CITY OF SACRAMENTO
New City Hall, 915 I St., 3rd Floor, Sacramento, CA 95814

Permit No: **0615805**
Insp Area: 2
Thos Bros: 336J3

Site Address: 906 LAKE FRONT DR SAC
Parcel No: 031-1220-048

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

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

OWNER
NGUYEN KIEN D
906 LAKE FRONT DR
SACRAMENTO, CA 95831

ARCHITECT

Nature of Work: REROOF-- T/O, RESHEET-- INSTALL 55 SQRS OF LIGHT WEIGHT TILE-- IN PROGRESS INSPECTION 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'sAddress_____

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 10/10/06 Contractor Signature Carolyn Pell

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).

RECEIVED
CITY OF SACRAMENTO
OCT 10 2006

_____ 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 herby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

Date 10/10/06 Applicant/Agent Signature Carolyn Pell

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 1271896-2004 Exp Date 10/01/2007

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

Date 10/10/06 Applicant Signature Carolyn Pell

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.

PZSE, Inc. - Structural Engi

PZSE, Inc. – Structural Engineer
4701 Lakeside Drive
Fair Oaks, CA 95628
TEL: (916) 961-3960
FAX: (916) 961-6662
e-mail: paul@pzse.com

September 16, 2006

ISSUED
CITY OF SACRAMENTO
OCT 02 2006
DOWNTOWN PERMIT CENTER

Weather-Tite Roofing Company
P.O. Box 6068
Folsom, CA 95673
TEL: (916) 635-9810; M
FAX: (916) 635-9810

REGISTERED PROFESSIONAL ENGINEER
PAUL KENNETH ZACHER
No. S3878
Exp. 3-31-07
STRUCTURAL
STATE OF CALIFORNIA

Attn.: Mr. Larry Peer,

re: Job 2006424: Young

Subject: Structural Investigation Report of the Roof for the Residence located at 431 Deer River Way, Sacramento, CA 95831.

As requested by Mr. Larry Peer, 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 12, 2006. 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 with 2001 CBC Title 24 Amendments.

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

<u>DESCRIPTION:</u>

Type of Facility:	Residence.
Year Built:	Estimated 1980's vintage.
Occupancy:	Residential.
No. of Stories:	One.
Dimensions:	Approximately 3000 square feet.

70/01/01 CB

This set of plans and specifications shall not be held to permit or approve the violation of any City Ordinance or State Law. The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law. Building inspection Division. same without written permission from the to make any changes or alterations from the kept on the job at all times and it is unlawful

BUILDING/INSPECTION DIVISION
SACRAMENTO, CALIF.
CODE
UNDER TITLE 15

<u>CONSTRUCTION:</u>

Roof:

The roof covering will consist of a Light Weight Concrete Tile over 7/16" solid sheathing. The roof structure is conventionally framed with 2x6 rafters spaced at 24" on center with 2x6 purlins supported at no more than 8'-0" on center by 2x4 struts bearing on walls below except for the vaulted ceiling areas. The vaulted ceiling is constructed of 2x6 rafters spaced at 24" on center.

<u>CONCLUSIONS:</u>

Roof:

The roof structure currently lacks sufficient structural capacity for the applied live and dead loads. See "Recommendations" for location and repair to bring the roof structure up to the required capacity.

CITY COPY

431 DEER RIVER WY
06/5804

PZSE, Inc. – Structural Engineers
4701 Lakeside Way
Fair Oaks, CA 95628
(916) 961-3960
(916) 961-6662
paul@pzse.com

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. 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 6'-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.
2. Scab a 1 3/4" x 9 1/4" x 14'-0" long LVL to the existing 2x6 purlin which spans 12'-6". Attach it with 16d's @ 3" on center. Support the LVL to the bearing walls below with 2x4 struts. See details 1 and 2.
3. Scab two (2) 2x6 rafters to each existing 2x6 rafters with 16d's @ 12" on center where the span is greater than 12'-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.
4. Shim the areas as required where the existing sags occur to provide an even contour at the roof level. See detail 1.
5. Scab a 1 3/4" x 11 7/8" LVL beam to the existing 2x6 crosstie and nail together with 16d's @ 6" oc. The ends of the LVL may be clipped as required to meet the slope of the rafters. The support at the interior wall shall be a 2x8 x 2'-8" long ledger attached to the double top plate with 16d's @ 2" oc staggered. Support the existing valley boards to the LVL beam with 2x4 struts. See details 1 and 3.
6. 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 4.

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.

PZSE, Inc. - Structural Engineers
4701 Lakeside
Fair Oaks, CA
(916) 961-3960
(916) 961-3952

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	6	in 12
Pitch Adjustment Factor	1.12	

LOCATION: ROOF

MATERIAL	WEIGHT	
Light Weight Tile	7.30	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
7/16" OSB/ plywood	1.30	psf
2x6 rafters @ 24" oc	1.00	psf
Load	11.0	psf
Roof Pitch Adjustment	1.30	psf
Total Load	12.3	psf

LOCATION: VAULT

MATERIAL	WEIGHT	
Light Weight Tile	7.30	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
7/16" OSB/ plywood	1.30	psf
2x6 rafters @ 24" oc	1.00	psf
Batt/blown insul	0.50	psf
1/2" Gypboard	2.50	psf
Load	14.0	psf
Roof Pitch Adjustment	1.65	psf
Total Load	15.6	psf

PAUL ZACHER- STRUCTURAL ENGINEERS, INC.
Job #: 06_424
Date: 09/16/2006

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

LOADING:

Rafter:

Dr = 12.3 psf x 2'-0" = 24.6 plf
Lr = 16.0 psf x 2'-0" = 32.0 plf

2x6 #2

24.6 / 32.0
12'-0"

Rafter:

Dr = 12.3 psf x 2'-0" = 24.6 plf
Lr = 16.0 psf x 2'-0" = 32.0 plf

3-2x6 #2

24.6 / 32.0
17'-3"

Vault:

Dr = 15.6 psf x 2'-0" = 31.2 plf
Lr = 16.0 psf x 2'-0" = 32.0 plf

2x6 #2

31.2 / 32.0
10'-6"

purlin:

Dr = 12.3 psf x 10'-0" = 123 plf
Lr = 16.0 psf x 10'-0" = 160 plf

1 ¾" x 9 ¼" LVL

123 / 160
12'-6"

LVL:

Pdr = 12.3 psf x 7' x 7' = 603 lbs
Plr = 16.0 psf x 7' x 7' = 784 plf

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

603 / 784
16'-0" 8'-0"
R1 = 402 / 523

B1:

Dr = 12.3 psf x 7'-0" = 86 plf
Lr = 16.0 psf x 7'-0" = 112 plf
Pd/lr = 402 / 523 = LVL

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

402 / 523
86 / 112
4'-6" 11'-6"

B2:

Dr = 15.6 psf x 11'-0" = 172 plf
Lr = 16.0 psf x 11'-0" = 176 plf

6x12 #1

172 / 176
18'-0"

B3:

Dr = 12.3 psf x 7'-0" = 86 plf
Lr = 16.0 psf x 7'-0" = 112 plf

4x12 #2

86 / 112
13'-6"

PZSE, Inc

[redacted]

Title :
Dsgnr:
Description :
Scope :

Job #
Date:

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

Timber Beam & Joist

Young.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	vault	purlin	LVL	B1	B2
Timber Section		2x6	3-2x6	2x6	MicroLam: 1.75x9.2	MicroLam: 1.75x11.ix12#2+1.75x11.875		6x12
Beam Width	in	1.500	4.500	1.500	1.750	1.750	6.186	5.500
Beam Depth	in	5.500	5.500	5.500	9.250	11.875	11.250	11.500
Le: Unbraced Length	ft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TImber Grade		Douglas Fir - Larch, No.2	Douglas Fir - Larch, No.2	Douglas Fir - Larch, No.2	Truss Joist - MacMillan,	Truss Joist - MacMillan,	Custom, LVL + DF#2	Douglas Fir - Larch, No.1
Fb - Basic Allow	psi	875.0	875.0	875.0	2,600.0	2,600.0	1,450.0	1,350.0
Fv - Basic Allow	psi	95.0	95.0	95.0	285.0	285.0	158.0	85.0
Elastic Modulus	ksi	1,600.0	1,600.0	1,600.0	1,900.0	1,900.0	1,700.0	1,600.0
Load Duration Factor		1.250	1.250	1.250	1.250	1.250	1.250	1.250
Member Type		Sawn	Sawn	Sawn	Manuf/Pine	Manuf/Pine	Manuf/Pine	Sawn
Repetitive Status		Repetitive	Repetitive	Repetitive	No	No	No	No

Center Span Data

Span	ft	12.00	17.25	10.50	12.50	24.00	16.00	18.00
Dead Load	#/ft	24.60	24.60	31.20	123.00		86.00	172.00
Live Load	#/ft	32.00	32.00	32.00	160.00		112.00	176.00
Point #1 DL	lbs					603.00	402.00	
LL	lbs					784.00	523.00	
@ X	ft					16.000	4.500	

Results

		Ratio =	0.9887	0.6810	0.8452	0.8178	0.6614	0.4357	0.8267
Mmax @ Center	in-k		12.23	25.26	10.45	66.33	88.41	103.06	169.13
@ X =	ft		6.00	8.62	5.25	6.25	16.03	6.66	9.00
fb : Actual	psi		1,616.6	1,113.5	1,382.0	2,657.8	2,149.6	789.8	1,395.1
Fb : Allowable	psi		1,635.2	1,635.2	1,635.2	3,250.0	3,250.0	1,812.5	1,687.5
			Bending OK	Bending OK	Bending OK	Bending OK	Bending OK	Bending OK	Bending OK
fv : Actual	psi		57.3	28.2	55.5	144.2	66.7	44.6	66.6
Fv : Allowable	psi		118.8	118.8	118.8	356.3	356.3	197.5	106.3
			Shear OK	Shear OK	Shear OK	Shear OK	Shear OK	Shear OK	Shear OK

Reactions

@ Left End DL	lbs	147.60	212.17	163.80	768.75	201.00	976.94	1,548.00
LL	lbs	192.00	276.00	168.00	1,000.00	261.33	1,271.91	1,584.00
Max. DL+LL	lbs	339.60	488.17	331.80	1,768.75	462.33	2,248.84	3,132.00
@ Right End DL	lbs	147.60	212.17	163.80	768.75	402.00	801.06	1,548.00
LL	lbs	192.00	276.00	168.00	1,000.00	522.67	1,043.09	1,584.00
Max. DL+LL	lbs	339.60	488.17	331.80	1,768.75	924.67	1,844.16	3,132.00

Deflections

		Ratio OK	Deflection OK	Deflection OK	Deflection OK	Deflection OK	Deflection OK	Deflection OK
Center DL Defl	in	-0.345	-0.491	-0.256	-0.308	-0.556	-0.138	-0.364
L/Defl Ratio		417.5	421.6	491.4	486.9	517.7	1,395.3	593.0
Center LL Defl	in	-0.449	-0.639	-0.263	-0.401	-0.723	-0.179	-0.373
L/Defl Ratio		320.9	324.1	479.1	374.3	398.2	1,071.6	579.5
Center Total Defl	in	-0.794	-1.130	-0.519	-0.709	-1.280	-0.317	-0.737
Location	ft	6.000	8.625	5.250	6.250	13.056	7.744	9.000
L/Defl Ratio		181.5	183.3	242.6	211.6	225.1	606.1	293.1

6

Timber Beam & Joist

Description

Timber Member Information

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

		B3
Timber Section		4x12
Beam Width	in	3.500
Beam Depth	in	11.250
Le: Unbraced Length	ft	0.00
Timber Grade		Douglas Fir - Larch, No.2
Fb - Basic Allow	psi	875.0
Fv - Basic Allow	psi	95.0
Elastic Modulus	ksi	1,600.0
Load Duration Factor		1.250
Member Type		Sawn
Repetitive Status		No

Center Span Data

Span	ft	13.50
Dead Load	#/ft	86.00
Live Load	#/ft	112.00

Results

Ratio =		0.6094
Mmax @ Center	in-k	54.13
@ X =	ft	6.75
fb : Actual	psi	733.2
Fb : Allowable	psi	1,203.1
		Bending OK
fv : Actual	psi	44.0
Fv : Allowable	psi	118.8
		Shear OK

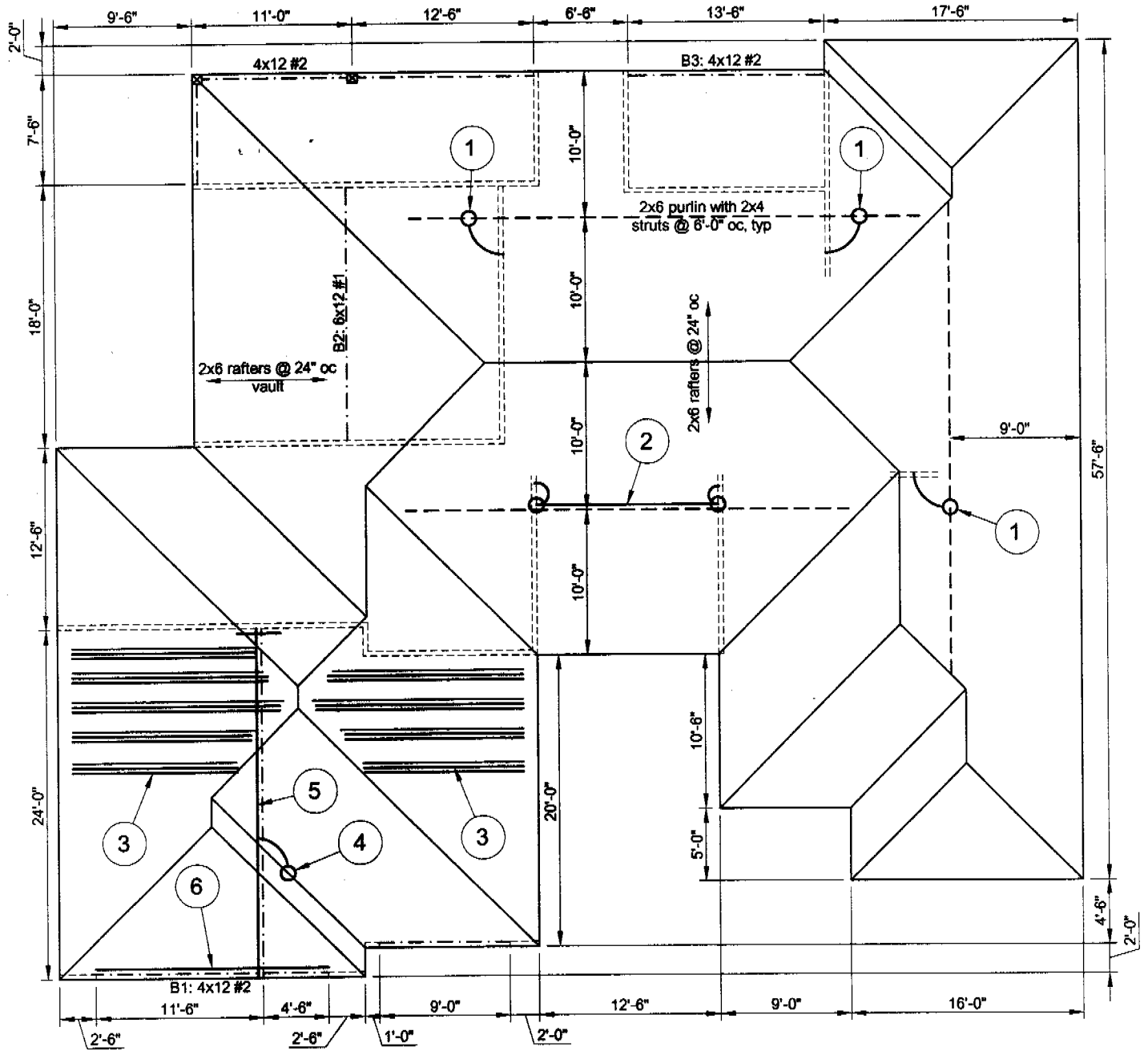
Reactions

@ Left End DL	lbs	580.50
LL	lbs	756.00
Max. DL+LL	lbs	1,336.50
@ Right End DL	lbs	580.50
LL	lbs	756.00
Max. DL+LL	lbs	1,336.50

Deflections

Ratio OK

Center DL Defl	in	-0.097
L/Defl Ratio		1,674.8
Center LL Defl	in	-0.126
L/Defl Ratio		1,286.0
Center Total Defl	in	-0.223
Location	ft	6.750
L/Defl Ratio		727.5



FRAMING NOTES:

1. Add 2x4 struts to bearing below (total 3).
2. Scab a 1 3/4" X 9 1/4" x 14'-0" long LVL to the existing 2x6 purlin. See detail 2.
3. Scab two (2) 2x6's to existing 2x6 rafters where the span is greater than 12'-0" (total 9 locations).
4. Shim the areas as required where the existing sags occur to provide an even contour at the roof level.
5. Scab a 1-3/4" x 11-7/8" LVL to the existing 2x6 crosstie with 16d's @ 6" oc. The ends of the LVL may be clipped as required to meet the slope of the rafters. The support at the interior wall shall be a 2x8 x 2'-8" long ledger attached to the double top plate with 16d's @ 2" oc staggered. Support the existing valley rafters to the LVL below with 2x4 struts. See detail 3.
6. Scab a 1 3/4" x 11 1/4" LVL to the existing 4x12 beam. See detail 4.

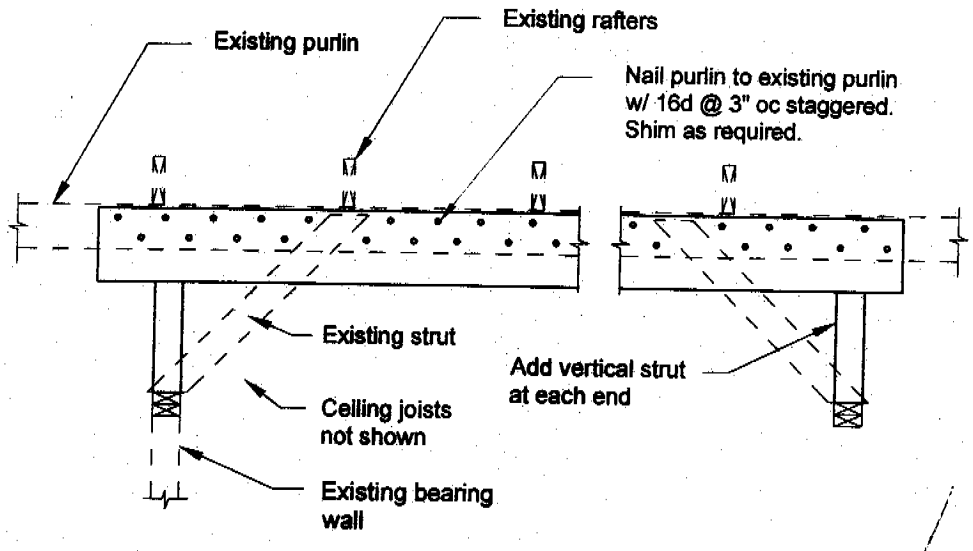
NOTES:

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 2x6 DF#2 and hips and valleys are 2x8 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.

REGISTERED PROFESSIONAL ENGINEER
PAUL KENNETH ZACHER
No. 53878
Exp. 3-31-07
STRUCTURAL
STATE OF CALIFORNIA

1 ROOF PLAN - YOUNG
Not to Scale

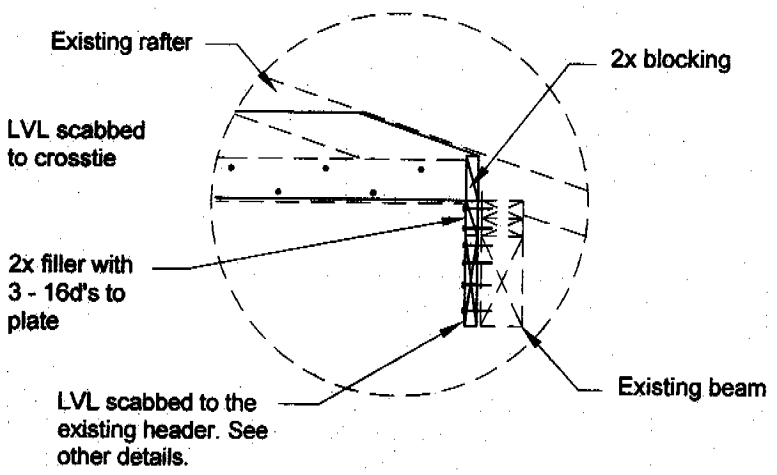
8



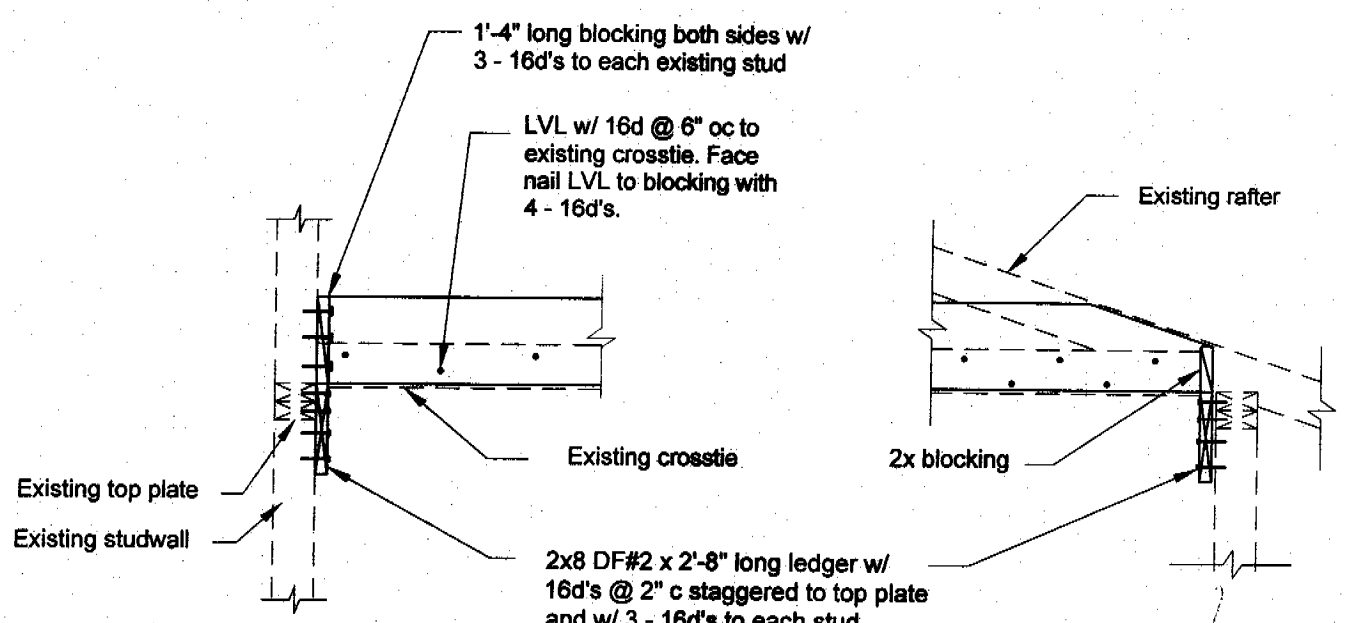
2 **PURLIN DETAIL**

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

REGISTERED PROFESSIONAL ENGINEER
PAUL KENNETH ZACHER
No. 33878
Exp. 3-31-07
STRUCTURAL
STATE OF CALIFORNIA



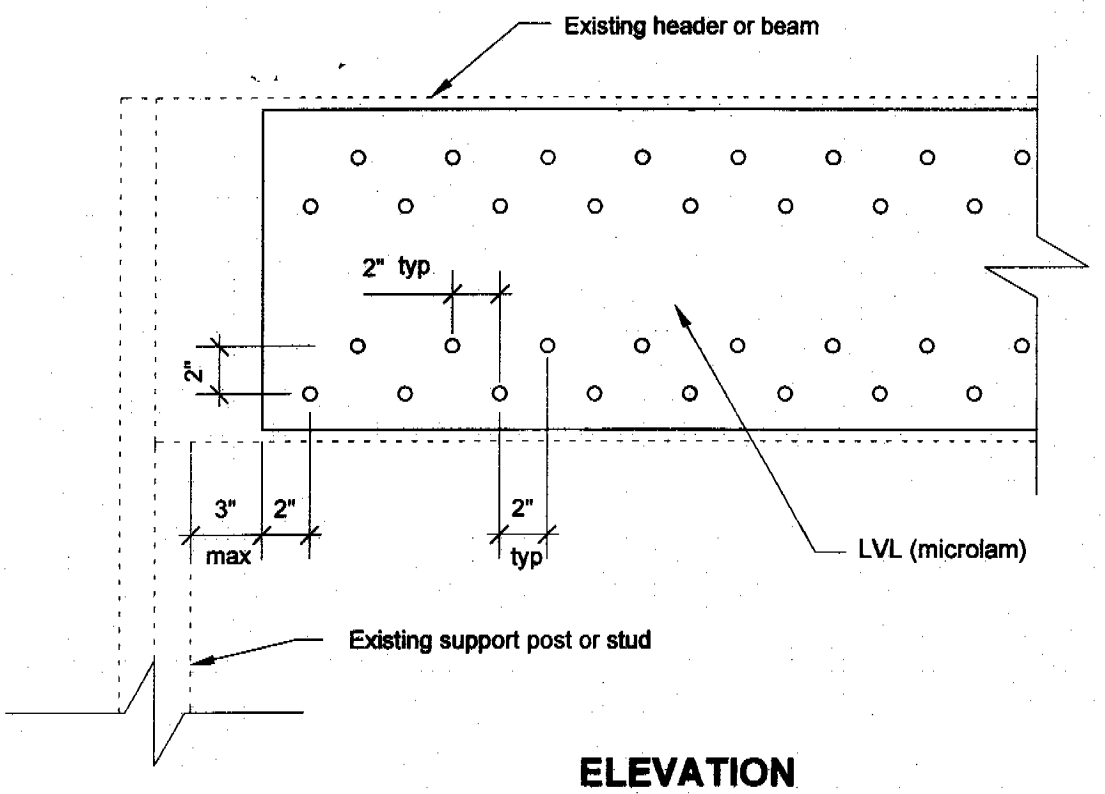
ALTERNATE CONNECTION AT BEAM



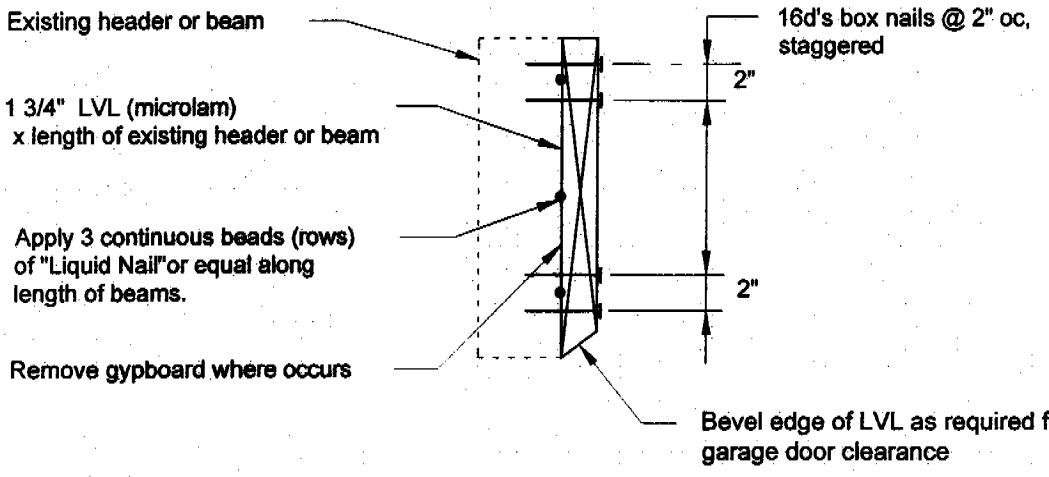
3 **CROSS TIE / LEDGER CONNECTION**

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

REGISTERED PROFESSIONAL ENGINEER
PAUL KENNETH ZACHER
No. S3878
Exp. 3-31-07
STRUCTURAL
STATE OF CALIFORNIA



ELEVATION



SECTION

4 **DETAIL**

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

Nguyn

PZSE, Inc. - Structural Engineers
4701 Lakeside Way
Fair Oaks, CA 95628

TEL: (916) 961-3960
FAX: (916) 961-6552

PZSE, Inc. - Structural Engineers

October 25, 2006

0615805

Weather-Tite Roofing Company
P.O. Box 6068
Folsom, CA 95673
TEL: (916) 635-9810; M: (916) 849-1977
FAX: (916) 635-9810

Attn.: Larry Peer,

re: Job 2006450: Nguyn residence located at 906 Lakefront Drive, Sacramento, CA

subject: Contract Change Order Number 1

Per Mr. Larry Peer's request, the bracing over the garage shall be modified per the following recommendations and attached roof plan and calculations.

Recommendation:
Item 2: Add a 1-3/4" x 11 7/8" x 16'-0" long LVL purlin with 2x4 struts to bearing below.

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

Sincerely,

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

REGISTERED PROFESSIONAL ENGINEER
PAUL KENNETH ZACHER
No. S3878
Exp. 3-31-07
STRUCTURAL
STATE OF CALIFORNIA

PAUL ZACHER- STRUCTURAL ENGINEERS, INC.
4701 Lakeside Way
Fair Oaks, Ca 95628
TEL: (916) 961-3960
FAX: (916) 961-6552

Job #: 06_450

Date: 09/25/2006

LOADING:

Rafter:

Dr = 13.1 psf x 2'-0" = 26.2 plf
Lr = 16.0 psf x 2'-0" = 32.0 plf

2x10 #2

26.2 / 32.0
18'-3"

Rafter:

Dr = 13.1 psf x 2'-0" = 26.2 plf
Lr = 16.0 psf x 2'-0" = 32.0 plf

2-2x10 #2

26.2 / 32.0
25'-3"

B1:

Dr = 13.1 psf x 24'-6" = 321 plf
Lr = 16.0 psf x 24'-6" = 392 plf

6x12 #1 + 1 ¾" x 11 ¼" LVL

321 / 392
16'-0"

B2:

Dr = 13.1 psf x 5'-0" = 66 plf
Lr = 16.0 psf x 5'-0" = 80 plf

4x12 #1

66 / 80
10'-6"

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Purlin:

Dr = 13.1 psf x 12'-6" = 164 plf
Lr = 16.0 psf x 12'-6" = 200 plf

1 ¾" x 11 ⅞" LVL

164 / 192
15'-6"

PZSE, Inc

Structural Engineering

Title :
Dsgnr:
Description :
Scope :

Job #
Date:

Rev: 580006
User: KW-0602844, Ver 5.8.0, 1-Dec-2003
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Timber Beam & Joist

Nguyn.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	purlin
Timber Section		2x10	2-2x10	6x12#1+1.75x11.25	4x10	MicroLam: 1.75x11.
Beam Width	in	1.500	3.000	7.446	3.500	1.750
Beam Depth	in	9.250	9.250	11.500	9.250	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, LVL + DF#2	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	158.0	95.0	285.0
Elastic Modulus	ksi	1,600.0	1,600.0	1,700.0	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	18.25	25.25	16.00	10.50	15.67
Dead Load	#/ft	26.20	26.20	321.00	66.00	164.00
Live Load	#/ft	32.00	32.00	392.00	80.00	192.00

Results

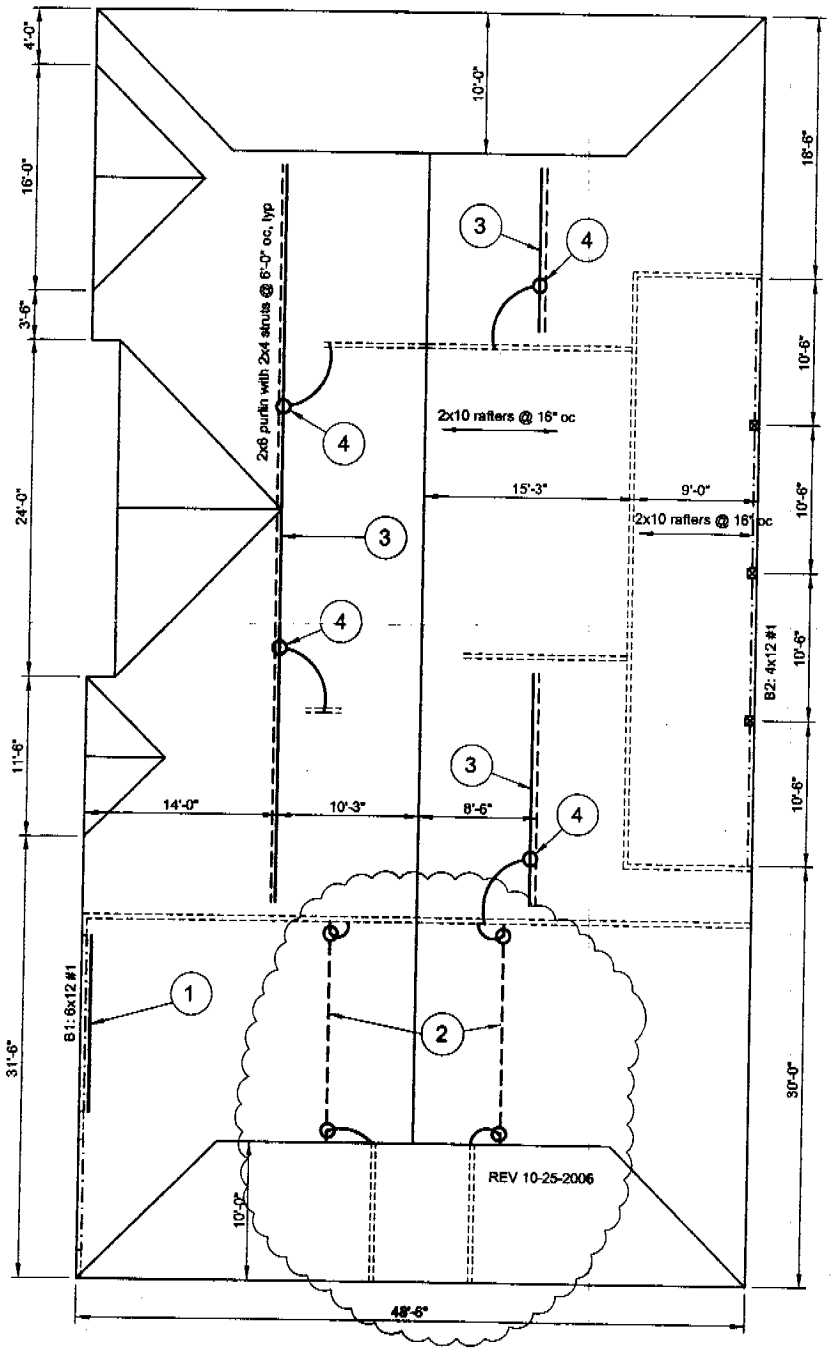
	Ratio =	0.9824	0.9403	0.9204	0.3225	0.9809
Mmax @ Center	in-k	29.08	55.66	273.79	24.14	131.12
@ X =	ft	9.12	12.62	8.00	5.25	7.83
fb : Actual	psi	1,359.3	1,301.0	1,668.2	483.8	3,188.0
Fb : Allowable	psi	1,383.6	1,383.6	1,812.5	1,500.0	3,250.0
		Bending OK	Bending OK	Bending OK	Bending OK	Bending OK
fv : Actual	psi	52.8	37.5	88.7	30.4	177.2
Fv : Allowable	psi	118.8	118.8	197.5	118.8	356.3
		Shear OK	Shear OK	Shear OK	Shear OK	Shear OK

Reactions

@ Left End	DL	lbs	239.07	330.77	2,568.00	346.50	1,284.94
	LL	lbs	292.00	404.00	3,136.00	420.00	1,504.32
	Max. DL+LL	lbs	531.07	734.77	5,704.00	766.50	2,789.26
@ Right End	DL	lbs	239.07	330.77	2,568.00	346.50	1,284.94
	LL	lbs	292.00	404.00	3,136.00	420.00	1,504.32
	Max. DL+LL	lbs	531.07	734.77	5,704.00	766.50	2,789.26

Deflections

		Ratio OK	Deflection OK	Deflection OK	Deflection OK	Deflection OK
Center DL Defl	in	-0.413	-0.757	-0.295	-0.046	-0.479
L/Defl Ratio		530.1	400.3	650.8	2,739.4	392.2
Center LL Defl	in	-0.505	-0.924	-0.360	-0.056	-0.561
L/Defl Ratio		434.0	327.8	532.9	2,260.0	335.0
Center Total Defl	in	-0.918	-1.681	-0.655	-0.102	-1.041
Location	ft	9.125	12.625	8.000	5.250	7.835
L/Defl Ratio		238.6	180.2	293.0	1,238.4	180.7



FRAMING NOTES:

1. Scab a 1 3/4" x 11 1/4" LVL to the existing beam. See detail 2.
2. Add a 1 3/4" x 11 7/8" x 16'-0" long LVL purlin with 2x4 struts to bearing below.
3. Scab a 2x10 DF#2 to the existing 2x6 purlin.
4. Add 2x4 struts to bearing below (total 4).

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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 2x10 DF#2 and hips and valleys are 2x12 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 - NGUYN

Not to Scale

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REGISTERED PROFESSIONAL ENGINEER
PAUL KENNETH ZACHER
No. S3878
Exp. 3-31-07
STRUCTURAL
STATE OF CALIFORNIA