

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0518001

Insp Area: 2

Thos Bros: 337A1

Site Address: 1212 EL ENCANTO WY SAC

Parcel No: 029-0142-003

Sub-Type: REP

Housing (Y/N): N

CONTRACTOR WEATHERTITE ROOFING 4661 SUMMER CREEK CT SHINGLE SPRINGS, CA 95682

OWNER ADAMS JAMES R/EVELYN M 1212 EL ENCANTO WY SACRAMENTO, CA 95831

ARCHITECT

Nature of Work: PAPERLESS, T/O, RESHEET & REROOF 32SQ'S WITH LIGHT WEIGHT TILE. INPROGRESS INSP REQUIRED.

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 420375 Date 11/17/05 Contractor Signature Carolyn Pen

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 improvements 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.

PAID CITY OF SACRAMENTO

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 11/17/05 Applicant/Agent Signature Carolyn Pen

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 1271896-2004 Exp Date 10/01/2006

(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 11/17/05 Applicant Signature Carolyn Pen

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.



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 1 3/4" x 11 1/4" LVL to the existing header. Jack up the existing beam as required where the existing sag occurs to provide an even contour at the roof level before installation of the LVL. See details 1 and 2.
2. Scab a 2x4 rafter to the existing 2x4 rafters with 16d's @ 12" on center where the span is greater than 10'-0". The rafter to be scabbed to the existing rafter may be held short of the intersecting bearing wall, hip, valley, ridge or purlin by no more than 4". See detail 1.
3. Provide additional 2x4 struts from the existing purlins to the bearing walls below. The maximum spacing between the new and existing struts shall not exceed 4'-0" on center. The unbraced length of the struts shall not exceed 8'-0" and the minimum slope of the struts shall not be less than 45 degrees from the horizontal. See detail 1.
4. Scab a 1 3/4" x 11 7/8" x 16'-0" long LVL to the existing 2x6 purlin which spans 15'-0". Attach it with 16d's @ 3" on center. Support the LVL to the bearing walls below with 2x4 struts. See details 1 and 3.

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.

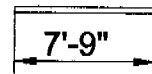
LOADING:

Rafter:

Dr = 11.2 psf x 2'-0" = 22.4 plf
 Lr = 16.0 psf x 2'-0" = 32.0 plf

2x4 #2

22.4 / 32.0

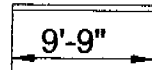


Rafter:

Dr = 11.2 psf x 2'-0" = 22.4 plf
 Lr = 16.0 psf x 2'-0" = 32.0 plf

2-2x4 #2

22.4 / 32.0

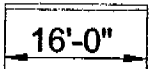


B1:

Dr = 11.2 psf x 11'-0" = 123 plf
 Lr = 16.0 psf x 11'-0" = 176 plf

4x12 #2 + 1-3/4"x11-1/4" LVL

123 / 176

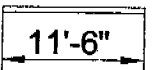


B2:

Dr = 11.2 psf x 4'-0" = 45 plf
 Lr = 16.0 psf x 4'-0" = 64 plf

4x6 #1

45 / 64

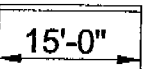


LVL:

Dr = 11.2 psf x 10'-0" = 112 plf
 Lr = 16.0 psf x 10'-0" = 160 plf

1-3/4"x11-7/8" LVL

112 / 160



Rev: 580006
 User: KW-0602844, Ver 5.8.0, 1-Dec-2003
 (c)1983-2003 ENERCALC Engineering Software

Timber Beam & Joist

Adam.ecw:Calculations

Description RAFTERS AND BEAMS

Timber Member Information Code Ref: 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000. Base allowables are user defined

| | rafter | rafter | B1 | B2 | LVL |
|-----------------------|---------------------------|---------------------------|--------------------|---------------------------|--------------------------|
| Timber Section | 2x4 | 2-2x4x12#2+1.75x11.875 | | 4x8 MicroLam: 1.75x11. | |
| Beam Width | in 1.500 | 3.000 | 6.186 | 3.500 | 1.750 |
| Beam Depth | in 3.500 | 3.500 | 11.250 | 5.500 | 11.875 |
| Le: Unbraced Length | ft 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Timber Grade | Douglas Fir - Larch, No.2 | Douglas Fir - Larch, No.2 | Custom, DF#2 + LVL | Douglas Fir - Larch, No.1 | Truss Joist - MacMillan, |
| Fb - Basic Allow | psi 875.0 | 875.0 | 1,450.0 | 1,000.0 | 2,600.0 |
| Fv - Basic Allow | psi 95.0 | 95.0 | 1,670.0 | 95.0 | 285.0 |
| Elastic Modulus | ksi 1,600.0 | 1,600.0 | 1,666.7 | 1,700.0 | 1,900.0 |
| Load Duration Factor | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 |
| Member Type | Sawn | Sawn | Manuf/Pine | Sawn | Manuf/Pine |
| Repetitive Status | Repetitive | Repetitive | No | No | No |

Center Span Data

| Span | ft | 7.75 | 9.75 | 16.00 | 11.50 | 15.00 |
|-----------|------|-------|-------|--------|-------|--------|
| Dead Load | #/ft | 22.40 | 22.40 | 123.00 | 45.00 | 112.00 |
| Live Load | #/ft | 32.00 | 32.00 | 176.00 | 64.00 | 160.00 |

Results

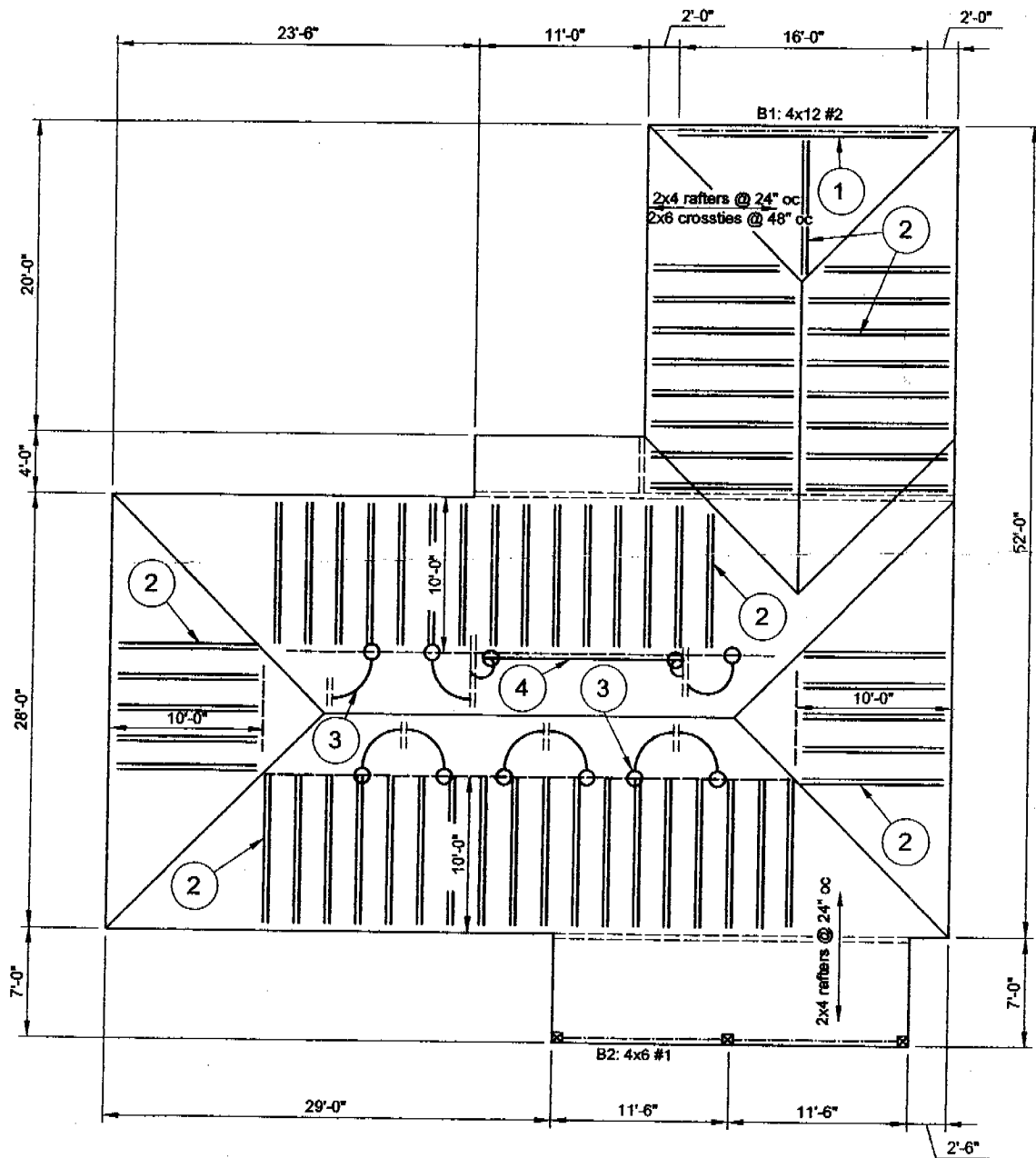
| | Ratio = | 0.8482 | 0.6713 | 0.4855 | 0.7541 | 0.6868 |
|---------------------|---------|------------|------------|------------|------------|------------|
| Mmax @ Center @ X = | in-k ft | 4.90 | 7.76 | 114.82 | 21.62 | 91.80 |
| | | 3.87 | 4.87 | 8.00 | 5.75 | 7.50 |
| fb : Actual | psi | 1,600.4 | 1,266.5 | 879.9 | 1,225.4 | 2,232.0 |
| Fb : Allowable | psi | 1,886.7 | 1,886.7 | 1,812.5 | 1,625.0 | 3,250.0 |
| | | Bending OK | Bending OK | Bending OK | Bending OK | Bending OK |
| fv : Actual | psi | 55.9 | 35.8 | 45.8 | 45.3 | 128.4 |
| Fv : Allowable | psi | 118.8 | 118.8 | 2,087.5 | 118.8 | 356.3 |
| | | Shear OK | Shear OK | Shear OK | Shear OK | Shear OK |

Reactions

| | | | | | | |
|----------------|-----|--------|--------|----------|--------|----------|
| @ Left End DL | lbs | 86.80 | 109.20 | 984.00 | 258.75 | 840.00 |
| LL | lbs | 124.00 | 156.00 | 1,408.00 | 368.00 | 1,200.00 |
| Max. DL+LL | lbs | 210.80 | 265.20 | 2,392.00 | 626.75 | 2,040.00 |
| @ Right End DL | lbs | 86.80 | 109.20 | 984.00 | 258.75 | 840.00 |
| LL | lbs | 124.00 | 156.00 | 1,408.00 | 368.00 | 1,200.00 |
| Max. DL+LL | lbs | 210.80 | 265.20 | 2,392.00 | 626.75 | 2,040.00 |

Deflections

| | Ratio OK | Deflection OK | Deflection OK | Deflection OK | Deflection OK | |
|-------------------|----------|---------------|---------------|---------------|---------------|--------|
| Center DL Defl | in | -0.212 | -0.266 | -0.148 | -0.215 | -0.275 |
| L/Defl Ratio | | 438.6 | 440.6 | 1,295.0 | 642.9 | 654.7 |
| Center LL Defl | in | -0.303 | -0.379 | -0.212 | -0.305 | -0.393 |
| L/Defl Ratio | | 307.0 | 308.4 | 905.0 | 452.0 | 458.3 |
| Center Total Defl | in | -0.515 | -0.645 | -0.360 | -0.520 | -0.668 |
| Location | ft | 3.875 | 4.875 | 8.000 | 5.750 | 7.500 |
| L/Defl Ratio | | 180.6 | 181.4 | 532.7 | 265.4 | 269.6 |



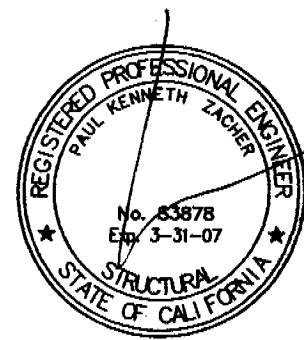
FRAMING NOTES:

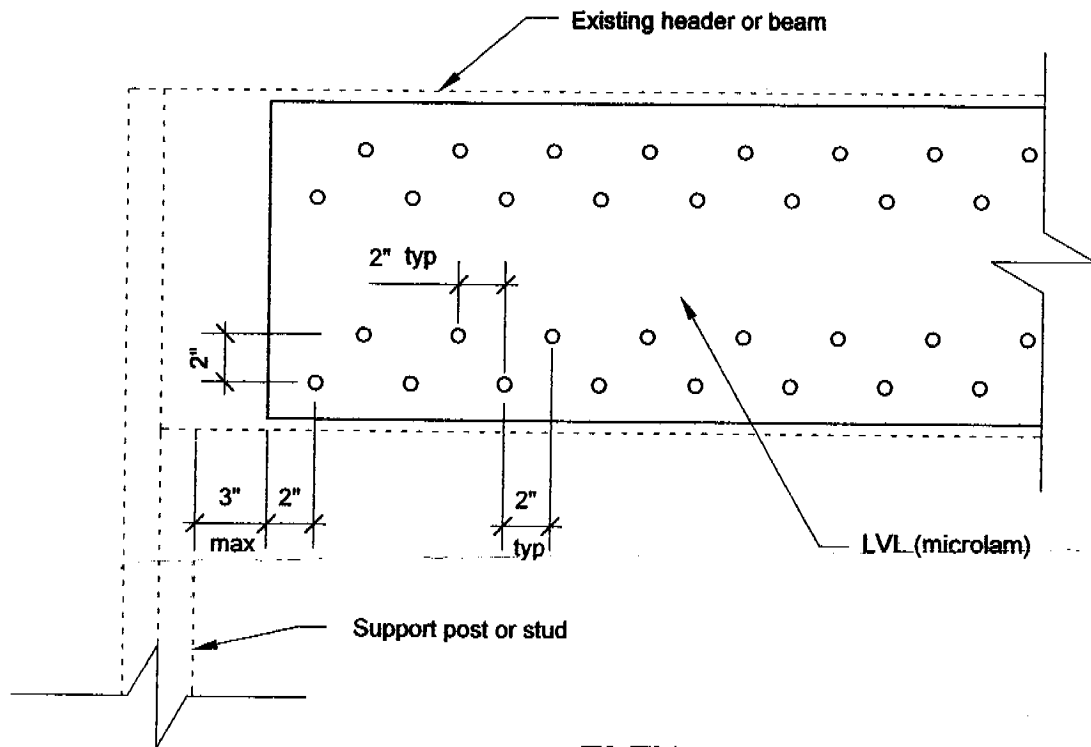
1. Scab a 1 3/4" x 11 1/4" LVL to the existing 4x12 beam. See detail 2.
2. Scab a 2x4 to existing 2x4 rafters where the span is greater than 8'-0" (total 60).
3. Add 2x4 struts to bearing below (total 9).
4. Scab a 1 3/4" x 11 7/8" x 16'-0" long LVL to the existing 2x4 purlin. See detail 3.

NOTES:

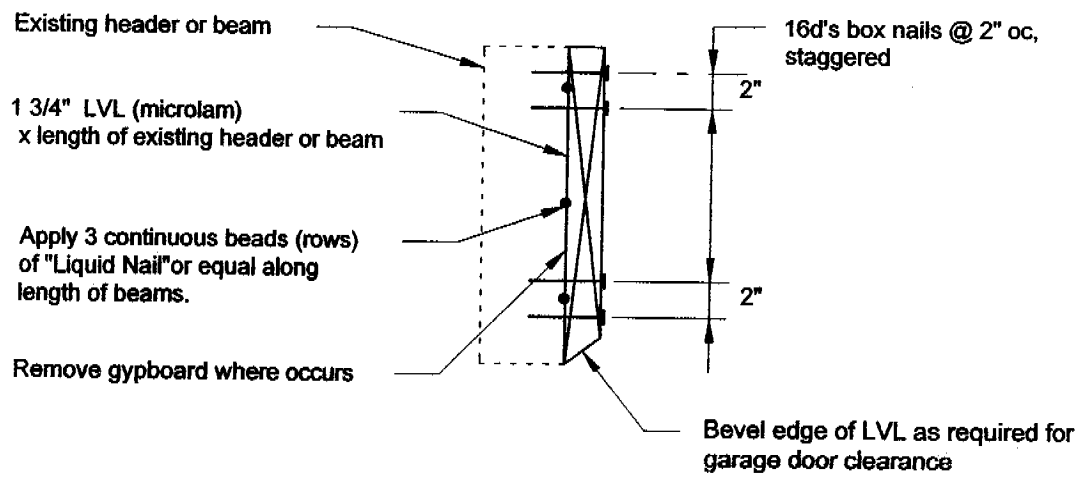
- A. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.3 psf.
- B. All framing members including rafters, purlins, joists and beams are existing unless otherwise noted in the framing notes above.
- C. All rafters are 2x4 DF#2 and hips and valleys are 2x6 DF#2 unless otherwise noted.
- D. All existing rafter, hips, valleys, rafter ties, and purlins are braced per UBC Section 2320.1 "Roof and Ceiling Framing" unless otherwise shown.
- E. All structural wood members that were observed appear to be in sound condition and without structural defect.

1 ROOF PLAN - ADAM
Not to Scale





ELEVATION

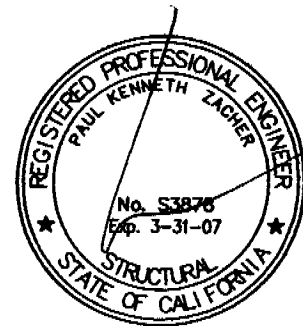


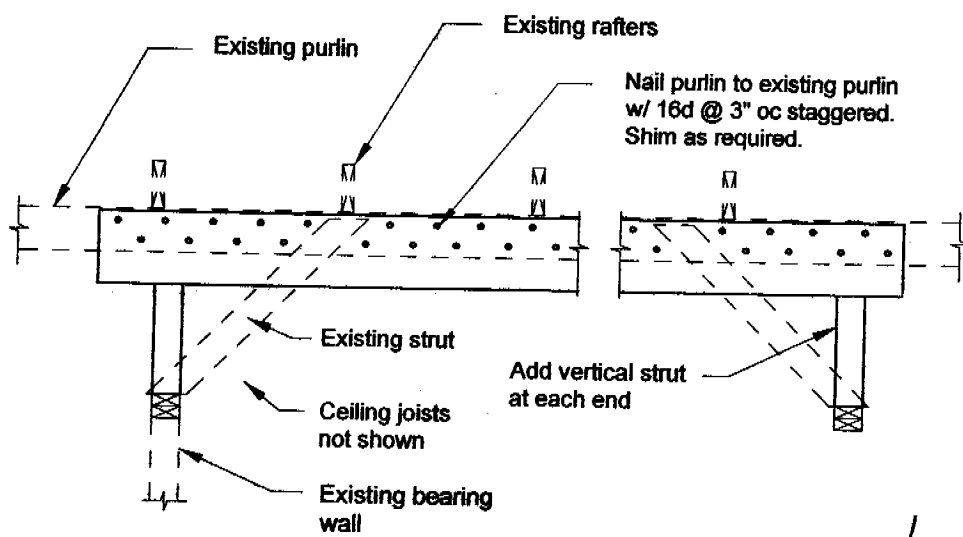
SECTION

2

DETAIL

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





3

PURLIN DETAIL

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

8





05/8001

CITY OF SACRAMENTO

www.cityofsacramento.org
 Help Line: 1-916-808-5656 OR 1-866-EZ-PERMIT
 Inspection Request: 1-916-808-7622

Downtown Permit Center
 1231 I Street, Suite 200
 Sacramento, CA 95834
 North Permit Center
 2101 Arena Blvd., Suite 200
 Sacramento, CA 95834
 Fax # 916-264-1901

MINOR PERMIT APPLICATION

Date: _____

029-0142-003

Faxed/web request must be received in this office by 3:00 P.M. to be processed the following workday. Contractors must have a current certificate of Worker's Compensation Insurance. Note: Work started before a Building Permit is issued will be subject to quad fee.

Permits requiring Plan Review are not eligible for the MINOR PERMIT PROGRAM
 Design Review and Historic Preservation approval may be required if job address is located in those areas (additional forms may be required)

IN ORDER TO PROCESS THIS REQUEST, ALL THE FOLLOWING INFORMATION MUST BE PROVIDED:

Job Address: 1212 Bl Encanto Way Bidg Type: RESIDENTIAL APARTMENTS (4+ units per building) COMMERCIAL (limited)
 CONTACT INFO Name: Larry Pees Phone # 916-849-1977 Email: _____ Contract Price \$12,000

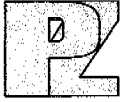
Property Owner: Mr Adams License #: 480375
 Address: 1212 Bl Encanto City/State/Zip: Sacramento, CA 95834
 City/State/Zip: 4661 Summer Creek Ct, Shug & Springs, CA 95682
 Phone: 830-632-1113 Fax: 544-2
 Nature of Work: Provide description of work & indicate type of work in selections below.

Description of Work: *Box of shaves, Redstart, Replace with light weight tile*

| | | | | | |
|--|--|--|--|--|-----------|
| <input type="checkbox"/> Reroof (excluding tile) <input type="checkbox"/> Tear-Off <input type="checkbox"/> Resheet <input type="checkbox"/> House Garage # Stories: 1 # Squares: 32 Material: <i>Light weight tile</i> <input type="checkbox"/> Siding <input type="checkbox"/> Wood <input type="checkbox"/> T-111 <input type="checkbox"/> Horiz <input type="checkbox"/> Vinyl <input type="checkbox"/> Shucco | <input type="checkbox"/> HVAC Installations (Residential Only) <input type="checkbox"/> Change-out <input type="checkbox"/> New <input type="checkbox"/> Heat Pump <input type="checkbox"/> Package <input type="checkbox"/> Split system <input type="checkbox"/> Roof mount <input type="checkbox"/> Cut-in <input type="checkbox"/> Heat pump or elect. unit to gas. <input type="checkbox"/> Wall furnace <input type="checkbox"/> Other (describe below) Value of duct work: _____ Equipment: \$ _____ Cut-in: \$ _____ | <input type="checkbox"/> Water Heater (Residential Only) <input type="checkbox"/> Electric <input type="checkbox"/> Gas <input type="checkbox"/> Change-out <input type="checkbox"/> Electric to Gas <input type="checkbox"/> Relocate <input type="checkbox"/> New <input type="checkbox"/> Dry Rot or Termitic Damage Repair <input type="checkbox"/> Flooring/Joists <input type="checkbox"/> Mudsill/Studs <input type="checkbox"/> Roof Structure <input type="checkbox"/> Exterior | <input type="checkbox"/> Minor Electric and/or Plumbing (Residential Only) <input type="checkbox"/> Electric Service Change # amps _____ <input type="checkbox"/> New electric circuits <input type="checkbox"/> Re-wire <input type="checkbox"/> Water Service Replacement <input type="checkbox"/> Sewer Service Replacement <input type="checkbox"/> Gas Line Replacement <input type="checkbox"/> Re-plumb <input type="checkbox"/> Water <input type="checkbox"/> Waste | <input type="checkbox"/> Public Utilities Safety Inspection (Residential and single apartment units Only) <input type="checkbox"/> SMUD <input type="checkbox"/> PG&E * NOTE * Correction Notice items will require an additional building permit. | |
| Office Use Only: | Parcel #: | Date Received: | Date Issued: | Processor's Initials: | Permit #: |

423928

Leong



Paul Zacher - Structural Engineers, Inc
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.

Roof Structure:

1. Scab a 2x4 DF#2 x 11'-0" long rafter to the top chord of the existing truss. See details 1 and 2.

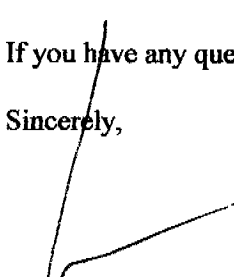
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and 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

PAUL ZACHER- STRUCTURAL ENGINEERS, INC.

4701 Lakeside Way

Job #: 05_565

Fair Oaks, Ca 95628

Date: 10/14/2005

TEL: (916) 961-3960

FAX: (916) 961-6552

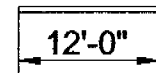
LOADING:

Rafter:

24.6 / 32.0

Dr = 12.3 psf x 2'-0" = 24.6 plf

2x6 #2



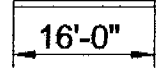
Lr = 16.0 psf x 2'-0" = 32.0 plf

B1:

60 / 64

Dr = 14.9 psf x 4'-0" = 60 plf

4x12 #2



Lr = 16.0 psf x 4'-0" = 64 plf

Paul Zacher Structural Engr's, Inc.
 4701 Lakeside Way
 Fair Oaks, CA 95628

Title :
 Dsgnr:
 Description :

Job #
 Date: 6:22PM, 14 OCT 05

Scope :

Rev: 580008
 User: KW-0802844, Ver 5.8.0, 1-Dec-2003
 (c)1983-2003 ENERCALC Engineering Software

Timber Beam & Joist

Leong.ecw.Calculations

Description RAFTERS AND BEAMS

Timber Member Information Code Ref: 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000. Base allowables are user defined

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

Center Span Data

| Span | ft | 12.00 | 16.00 |
|-----------|------|-------|-------|
| Dead Load | #/ft | 24.60 | 60.00 |
| Live Load | #/ft | 32.00 | 64.00 |

Results

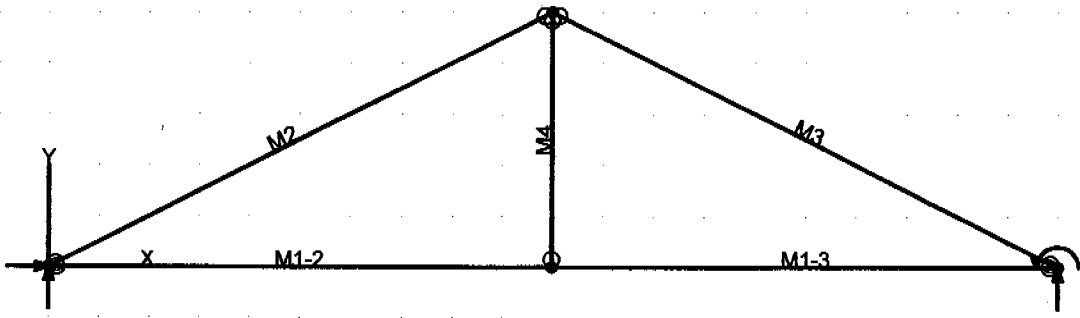
| | | Ratio = | |
|----------------|------|------------|------------|
| Mmax @ Center | in-k | 0.9887 | 0.5361 |
| @ X = | ft | | |
| fb : Actual | psi | 12.23 | 47.62 |
| Fb : Allowable | psi | 6.00 | 8.00 |
| | | 1,616.6 | 645.0 |
| | | 1,635.2 | 1,203.1 |
| | | Bending OK | Bending OK |
| fv : Actual | psi | 57.3 | 33.6 |
| Fv : Allowable | psi | 118.8 | 118.8 |
| | | Shear OK | Shear OK |

Reactions

| | | | | |
|-------------|------------|-----|--------|--------|
| @ Left End | DL | lbs | 147.60 | 480.00 |
| | LL | lbs | 192.00 | 512.00 |
| | Max. DL+LL | lbs | 339.60 | 992.00 |
| @ Right End | DL | lbs | 147.60 | 480.00 |
| | LL | lbs | 192.00 | 512.00 |
| | Max. DL+LL | lbs | 339.60 | 992.00 |

Deflections

| | | Ratio OK | Deflection OK |
|-------------------|----|----------|---------------|
| Center DL Defl | in | -0.345 | -0.133 |
| L/Defl Ratio | | 417.5 | 1,442.0 |
| Center LL Defl | in | -0.449 | -0.142 |
| L/Defl Ratio | | 320.9 | 1,351.9 |
| Center Total Defl | in | -0.794 | -0.275 |
| Location | ft | 6.000 | 8.000 |
| L/Defl Ratio | | 181.5 | 697.7 |



Truss 1

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural - Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Owner\Desktop\Leong05_565\Truss 1.vap

Nodes

| Node | X ft | Y ft | Fix DX | Fix DY | Fix RZ |
|------|---------|---------|-----------|-----------|-----------|
| N1 | 0.00 | 0.00 | Yes | Yes | No |
| N2 | 20.00 | 0.00 | No | " | Yes |
| N3 | 10.00 | 5.00 | " | No | No |
| N4 | 10.00 | 0.00 | " | " | " |

Member Elements

| Member | Section | Material | Length ft |
|--------|---------|----------|--------------|
| M1-2 | SS2x4 | Wood | 10.00 |
| M1-3 | " | " | 10.00 |
| M2 | SS2-2x4 | " | 11.18 |
| M3 | " | " | 11.18 |
| M4 | SS2x4 | " | 5.00 |

Section Properties

| Category | Section | Ax in ² | Iz in ⁴ | Sy+ in ³ | Sy- in ³ |
|----------|---------|-----------------------|-----------------------|------------------------|------------------------|
| Wood Sha | SS2-2x4 | 10.50 | 10.72 | 6.13 | 6.13 |
| " | SS2x4 | 5.25 | 5.36 | 3.06 | 3.06 |

Material Properties

| Material | Strength psi | Elasticity psi | Poisson | Density lb/ft ³ |
|----------|-----------------|-------------------|---------|-------------------------------|
| Wood | -NA- | 1800000.00 | 0.36 | 40.47 |

Load Combination Summary

Equation Case: UBC97 12.8a

Combination: 1D+1Lr

Contributing Cases & Source

Dead Load (Dead loads)

Roof Live Load (Roof Live loads)

Nodal Reactions

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

Member Results

| Member | Fx lb | Vy lb | Mz lb-ft | Dx in | Dy in |
|--------|----------------|----------------|---------------|-------------|--------------|
| M1-2 | 604.60 | -53.30 | -103.02 | 0.01 | -0.03 |
| " | 604.60 | -24.64 | 26.84 | 0.01 | -0.08 |
| " | 604.60 | 4.03 | 61.18 | 0.00 | -0.09 |
| " | 604.60 | 32.70 | 0.00 | 0.00 | 0.00 |
| M1-3 | 604.60 | -32.70 | 0.00 | 0.02 | 0.00 |
| " | 604.60 | -4.03 | 61.18 | 0.01 | -0.09 |
| " | 604.60 | 24.64 | 26.84 | 0.01 | -0.08 |
| " | 604.60 | 53.30 | -103.02 | 0.01 | -0.03 |
| M2 | -787.32 | 222.71 | 0.00 | 0.00 | 0.00 |
| " | -713.09 | 74.24 | 553.11 | -0.00 | -0.64 |
| " | -638.85 | -74.24 | 553.11 | -0.00 | -0.65 |
| " | -564.61 | -222.71 | 0.00 | -0.00 | -0.03 |
| M3 | -787.32 | -222.71 | 0.00 | 0.01 | 0.01 |
| " | -713.09 | -74.24 | 553.11 | 0.02 | -0.63 |
| " | -638.85 | 74.24 | 553.11 | 0.02 | -0.64 |
| " | -564.61 | 222.71 | 0.00 | 0.02 | -0.02 |
| M4 | 106.60 | 0.00 | 0.00 | 0.03 | 0.01 |
| " | 106.60 | 0.00 | 0.00 | 0.03 | 0.01 |
| " | 106.60 | 0.00 | 0.00 | 0.03 | 0.01 |
| " | 106.60 | 0.00 | 0.00 | 0.03 | 0.01 |

BENDING & COMP: TRUSS 1 - MEMBER 2

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

Grading:

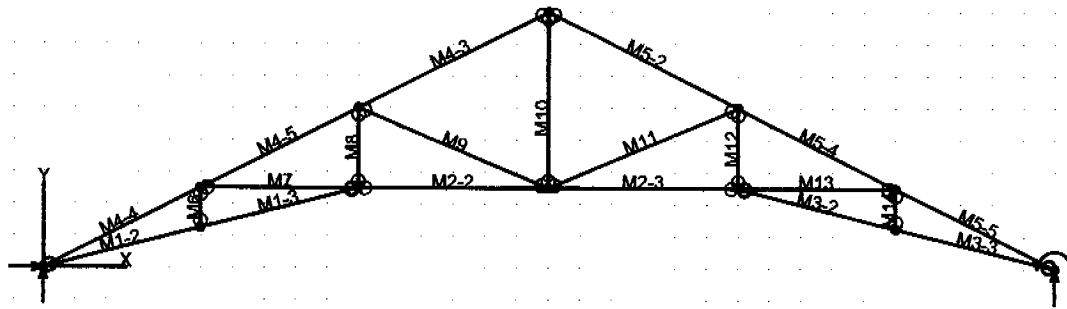
2x or 4x

Doug-fir larch: No. 2

Assumptions:

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

| | |
|-------------------------|--------------------------------|
| Width, b | 3 inches |
| Depth, d | 3.5 inches |
| Length | 11.18 feet |
| Max Axial Comp, C | 713 lbs |
| Max Reaction, R | 74 lbs |
| Max Moment, M | 553 ft-lbs |
| Max LL Deflection | 0.33 inches |
| Max TL Deflection | 0.65 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 = | 1.31 |
| fc = | 68 psi |
| Fce= | 454 psi |
| Fc*= | 2084 psi |
| F'c= | 431 psi |
| fb= | 1083 psi |
| F'b=Fb*= | 2156 psi |
| Shear D/C ratio | 0.09 < 1.0, Member OK |
| Interaction equation: | |
| (fc/F'c)^2 + | |
| fb/ (F'b(1-fc/Fce)) = | 0.62 < 1.0, Member OK |
| Live Load defl ratio | 0.59 < 1.0, Member OK |
| Total Load defl ratio | 0.87 < 1.0, Member OK |



Truss 2

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural - Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Owner\Desktop\Leong05_565\Truss 2.vap

Nodes

| Node | X ft | Y ft | Fix DX | Fix DY | Fix RZ |
|------|---------|---------|-----------|-----------|-----------|
| N1 | 0.00 | 0.00 | Yes | Yes | No |
| N2 | 32.00 | 0.00 | No | " | Yes |
| N3 | 16.00 | 8.00 | " | No | No |
| N4 | 10.00 | 2.50 | " | " | " |
| N5 | 22.00 | 2.50 | " | " | " |
| N6 | 10.00 | 5.00 | " | " | " |
| N7 | 22.00 | 5.00 | " | " | " |
| N8 | 5.00 | 1.25 | " | " | " |
| N9 | 16.00 | 2.50 | " | " | " |
| N10 | 27.00 | 1.25 | " | " | " |
| N11 | 5.00 | 2.50 | " | " | " |
| N12 | 27.00 | 2.50 | " | " | " |

Member Elements

| Member | Section | Material | Length ft |
|--------|---------|----------|--------------|
| M1-2 | SS2x4 | Wood | 5.15 |
| M1-3 | " | " | 5.15 |
| M2-2 | " | " | 6.00 |
| M2-3 | " | " | 6.00 |
| M3-2 | " | " | 5.15 |
| M3-3 | " | " | 5.15 |
| M4-3 | " | " | 6.71 |
| M4-4 | " | " | 5.59 |
| M4-5 | " | " | 5.59 |
| M5-2 | " | " | 6.71 |
| M5-4 | " | " | 5.59 |
| M5-5 | " | " | 5.59 |
| M6 | " | " | 1.25 |
| M7 | " | " | 5.00 |
| M8 | " | " | 2.50 |
| M9 | " | " | 6.50 |
| M10 | " | " | 5.50 |
| M11 | " | " | 6.50 |
| M12 | " | " | 2.50 |
| M13 | " | " | 5.00 |
| M14 | " | " | 1.25 |

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- 1800000.00 0.36 40.47

Load Combination Summary

Equation Case: UBC97 12.8a
 Combination: 1D+1Lr
 Contributing Cases & Source
 Dead Load (Dead loads)
 Roof Live Load (Roof Live loads)

Nodal Reactions

| Node | Load Case | FX lb | FY lb | MZ lb-ft |
|------|-------------|----------|----------|-------------|
| N1 | UBC97 12.8a | 0.00 | 934.40 | -NA- |
| N2 | " | -NA- | 934.40 | 0.00 |

Member Results

| Member | Fx lb | Vy lb | Mz lb-ft | Dx in | Dy in |
|--------|----------------|----------------|----------------|----------|--------------|
| M1-2 | 3207.11 | 34.34 | 0.00 | 0.00 | 0.00 |
| " | 3210.58 | 20.44 | 47.05 | 0.01 | -0.17 |
| " | 3214.06 | 6.53 | 70.21 | 0.01 | -0.32 |
| " | 3217.54 | -7.37 | 69.50 | 0.02 | -0.43 |
| M1-3 | 3213.85 | 7.37 | 69.50 | 0.02 | -0.43 |
| " | 3217.33 | -6.53 | 70.21 | 0.03 | -0.50 |
| " | 3220.80 | -20.44 | 47.05 | 0.04 | -0.54 |
| " | 3224.28 | -34.34 | 0.00 | 0.04 | -0.55 |
| M2-2 | 2632.66 | -31.92 | -36.74 | 0.19 | -0.53 |
| " | 2632.66 | -14.72 | 9.89 | 0.19 | -0.53 |
| " | 2632.66 | 2.48 | 22.14 | 0.18 | -0.54 |
| " | 2632.66 | 19.68 | 0.00 | 0.17 | -0.52 |
| M2-3 | 2632.66 | -19.68 | 0.00 | 0.21 | -0.52 |
| " | 2632.66 | -2.48 | 22.14 | 0.21 | -0.54 |
| " | 2632.66 | 14.72 | 9.89 | 0.20 | -0.53 |
| " | 2632.66 | 31.92 | -36.74 | 0.19 | -0.53 |
| M3-2 | 3213.85 | -7.37 | 69.50 | 0.36 | -0.33 |
| " | 3217.33 | 6.53 | 70.21 | 0.35 | -0.41 |
| " | 3220.80 | 20.44 | 47.05 | 0.34 | -0.44 |
| " | 3224.28 | 34.34 | 0.00 | 0.33 | -0.46 |
| M3-3 | 3207.11 | -34.34 | 0.00 | 0.38 | 0.09 |
| " | 3210.58 | -20.44 | 47.05 | 0.37 | -0.08 |
| " | 3214.06 | -6.53 | 70.21 | 0.36 | -0.22 |
| " | 3217.54 | 7.37 | 69.50 | 0.36 | -0.33 |
| M4-3 | -1605.5 | 157.13 | -157.65 | -0.05 | -0.56 |
| " | -1561.0 | 68.04 | 94.02 | -0.05 | -0.64 |
| " | -1516.5 | -21.04 | 146.57 | -0.05 | -0.66 |
| " | -1471.9 | -110.13 | 0.00 | -0.06 | -0.55 |
| M4-4 | -3541.1 | 106.51 | 0.00 | 0.00 | 0.00 |
| " | -3504.0 | 32.27 | 129.24 | -0.01 | -0.22 |
| " | -3466.9 | -41.97 | 120.21 | -0.02 | -0.37 |
| " | -3429.8 | -116.20 | -27.10 | -0.02 | -0.45 |
| M4-5 | -2987.4 | 88.00 | -27.10 | -0.02 | -0.45 |
| " | -2950.2 | 13.77 | 67.66 | -0.03 | -0.51 |
| " | -2913.1 | -60.47 | 24.15 | -0.04 | -0.54 |
| " | -2876.0 | -134.71 | -157.65 | -0.05 | -0.56 |
| M5-2 | -1605.5 | -157.13 | -157.65 | 0.39 | -0.39 |
| " | -1561.0 | -68.04 | 94.02 | 0.40 | -0.47 |
| " | -1516.5 | 21.04 | 146.57 | 0.40 | -0.48 |
| " | -1471.9 | 110.13 | 0.00 | 0.41 | -0.38 |
| M5-4 | -2987.4 | -88.00 | -27.10 | 0.37 | -0.27 |

12

| Member | Fx lb | Vy lb | Mz lb-ft | Dx in | Dy in |
|--------|----------|----------|-------------|----------|----------|
| " | -2950.2 | -13.77 | 67.66 | 0.38 | -0.34 |
| " | -2913.1 | 60.47 | 24.15 | 0.39 | -0.36 |
| " | -2876.0 | 134.71 | -157.65 | 0.39 | -0.39 |
| M5-5 | -3541.1 | -106.51 | 0.00 | 0.35 | 0.17 |
| " | -3504.0 | -32.27 | 129.24 | 0.36 | -0.05 |
| " | -3466.9 | 41.97 | 120.21 | 0.36 | -0.19 |
| " | -3429.8 | 116.20 | -27.10 | 0.37 | -0.27 |
| M6 | 15.20 | 0.00 | 0.00 | 0.41 | 0.12 |
| " | 15.20 | 0.00 | 0.00 | 0.41 | 0.14 |
| " | 15.20 | 0.00 | 0.00 | 0.41 | 0.16 |
| " | 15.20 | 0.00 | 0.00 | 0.41 | 0.18 |
| M7 | -487.02 | 0.00 | 0.00 | 0.17 | -0.52 |
| " | -487.02 | 0.00 | 0.00 | 0.18 | -0.49 |
| " | -487.02 | 0.00 | 0.00 | 0.18 | -0.45 |
| " | -487.02 | 0.00 | 0.00 | 0.18 | -0.41 |
| M8 | 835.00 | 0.00 | 0.00 | -0.52 | -0.21 |
| " | 835.00 | 0.00 | 0.00 | -0.52 | -0.20 |
| " | 835.00 | 0.00 | 0.00 | -0.52 | -0.19 |
| " | 835.00 | 0.00 | 0.00 | -0.52 | -0.17 |
| M9 | -1372.4 | 0.00 | 0.00 | 0.38 | -0.41 |
| " | -1372.4 | 0.00 | 0.00 | 0.39 | -0.41 |
| " | -1372.4 | 0.00 | 0.00 | 0.39 | -0.40 |
| " | -1372.4 | 0.00 | 0.00 | 0.39 | -0.40 |
| M10 | 1119.56 | 0.00 | 0.00 | -0.53 | -0.19 |
| " | 1119.56 | 0.00 | 0.00 | -0.52 | -0.19 |
| " | 1119.56 | 0.00 | 0.00 | -0.52 | -0.19 |
| " | 1119.56 | 0.00 | 0.00 | -0.52 | -0.19 |
| M11 | -1372.4 | 0.00 | 0.00 | -0.03 | -0.56 |
| " | -1372.4 | 0.00 | 0.00 | -0.03 | -0.55 |
| " | -1372.4 | 0.00 | 0.00 | -0.03 | -0.55 |
| " | -1372.4 | 0.00 | 0.00 | -0.02 | -0.56 |
| M12 | 835.00 | 0.00 | 0.00 | 0.52 | 0.18 |
| " | 835.00 | 0.00 | 0.00 | 0.52 | 0.19 |
| " | 835.00 | 0.00 | 0.00 | 0.52 | 0.20 |
| " | 835.00 | 0.00 | 0.00 | 0.52 | 0.21 |
| M13 | -487.02 | 0.00 | 0.00 | 0.21 | -0.52 |
| " | -487.02 | 0.00 | 0.00 | 0.21 | -0.49 |
| " | -487.02 | 0.00 | 0.00 | 0.21 | -0.45 |
| " | -487.02 | 0.00 | 0.00 | 0.21 | -0.41 |
| M14 | 15.20 | 0.00 | 0.00 | 0.41 | 0.21 |
| " | 15.20 | 0.00 | 0.00 | 0.41 | 0.23 |
| " | 15.20 | 0.00 | 0.00 | 0.41 | 0.25 |
| " | 15.20 | 0.00 | 0.00 | 0.41 | 0.26 |

BENDING & COMP: TRUSS 2 - MEMBER 3-2

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

Grading:

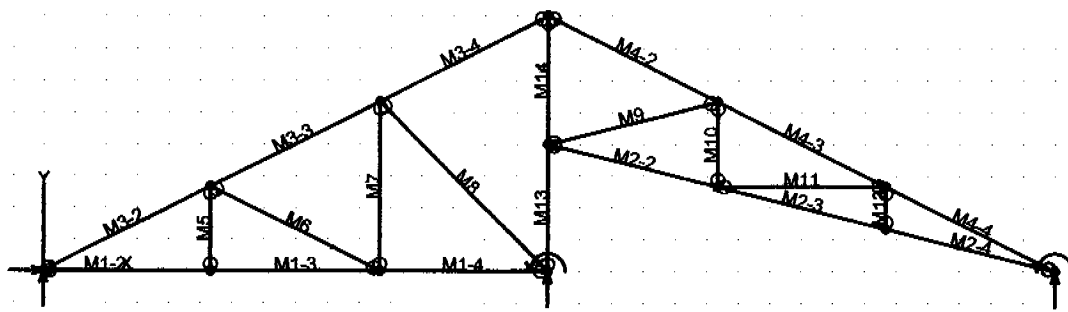
2x or 4x

Doug-fir larch: No. 2

Assumptions:

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

| | |
|-------------------------|--------------------------------|
| Width, b | 1.5 inches |
| Depth, d | 3.5 inches |
| Length | 5.15 feet |
| Max Axial Comp, C | 3220 lbs |
| Max Reaction, R | 20 lbs |
| Max Moment, M | 47 ft-lbs |
| Max LL Deflection | 0.17 inches |
| Max TL Deflection | 0.33 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 = | 1.14 |
| fc = | 613 psi |
| Fce= | 1868 psi |
| Fc*= | 2084 psi |
| F'c= | 1359 psi |
| fb= | 184 psi |
| F'b=Fb*= | 2156 psi |
| Shear D/C ratio | 0.05 < 1.0, Member OK |
| Interaction equation: | |
| (fc/F'c) ² + | |
| fb/ (F'b(1-fc/Fce)) = | 0.33 < 1.0, Member OK |
| Live Load defl ratio | 0.66 < 1.0, Member OK |
| Total Load defl ratio | 0.96 < 1.0, Member OK |



Truss 3

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural - Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Owner\Desktop\Leong05_565\Truss 3.vap

Nodes

| Node | X ft | Y ft | Fix | DX | Fix | DY | Fix | RZ |
|------|---------|---------|-----|----|-----|----|-----|----|
| N1 | 32.00 | 0.00 | No | | Yes | | Yes | |
| N2 | 0.00 | 0.00 | Yes | | " | | No | |
| N3 | 16.00 | 8.00 | No | | No | | " | |
| N4 | 16.00 | 0.00 | " | | Yes | | Yes | |
| N5 | 16.00 | 4.00 | " | | No | | No | |
| N6 | 5.33 | 0.00 | " | | " | | " | |
| N7 | 10.67 | 0.00 | " | | " | | " | |
| N8 | 21.33 | 2.67 | " | | " | | " | |
| N9 | 26.67 | 1.33 | " | | " | | " | |
| N10 | 5.33 | 2.67 | " | | " | | " | |
| N11 | 10.67 | 5.33 | " | | " | | " | |
| N12 | 21.33 | 5.33 | " | | " | | " | |
| N13 | 26.67 | 2.67 | " | | " | | " | |

Member Elements

| Member | Section | Material | Length ft |
|--------|---------|----------|--------------|
| M1-2 | SS2x4 | Wood | 5.33 |
| M1-3 | " | " | 5.33 |
| M1-4 | " | " | 5.33 |
| M2-2 | " | " | 5.50 |
| M2-3 | " | " | 5.50 |
| M2-4 | " | " | 5.50 |
| M3-2 | " | " | 5.96 |
| M3-3 | " | " | 5.96 |
| M3-4 | " | " | 5.96 |
| M4-2 | " | " | 5.96 |
| M4-3 | " | " | 5.96 |
| M4-4 | " | " | 5.96 |
| M5 | " | " | 2.67 |
| M6 | " | " | 5.96 |
| M7 | " | " | 5.33 |
| M8 | " | " | 7.54 |
| M9 | " | " | 5.50 |
| M10 | " | " | 2.67 |
| M11 | " | " | 5.33 |
| M12 | " | " | 1.33 |
| M13 | " | " | 4.00 |
| M14 | " | " | 4.00 |

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- | 1800000.00 | 0.36 | 40.47 |

Load Combination Summary

Equation Case: UBC97 12.8a

Combination: 1D+1Lr

Contributing Cases & Source

Dead Load (Dead loads)

Roof Live Load (Roof Live loads)

Nodal Reactions

| Node | Load Case | FX lb | FY lb | MZ lb-ft |
|------|-------------|----------|---------------|-------------|
| N1 | UBC97 12.8a | -NA- | 460.65 | 0.00 |
| N2 | " | 0.00 | 460.65 | -NA- |
| N4 | " | -NA- | 947.49 | 0.00 |

Member Results

| Member | Fx lb | Vy lb | Mz lb-ft | Dx in | Dy in |
|--------|----------------|----------------|----------------|----------|----------|
| M1-2 | 664.27 | -25.50 | -13.68 | 0.00 | -0.03 |
| " | 664.27 | -10.21 | 18.05 | 0.00 | -0.03 |
| " | 664.27 | 5.08 | 22.61 | 0.00 | -0.02 |
| " | 664.27 | 20.37 | 0.00 | 0.00 | 0.00 |
| M1-3 | 664.27 | -24.86 | -23.97 | 0.01 | -0.02 |
| " | 664.27 | -9.57 | 6.63 | 0.01 | -0.03 |
| " | 664.27 | 5.72 | 10.06 | 0.01 | -0.03 |
| " | 664.27 | 21.00 | -13.68 | 0.00 | -0.03 |
| M1-4 | 329.78 | -18.44 | 0.00 | 0.01 | 0.00 |
| " | 329.78 | -3.15 | 19.18 | 0.01 | -0.01 |
| " | 329.78 | 12.14 | 11.19 | 0.01 | -0.02 |
| " | 329.78 | 27.43 | -23.97 | 0.01 | -0.02 |
| M2-2 | 675.24 | -27.21 | -27.28 | -0.04 | -0.08 |
| " | 678.95 | -12.38 | 8.98 | -0.04 | -0.06 |
| " | 682.66 | 2.45 | 18.08 | -0.04 | -0.04 |
| " | 686.37 | 17.29 | 0.00 | -0.05 | -0.01 |
| M2-3 | 1320.97 | -14.25 | 16.69 | -0.03 | -0.11 |
| " | 1324.67 | 0.58 | 29.20 | -0.03 | -0.12 |
| " | 1328.38 | 15.42 | 14.55 | -0.04 | -0.10 |
| " | 1332.09 | 30.25 | -27.28 | -0.04 | -0.08 |
| M2-4 | 1318.21 | -25.28 | 0.00 | -0.02 | -0.01 |
| " | 1321.92 | -10.45 | 32.73 | -0.03 | -0.06 |
| " | 1325.62 | 4.38 | 38.30 | -0.03 | -0.10 |
| " | 1329.33 | 19.21 | 16.69 | -0.03 | -0.11 |
| M3-2 | -791.04 | 96.73 | 0.00 | 0.00 | 0.00 |
| " | -751.45 | 17.55 | 113.51 | -0.00 | -0.07 |
| " | -711.85 | -61.64 | 69.69 | -0.00 | -0.07 |
| " | -672.26 | -140.83 | -131.45 | -0.01 | -0.03 |
| M3-3 | -427.08 | 116.76 | -131.45 | -0.01 | -0.03 |
| " | -387.49 | 37.57 | 21.85 | -0.01 | -0.03 |
| " | -347.89 | -41.62 | 17.83 | -0.01 | -0.02 |
| " | -308.30 | -120.80 | -143.52 | -0.01 | -0.02 |
| M3-4 | -56.79 | 142.85 | -143.52 | -0.01 | -0.02 |
| " | -17.19 | 63.66 | 61.65 | -0.01 | -0.06 |
| " | 22.40 | -15.52 | 109.49 | -0.01 | -0.06 |
| " | 61.99 | -94.71 | 0.00 | -0.01 | -0.00 |
| M4-2 | -42.35 | -143.24 | -145.88 | -0.00 | -0.08 |
| " | -2.75 | -64.06 | 60.08 | -0.00 | -0.10 |

| Member | Fx lb | Vy lb | Mz lb-ft | Dx in | Dy in |
|--------|----------------|----------|---------------|--------------|--------------|
| " | 36.84 | 15.13 | 108.70 | -0.00 | -0.09 |
| " | 76.43 | 94.32 | 0.00 | -0.00 | -0.01 |
| M4-3 | -795.64 | -111.72 | -103.76 | -0.01 | -0.12 |
| " | -756.05 | -32.53 | 39.53 | -0.01 | -0.12 |
| " | -716.45 | 46.66 | 25.49 | -0.01 | -0.10 |
| " | -676.86 | 125.84 | -145.88 | -0.00 | -0.08 |
| M4-4 | -1487.3 | -101.38 | 0.00 | -0.02 | -0.01 |
| " | -1447.7 | -22.19 | 122.74 | -0.02 | -0.12 |
| " | -1408.1 | 56.99 | 88.16 | -0.01 | -0.15 |
| " | -1368.5 | 136.18 | -103.76 | -0.01 | -0.12 |
| M5 | 46.50 | 0.00 | 0.00 | 0.03 | 0.00 |
| " | 46.50 | 0.00 | 0.00 | 0.03 | 0.01 |
| " | 46.50 | 0.00 | 0.00 | 0.03 | 0.01 |
| " | 46.50 | 0.00 | 0.00 | 0.03 | 0.01 |
| M6 | -373.97 | 0.00 | 0.00 | 0.02 | -0.02 |
| " | -373.97 | 0.00 | 0.00 | 0.02 | -0.02 |
| " | -373.97 | 0.00 | 0.00 | 0.02 | -0.02 |
| " | -373.97 | 0.00 | 0.00 | 0.02 | -0.01 |
| M7 | 219.53 | 0.00 | 0.00 | -0.02 | -0.01 |
| " | 219.53 | 0.00 | 0.00 | -0.02 | -0.01 |
| " | 219.53 | 0.00 | 0.00 | -0.02 | -0.00 |
| " | 219.53 | 0.00 | 0.00 | -0.02 | 0.00 |
| M8 | -484.89 | 0.00 | 0.00 | 0.01 | -0.01 |
| " | -484.89 | 0.00 | 0.00 | 0.01 | -0.01 |
| " | -484.89 | 0.00 | 0.00 | 0.01 | 0.00 |
| " | -484.89 | 0.00 | 0.00 | 0.01 | 0.01 |
| M9 | -709.04 | 0.00 | 0.00 | -0.05 | -0.05 |
| " | -709.04 | 0.00 | 0.00 | -0.05 | -0.03 |
| " | -709.04 | 0.00 | 0.00 | -0.05 | -0.01 |
| " | -709.04 | 0.00 | 0.00 | -0.05 | 0.01 |
| M10 | 215.05 | 0.00 | 0.00 | 0.07 | -0.06 |
| " | 215.05 | 0.00 | 0.00 | 0.07 | -0.05 |
| " | 215.05 | 0.00 | 0.00 | 0.07 | -0.04 |
| " | 215.05 | 0.00 | 0.00 | 0.07 | -0.04 |
| M11 | -623.30 | 0.00 | 0.00 | -0.06 | -0.10 |
| " | -623.30 | 0.00 | 0.00 | -0.06 | -0.09 |
| " | -623.30 | 0.00 | 0.00 | -0.06 | -0.08 |
| " | -623.30 | 0.00 | 0.00 | -0.06 | -0.07 |
| M12 | 34.49 | 0.00 | 0.00 | 0.10 | -0.06 |
| " | 34.49 | 0.00 | 0.00 | 0.10 | -0.06 |
| " | 34.49 | 0.00 | 0.00 | 0.10 | -0.06 |
| " | 34.49 | 0.00 | 0.00 | 0.10 | -0.06 |
| M13 | -586.18 | -13.09 | 0.00 | 0.00 | 0.01 |
| " | -586.18 | -13.09 | 17.46 | 0.00 | -0.02 |
| " | -586.18 | -13.09 | 34.91 | 0.00 | -0.04 |
| " | -586.18 | -13.09 | 52.37 | 0.00 | -0.05 |
| M14 | -230.98 | 13.09 | -52.37 | -0.00 | 0.05 |
| " | -230.98 | 13.09 | -34.91 | -0.00 | 0.04 |
| " | -230.98 | 13.09 | -17.46 | -0.00 | 0.03 |
| " | -230.98 | 13.09 | 0.00 | -0.00 | 0.01 |

BENDING & COMP: TRUSS 3 - MEMBER 4-4

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

Grading:

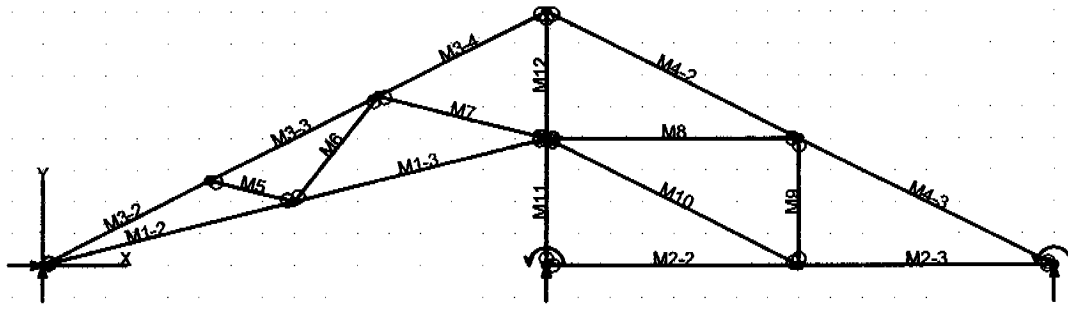
2x or 4x

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 | 5.96 feet |
| Max Axial Comp, C | 1368 lbs |
| Max Reaction, R | 136 lbs |
| Max Moment, M | 103 ft-lbs |
| Max LL Deflection | 0.06 inches |
| Max TL Deflection | 0.12 inches |
| LL Defl Criteria = L/ | 240 |
| TL Defl Criteria = L/ | 180 |
| Duration factor, Cd | 1.25 |
| Repetitive Factor, Cr | 1.15 |
| Size Factor, Cf bending | 1.5 1.5 for 2x4, 1.3 for 2x6 |
| Size Factor, Cf comp | 1.15 1.15 for 2x4, 1.1 for 2x6 |
| Buckling Factor, CT = | 1.16 |
| fc = | 261 psi |
| Fce = | 1422 psi |
| Fc* = | 2084 psi |
| F'c = | 1144 psi |
| fb = | 404 psi |
| F'b = Fb* = | 2156 psi |
| Shear D/C ratio | 0.33 < 1.0, Member OK |
| Interaction equation: | |
| (fc/F'c)^2 + | |
| fb / (F'b(1-fc/Fce)) = | 0.28 < 1.0, Member OK |
| Live Load defl ratio | 0.20 < 1.0, Member OK |
| Total Load defl ratio | 0.30 < 1.0, Member OK |



Truss 4

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural - Engineers Engineer: Paul Zacher
File: C:\Documents and Settings\Owner\Desktop\Leong05_565\Truss 4.vap

Nodes

| Node | X ft | Y ft | Fix | DX | Fix | DY | Fix | RZ |
|------|---------|---------|-----|----|-----|----|-----|----|
| N1 | 32.00 | 0.00 | No | | Yes | | Yes | |
| N2 | 0.00 | 0.00 | Yes | | " | | No | |
| N3 | 16.00 | 8.00 | No | | No | | " | |
| N4 | 16.00 | 4.00 | " | | " | | " | |
| N5 | 16.00 | 0.00 | " | | Yes | | Yes | |
| N6 | 8.00 | 2.00 | " | | No | | No | |
| N7 | 24.00 | 0.00 | " | | " | | " | |
| N8 | 24.00 | 4.00 | " | | " | | " | |
| N9 | 5.33 | 2.67 | " | | " | | " | |
| N10 | 10.67 | 5.33 | " | | " | | " | |

Member Elements

| Member | Section | Material | Length ft |
|--------|---------|----------|--------------|
| M1-2 | SS2x4 | Wood | 8.25 |
| M1-3 | " | " | 8.25 |
| M2-2 | " | " | 8.00 |
| M2-3 | " | " | 8.00 |
| M3-2 | " | " | 5.96 |
| M3-3 | " | " | 5.96 |
| M3-4 | " | " | 5.96 |
| M4-2 | " | " | 8.94 |
| M4-3 | " | " | 8.94 |
| M5 | " | " | 2.75 |
| M6 | " | " | 4.27 |
| M7 | " | " | 5.50 |
| M8 | " | " | 8.00 |
| M9 | " | " | 4.00 |
| M10 | " | " | 8.94 |
| M11 | " | " | 4.00 |
| M12 | " | " | 4.00 |

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- | 1800000.00 | 0.36 | 40.47 |

Load Combination Summary

Equation Case: UBC97 12.8a

Combination: 1D+1Lr
 Contributing Cases & Source
 Dead Load (Dead loads)
 Roof Live Load (Roof Live loads)

Nodal Reactions

| Node | Load Case | FX lb | FY lb | MZ lb-ft |
|------|-------------|-------------|----------------|-------------|
| N1 | UBC97 12.8a | -NA- | 321.93 | 0.00 |
| N2 | " | 0.00 | 321.93 | -NA- |
| N5 | " | -NA- | 1224.95 | 0.00 |

Member Results

| Member | Fx lb | Vy lb | Mz lb-ft | Dx in | Dy in |
|--------|---------------|----------------|----------------|--------------|--------------|
| M1-2 | 754.57 | 26.50 | 0.00 | 0.00 | 0.00 |
| " | 760.13 | 4.25 | 42.23 | 0.00 | -0.06 |
| " | 765.69 | -18.00 | 23.32 | 0.01 | -0.07 |
| " | 771.25 | -40.25 | -56.71 | 0.01 | -0.05 |
| M1-3 | 80.31 | 40.25 | -56.71 | 0.01 | -0.05 |
| " | 85.87 | 18.00 | 23.32 | 0.01 | -0.07 |
| " | 91.43 | -4.25 | 42.23 | 0.01 | -0.07 |
| " | 96.99 | -26.50 | 0.00 | 0.01 | -0.01 |
| M2-2 | -1.91 | -42.26 | -62.86 | 0.01 | -0.02 |
| " | -1.91 | -19.32 | 19.22 | 0.01 | -0.04 |
| " | -1.91 | 3.61 | 40.18 | 0.01 | -0.04 |
| " | -1.91 | 26.54 | 0.00 | 0.01 | 0.00 |
| M2-3 | 291.06 | -26.54 | 0.00 | 0.01 | 0.00 |
| " | 291.06 | -3.61 | 40.18 | 0.01 | -0.04 |
| " | 291.06 | 19.32 | 19.22 | 0.01 | -0.04 |
| " | 291.06 | 42.26 | -62.86 | 0.01 | -0.02 |
| M3-2 | -874.82 | 98.39 | 0.00 | 0.00 | 0.00 |
| " | -835.23 | 19.20 | 116.80 | -0.00 | -0.08 |
| " | -795.63 | -59.99 | 76.26 | -0.00 | -0.09 |
| " | -756.04 | -139.17 | -121.60 | -0.01 | -0.06 |
| M3-3 | -459.78 | 114.76 | -121.60 | -0.01 | -0.06 |
| " | -420.19 | 35.58 | 27.74 | -0.01 | -0.06 |
| " | -380.60 | -43.61 | 19.76 | -0.01 | -0.05 |
| " | -341.00 | -122.80 | -145.56 | -0.01 | -0.04 |
| M3-4 | 578.09 | 143.19 | -145.56 | -0.01 | -0.04 |
| " | 617.68 | 64.00 | 60.29 | -0.01 | -0.07 |
| " | 657.27 | -15.18 | 108.81 | -0.01 | -0.07 |
| " | 696.87 | -94.37 | 0.00 | -0.00 | -0.01 |
| M4-2 | 536.40 | -222.31 | -394.78 | 0.01 | -0.02 |
| " | 595.79 | -103.53 | 90.81 | 0.01 | -0.18 |
| " | 655.18 | 15.25 | 222.40 | 0.01 | -0.25 |
| " | 714.57 | 134.03 | 0.00 | 0.00 | -0.01 |
| M4-3 | -392.43 | -134.03 | 0.00 | 0.01 | 0.00 |
| " | -333.04 | -15.25 | 222.40 | 0.01 | -0.24 |
| " | -273.65 | 103.53 | 90.81 | 0.01 | -0.18 |
| " | -214.26 | 222.31 | -394.78 | 0.01 | -0.02 |
| M5 | -390.19 | 0.00 | 0.00 | 0.03 | -0.05 |
| " | -390.19 | 0.00 | 0.00 | 0.03 | -0.05 |
| " | -390.19 | 0.00 | 0.00 | 0.03 | -0.05 |
| " | -390.19 | 0.00 | 0.00 | 0.03 | -0.04 |
| M6 | 435.81 | 0.00 | 0.00 | -0.03 | -0.05 |
| " | 435.81 | 0.00 | 0.00 | -0.03 | -0.04 |
| " | 435.81 | 0.00 | 0.00 | -0.02 | -0.04 |
| " | 435.81 | 0.00 | 0.00 | -0.02 | -0.03 |
| M7 | -689.35 | 0.00 | 0.00 | 0.01 | -0.01 |
| " | -689.35 | 0.00 | 0.00 | 0.01 | -0.00 |
| " | -689.35 | 0.00 | 0.00 | 0.02 | -0.03 |

| Member | Fx lb | Vy lb | Mz lb-ft | Dx in | Dy in |
|--------|----------|----------|-------------|----------|----------|
| " | -689.35 | 0.00 | 0.00 | 0.02 | -0.02 |
| M8 | -870.25 | 0.00 | 0.00 | 0.00 | -0.02 |
| " | -870.25 | 0.00 | 0.00 | 0.00 | -0.02 |
| " | -870.25 | 0.00 | 0.00 | 0.01 | -0.01 |
| " | -870.25 | 0.00 | 0.00 | 0.01 | -0.01 |
| M9 | -61.97 | 0.00 | 0.00 | 0.02 | 0.00 |
| " | -61.97 | 0.00 | 0.00 | 0.02 | 0.00 |
| " | -61.97 | 0.00 | 0.00 | 0.02 | 0.01 |
| " | -61.97 | 0.00 | 0.00 | 0.02 | 0.01 |
| M10 | 327.55 | 0.00 | 0.00 | -0.02 | 0.02 |
| " | 327.55 | 0.00 | 0.00 | -0.01 | 0.00 |
| " | 327.55 | 0.00 | 0.00 | -0.01 | 0.01 |
| " | 327.55 | 0.00 | 0.00 | -0.01 | 0.01 |
| M11 | -1198.4 | 1.91 | -7.62 | 0.01 | 0.01 |
| " | -1198.4 | 1.91 | -5.08 | 0.00 | 0.01 |
| " | -1198.4 | 1.91 | -2.54 | 0.00 | 0.01 |
| " | -1198.4 | 1.91 | 0.00 | 0.00 | 0.01 |
| M12 | -835.50 | -1.91 | 0.00 | -0.01 | -0.00 |
| " | -835.50 | -1.91 | 2.54 | -0.01 | -0.00 |
| " | -835.50 | -1.91 | 5.08 | -0.01 | -0.01 |
| " | -835.50 | -1.91 | 7.62 | -0.01 | -0.01 |

BENDING & COMP: TRUSS 4 - MEMBER 4-2

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

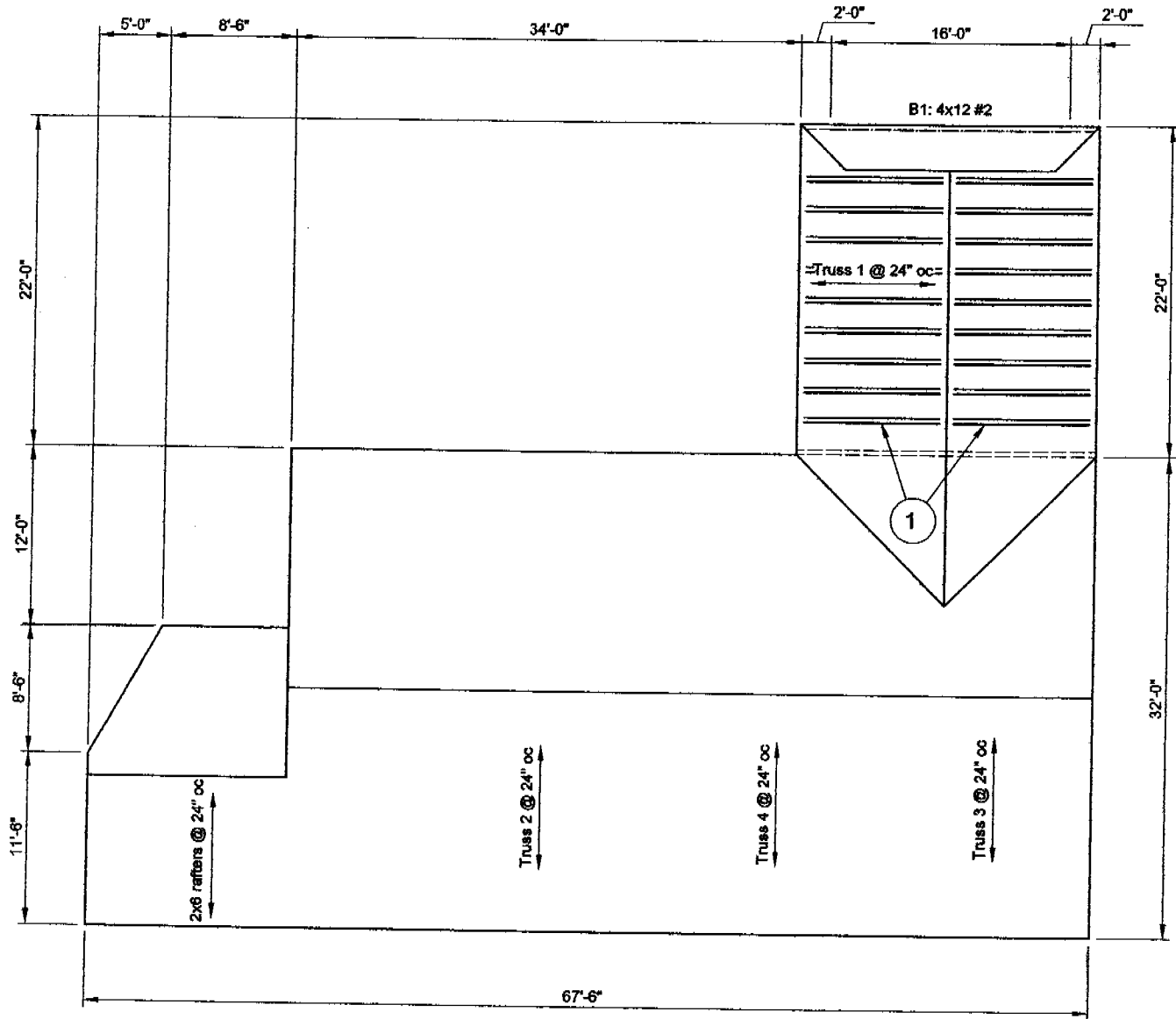
Grading:

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

Assumptions:

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

| | |
|-------------------------|--------------------------------|
| Width, b | 1.5 inches |
| Depth, d | 3.5 inches |
| Length | 8.94 feet |
| Max Axial Comp, C | 536 lbs |
| Max Reaction, R | 222 lbs |
| Max Moment, M | 394 ft-lbs |
| Max LL Deflection | 0.01 inches |
| Max TL Deflection | 0.02 inches |
| LL Defl Criteria = L/ | 240 |
| TL Defl Criteria = L/ | 180 |
| Duration factor, Cd | 1.25 |
| Repetitive Factor, Cr | 1.15 |
| Size Factor, Cf bending | 1.5 1.5 for 2x4, 1.3 for 2x6 |
| Size Factor, Cf comp | 1.15 1.15 for 2x4, 1.1 for 2x6 |
| Buckling Factor, CT = | 1.25 |
| fc = | 102 psi |
| Fce = | 676 psi |
| Fc* = | 2084 psi |
| F'c = | 623 psi |
| fb = | 1544 psi |
| F'b = Fb* = | 2156 psi |
| Shear D/C ratio | 0.53 < 1.0, Member OK |
| Interaction equation: | |
| (fc/F'c) ² + | |
| fb / (F'b(1-fc/Fce)) = | 0.87 < 1.0, Member OK |
| Live Load defl ratio | 0.02 < 1.0, Member OK |
| Total Load defl ratio | 0.03 < 1.0, Member OK |



FRAMING NOTES:

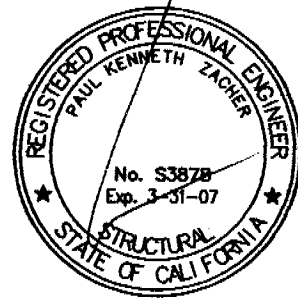
1. Scab a 2x4 DF#2 x 11'-0" long rafter to the top chord of the existing truss #1 (total 18). See detail 2.

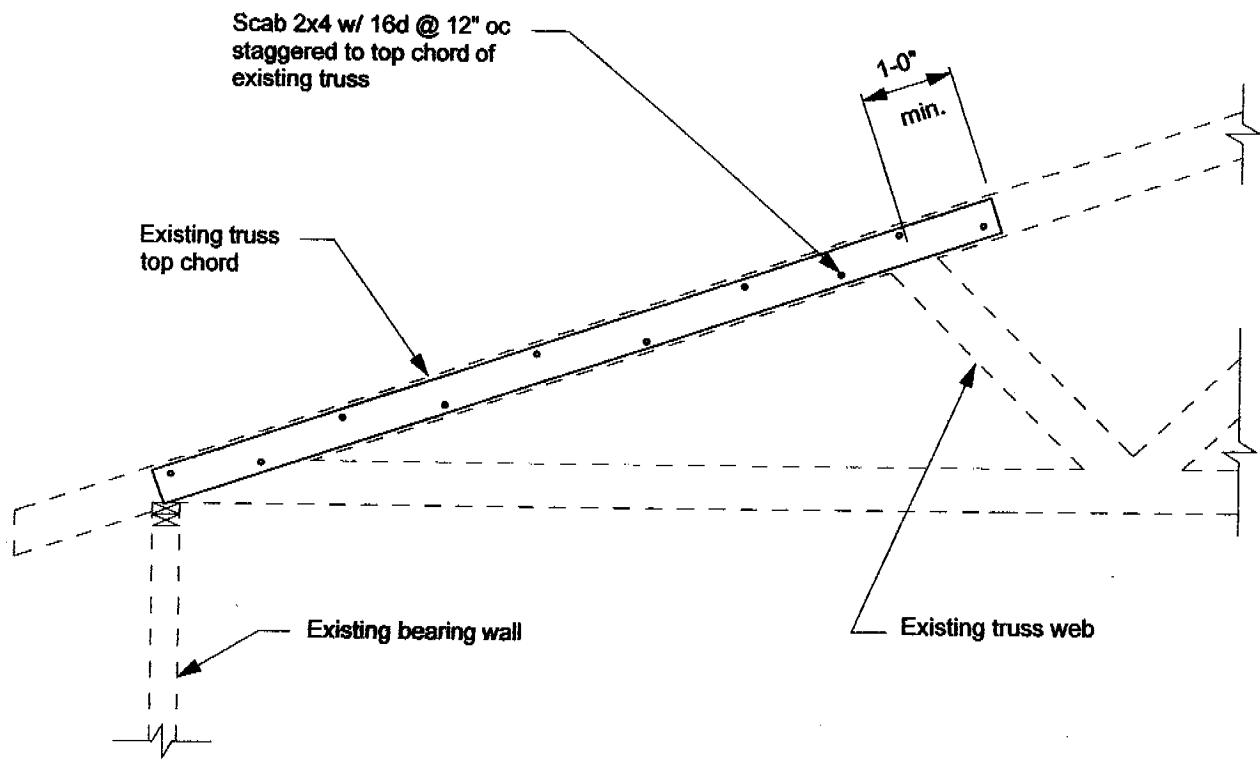
NOTES:

- 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 7.3 psf.
- B. All framing members including rafters, purlins, joists and beams are existing unless otherwise noted in the framing notes above.
- C. All structural wood members that were observed appear to be in sound condition and without structural defect.

① **ROOF PLAN - LEONG**
Not to Scale

25





2

TRUSS REINFORCEMENT DETAIL

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

26

