

**CITY OF SACRAMENTO**  
1231 I Street, Sacramento, CA 95814

**Permit No: 9911654**  
**Insp Area: 2**

**Site Address: 629 RIVERLAKE WY SAC**  
Parcel No: 030-0402-013

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

CONTRACTOR  
ZIMMERMAN ROOFING  
3566 RAMONA AV  
SACRAMENTO CA 95826

OWNER  
LOHEIT LAWRENCE J/ELIZABETH  
629 RIVERLAKE WY  
SACRAMENTO CA 95831

ARCHITECT

**Nature of Work: TEAR OFF/REROOF WITH PIONEER TILE/42 SQ**

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

Lender's Name \_\_\_\_\_ Lender's Address \_\_\_\_\_

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

License Class C39 License Number 557559 Date 10-14-99 Contractor Signature [Signature]

**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 10-14-99 Applicant/Agent Signature [Signature]

**WORKER'S COMPENSATION DECLARATION:** I hereby affirm under penalty of perjury one of the following declarations:

I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.

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

Carrier STATE COMP INS FUND Policy Number 713-98-2021 Exp Date 10/01/2000

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

Date 10-14-99 Applicant Signature [Signature]

**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.**

SCHOEN ENGINEERING  
9524 BEDINGTON WAY  
SACRAMENTO, CA 95827  
(916) 369 6866  
LIC.# C042913



July 17, 1999

Larry Loheit  
629 Riverlake Way  
Sacramento, CA 95831

SUBJECT: Reroof at 629 Riverlake Way, Sacramento, CA 95831

Dear Larry:

On July 14<sup>th</sup> 1999 I inspected the roof structure of your residence at the above mentioned address. The roof was made up of 2x6 Douglas fir No.2 rafters @ 2' o.c. with a max. span of 11'-2" in the garage and 11' in the attic areas of the house. There were also 2x8 rafters @ 2' o.c. spanning a max of 15'-2" in the back porch of the house and 2x8 rafters @ 16" o.c. spanning 15'-4" in the vault area of the family room. The vaulted area in the family room had a full dimension 6x14 ridge beam spanning 16'-8". There was a 4x12 front porch support beam spanning 11', and a 6x12 back porch support beam spanning 17'-2".

It is my finding that this structure is adequate for the following : 1/2" plywood or OSB installed over the existing skip sheathing; 30lb. tarred felt; 1x2 batts; Lightweight concrete tile weighing 7.3 lbs./sq. ft.

**NOTE:** it is possible when reroofing that the increased load to structural elements ~~also including wall,~~ ceiling and floor finishes could cause some minor cosmetic cracking of these finishes. This is typical of wood framed structures and does not of itself indicate structural inadequacy of these members.

This report deals with the structural adequacy of roof supporting members that were readily observable. It does not address any structure that was covered by wall finishes, buried in the ground or was otherwise not observable. Any such structures were assumed to conform to standard construction specifications in the Uniform Building Code. Also, it does not address any existing deflection or warping of roof surfaces, nor is it guaranteed that any structural modifications that may be listed in this report will remove such deflections or warping. The repair of such deflections or warping to improve architectural appearance is at the option of the building owner and the roofing contractor.

I would like to thank you for allowing me to provide my services in this matter. Please let me know if I may be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark S. Schoen".

Mark S. Schoen P.E.

MSS:mss  
S. 10/99/11/00



DEPARTMENT OF  
PLANNING AND DEVELOPMENT

CITY OF SACRAMENTO  
CALIFORNIA

1231 I STREET  
ROOM 200  
SACRAMENTO, CA  
95814-2928

Permit Services  
916-264-7619  
FAX 916-264-7096

Larry Coheit  
629 Riverlake  
TILE ROOF WORKSHEET  
95831

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

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

- 1 BRAND AND MODEL OF TILE Pioneer Lite weight
- 2 TILE WEIGHT PER SQUARE 7.30 lbs
- 3 WEIGHT OF ROOF SYSTEM PER SQUARE 180 lbs
- 4 TOTAL WEIGHT OF ROOF SYSTEM 910 lbs
- 5 DOES TOTAL WEIGHT OF ROOF SYSTEM EXCEED 750# PER SQUARE?  YES  NO
- 6 ROOF SLOPE 4/12

PLEASE PROVIDE A SEPARATE WORKSHEET FOR EACH APPLICATION INVOLVING A TILE ROOF

*See attached engin. report*

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**NOTE:** it is possible when reroofing that the increased load to structural elements also supporting wall, ceiling and floor finishes could cause some minor cosmetic cracking of these finishes. This is typical of wood framed structures and does not of itself indicate structural inadequacy of these members.

This report deals with the structural adequacy of roof supporting members that were readily observable. It does not address any structure that was covered by wall finishes, buried in the ground or was otherwise not observable. Any such structures were assumed to conform to standard construction specifications in the Uniform Building Code. Also, it does not address any existing deflection or warping of roof surfaces, nor is it guaranteed that any structural modifications that may be listed in this report will remove such deflections or warping. The repair of such deflections or warping to improve architectural appearance is at the option of the building owner and the roofing contractor.

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Sincerely,

A handwritten signature in black ink, appearing to read "Mark S. Schoen".

Mark S. Schoen P.E.

MSS:mss  
04/23/99 11:00

Reviewed by Matt P. 10/12/99  
no repairs req'd.

SCHOEN ENGINEERING

Client: Larry Loheit

Date: 10/5/99

Job No.: LL001.99

Page: \_\_\_\_\_

Job Title: Reroof for 629 Rivierlake Way, Sacramento, CA 95831

RAFTER CHECK:



-----  
 Check for 2x6 Douglas fir No. 2 rafters with a max span in the attic areas of 11'2":  
 -----

$$E_w := 1700000 \quad F_b := 1450 \quad C_d := 1.25 \quad C_f := 1 \quad I_{x2x6} := 34$$

$$C_r := 1 \quad F_{bp} := F_b \cdot C_d \cdot C_f \cdot C_r \quad F_{bp} = 1812.5$$

$$b := 1.5 \quad d := 5.5 \quad I_{x2x6} := b \cdot \frac{d^3}{12} \quad S_{x2x6} := b \cdot \frac{d^2}{6} \quad Stiff_{2x6} := I_{x2x6} \cdot E_w$$

Superimposed dead and live loads:

Tile dead load:  $DL_t := 7.3$       Live load:  $LL := 16$

Rafter spacing:  $sp := 2$       Rafter dead load:  $Rdl := \frac{2}{sp}$

Skip shtg. dead load:  $skshgt := 1$       Plywood felt & batts dead load:  $ply := 2$

Ceiling dead load:  $clg := 0$       misl. dead load:  $msl := 0$

Structure roof dead load:  $DL_{ext} := Rdl + skshgt + ply + clg + msl$

Check maximum span based on deflection limit of L/240 for rafters w/ceiling

L/180 for rafters w/o ceiling:

(Note: The formula used to calculate allowable span for deflections is based on a two span continuous beam where rafters are continuous over a midspan purlin with live load on one span only and dead load on both spans otherwise it is based on a simple span condition)

$$\text{Load:} \quad wd := sp \cdot \frac{1}{12} \cdot ((DL_{ext} + DL_t) + LL) \quad ws := sp \cdot \frac{1}{12} \cdot ((DL_{ext} + DL_t) + LL)$$

$$L_{maxd} = \frac{77 \cdot Stiff_{2x6}}{1 \cdot 180 \cdot wd} \cdot \frac{1}{12} \quad L_{maxd} = 12.437 > 11.17 \text{ therefore O.K.}$$

-----

Check for maximum span based on stresses:

$$L_{maxs} := \sqrt{F_{bp} \cdot 8 \cdot \frac{S_{x2x6}}{ws} \cdot \frac{1}{12}} \quad L_{maxs} = 12.937 > 11.17 \text{ therefore O.K.}$$

-----



Check 2x8 Douglas fir No. 2 rafter @ 2' o.c. with a max span of 15'-2" in the non vault area.

$$\begin{aligned}
 E_w &:= 1700000 & F_b &:= 1450 & C_d &:= 1.25 & C_f &:= 1 & I_{x2x6} &:= 34 \\
 C_r &:= 1 & F_{bp} &:= F_b \cdot C_d \cdot C_f \cdot C_r & & & & & & F_{bp} = 1812.5 \\
 b &:= 1.5 & d &:= 7.25 & I_{x2x8} &:= b \cdot \frac{d^3}{12} & S_{x2x8} &:= b \cdot \frac{d^2}{6} & & Stiff_{2x8} := I_{x2x8} \cdot E_w
 \end{aligned}$$

Superimposed dead and live loads:

$$\begin{aligned}
 \text{Tile dead load:} & & DL_t &:= 7.3 & \text{Live load:} & & LL &:= 16 \\
 \text{Rafter spacing:} & & sp &:= 2 & \text{Rafter dead load:} & & R_{dl} &:= \frac{2.84}{sp} \\
 \text{Skip shtg. dead load:} & & skshtg &:= 1 & \text{Plywood felt \& batts dead load:} & & ply &:= 2 \\
 \text{Ceiling dead load:} & & clg &:= 0 & \text{misc. dead load:} & & msl &:= .0 \\
 \text{Structure roof dead load:} & & & & DL_{ext} &:= R_{dl} + skshtg + ply + clg + msl
 \end{aligned}$$

Check maximum span based on deflection limit of L/240 for rafters w/ceiling

L/180 for rafters w/o ceiling:

(Note: The formula used to calculate allowable span for deflections is based on a two span continuous beam where rafters are continuous over a midspan purlin with live load on one span only and dead load on both spans otherwise it is based on a simple span condition)

$$\begin{aligned}
 \text{Load:} & & wd &:= sp \cdot \frac{1}{12} \cdot ((DL_{ext} + DL_t) + LL) & & & ws &:= sp \cdot \frac{1}{12} \cdot ((DL_{ext} + DL_t) + LL) \\
 L_{maxd} &:= \frac{77 \cdot Stiff_{2x8}}{1 \cdot 180 \cdot wd} \cdot \frac{1}{12} & & & & & L_{maxd} &= 16.311 > 15.17 \text{ therefore O.K.}
 \end{aligned}$$

Check for maximum span based on stresses:

$$L_{maxs} := \sqrt{F_{bp} \cdot 8 \cdot \frac{S_{x2x8}}{ws} \cdot \frac{1}{12}} \quad L_{maxs} = 16.923 > 15.17 \text{ therefore O.K.}$$

Check 2x8 Douglas fir No. 2 rafter @ 16" o.c. with a max span of 15'-2" in the non vault areas:

$$\begin{aligned}
 E_w &:= 1700000 & F_b &:= 1450 & C_d &:= 1.25 & C_f &:= 1 \\
 C_r &:= 1 & F_{bp} &:= F_b \cdot C_d \cdot C_f \cdot C_r & & & & F_{bp} = 1812.5
 \end{aligned}$$



$$b := 1.5 \quad d := 7.25 \quad I_{2 \times 8} := b \cdot \frac{d^3}{12} \quad S_{2 \times 8} := b \cdot \frac{d^2}{6} \quad \text{Stiff}_{2 \times 8} := 2.8 \cdot E_w \cdot I_{2 \times 8}$$

Superimposed dead and live loads:

Tile dead load:  $DL_t := 7.3$       Live load:  $LL := 16$   
 Rafter spacing:  $sp := 1.33$       Rafter dead load:  $Rdl := \frac{2.84}{sp}$   
 Skip shtg. dead load:  $skshtg := 1$       Plywood felt & batts dead load:  $ply := 2$   
 Ceiling dead load:  $clg := 2$       misc. dead load:  $msl := .5$   
 Structure roof dead load:  $DLExt := Rdl + skshtg + ply + clg + msl$

Check maximum span based on deflection limit of L/240 for rafters w/ceiling

L/180 for rafters w/o ceiling:

(Note: The formula used to calculate allowable span for deflections is based on a two span continuous beam where rafters are continuous over a midspan purlin with live load on one span only and dead load on both spans otherwise it is based on a simple span condition)

$$\text{Load:} \quad wd := sp \cdot \frac{1}{12} \cdot ((DLExt + DL_t) + LL) \quad ws := sp \cdot \frac{1}{12} \cdot ((DLExt + DL_t) + LL)$$

$$L_{maxd} := \frac{77 \cdot \text{Stiff}_{2 \times 8}}{1 \cdot 240 \cdot wd} \cdot \frac{1}{12} \quad L_{maxd} = 16.368 > 15.33 \text{ therefore O.K.}$$

Check for maximum span based on stresses:

$$L_{maxs} := \sqrt{F_{bp} \cdot 8 \cdot \frac{S_{2 \times 8}}{ws}} \cdot \frac{1}{12} \quad L_{maxs} = 19.645 > 15.33 \text{ therefore O.K.}$$

Calculation for the required area, section modulus and moment of inertia for simple span wood beams  
 Dead load(dl) and Live load(ll) are in pounds per square ft., Spans(l) and Tributary load length or spacing(sp) are in ft., Areas are in sq.in., Section moduli are in inches cubed and Moments of inertia are in inches to the 4th power. Allowable stresses (Fy),(Fb),(Fv) are in lbs./sq.in.

6x12 RIDGE BEAM

$$\begin{aligned} rdl &:= 15 & rll &:= 16 & rta &:= \frac{(15.33 + 6)}{2} & l &:= 16.67 \\ fdl &:= 9 & fl &:= 40 & fta &:= 0 & rta \cdot l &:= 177.786 \\ wt &:= (rta \cdot (rdl + rll) + fta \cdot (fdl + fl)) + 18 & Cd &:= 1.25 \\ Fb &:= 1250 & Fbp &:= Fb \cdot Cd & Fbp &:= 1562.5 & Ew &:= 1700000 & Fv &:= 95 \cdot Cd \end{aligned}$$



A min. required =

$$\frac{l \cdot wt}{F_v} \cdot \left(\frac{3}{2}\right) = 36.704$$

S min. required =

$$wt \cdot l^2 \cdot \frac{1.5}{F_{bp}} = 93.001$$

I min. required =

$$5 \cdot wt \cdot \frac{(l \cdot 12)^4}{12 \cdot 384 \cdot E_w \cdot l \cdot \frac{12}{240}} = 427.481$$

Check Beam properties:

$CF = \frac{12}{d} \cdot \frac{1}{9}$        $A := w \cdot d$        $S := w \cdot CF \cdot \frac{d^2}{6}$        $I := w \cdot \frac{d^3}{12}$        $Stiffw := I \cdot E_w$   
 $w := 5.5$        $d := 13.25$

-----  
 A = 72.875 > 37      S = 159.17 > 93      I = 1066.176 > 427      therefore O.K.  
 -----

4X12 FRONT PORCH BEAM

$rdl := 11$        $rll := 16$        $rtal := \frac{11}{2} + 2$        $l := 11$   
 $fdl := 9$        $fll := 40$        $ftal := 0$        $rtal \cdot l = 82.5$

$wt := (rtal \cdot (rdl + rll) + ftal \cdot (fdl + fll)) + 10$        $Cd := 1.25$   
 $Fb := 1250$        $Fbp := Fb \cdot Cd$        $Fbp = 1562.5$        $E_w := 1700000$        $F_v := 95 \cdot Cd$

A min. required =

$$\frac{l \cdot wt}{F_v} \cdot \left(\frac{3}{2}\right) = 14.763$$

S min. required =

$$wt \cdot l^2 \cdot \frac{1.5}{F_{bp}} = 24.684$$

I min. required =

$$5 \cdot wt \cdot \frac{(l \cdot 12)^4}{12 \cdot 384 \cdot E_w \cdot l \cdot \frac{12}{240}} = 74.869$$

Check Beam properties:

$CF = \frac{12}{d} \cdot \frac{1}{9}$        $A := w \cdot d$        $S := w \cdot CF \cdot \frac{d^2}{6}$        $I := w \cdot \frac{d^3}{12}$        $Stiffw := I \cdot E_w$   
 $w := 3.5$        $d := 11.25$

-----  
 A = 39.375 > 15      S = 74.359 > 25      I = 415.283 > 75      therefore O.K.  
 -----





6X12 BACK PORCH BEAM

---

$r_{dl} := 11$                        $r_{ll} := 16$                        $r_{ta} := \frac{15.17}{2} + 2$                        $l := 17.17$   
 $f_{dl} := 9$                            $f_{ll} := 40$                        $f_{ta} := 0$                            $r_{ta} \cdot l = 164.574$

$w_t := (r_{ta} \cdot (r_{dl} + r_{ll}) + f_{ta} \cdot (f_{dl} + f_{ll})) + 15$                        $C_d := 1.25$   
 $F_b := 1250$                        $F_{bp} := F_b \cdot C_d$                        $F_{bp} = 1562.5$                        $E_w := 1700000$                        $F_v := 95 \cdot C_d$

$A_{min. \text{ required}} = \frac{l \cdot \frac{w_t}{2} \cdot \left(\frac{3}{2}\right)}{F_v} = 29.691$   
 $S_{min. \text{ required}} = \frac{w_t \cdot l^2 \cdot \frac{1.5}{F_{bp}}}{6} = 77.489$   
 $I_{min. \text{ required}} = \frac{5 \cdot w_t \cdot (l \cdot 12)^4}{12 \cdot 384 \cdot E_w \cdot l \cdot \frac{12}{240}} = 366.86$

Check Beam properties:

$w := 5.5$                        $d := 11.25$   
 $CF := \frac{12}{d} \cdot \frac{1}{9}$                        $A := w \cdot d$                        $S := w \cdot CF \cdot \frac{d^2}{6}$                        $I := w \cdot \frac{d^3}{12}$                        $Stiff_w := I \cdot E_w$

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$A = 61.875 > 30$                        $S = 116.851 > 77$                        $I = 652.588 > 367$                       therefore O.K.

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