

CITY OF SACRAMENTO

Permit No: 9810684

1231 I Street, Sacramento, CA 95814

Insp Area: 2

Site Address: 6185 FENNWOOD CT SAC

Sub-Type: RES

Parcel No: 0290362015

Housing (Y/N): N

CONTRACTOR

BRAZIL QUALITY ROOFING INC
POB7703
CITRUS HEIGHTS CA 95621

OWNER

LOGAN ROBERT C & LILLIAN J
6185 FENNWOOD CT
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: T/O SHAKE&REROOF W/LT WT TILE PER PLAN(ENGINEERED)

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 749346 Date 10-27-98 Contractor Signature Michael D Brazil

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

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

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

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

Date Owner Signature

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

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

Date 10-27-98 Applicant/Agent Signature Michael D Brazil

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 1497605 Exp Date 8-30-99

(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 10-27-98 Applicant Signature Michael D Brazil

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.

Logan

**Paul Zacher-Structural Engineers**

4701 Lakeside Way  
Fair Oaks, CA 95628

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

September 3, 1998

Brazil Roofing  
P.O. Box 7703  
Citrus Heights, CA 95621  
TEL: 916.725.5882  
FAX: 916.725.5882

Attn.: Mr. Mike Brazil,

re: Job 98210: LOGAN

Subject: Structural Investigation Report of the Roof for the Residence located at 6185 Fennwood Court, Sacramento, CA 95831.

As requested by Mr. Mike Brazil, 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 2, 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 Light Weight Concrete Tile over 1/2" solid sheathing. The living area 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 over the vaulted ceiling areas. The vaulted ceiling is constructed of 2x4 rafters spaced at 24" on center. The garage area is framed with 2x6 rafters spaced at 24" on center and 2x6 cross ties spaced at 4'-0" on center.

CONCLUSIONS:

Roof:

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

RECOMMENDATIONS:

If any of the following recommendations do not correspond to actual field conditions, the engineer of record shall be notified for further investigation and evaluation before continuing work.

Living Area.

- 1 Provide additional 2x4 struts from the existing purlins or ridge 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 2x6 rafter to the existing 2x6 rafters with 16d's @ 12" on center where the span is greater than 12'-0". See detail 1.
- 3 At the vaulted portion, add Simpson A35 clips at the rafter ends to the top plate or nailer connection. See detail 1. The owner requested that this be provided as an alternative to placing a 4x4 post at the end of the ridge board. If for some reason it becomes apparent that the Simpson A35 clips will not work, a 4x4 post and 18" square x 12" deep footing shall be installed at the end of the ridge board. See detail 1.

Garage.

- 4 Scab a 1 3/4" x 11 7/8" microlam beam to each existing 2x12 and nail together with 16d's @ 4" oc. The support at the walls shall be a 2x8 x 2'-8" long nailer attached to the double top plate with 16d's @ 2" oc staggered. See details 1, and 2.

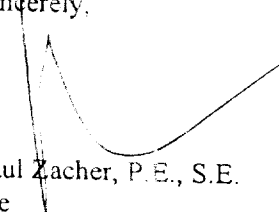
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls which are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and 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 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 4 in 12  
Pitch Adjustment Factor 1.05

LOCATION: ROOF

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Wt Concrete Tile	7.40	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
1/2" OSB/ plywood	1.50	psf
2x6 rafters @ 24" oc	<u>1.00</u>	psf
Load	11.3	psf
Roof Pitch Adjustment	<u>0.61</u>	psf
Total Load	11.9	psf

LOCATION: VAULT

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Wt Concrete Tile	7.40	psf
Roofing felt	0.30	psf
1/2" OSB/ plywood	1.50	psf
1x4 skip sht'g	1.09	psf
2x6 rafters @ 24" oc	1.00	psf
Batt/blown insul	0.50	psf
1/2" Gypboard	<u>2.50</u>	psf
Load	14.3	psf
Roof Pitch Adjustment	<u>0.77</u>	psf
Total Load	15.1	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	11.9 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
Toal load defl ratio	180
Total dead load	23.8 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	143 lbs
Live load reaction	192 lbs
Total load reaction	335 lbs

Allowable shear, $F_v'$	119 psi	Horizontal Shear OK
Actual shear, $f_v$	56 psi	
Allowable bending, $F_b'$	1635 psi	Bending OK
Actual bending, $f_b$	1594 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	0.78 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	11.9 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	23.8 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	179 lbs
Live load reaction	240 lbs
Total load reaction	419 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, $f_b$	1245 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	0.96 inches	
Bearing length req'd	0.22 inches	

**MICROLAM BEAM DESIGN FOR UNIFORM LOAD:**

Width	3.5 inches
Depth	11.875 inches
Length of beam	23.5 feet
Dead load roof	11.9 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	240
Total load defl ratio	180
Total dead load	83.3 plf
Total live load	112 plf

Base design values:

Shear, $F_v$	285 psi
Bending, $F_b$	2600 psi
Comp. perp. to grain, $F_c$	750 psi
Mod of Elasticity, $E$	1800000 psi
Load duration factor, $C_d$	1.25
Volume factor, $C_v$	1.00

Dead load reaction	979 lbs
Live load reaction	1316 lbs
Total load reaction	2295 lbs

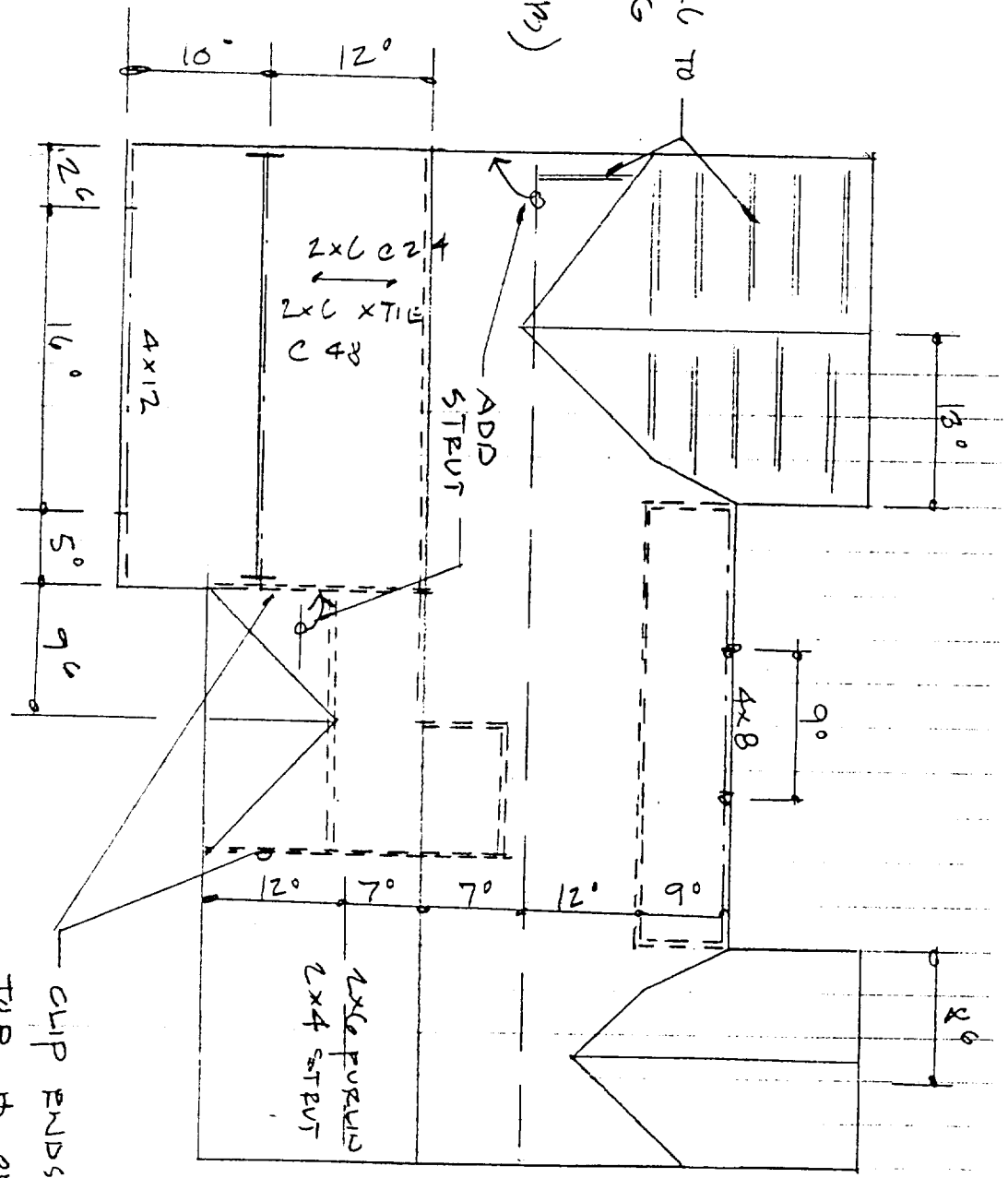
Allowable shear, $F_v'$	356 psi	Horizontal Shear OK
Actual shear, $f_v$	76 psi	
Allowable bending, $F_b'$	3250 psi	Bending OK
Actual bending, $f_b$	1967 psi	
Allowable live load defl	1.18 inches	Live Load Deflection OK
Actual live load defl	0.87 inches	
Allowable total load defl	1.57 inches	Total Load Deflection OK
Actual total load defl	1.52 inches	

Bearing length req'd 0.87 inches

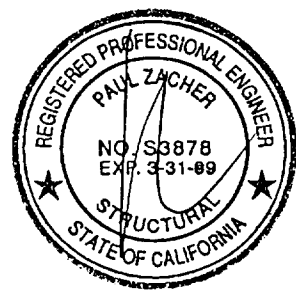
SCAB  $1\frac{3}{4} \times 11\frac{7}{8}$  MICROLAM TO  
 EA 2x12 (TOTAL 2) ADD LEDGER  
 UNDER EACH (2)

SCAB 2x6 TO  
 EXISTING  
 RAFTER  
 (APPROX 13)

1 ROOF PLAN - LOGAN  
 N.T.S.



CLIP ENDS OF 2x6 C RAFT TO  
 TOP # OF NAILED W/SIMPSON  
 ADS'S.





**LEDGER DESIGN:**

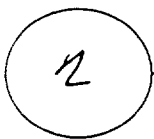
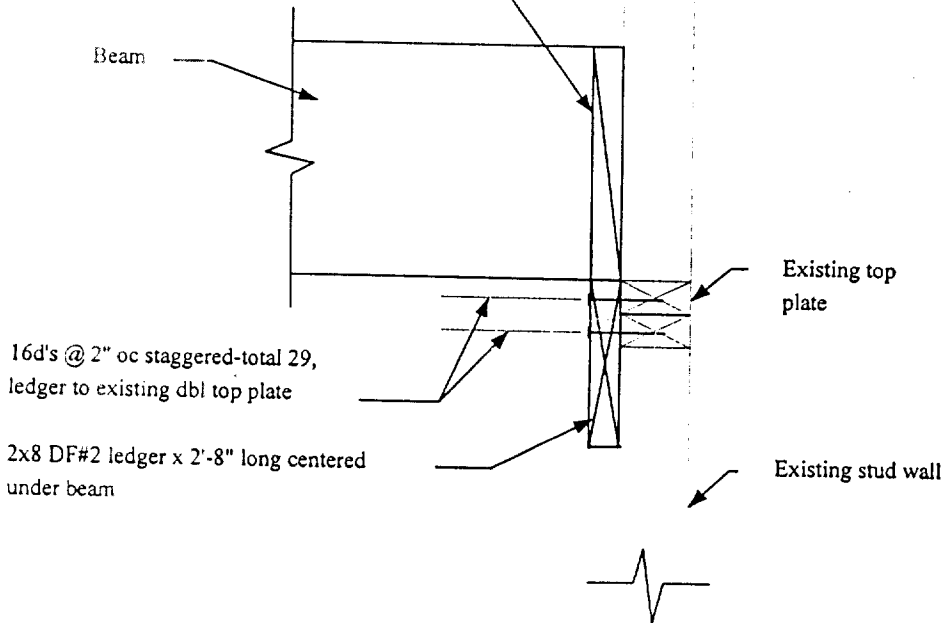
WOOD TO WOOD CONNECTION: Ledger to double top plate

Assumptions:

1. Point load from beam is equally distributed to each supporting stud.
2. Allowable foundation pressure is 1000 plf.

Ledger width, b	1.5 inches	
Ledger depth, d	7.25 inches	
Maximum reaction	2295 lbs	
Base design values:		
Shear, Fv	95 psi	
Bending, Fb	875 psi	
Comp. perp. to grain, Fc	625 psi	
Mod of elasticity, E	1600000 psi	
Load duration factor, Cd	1.25	
Size factor, Cf	1.20	
Allowable shear, Fv'	119 psi	Horizontal Shear OK
Actual shear, fv	84 psi	
Allowable bending, Fb'	1313 psi	Bending OK
Actual bending, fb	174 psi	
Length of ledger required	2.295 feet	
Length of ledger used	2.67 feet	
Number of nails required	29 16d sinkers ledger to top plate	

1'-4" long blocking both sides with  
4 - 16d commons to each existing stud



**LEDGER DETAIL**

Not to Scale

