

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0512302

Insp Area: 2

Thos Bros: 336H1

Site Address: 2 PEACOCK GAP CT SAC

Parcel No: 031-0510-008

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR
BRAZIL QUALITY ROOFING INC
3219 FITZGERALD RD
RANCHO CORDOVA, CA 95742

OWNER
KONG FAMILY LP
2 PEACOCK GAP CT
SACRAMENTO, CA 95831

ARCHITECT

Nature of Work: REROOF - T/O; RESHEET; INSTALL 56 SQ STANDARD WEIGHT TILE; 1 STORY

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 39 License Number 747348 Date 8/15/05 Contractor Signature J. Cal

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).

PAID
CITY OF SACRAMENTO
AUG 15 2005
NORTH PERMIT CENTER

I am exempt under Sec. _____ B & PC for this reason: _____
Date _____ Owner Signature _____

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

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

Date 8/15/05 Applicant/Agent Signature J. Cal

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 MAINSTAY Policy Number WCCN6403164183041 Exp Date 02/28/2006

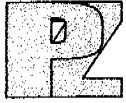
(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become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

Date 08/15/05 Applicant Signature J. Cal

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.

Kong



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 2x6 rafter to the 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.
2. Scab a 1 3/4" x 11 7/8" LVL beam to the existing 2x12 crosstie and nail together with 16d's @ 4" oc. The ends of the LVL may be clipped as required to meet the slope of the rafters. The support at the exterior wall shall be a 2x8 x 2'-8" long ledger attached to the double top plate with 16d's @ 2" oc staggered. The connection at the interior wall does not require a ledger for support. Support the existing hip, valley and ridge boards to the LVL beam with 2x4 struts. See details 1 and 2.
3. Scab a 1 3/4" x 11 1/4" LVL to the existing header. 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.
file

DESIGN LOADING:

Roof Pitch	6	in 12
Pitch Adjustment Factor	1.12	

LOCATION: ROOF

<u>MATERIAL</u>	<u>WEIGHT</u>	
Standard Weight Tile	10.30	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
7/16" OSB/ plywood	1.30	psf
2x6 rafters @ 24" oc	<u>1.00</u>	psf
Load	14.0	psf
Roof Pitch Adjustment	<u>1.65</u>	psf
Total Load	15.6	psf

LOCATION: VAULT

<u>MATERIAL</u>	<u>WEIGHT</u>	
Standard Weight Tile	10.30	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
7/16" OSB/ plywood	1.30	psf
2x12 rafters @ 16" oc	3.08	psf
Batt/blown insul	0.50	psf
1/2" Gypboard	<u>2.50</u>	psf
Load	19.1	psf
Roof Pitch Adjustment	<u>2.25</u>	psf
Total Load	21.3	psf

Job #: 05_342

Date: 07/25/2005

LOADING:

<u>Rafter:</u>		31.2 / 32.0
Dr = 15.6 psf x 2'-0" = 31.2 plf	2x6 #2	
Lr = 16.0 psf x 2'-0" = 32.0 plf		
<u>Rafter:</u>		31.2 / 32.0
Dr = 15.6 psf x 2'-0" = 31.2 plf	2-2x6 #2	
Lr = 16.0 psf x 2'-0" = 32.0 plf		
<u>Vault:</u>		28.4 / 21.3
Dr = 21.3 psf x 1'-4" = 28.4 plf	2x6 #2	
Lr = 16.0 psf x 1'-4" = 21.3 plf		
<u>Vault:</u>		28.4 / 21.3
Dr = 21.3 psf x 1'-4" = 28.4 plf	2x12 #2	
Lr = 16.0 psf x 1'-4" = 21.3 plf		
<u>B1:</u>		62 / 64
Dr = 15.6 psf x 4'-0" = 62 plf	4x12 #2	
Lr = 16.0 psf x 4'-0" = 64 plf		
<u>B2:</u>		362 / 272
Dr = 21.3 psf x 17'-0" = 362 plf	6x14 #1	
Lr = 16.0 psf x 17'-0" = 272 plf		
<u>B3:</u>		170 / 144
Dr = 21.3 psf x 8'-0" = 170 plf	4x12 #1 + 1-3/4"x11-1/4" LVL	
Lr = 16.0 psf x 8'-0" = 144 plf		
<u>B4:</u>		135 / 176
Dr = 15.6 psf x 11'-0" = 135 plf	4x12 #2 + 1-3/4"x11-1/4" LVL	
Lr = 16.0 psf x 11'-0" = 176 plf		
<u>LVL:</u>		764 / 784
Pdr = 15.6 psf x 7' x 7' = 764 lbs	1-3/4"x11 7/8" LVL	
Plr = 16.0 psf x 7' x 7' = 784 plf		

Timber Beam & Joist

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	vault	B1	B2	B3
Timber Section	2x6	2-2x6	2x6	2x12	4x12	6x14	4x12#2+1.75x11.875
Beam Width	in 1.500	3.000	1.500	1.500	3.500	5.500	6.186
Beam Depth	in 5.500	5.500	5.500	11.250	11.250	13.500	11.250
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	Douglas Fir - Larch, No.2	Douglas Fir - Larch, No.2	Douglas Fir - Larch, No.1	Custom, DF#2 + LVL
Fb - Basic Allow	psi 875.0	875.0	875.0	875.0	875.0	1,350.0	1,450.0
Fv - Basic Allow	psi 95.0	95.0	95.0	95.0	95.0	85.0	1,670.0
Elastic Modulus	ksi 1,600.0	1,600.0	1,600.0	1,600.0	1,600.0	1,600.0	1,666.7
Load Duration Factor	1.250	1.250	1.250	1.250	1.250	1.250	1.250
Member Type	Sawn	Sawn	Sawn	Sawn	Sawn	Sawn	Manuf/Pine
Repetitive Status	Repetitive	Repetitive	No	No	No	No	No

Center Span Data

		11.25	14.25	11.25	21.50	16.00	17.00	16.00
Span	ft							
Dead Load	#/ft	31.20	31.20	28.40	28.40	62.00	362.00	170.00
Live Load	#/ft	32.00	32.00	21.30	21.30	64.00	272.00	144.00

Results

	Ratio =	0.9703	0.7784	0.8775	0.9958	0.5447	0.9877	0.5098
Mmax @ Center @ X =	in-k ft	12.00	19.25	9.44	34.46	48.38	274.84	120.58
fb : Actual	psi	1,586.5	1,272.7	1,247.6	1,089.1	655.4	1,645.1	924.1
Fb : Allowable	psi	1,635.2	1,635.2	1,421.9	1,093.8	1,203.1	1,665.6	1,812.5
		Bending OK	Bending OK	Bending OK	Bending OK	Bending OK	Bending OK	Bending OK
fv : Actual	psi	59.5	38.3	46.8	43.7	34.1	94.9	48.1
Fv : Allowable	psi	118.8	118.8	118.8	118.8	118.8	106.3	2,087.5
		Shear OK	Shear OK	Shear OK	Shear OK	Shear OK	Shear OK	Shear OK

Reactions

		175.50	222.30	159.75	305.30	496.00	3,077.00	1,360.00
@ Left End	DL	lbs						
	LL	lbs	180.00	228.00	119.81	228.97	512.00	2,312.00
	Max. DL+LL	lbs	355.50	450.30	279.56	534.27	1,008.00	5,389.00
@ Right End	DL	lbs	175.50	222.30	159.75	305.30	496.00	3,077.00
	LL	lbs	180.00	228.00	119.81	228.97	512.00	2,312.00
	Max. DL+LL	lbs	355.50	450.30	279.56	534.27	1,008.00	5,389.00

Deflections

		Ratio OK	Deflection OK	Deflection OK	Deflection OK	Deflection OK	Deflection OK	Deflection OK
Center DL Defl	in	-0.338	-0.435	-0.308	-0.479	-0.138	-0.377	-0.205
L/Defl Ratio		399.5	393.2	438.9	538.1	1,395.5	541.1	937.0
Center LL Defl	in	-0.347	-0.446	-0.231	-0.360	-0.142	-0.283	-0.174
L/Defl Ratio		389.5	383.3	585.2	717.5	1,351.9	720.1	1,106.2
Center Total Defl Location	ft	-0.685	-0.881	-0.538	-0.839	-0.280	-0.660	-0.378
L/Defl Ratio		197.2	194.1	250.8	307.5	686.7	308.9	507.3

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

Title :
 Dsgnr:
 Description :

Job #
 Date: 10:37AM, 26 JUL 05

Scope :

Rev: 580008
 User: KW-0602844, Ver 5.8.0, 1-Dec-2003
 (c)1983-2003 ENERCALC Engineering Software

Timber Beam & Joist

Kong.ecw:Calculations

Description BEAMS

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

		B4	LVL
Timber Section		2#2+1.75x11.875	MicroLam: 1.75x11.
Beam Width	in	6.186	1.750
Beam Depth	in	11.250	11.875
Le: Unbraced Length	ft	0.00	0.00
Timber Grade		Custom, DF#2 + LVL	Truss Joist - MacMillan,
Fb - Basic Allow	psi	1,450.0	2,600.0
Fv - Basic Allow	psi	1,670.0	285.0
Elastic Modulus	ksi	1,666.7	1,900.0
Load Duration Factor		1.250	1.250
Member Type		Manuf/Pine	Manuf/Pine
Repetitive Status		No	No

Center Span Data

Span	ft	16.00	20.50
Dead Load	#/ft	135.00	
Live Load	#/ft	176.00	
Point #1 DL	lbs		764.00
LL	lbs		784.00
@ X	ft		10.250

Results Ratio = 0.5050 0.7122

Mmax @ Center	in-k	119.42	95.20
@ X =	ft	8.00	10.25
fb : Actual	psi	915.2	2,314.7
Fb : Allowable	psi	1,812.5	3,250.0
		Bending OK	Bending OK
fv : Actual	psi	47.6	55.9
Fv : Allowable	psi	2,087.5	356.3
		Shear OK	Shear OK

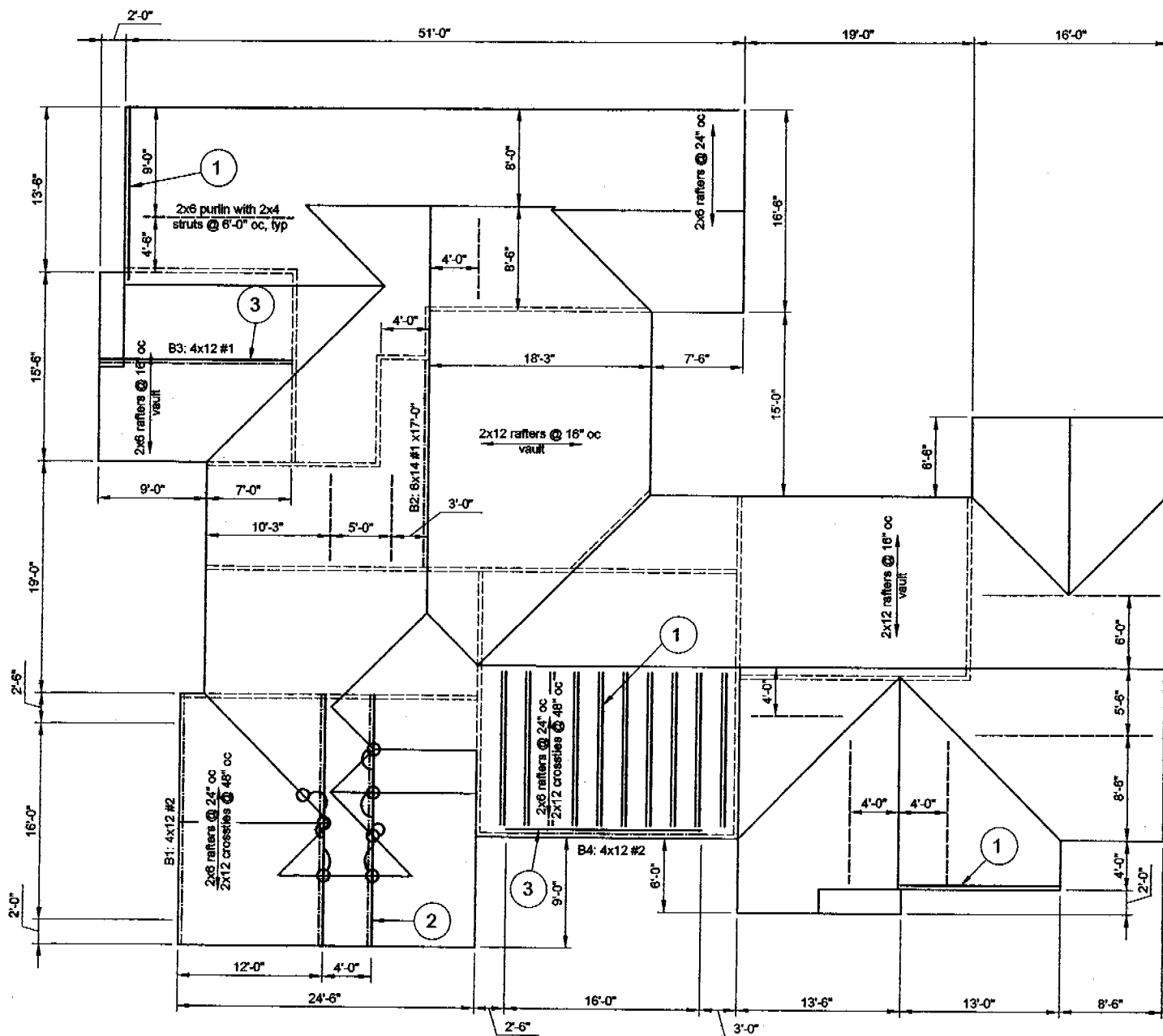
Reactions

@ Left End DL	lbs	1,080.00	382.00
LL	lbs	1,408.00	392.00
Max. DL+LL	lbs	2,488.00	774.00
@ Right End DL	lbs	1,080.00	382.00
LL	lbs	1,408.00	392.00
Max. DL+LL	lbs	2,488.00	774.00

Deflections Ratio OK Deflection OK

Center DL Def	in	-0.163	-0.511
L/Defl Ratio		1,179.9	481.7
Center LL Def	in	-0.212	-0.524
L/Defl Ratio		905.0	469.4
Center Total Def	in	-0.375	-1.035
Location	ft	8.000	10.250
L/Defl Ratio		512.2	237.7

6



FRAMING NOTES:

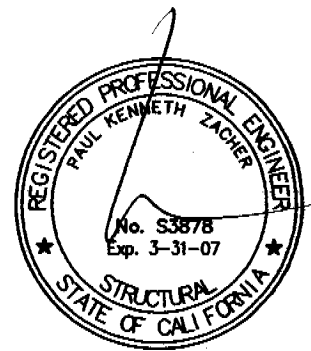
1. Scab a 2x6 to existing 2x6 rafters where the span is greater than 12'-0" (total 12).
2. Scab a 1-3/4" x 11-7/8" LVL to the existing 2x12 crossie with 16d's @ 4" oc. The ends of the LVL may be clipped as required to meet the slope of the rafters. The support at the exterior wall shall be a 2x8 x 2'-8" long ledger attached to the double top plate with 16d's @ 2" oc staggered. Support the existing ridge, hip and valley rafters to the LVL below with 2x4 struts. See detail 2.
3. Scab a 1 3/4" x 11 1/4" LVL to the existing 4x12 beam. See detail 3.

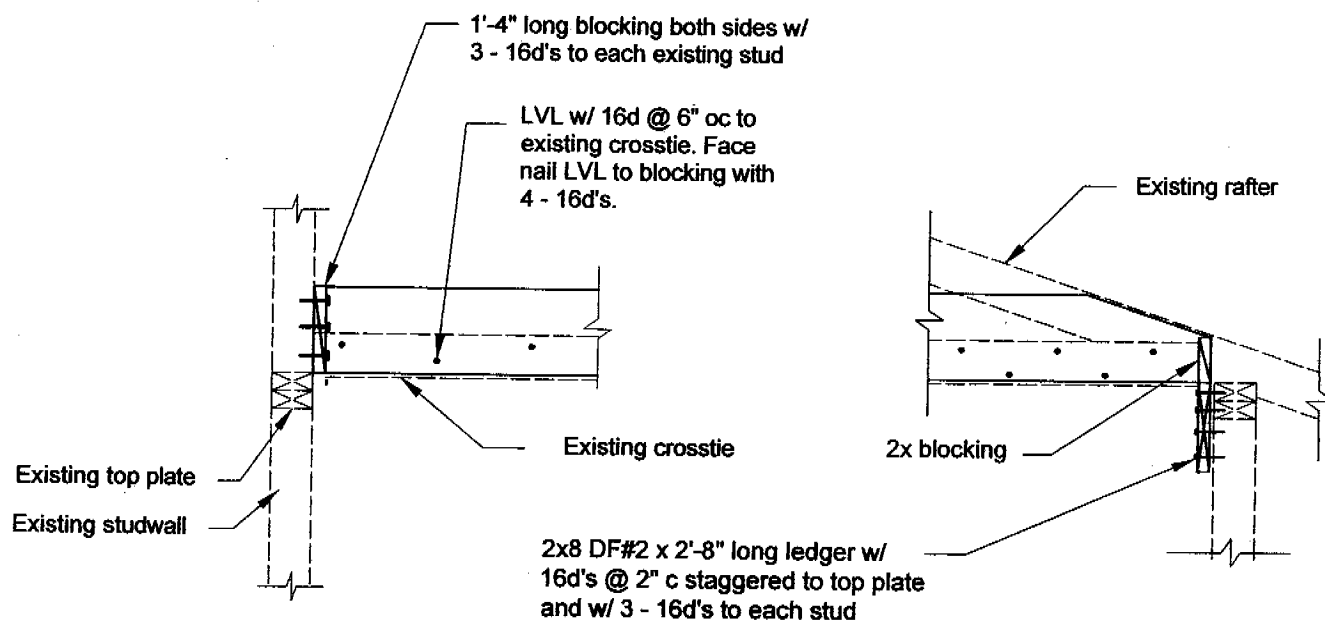
NOTES:

- A. This is a reroof project. The new roofing material shall be a Standard Weight Concrete Tile. The tile shall weigh less than or equal to 10.3 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.

1 **ROOF PLAN - KONG**
Not to Scale

7





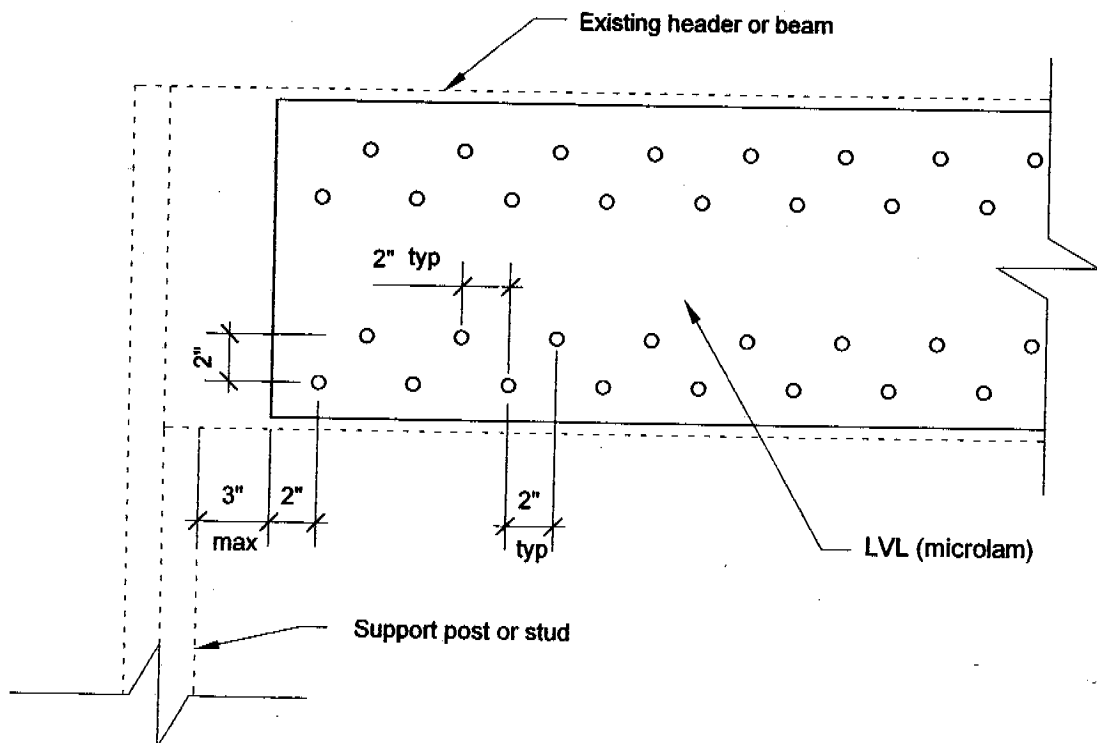
2

LEDGER CONNECTION

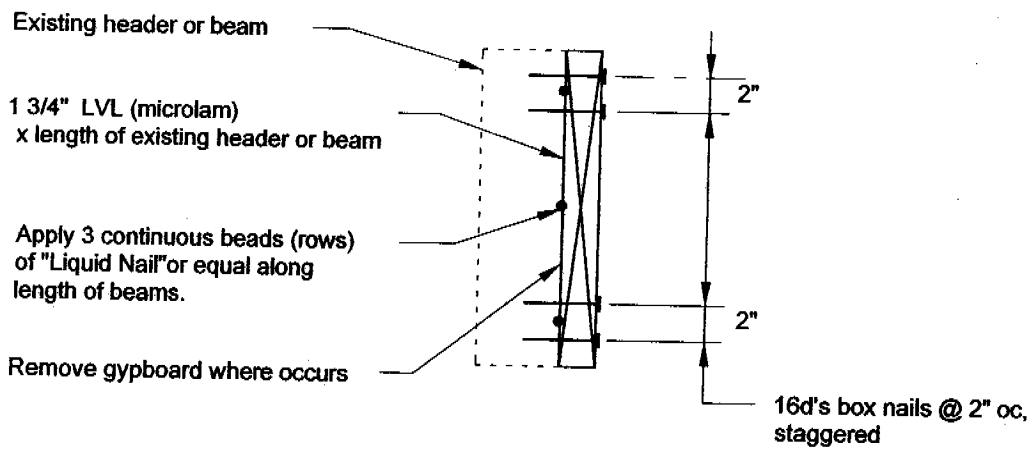
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8





ELEVATION



SECTION

3

DETAIL

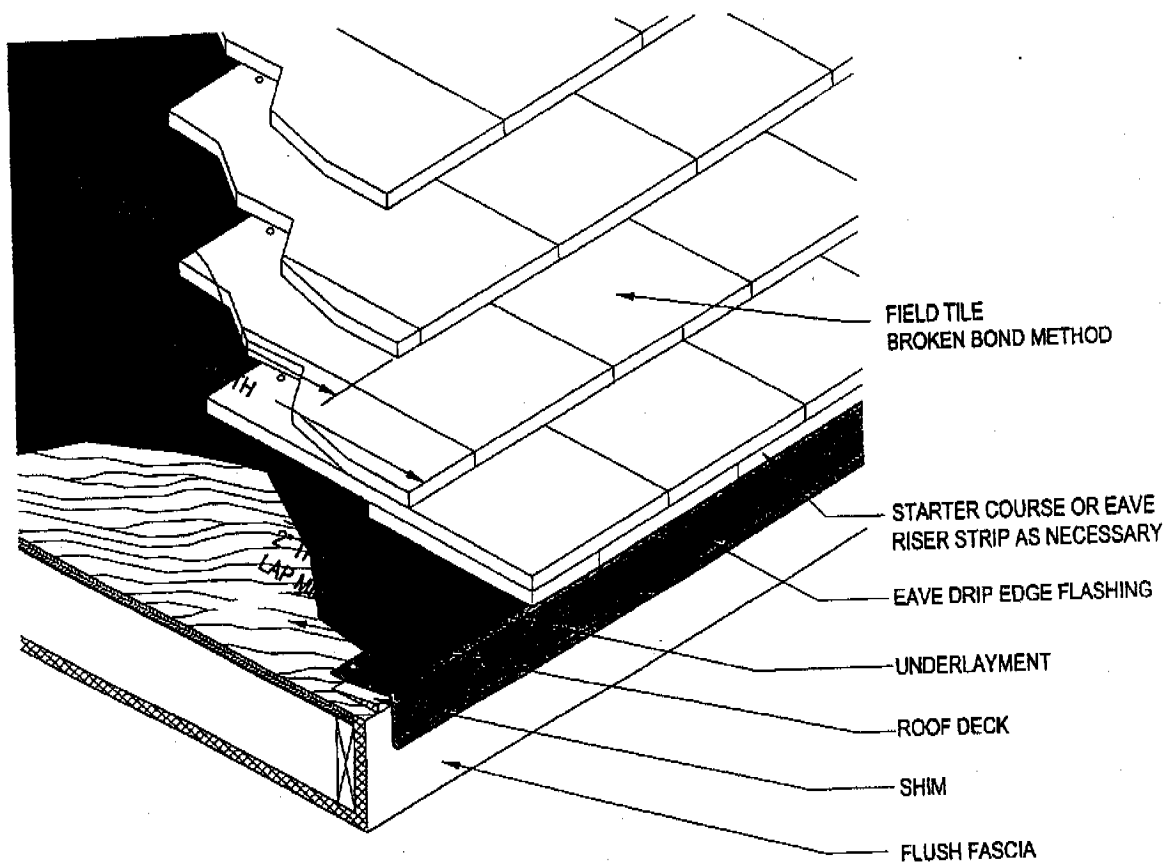
scale: 1 1/2" = 1'-0"

9



DOUBLE LAP TILE (AS DESIGNED)

MC-10F



Notes:

1. Provide one layer of No. 30 asphalt-saturated felt complying with ASTM D-226 (ASTM D4869 Type IV as minimum underlayment on all tile roof applications. Other underlayments as approved by local building officials will be allowed.
2. A sheet metal drip edge flashing is required with: stucco fascia, EIFS (Exterior Insulated Finish System) and flush fascia perimeter edges.
3. The fasteners must penetrate a minimum of 3/4" into dimensional wood decking or pass through wood panel sheathing which ever is less.
4. For recommended tile fastening schedule(s) see Fastening Table 1A and 1B.
5. Dimensions shown are minimums and are intended to be approximate to allow for reasonable tolerances due to field conditions.
6. Standard head lap equal to tile length minus 2" divided by 2.

Drawing shown depicts the application of a generic roof tile installation. Unless otherwise noted it would apply to either concrete or clay tiles.

ROOF LAYOUT - QUICK REFERENCE FOR ADJUSTABLE HEAD LAP TILE MC-08B

Course Spacing Table - For Tiles 16 1/2" to 17" in Length

To achieve optimum beauty, the area between the eave and ridge should be divided into equal tile courses, when possible. Minimum 3" overlap must be maintained for all tiles unless design of tile precludes.

17" - ONLY

16 1/2" - NOT TO EXCEED 13 1/2"

12 1/2"	12 3/4"	12 5/8"	12 7/8"	13"	13 1/8"	13 1/4"	13 1/2"	13 3/8"	13 1/2"	13 3/4"	13 7/8"	14"
2' 1"	2' 1 1/4"	2' 1 1/2"	2' 1 3/4"	2' 2"	2' 2 1/8"	2' 2 1/4"	2' 2 1/2"	2' 3"	2' 3 1/8"	2' 3 1/4"	2' 3 3/8"	2' 4"
3' 1 1/2"	3' 1 3/4"	3' 2"	3' 2 1/4"	3' 3"	3' 3 1/8"	3' 3 1/4"	3' 3 1/2"	3' 4"	3' 4 1/8"	3' 4 1/4"	3' 4 3/8"	3' 6"
4' 2"	4' 2 1/4"	4' 3"	4' 3 1/4"	4' 4"	4' 4 1/8"	4' 4 1/4"	4' 5"	4' 6"	4' 6 1/8"	4' 6 1/4"	4' 7"	4' 8"
5' 2 1/2"	5' 3"	5' 3 1/4"	5' 3 3/4"	5' 5"	5' 5 1/8"	5' 5 1/4"	5' 6"	5' 7 1/8"	5' 7 1/4"	5' 7 3/8"	5' 9"	5' 10"
6' 3"	6' 3 1/4"	6' 4"	6' 4 1/4"	6' 6"	6' 6 1/8"	6' 6 1/4"	6' 8"	6' 9"	6' 9 1/8"	6' 9 1/4"	6' 10 1/2"	7' 0"
7' 3 1/2"	7' 4 1/4"	7' 5 1/4"	7' 6 1/4"	7' 7"	7' 7 1/8"	7' 7 1/4"	7' 9 1/4"	7' 10 1/8"	7' 10 1/4"	7' 11 1/8"	8' 1 1/4"	8' 2"
8' 4"	8' 5"	8' 6"	8' 7"	8' 8"	8' 9"	8' 10"	8' 11"	9' 0"	9' 1"	9' 2"	9' 3"	9' 4"
9' 4 1/2"	9' 5 1/4"	9' 6 1/4"	9' 7 1/4"	9' 9"	9' 10 1/8"	9' 11 1/4"	10' 1 1/4"	10' 1 1/2"	10' 2 1/8"	10' 2 1/4"	10' 3 1/4"	10' 6"
10' 5"	10' 6 1/4"	10' 7 1/4"	10' 8 1/4"	10' 10"	10' 11 1/8"	11' 1 1/4"	11' 1 1/2"	11' 3"	11' 4 1/8"	11' 4 1/4"	11' 5 1/4"	11' 8"
11' 5 1/2"	11' 6 3/4"	11' 8 1/4"	11' 9 1/4"	11' 11"	12' 1 1/8"	12' 1 1/4"	12' 3 1/4"	12' 4 1/8"	12' 5 1/4"	12' 6 1/4"	12' 7 1/4"	12' 10"
12' 6"	12' 7 1/4"	12' 9"	12' 10 1/4"	13' 0"	13' 1 1/8"	13' 3"	13' 4 1/4"	13' 6"	13' 7 1/8"	13' 9"	13' 10 1/4"	14' 0"
13' 6 1/2"	13' 7 3/4"	13' 9 3/4"	13' 11 1/4"	14' 1"	14' 2 1/8"	14' 4 1/4"	14' 5 1/4"	14' 7 1/8"	14' 9 1/4"	14' 10 1/4"	15' 1/4"	15' 2"
14' 7"	14' 8 1/4"	14' 10 1/4"	15' 1/4"	15' 2"	15' 3 1/8"	15' 5 1/4"	15' 7 1/4"	15' 9"	15' 10 1/8"	16' 1/4"	16' 2 1/4"	16' 4"
15' 7 1/2"	15' 9 1/4"	15' 11 1/4"	16' 1 1/4"	16' 3"	16' 4 1/8"	16' 6 1/4"	16' 8 1/4"	16' 10 1/8"	17' 1/4"	17' 2 1/4"	17' 4 1/4"	17' 6"
16' 8"	16' 10"	17' 0"	17' 2"	17' 4"	17' 6"	17' 8"	17' 10"	18' 0"	18' 2"	18' 4"	18' 6"	18' 8"
17' 8 1/2"	17' 10 1/4"	18' 1/4"	18' 2 1/4"	18' 5"	18' 7 1/8"	18' 9 1/4"	18' 11 1/4"	19' 1 1/4"	19' 3 1/4"	19' 5 1/4"	19' 7 1/4"	19' 10"
18' 9"	18' 11 1/4"	19' 1 1/4"	19' 3 1/4"	19' 6"	19' 8 1/4"	19' 10 1/4"	20' 1/4"	20' 3"	20' 5 1/4"	20' 7 1/4"	20' 9 1/4"	21' 0"
19' 9 1/2"	19' 11 3/4"	20' 2 1/4"	20' 4 1/4"	20' 7"	20' 9 1/4"	20' 11 1/4"	21' 2 1/4"	21' 4 1/4"	21' 6 1/4"	21' 9 1/4"	21' 11 1/4"	22' 2"
20' 10"	21' 1/4"	21' 3"	21' 5 1/4"	21' 8"	21' 10 1/4"	22' 1"	22' 3 1/4"	22' 6"	22' 8 1/4"	22' 11"	23' 1 1/4"	23' 4"
21' 10 1/2"	22' 1 1/4"	22' 3 1/4"	22' 6 1/4"	22' 9"	22' 11 1/4"	23' 2 1/4"	23' 4 1/4"	23' 7 1/4"	23' 10 1/4"	24' 1/4"	24' 3 1/4"	24' 6"
22' 11"	23' 1 1/4"	23' 4 1/4"	23' 7 1/4"	23' 10"	24' 1/4"	24' 3 1/4"	24' 6 1/4"	24' 9"	24' 11 1/4"	25' 2 1/4"	25' 5 1/4"	25' 8"
23' 11 1/2"	24' 2 1/4"	24' 5 1/4"	24' 8 1/4"	24' 11"	25' 1 1/4"	25' 4 1/4"	25' 7 1/4"	25' 10 1/4"	26' 1 1/4"	26' 4 1/4"	26' 7 1/4"	26' 10"
25' 0"	25' 3"	25' 6"	25' 9"	26' 0"	26' 3"	26' 6"	26' 9"	27' 0"	27' 3"	27' 6"	27' 9"	28' 0"
26' 1/2"	26' 3 1/4"	26' 6 1/4"	26' 9 1/4"	27' 1"	27' 4 1/4"	27' 7 1/4"	27' 10 1/4"	28' 1 1/4"	28' 4 1/4"	28' 7 1/4"	28' 10 1/4"	29' 2"
27' 1"	27' 4 1/4"	27' 7 1/4"	27' 10 1/4"	28' 2"	28' 5 1/4"	28' 8 1/4"	28' 11 1/4"	29' 3"	29' 6 1/4"	29' 9 1/4"	30' 1/4"	30' 4"
28' 1 1/2"	28' 4 1/4"	28' 8 1/4"	28' 11 1/4"	29' 3"	29' 6 1/4"	29' 9 1/4"	30' 1 1/4"	30' 4 1/4"	30' 7 1/4"	30' 11 1/4"	31' 2 1/4"	31' 6"
29' 2"	29' 5 1/4"	29' 9"	30' 1/4"	30' 4"	30' 7 1/4"	30' 11"	31' 2 1/4"	31' 6"	31' 9 1/4"	32' 1"	32' 4 1/4"	32' 8"

Notes:

- Using a full tile, determine desired overhang at eave and snap horizontal chalk line across roof at head end of tile on direct deck or top of batten for batten installations. Use of rain gutters and eave closures should be considered in determining tile overhang.
- Snap horizontal chalk line at the top of the roof 1-1/2" from the center of the ridge (adjust for direct deck).
- In spacing guide, find column containing nearest figure to the measurement between eave and ridge course.
- Mark both ends of roof at course spacing shown in column.
- Snap chalk lines across roof at course markings.
- Nail top of battens to chalk line.

Drawing shown depicts the application of a generic roof tile installation. Unless otherwise noted it would apply to either concrete or clay tiles.

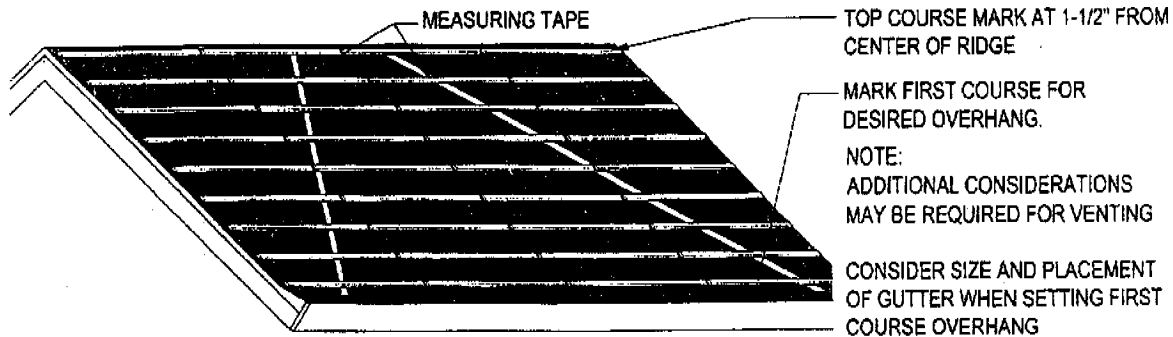
Appendix A

ROOF LAYOUT

UTILIZING SPECIALLY MARKED MEASURING TAPE

MC-08A

To achieve optimum beauty, the area between the eave and ridge should be divided into equal tile courses, when possible. Minimum 3" overlap must be maintained for all tiles unless design of tile precludes. (See MC-04 for batten applications)



Notes:

1. Using a full tile, determine desired overhang at eave and snap horizontal chalk line across roof at head end of tile or top of batten. Use of rain gutters and eave closures should be considered in determining tile overhang.
2. Snap a horizontal chalk line at the top of the roof 1-1/2" from the center of the ridge. (Adjust for direct deck)
3. With fiberglass or metal tape marked for maximum "exposed length" of tile being installed measure vertically from the bottom line near the ridge at either end of the roof. (i.e. 14" for a 17" length tile)
4. If a mark on your tape does not fall exactly upon top line, move the tape to the left or right until the next mark intersects the line.
5. Mark the deck at every mark on the tape.
6. Repeat this process at other end of roof.
7. Snap lines between marks on the deck. All courses will be equal with minimum recommended headlap maintained.
8. Repeat above steps on all roof planes.
9. Nail top of battens or tiles at each horizontal line.

ROOF LAYOUT FOR CLAY DIAGONAL CUT ONE-PIECE S TILE

Horizontal Lay-Out

1. Using a full tile, determine desired overhang at eave and snap a horizontal chalk line across roof at head end of tile. Use of rain gutters and eave closures shall be considered in determining tile overhang.
2. At the top of the roof deck, mark a reference point by measuring 1 1/2" from the center of the ridge, plus the distance of one full course (i.e. 15" for a 18" length tile).
3. Measure up the roof slope to the reference point and divide by the manufacturer's maximum exposure in an effort to determine if the roof section will terminate with a full tile. Mark roof deck for each course of tile and snap chalk lines over entire section.
4. If roof section does not terminate with a full tile at the ridge, decrease the course exposure in small increments (typically 1/4") in attempt to finish with a full tile at the ridge (see note below).
5. If the last course does not terminate with a full tile, cut to dimension, as required and fasten with a mechanical fastener or other approved fastening method.

Vertical Lay-Out

1. To ensure proper vertical alignment, determine the manufacturer's stated maximum on-center spacing requirements and snap chalk lines as a reference point, typically the inside of the tile.
2. For gable end roof sections, determine the proper distance from the left and right rakes and mark the eave and ridge section to align the edge of the tiles.
3. Measure between the two marks and divide by manufacturer's stated maximum on-center spacing. If required, decrease the on-center spacing, slightly in an effort to terminate with a full tile at gable end(s). Ensure that the installed tile are within the manufacturer's minimum/maximum on-center spacing requirements.

Note: Kiln fired clay tiles are allowed, by USB Code, a plus or minus 5% variance from the manufacturer's stated "nominal dimensions". It is the installer's responsibility to verify the "delivered" roof tiles dimensions prior to commencing with roof layout and to ensure that the tile is installed within the manufacturer's minimum headlap and on-center spacing requirements. Most diagonal-cut tiles will allow slight course exposure adjustments typically 1/4" per tile.

Drawing shown depicts the application of a generic roof tile installation. Unless otherwise noted it would apply to either concrete or clay tiles.