateral forces or effects on the foundation unless specifically noted in the calculations and in this document. 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 which are not observable, or are hidden by architectural and structural materials.

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

Sincerely



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



DESIGN LOADING:

Roof Pitch	6	in 12
Pitch Adjustment Factor	1.12	

LOCATION: ROOF

<u>MATERIAL</u>	<u>WEIGHT</u>	
Pioneer Everwest Light Wt	7.00	psf
Roofing felt	0.30	psf
1x4 skip sh'tg	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>1.29</u>	psf
Total Load	12.2	psf

LOCATION: TOP CHORD

<u>MATERIAL</u>	<u>WEIGHT</u>	
Pioneer Everwest Light Wt	7.00	psf
Roofing felt	0.30	psf
1/2" OSB/ plywood	1.50	psf
1x4 skip sh'tg	1.09	psf
2x4 truss @ 24" oc	<u>1.28</u>	psf
Load	11.2	psf
Roof Pitch Adjustment	<u>1.32</u>	psf
Total Load	12.5	psf

LOCATION: BOTTOM CHORD

<u>MATERIAL</u>	<u>WEIGHT</u>	
Batt/blown insul	0.50	psf
2x4 truss @ 24" oc	0.64	psf
1/2" Gypboard	<u>2.50</u>	psf
Load	3.6	psf

BEAM DESIGN FOR UNIFORM LOAD: 2x6

(Values for DF Larch #2)

Width, b	1.5 inches
Depth, d	5.5 inches
Length of beam	12 feet
Dead load roof	12.2 psf
Live load roof	16 psf
Contributory width of roof load	2 feet
Dead load floor	0 psf
Live load floor	0 psf
Contributory width of floor load	0 feet
Dead load wall	0 plf
Live load defl ratio	240
Total load defl ratio	180
Total dead load	24.4 plf
Total live load	32 plf

Base design values:

Shear, F_v	95 psi
Bending, F_b	875 psi
Comp. perp. to grain, F_c	625 psi
Mod of Elasticity, E	1600000 psi
Load duration factor, C_d	1.25
Size Factor, C_f	1.30
Repetitive factor, C_r	1.15

Dead load reaction	146 lbs
Live load reaction	192 lbs
Total load reaction	338 lbs

Allowable shear, F_v'	119 psi	Horizontal Shear OK
Actual shear, f_v	57 psi	
Allowable bending, F_b'	1635 psi	Bending OK
Actual bending, f_b	1611 psi	
Allowable live load defl	0.60 inches	Live Load Deflection OK
Actual live load defl	0.45 inches	
Allowable total load defl	0.80 inches	Total Load Deflection OK
Actual total load defl	0.79 inches	
Bearing length req'd	0.36 inches	

BEAM DESIGN FOR UNIFORM LOAD: 2-2x6

(Values for DF Larch #2)

Width, b	3 inches
Depth, d	5.5 inches
Length of beam	15 feet
Dead load roof	12.2 psf
Live load roof	16 psf
Contributory width of roof load	2 feet
Dead load floor	0 psf
Live load floor	0 psf
Contributory width of floor load	0 feet
Dead load wall	0 plf
Live load defl ratio	240
Total load defl ratio	180
Total dead load	24.4 plf
Total live load	32 plf

Base design values:

Shear, F_v	95 psi
Bending, F_b	875 psi
Comp. perp. to grain, F_c	625 psi
Mod of Elasticity, E	1600000 psi
Load duration factor, C_d	1.25
Size Factor, C_f	1.30
Repetitive factor, C_r	1.15

Dead load reaction	183 lbs
Live load reaction	240 lbs
Total load reaction	423 lbs

Allowable shear, F_v'	119 psi	Horizontal Shear OK
Actual shear, f_v	36 psi	
Allowable bending, F_b'	1635 psi	Bending OK
Actual bending, f_b	1259 psi	
Allowable live load defl	0.75 inches	Live Load Deflection OK
Actual live load defl	0.55 inches	
Allowable total load defl	1.00 inches	Total Load Deflection OK
Actual total load defl	0.97 inches	

Bearing length req'd	0.23 inches
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BEAM DESIGN FOR UNIFORM LOAD:

(Values for DF Larch #1)

Width, b	3.5 inches
Depth, d	11.25 inches
Length of beam	16 feet
Dead load roof	15.7 psf
Live load roof	16 psf
Contributory width of roof load	7 feet
Dead load floor	0 psf
Live load floor	0 psf
Contributory width of floor load	0 feet
Dead load wall	0 plf
Live load defl ratio	360
Total load defl ratio	240
Total dead load	109.9 plf
Total live load	112 plf

Base design values:

Shear, F_v	95 psi
Bending, F_b	1000 psi
Comp. perp. to grain, F_c	625 psi
Mod of Elasticity, E	1600000 psi
Load duration factor, C_d	1.25
Size Factor, C_f	1.10

Dead load reaction	879 lbs
Live load reaction	896 lbs
Total load reaction	1775 lbs

Allowable shear, F_v'	119 psi	Horizontal Shear	OK
Actual shear, f_v	60 psi		
Allowable bending, F_b'	1375 psi	Bending	OK
Actual bending, f_b	1154 psi		
Allowable live load defl	0.53 inches	Live Load Deflection	OK
Actual live load defl	0.25 inches		
Allowable total load defl	0.80 inches	Total Load Deflection	OK
Actual total load defl	0.49 inches		

Bearing length req'd	0.81 inches
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BEAM DESIGN FOR UNIFORM LOAD: 6x16

(Values for DF Larch #1)

Width, b	5.5 inches
Depth, d	15.5 inches
Length of beam	18 feet
Dead load roof	16.1 psf
Live load roof	16 psf
Contributory width of roof load	10 feet
Dead load floor	0 psf
Live load floor	0 psf
Contributory width of floor load	0 feet
Dead load wall	0 plf
Live load defl ratio	360
Total load defl ratio	240
Total dead load	161 plf
Total live load	160 plf

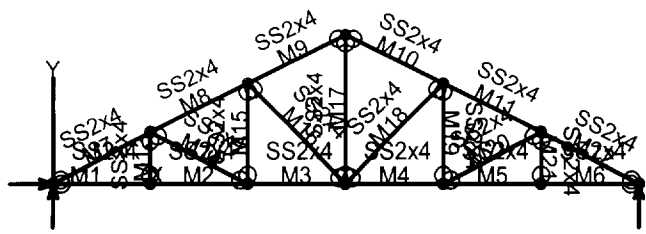
Base design values:

Shear, F_v	85 psi
Bending, F_b	1350 psi
Comp. perp. to grain, F_c	625 psi
Mod of Elasticity, E	1600000 psi
Load duration factor, C_d	1.25
Size Factor, C_f	0.97

Dead load reaction	1449 lbs
Live load reaction	1440 lbs
Total load reaction	2889 lbs

Allowable shear, F_v'	106 psi	Horizontal Shear OK
Actual shear, f_v	44 psi	
Allowable bending, F_b'	1640 psi	Bending OK
Actual bending, f_b	708 psi	
Allowable live load defl	0.60 inches	Live Load Deflection OK
Actual live load defl	0.14 inches	
Allowable total load defl	0.90 inches	Total Load Deflection OK
Actual total load defl	0.28 inches	

Bearing length req'd	0.84 inches
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VisualAnalysis 3.12.c Report

August 10, 1998 12:30 PM

Project:

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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	
N2	8.00	0.00	No	No		
N3	16.00	0.00	"	"		
N4	24.00	0.00	"	"		
N5	32.00	0.00	"	"		
N6	40.00	0.00	"	"		
N7	48.00	0.00	"	Yes		
N8	8.00	4.00	"	No		
N9	16.00	8.00	"	"		
N10	24.00	12.00	"	"		
N11	32.00	8.00	"	"		
N12	40.00	4.00	"	"		

Spring Elements

This item is empty. Check the selection state, or report properties.

Member Elements

Member	Section	Material	Length ft	Weight lbs	Theta deg
M1	SS2x4	Wood	8.00	11.80	0.00
M2	"	"	8.00	11.80	0.00
M3	"	"	8.00	11.80	0.00
M4	"	"	8.00	11.80	0.00
M5	"	"	8.00	11.80	0.00
M6	"	"	8.00	11.80	0.00
M7	"	"	8.94	13.20	0.00
M8	"	"	8.94	13.20	0.00
M9	"	"	8.94	13.20	0.00
M10	"	"	8.94	13.20	0.00
M11	"	"	8.94	13.20	0.00
M12	"	"	8.94	13.20	0.00
M13	"	"	4.00	5.90	0.00
M14	"	"	8.94	13.20	0.00
M15	"	"	8.00	11.80	0.00
M16	"	"	11.31	16.69	0.00
M17	"	"	12.00	17.70	0.00
M18	"	"	11.31	16.69	0.00
M19	"	"	8.00	11.80	0.00
M20	"	"	8.94	13.20	0.00
M21	"	"	4.00	5.90	0.00

Section Properties

Category	Section	Ax in ²	Iz in ⁴	Sy+ in ³	Sy- in ³
Wood	Sha SS1x4	5.25	5.36	3.06	3.06

Material Properties

Material	Strength <i>ksi</i>	Elasticity <i>ksi</i>	Poisson	Density <i>lb/ft^3</i>	Therm. <i>/F</i>
Wood	-NA-	1700.00	0.36	40.47	0.00

Plate Elements

This item is empty. Check the selection state, or report properties.

VisualAnalysis 3.12.c Report

August 10, 1998 12:30 PM

Project:

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Engineer: Paul Zacher

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

Load Cases

Load Case	Strength Service Results		
1 Service Case 1	Yes	Yes	1st Ord
2 Service Case 2	"	"	"
3 Equation Case 1	"	"	"

Service Load Cases

Load Case	Load Source	Self Weight	Loads
Service Case 1	Dead loads	None	
Service Case 2	Roof Live 1	"	

Load Combination Summary

Equation Case: Equation Case 1

Combination: +1D+1L+1Lr+1R+1W-1S+1E+1H+1F+1TS+1T+1TC+1I+1U+1LE

Contributing Cases & Source

Service Case 1 (Dead loads)

Service Case 2 (Roof Live loads)

Equation Case Combinations

Load Case	Cases Equation	
Equation Case 1	0.00	0.00

Factored Case Combinations

This item is empty. Check the selection state, or report properties.

Nodal Loads

This item is empty. Check the selection state, or report properties.

Member Point Loads

This item is empty. Check the selection state, or report properties.

Member Uniform Loads

Load Case	Member	Direction	Offset ft	End Off ft	Magnitude
Service Case 1	M1	DY proj.	0.00	8.00	-0.01 K/ft
"	M2	"	0.00	8.00	-0.01 K/ft
"	M3	"	0.00	8.00	-0.01 K/ft
"	M4	"	0.00	8.00	-0.01 K/ft
"	M5	"	0.00	8.00	-0.01 K/ft
"	M6	"	0.00	8.00	-0.01 K/ft
"	M7	"	0.00	8.94	-0.02 K/ft
"	M8	"	0.00	8.94	-0.02 K/ft
"	M9	"	0.00	8.94	-0.02 K/ft
"	M10	"	0.00	8.94	-0.02 K/ft
"	M11	"	0.00	8.94	-0.02 K/ft

"	M12	"	0.00	8.94	-0.02 K/ft
Section Case 2	M7	"	0.00	8.94	-0.03 K/ft
"	M8	"	0.00	8.94	-0.03 K/ft
"	M9	"	0.00	8.94	-0.03 K/ft
"	M10	"	0.00	8.94	-0.03 K/ft
"	M11	"	0.00	8.94	-0.03 K/ft
"	M12	"	0.00	8.94	-0.03 K/ft

Member Linear Loads

This item is empty. Check the selection state, or report properties.

Member Temperature Changes

This item is empty. Check the selection state, or report properties.

Member Gradient Temperatures

This item is empty. Check the selection state, or report properties.

VisualAnalysis 3.12.c Report

August 10, 1998 12:30 PM

Project:

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Engineer: Paul Zacher

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

Load Cases

Load Case	Strength Service Results		
1: Service Case 1	Yes	Yes	1st Ord
2: Service Case 2	"	"	"
3: Equation Case 1	"	"	"

Member Extreme Results

Member	Fx(1c) K	Fy(1c) K	Mz(1c) K-ft	fc max(1c) ksi	fc min(1c) ksi	Dx(1c) in	Dy(1c) in
M1	1.33(2)	-0.03(1)	-0.04(1)	0.25(2)	0.09(1)	0.00(2)	-0.29(3)
"	2.66(3)	0.03(3)	0.05(3)	0.69(3)	0.51(3)	0.03(3)	0.00(2)
M2	1.33(2)	-0.03(3)	-0.04(1)	0.26(2)	0.11(1)	0.01(2)	-0.36(3)
"	2.66(3)	0.03(1)	0.03(3)	0.64(3)	0.51(3)	0.06(3)	-0.14(2)
M3	1.05(2)	-0.03(3)	-0.04(1)	0.20(2)	0.05(1)	0.03(2)	-0.38(3)
"	2.10(3)	0.03(1)	0.02(3)	0.55(3)	0.40(3)	0.08(3)	-0.18(2)
M4	1.05(2)	-0.03(1)	-0.04(1)	0.20(2)	0.05(1)	0.04(2)	-0.38(3)
"	2.10(3)	0.03(3)	0.02(3)	0.55(3)	0.40(3)	0.10(3)	-0.18(2)
M5	1.33(2)	-0.03(1)	-0.04(1)	0.26(2)	0.11(1)	0.05(2)	-0.36(3)
"	2.66(3)	0.03(3)	0.03(3)	0.64(3)	0.51(3)	0.13(3)	-0.14(2)
M6	1.33(2)	-0.03(3)	-0.04(1)	0.25(2)	0.09(1)	0.07(2)	-0.29(3)
"	2.66(3)	0.03(1)	0.05(3)	0.69(3)	0.51(3)	0.16(3)	0.00(2)
M7	-3.06(3)	-0.24(3)	-0.34(3)	-0.58(3)	-1.88(3)	-0.04(3)	-0.55(3)
"	-1.41(2)	0.17(3)	0.30(3)	0.80(3)	-0.29(1)	0.00(2)	0.00(2)
M8	-2.45(3)	-0.21(3)	-0.36(3)	-0.44(3)	-1.85(3)	-0.06(3)	-0.39(3)
"	-1.12(2)	0.20(3)	0.10(3)	0.99(3)	-0.23(1)	-0.02(2)	-0.14(2)
M9	-1.85(3)	-0.16(3)	-0.36(3)	-0.34(3)	-1.77(3)	-0.08(3)	-0.74(3)
"	-0.81(2)	0.24(3)	0.29(3)	1.07(3)	-0.15(2)	-0.03(2)	-0.17(2)
M10	-1.85(3)	-0.24(3)	-0.36(3)	-0.34(3)	-1.77(3)	0.10(2)	-0.67(3)
"	-0.81(2)	0.16(3)	0.29(3)	1.07(3)	-0.15(2)	0.23(3)	-0.14(2)
M11	-2.45(3)	-0.20(3)	-0.36(3)	-0.44(3)	-1.85(3)	0.09(2)	-0.32(3)
"	-1.12(2)	0.21(3)	0.10(3)	0.99(3)	-0.23(1)	0.21(3)	-0.11(2)
M12	-3.06(3)	-0.17(3)	-0.34(3)	-0.58(3)	-1.88(3)	0.07(2)	-0.48(3)
"	-1.41(2)	0.24(3)	0.30(3)	0.80(3)	-0.29(1)	0.18(3)	0.07(3)
M13	0.00(2)	0.00(3)	0.00(3)	0.00(2)	0.00(2)	-0.29(3)	-0.10(3)
"	0.06(1)	0.00(2)	0.00(1)	0.01(1)	0.01(1)	-0.14(2)	-0.01(2)
M14	-0.62(3)	0.00(2)	0.00(1)	-0.12(3)	-0.12(3)	0.11(2)	-0.30(3)
"	-0.31(2)	0.00(3)	0.00(3)	-0.06(2)	-0.06(2)	0.22(3)	-0.10(2)
M15	0.14(2)	0.00(3)	0.00(3)	0.03(2)	0.03(2)	-0.36(3)	-0.11(3)
"	0.34(3)	0.00(2)	0.00(1)	0.06(3)	0.06(3)	-0.18(2)	-0.03(2)
M16	-0.79(3)	0.00(2)	0.00(1)	-0.15(3)	-0.15(3)	0.16(2)	-0.20(3)
"	-0.39(1)	0.00(3)	0.00(3)	-0.08(1)	-0.08(1)	0.33(3)	-0.09(2)
M17	0.56(2)	0.00(3)	0.00(3)	0.11(2)	0.11(2)	-0.37(3)	-0.08(3)
"	1.18(3)	0.00(1)	0.00(1)	0.22(3)	0.22(3)	-0.17(2)	-0.04(2)
M18	-0.79(3)	0.00(3)	0.00(3)	-0.15(3)	-0.15(3)	-0.22(3)	-0.32(3)
"	-0.39(1)	0.00(2)	0.00(1)	-0.08(1)	-0.08(1)	-0.10(2)	-0.14(2)
M19	0.14(2)	0.00(2)	0.00(1)	0.03(2)	0.03(2)	0.18(2)	0.03(1)
"	0.34(3)	0.00(3)	0.00(3)	0.06(3)	0.06(3)	0.36(3)	0.10(3)
M20	-0.62(3)	0.00(3)	0.00(3)	-0.12(3)	-0.12(3)	-0.08(3)	-0.37(3)
"	-0.31(2)	0.00(2)	0.00(1)	-0.06(2)	-0.06(2)	-0.03(2)	-0.14(2)
M21	0.00(2)	0.00(2)	0.00(1)	0.00(2)	0.00(2)	0.14(2)	0.03(1)
"	0.06(1)	0.00(3)	0.00(3)	0.01(1)	0.01(1)	0.29(3)	0.13(3)

BENDING & COMP: TRUSS 1; MEMBER 12Grading:

2x or 4x Doug-fir larch: No. 2

Assumptions:

Lateral support at points of bearing
SPS or gypboard attached to compression face
Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	3.5 inches
Length	8.54 feet
Max Axial Comp. C	3060 lbs
Max Reaction, R	170 lbs
Max Moment, M	340 ft-lbs
Max LL Deflection	0.24 inches
Max TL Deflection	0.48 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
fc =	583 psi
Fce =	875 psi
Fc* =	1094 psi
F'c =	667 psi
fb =	111 psi
F'b =	1258 psi
Shear D/C ratio	0.41 < 1.0, Member OK
Interaction equation:	
$(fc/F'c)^2$	OK 3% over
$fb / (F'b(1-fc/Fce)) =$	1.03 > 1.0, Member No Good.
Live Load defl ratio	0.56 < 1.0, Member OK
Total Load defl ratio	0.84 < 1.0, Member OK