

CITY OF SACRAMENTO

Permit No: 9901990

1231 I Street, Sacramento, CA 95814

Insp Area: 2

Site Address: 67 SIX RIVERS CR SAC

Sub-Type: RES

Parcel No: 031-0260-022

Housing (Y/N): N

CONTRACTOR

FRED B CURTIS
7475 14TH AV
SACRAMENTO CA 95820

OWNER

HILL ANN MARIE
SACRAMENTO CA 95817

ARCHITECT

Nature of Work: TILE REROOF

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.

X License Class C-39 License Number 159577 Date 3/3/99 Contractor Signature Robert O'Neil

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.

X Date 3/3/99 Applicant/Agent Signature Robert O'Neil

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 692-98 UNIT 0002043 Exp Date 10/01/1999

_____, (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.

X Date 3/3/99 Applicant Signature Robert O'Neil

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.

TABLE 1 - INSTALLATION PROCEDURES FOR REGULAR-WEIGHT TILES
 MAXIMUM WIND VELOCITY UP TO 80 MPH ^{1,4} ROOF HEIGHTS NOT EXCEEDING 40 FEET

ROOF SLOPE	FIELD NAILING		NAILING FOR PERIMETER TILE AND TILE ON CANILEVERED AREAS ³
	Spaced or Solid Sheathing With Battens	Solid Sheathing Without Battens	
3:12 to and including 5:12	Not required	Every tile	Every tile
Above 5:12 to less than 12:12	Every tile every other row	Every tile	Every tile
12:12 and over	Every tile	Every tile	Every tile

¹In areas designated by the building official as being subject to repeated wind velocities in excess of 80 MPH or where roof height exceeds 40 feet above grade, all tiles shall be attached in accordance with Chapter 32 of the Uniform Building Code or as set forth below, whichever is more restrictive:

- (a) The heads of all tiles shall be nailed.
- (b) The noses of all eave course tiles shall be fastened with a special nail or clip.
- (c) All rake tiles shall be nailed with two nails.
- (d) The noses of all ridge, hip and rake tiles shall be set in continuous bead of approved roofer's mastic.

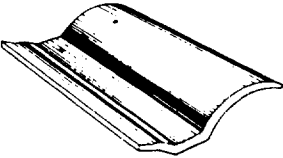
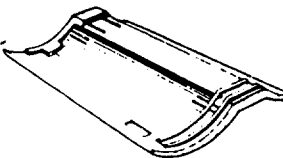
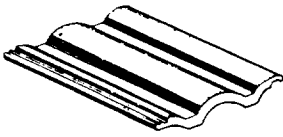
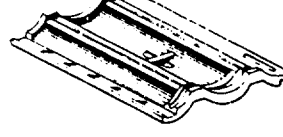
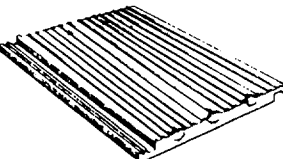
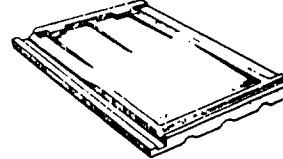
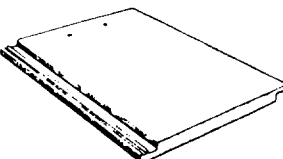
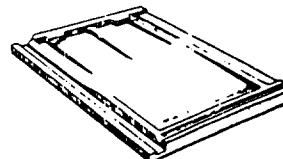
³Perimeter nailing areas include three tile courses but not less than 36 inches from either side of hips or ridges and edges of eaves and gable rakes. In special wind areas as designated by the building official, additional fastenings may be required.

⁴Lightweight tiles must be installed in accordance with Table No. 32-D-2 of Chapter 32 of the Uniform Building Code. Tiles with installed weight less than 9 pounds per square foot require a minimum of one fastener per tile regardless of roof slope.

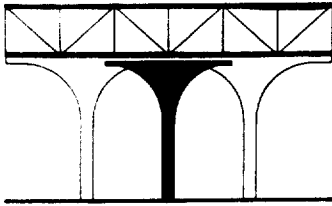
² 7:12 and above: battens are required.

67 Six Rivers Cir 9901990R

PIONEER ROOFING TILE, INC. FIELD TILE SPECIFICATIONS TABLE 2

STYLE	TOP	BOTTOM	Length	Height	Width	Weight	
						Light	PSF Conv.
REGAL			17-1/4"	3-1/4"	13-3/8"	6.4	9.7
HACIENDA			17-1/4"	2-1/16"	13"	6.9	9.1
SHAKE			17-1/4"	1-1/4"	13"	7.3	9.9
SLATE			17-1/4"	1-1/8"	13"	7.1	9.7

P. 1/6 Reviewed by Matt P. 3/3/99 Page 3 of 12



ENGINEERING

8952 NEW DAWN DRIVE
SACRAMENTO, CA 95826

GENE S. PORTER INC.

(916) 362-4363

FAX (916) 362-1715

Fred B. Curtis, Inc.
7475 14th Ave.
Sacramento, CA

Re: Reroof
67 Six River Circle
Sacramento, CA

Atten: Bob O'Dell

Dear Bob,

Per your request I visited the site with you and observed the following:

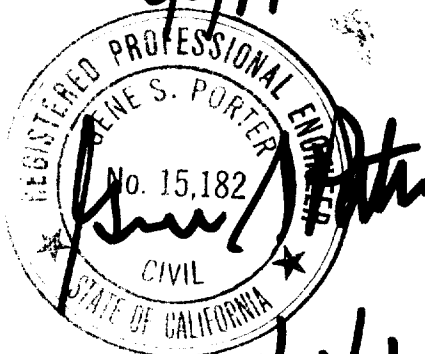
The existing roof framing is 2x4 trusses at 24"cc, with 1x6 spaced sheathing at 12"cc. The roof pitch is 4:12. It is my understanding that you plan to remove the existing tile roofing and replace it with tile of the same weight over new 7/16" OSB sheathing. The existing spaced sheathing is to remain.

The net weight gain to the roof framing is 1.5 lbs/sf. The existing trusses are capable of supporting this increase in loading.

Sincerely,


Gene S. Porter

via fax
451-1228



TECHNICAL BULLETIN

Pioneer

ROOFING TILE, INC.

ICBO REPORT # ER 3748

L. A. RESEARCH REPORT # RR 25141

© March 1994

CLASS "A" CONCRETE ROOFS

PIONEER CONCRETE ROOFING TILES

PIONEER ROOFING TILE, INC.

10650 POPLAR AVENUE

FONTANA, CALIFORNIA 92337

(909) 350-4238 FAX (909) 350-2298

I. Subject: Pioneer Concrete Roofing Tiles

II. Description: A. General: The tiles are made by extruding and forming under pressure, integrally colored or coloring the exposed surface with colored cementitious slurry and curing under controlled humidity-temperature conditions. Accessory and trim tile units are also available. The tiles have anchor lugs designed to engage wood battens, with the sides consisting of ribs and grooves for interlocking with tile. Two nail holes are provided at the top of each Hacienda, Shake and Slate tiles for fastening to the deck. Three nail holes are provided for the Regal profile. It is recommended on lower pitched roofs that the main body of field tiles be fastened utilizing the center nail hole. A nose lug and weather checks are provided at the bottom of each tile. The Hacienda tile has a total rise including the nose lug, of 2-1/16". Regal is 3-1/4". Shake and Slate are 1-1/4" 1-1/8" respectively.

Pioneer Lightweight Tile: The tiles are manufactured in the same manner, shape and size as regular-weight tiles, substituting lightweight aggregate and proprietary additives for sand.

B. Installation - New Construction: Tiles are limited to roofs having at least 1/2" thick exterior grade sheathing, (or I.C.B.O.E.S. RECOGNIZED EQUIVALENT) 1" nominal thick solid lumber nailed in accordance with the code. Spaced sheathing must be minimum 1 by 6 lumber graded in accordance with Table No. 25-R-2 of the code spaced a maximum of 14-1/4" on center. The roofs are limited to slopes between 3:12 to 21:12. Underlayment required on roof slopes between 3:12 and 4:12 must be a minimum of Type 40 felt. On slopes 4:12 and above, one layer of minimum Type 30 felt or equal is required. Note: any cut or half pieces that can not be nailed should be installed using approved roofer's cement at the headlap of interlocking sidelap with care not to block the water flow. All foreign material should be removed from the interlocking area of the tile to allow for proper fit. Cracked or broken tile must not be installed. All concrete roof tile cut dust should be swept or airblown off the roof daily to avoid staining the tiles during application. These installation recommendations are aimed at achieving the quality of finished product that is both pleasing to the eye and insuring a weather-tight roof. In the event of roofline areas of zero fascia / eave clearance and / or run-off flow directly in contact with stucco and / or painted

surfaces, it is recommended for the initial installation that some type of gutter, diverter, or deflection device be installed to channel the rooftop accumulation of weathered matter in order to avoid exposure or staining of the given surface. If any of the other construction tradesmen expose their materials to, and thereby contaminate, the surface of the roof tiles, there is an immediate need to remove the said materials from that surface or permanent damage may occur. If this process is ignored it may be necessary to remove and replace the damaged roof tile. It is the responsibility of the person or persons in charge to monitor the entire construction phase of the said project. Methods of good roofing practice need to be maintained throughout the roofing sequence in order to minimize waste and ensure a good quality installation. PIONEER ROOFING TILE, INC. DOES NOT WARRANTY ANY INSTALLATION METHOD OF ITS ROOFING TILES. The homeowner, builder, or applicator should assure that Pioneer roofing tiles are installed in accordance with local building codes and good roofing practice.

1. Sheathing: Solid sheathing of nominal 1"x 6" boards or minimum 1/2" thick exterior grade sheathing is installed in accordance with the code. It is mandatory, prior to roof loading of tiles, that the local code agency be contacted for approval in the given area where "spaced sheathing" method of installation has been specified. When tiles are installed on spaced sheathing an underlayment complying with ICBO Evaluation Service, Inc. must be complied with.

2. Roof Pitch: See Table No. 1 Where roof pitch is between 2-1/2:12 and 3:12, an approved built-up roof is installed over solid decking in compliance with Table No. 32-D-1 of the code. Vertical nominal 1" x 2" wood battens are then nailed over the built-up roofing at a maximum 24" on center into rafters with subsequent hot mopping of the entire roof. Horizontal nominal 1" x 2" wood battens are then nailed to the vertical battens at proper coursing not exceeding 14-1/4" on center. Nose end of tiles installed on pitches exceeding 18:12 are secured with a clip or approved adhesive.

On roof slopes 4:12 and above installation must comply with Table No. 1 and Table No. 32-D-2 of the code.

3. Underlayment: One layer of minimum Type 30 asphalt-saturated organic felt, meeting U.B.C. Standard No. 32-1, is carried over or under hip and ridge nailer boards and laced through valleys.

4. Battens: Where the roof pitch is 7:12 and above or where specified at lower pitches, nominal 1" x 2" wood-batten strips are nailed to decking on 24" centers, allowing a 1/2" separation at batten ends. If battens exceeding 48 inches are used, 2" square shims cut from asphalt shingles shall be placed between battens and the deck every 48" prior to nailing to provide drainage beneath the battens. Horizontal batten placement shall not exceed 14-1/4" on center.

5. Eave: Metal eave closure strips are recommended when using Regal tiles. Eave riser strips of wood or metal must be installed at eaves when using Hacienda, Shake or Slate tile. Eave closures and/or eave risers elevate eave tiles to the proper height, block wind, fire, snow, vermin, or birds, and allow drainage of moisture accumulated beneath the tiles to escape through weep holes in metal or slots in wood.

6. Fastening: Tiles are attached in accordance with Table No. 1. All the nails are minimum No. 11 gauge corrosion-resistant steel having a minimum 5/16" head and sufficient length to penetrate 3/4" into framing battens or through the thickness of the sheathing, whichever is less. Nailers boards of sufficient height to adequately support hip or ridge tiles are nailed into framing every 48" with 20-penny steel nails or secured using galvanized steel strapping or special galvanized steel attachment devices at 48" on center.

7. Trim Tile: Each hip or ridge tile is secured to nailer boards with one nail at the head end and a dab of roofers mastic or other permanent adhesive placed over the nailing area to secure succeeding tile. Colored mortar may be used at hip and ridge ends or to fill open areas beneath hip or ridge trim. All rake tiles are attached with two nails into the barge board.

8. Flashings: Valley metal should be copper or minimum No. 28 gauge galvanized steel formed with a 1" high splash diverter in the center and both longitudinal edges turned inward approximately 1/2" at 30-degree angles. Succeeding valley metal sections should overlap a minimum of 6" and be attached with clips or nails bent over the edges - not penetrating the metal. All exposed field or roof to wall flashing for Regal, Hacienda, tiles must be malleable metal (OR I.C.B.O. E.S. RECOGNIZED EQUIVALENT). Standard galvanized iron flashing may be used with Shake or Slate tiles. In all cases double flashing of pipe or vent penetration is recommended.

9. Reroofing: Pioneer Tiles provide a Class A fire-retardant roof when installed over existing asphalt-shingle roofs. Existing framing must be adequate for the additional load. The existing roof should be inspected in accordance with Appendix Chapter 32 of the code. When reroofing a wood shake roof, or shingle, existing shakes, or shingles, must be removed. Details not covered under this section are identical to those covered under New Construction.

10. Broken Tile Replacement: The broken tile is first removed. If battens were used originally, existing nails, if any, are cut and new tile inserted. If no battens were used, a 6" x 6" piece of 1/2" thick plywood is nailed to the deck to act as a batten, or apply mastic to overlapping areas of new tile and put in place.

11. Special Environments Conditions:

- a. In areas subject to snow, underlayment as required in Table No. 32-D-2 of the code is initially applied, Nominal 1" x 4" wood strips vertically over rafters (maximum 24" centers) and nominal 1 x 4" strips horizontally at proper course intervals are then nailed. All tiles are nailed with aluminum or hot-dipped galvanized nails.
- b. In areas where winds exceeding 100 mph exist directions in Table No. 1 are followed. Additionally, clips or approved adhesive are used to stabilize noses of all tiles.
- c. Severe weather blocks. In areas designated by local building departments as subject to roof-top accumulation of sand or snow or rains driven by high winds; Mortar, roofer's cement, or approved weather block should be used at ridge, hip or wall intersection of Regal, and Hacienda tiles to provide a weather block. In all other areas the application of mortar is an aesthetic option. Shakes and Slate (flat) tiles do not require weather blocks in any climate.

C. Fire Retardancy: Pioneer Roofing tile installations are recognized by the code as Class A have passed required tests to gain Class A recognition when installed over existing asphalt shingles.

D. 1989 Supplement to the U.B.C.: This report is unaffected by the Supplement.

E. Identification: Each tile is identified on the underside by the company name Hume or Pioneer. Pallets are stenciled with the company name.

III. Evidence Submitted: Reports of water absorption, strength, wind-resistance and wind-driven-rain, freeze - thaw, fire - retardant roof tests and installation details.

FINDINGS

IV. Findings: That the Concrete Roof Tile roofing systems are fire-retardant roof coverings under the 1991 Uniform Building Code, subject to the following conditions:

1. The tiles are manufactured, identified and installed in accordance with this report and manufacturer's instructions.
 2. Installation of tiles without field nailing is limited to localities which are subject to a maximum velocity of 80 mph. In areas subject to higher velocity, as determined by the building official, installation shall comply with the Footnote 1 in Table 1.
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ICBO Evaluation Service, Inc.

A subsidiary corporation of the International Conference of Building Officials

EVALUATION REPORT

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Report No. 2093

August, 1994

Filing Category: ROOF COVERING AND ROOF DECK CONSTRUCTION—Roof Covering (202)

MONIER VILLA, ROMA, CLASSIC "100," MISSION "S," HOMESTEAD, SPLIT SHAKE OR SLATE FLAT REGULAR WEIGHT AND PREMIUM DURALITE VILLA AND SPLIT SHAKE OR SLATE FLAT LIGHTWEIGHT EXTRUDED CONCRETE INTERLOCKING ROOF TILES

MONIER, INC.

POST OFFICE BOX 5567

ORANGE, CALIFORNIA 92668

I. Subject: Monier Villa, Roma, Classic "100," Mission "S," Homestead, Split Shake or Slate Flat Regular Weight and Premium Duralite Villa and Split Shake or Slate Flat Lightweight Extruded Concrete Interlocking Roof Tiles.

II. Description: A. **General:** The extruded concrete roof tiles are interlocking elements having the dimensions and configurations shown in accompanying figures. Accessory tile units are available for ridge, hip and gable areas. The tiles are of ribbed design varying in thickness from $\frac{3}{8}$ inch to 1 inch. Anchor lugs located on the underside of the tile overlap the wood battens, purlins or spaced sheathing for anchorage in the plane of the roof. Holes are provided in each tile for nailing where required by the installation. Interlocking ribs are provided on the longitudinal edges of the tile to restrict lateral movement and provide a water stop. In addition, transverse bars are provided on the underside to serve as weather checks. The tiles are composed of portland cement and selected sand aggregates. The proportioned mix is accurately maintained to ensure tile production in accordance with the approved specifications. The exposed surface is generally finished with a cementitious material colored with processed oxides. Alternately, processed oxides are mixed integrally with the tile mix to produce a through-colored product.

The Villa, Split shake or Slate Flat and Mission "S" tiles are also available as Premium Duralite lightweight tiles. They are manufactured in the same manner and size as regular weight tiles. The Premium Duralite tiles use lightweight aggregate with proprietary additives. The dry installed weights of the various tiles with 3-inch head lap are as follows:

TILE TYPE		INSTALLED WEIGHT (Pounds per square foot)
Roma		9.3
Classic "100"		9.5
Homestead		9.5
Mission "S"	Regular weight	9.5
Premium Duralite	Lightweight	5.9
Split Shake or Slate Flat	Regular weight	10.3
Premium Duralite	Lightweight	7.4
Villa	Regular weight	9.3
Premium Duralite	Lightweight	5.8

See Figure No. 1 for tile profiles and dimensional details.

B Installation—New Construction: 1. **General:** Care should be taken to ensure both horizontal and vertical alignment on the roof. Foreign par-

ticles must be cleaned from all interlocking areas to ensure correct fit and interlock and to prevent water damming. Cracked or broken tiles must not be installed nor allowed to remain on the roof. Regular weight tiles shall be installed in accordance with Table No. 1. Tiles installed on roof slopes less than 3:12 shall be applied over an approved roof covering, subject to the local building officials approval. In areas subject to freeze-thaw conditions tile installation must be in accordance with this report and Monier Technical Bulletin No. 623, dated December, 1984. In areas subject to snow fall in excess of 24 inches per year, tile installation must be in accordance with Monier Technical Bulletin 620, dated December, 1984. See Figure No. 2 for typical installation details.

2. **Sheathing:** All sheathing shall be adequate to support the loads involved. As a minimum, spaced sheathing shall be nominal 1-inch by 6-inch boards spanning a maximum of 24 inches. Maximum spacing shall not exceed that shown in Figure No. 3. Solid and spaced sheathing shall be nailed in accordance with the code.

3. **Battens:** a. Battens shall be nominal 1-inch by 2-inch boards and are required on solidly sheathed roofs where pitches fall below 3:12 in order to minimize membrane penetration and where pitches exceed 7:12 to provide positive tile anchorage. Battens must be fastened with corrosion-resistant 8-penny nails or approved equal at 24 inches on center. Tile installed on roof slopes less than 3:12 shall be applied over an approved roof covering, subject to the local building official's approval. Before installation of battens, nominal $\frac{3}{8}$ -inch decay-resistant wood lath strips are nailed to the deck vertically from eave to ridge at 24 inches on center. The entire deck is then top mopped with asphalt. Battens are then laid horizontally and fastened at all intersections to the vertical stripes. Tile is then attached in accordance with Table No. 1. Where tile is nailed, nails shall penetrate the full batten thickness but must not penetrate the subroof membrane. Batten installation on roof slopes 3:12 and greater shall have provision for drainage by providing a $\frac{1}{2}$ -inch break in battens every 4 feet or by shimming with moisture resistant $\frac{3}{8}$ -inch nominal lath or strips of decay resistant material such as asphalt cap sheet or asphalt shingle.

b. **Eave Preparation:** A raised fascia board or cant strip or Monier approved special accessory must be installed to ensure that the eave course of tiles lies in the same plane as the remainder of the field tile. Where a raised fascia is used, an anti-ponding device must also be used to support the underlayment.

4. **Headlap:** Headlap of tile shall be maintained at a minimum of 3 inches.

5. **Underlayment:** On solid-sheathing applications, underlayment shall be a minimum of Type 30 asphalt-saturated felt installed with minimum 2-inch headlap and 6-inch side lap. Underlayment under spaced sheathing shall be a special underlayment complying with the ICBO Evaluation Service, Inc., Acceptance Criteria for Concrete Tile Underlayment on Spaced Sheathing dated January, 1989. The underlayment is draped over the rafters with a 4-inch headlap and 6-inch side lap so as to allow for proper water drainage.

Evaluation reports of ICBO Evaluation Service, Inc., are issued solely to provide information to Class A members of ICBO, utilizing the code upon which the report is based. Evaluation reports are not to be construed as representing aesthetics or any other attributes not specifically addressed nor as an endorsement or recommendation for use of the subject report.

This report is based upon independent tests or other technical data submitted by the applicant. The ICBO Evaluation Service, Inc., technical staff has reviewed the test results and/or other data, but does not possess test facilities to make an independent verification. There is no warranty by ICBO Evaluation Service, Inc., express or implied, as to any "Finding" or other matter in the report or as to any product covered by the report. This disclaimer includes, but is not limited to, merchantability.

In areas subject to roof ice buildup, underlayment application must comply with Table No. 32-D-2 of the code.

6. **Flashing:** Valley flashings shall be No. 28 gauge corrosion-resistant metal flashing extending at least 11 inches from the centerline each way, with splash diverter rib not less than 1 inch high at the flow line formed as a part of the flashing. Flashing end laps shall be not less than 6 inches. When battens are used, an accessory batten extender, supplied by Monier, must be installed to support the tile and avoid damage to the flashing. Longitudinal edges shall be turned in not less than 30 degrees and shall be not less than 1/2 inch in height to prevent water overflow. Flashings around pipes, vents, flues, chimneys, etc., shall be of lead, copper or other approved material and shall be formed to follow the contours of the tile and allow proper seating of the tile. Where spaced sheathing is utilized, penetration flashing shall incorporate lead only.

7. **Tile Fastening:** (See Table No. I for nailing schedules.) Where field nailing is specified, one nail per tile is used and must be a minimum No. 10 gauge corrosion-resistant box nail of sufficient length to penetrate 3/4 inch into or through the thickness of the sheathing, whichever is less. The lightweight tiles are installed in accordance with Chapter 32 of the code.

8. **Hips, Ridges and Rakes:** Each hip and ridge tile is to be nailed to the supporting member using one corrosion-resistant nail of sufficient length to penetrate 3/4 inch into or through the thickness of the supporting member. Nose ends are to be set in a bead of roofer's mastic which also covers the nail head. All rake tile shall be fastened with two nails. The junction of field tile and hip and or ridge must be weatherproofed with an approved dry ridge/hip system or a bed of mortar or other approved bedding material.

Mortar shall be used sparingly and only to provide proper bedding of hip or ridge tiles in accordance with Monier technical bulletins. Weep holes are required in mortar at ridge. The interlocking joints between field tiles shall not be mortared.

C. **Installation—Reroofing Applications:** 1. **General:** Care should be taken to ensure both horizontal and vertical alignment on the roof. Foreign matter must be cleaned from all interlocking areas. Cracked or broken tiles must not remain on the roof. Existing framing must be adequate for the additional load. Structural data verifying adequacy should be submitted to the building official. The existing roof should be inspected in accordance with Appendix Chapter 32 of the code. When installed over existing spaced sheathing boards, plywood, or underlayment complying with the code, or an underlayment specifically recognized for this type of use in an ICBO ES evaluation report, installed with and without battens, may be used. One layer of Type 30 felt or approved equal underlayment must be installed on the roof prior to application of the tile. In lieu of providing this underlayment, the building official may determine that the existing roof covering provides the equivalent underlayment protection.

Minimum allowable roof slope is 3:12. Details not covered under this section are identical to those described under "New Construction." Fas-

teners must be of sufficient length to penetrate through the roof sheathing or minimum of 3/4 inch into the structural framing, whichever is less. Wood battens must be installed in accordance with paragraph 3. Predrilling of battens may be required to prevent splitting.

2. **Deck Preparation: a. Over asphalt shingle:** Wood battens must be provided for roof slopes over 7:12.

b. Over wood shingles and shakes (butt thickness up to and including 3/4 inch): All cupped or curled shingle or shake ends must be sawn off or nailed down. Ridge and hip caps must be removed and the existing roof covering cut back flush with the barge cover. Nominal 1-inch by 2-inch No. 2 Douglas fir-larch battens must be installed on a level plane for all slopes. This may necessitate cutting back of the butt ends or complete removal of the shingles or shakes in order to establish a level plane. The battens are fastened to the framing members with 16-penny corrosion-resistant nails.

c. **Wood shakes (average thickness over 3/4 inch):** Complete removal of shake is required.

3. **Eave Preparation:** Existing roof material must be cut back to allow installation of raised fascia board, cant strip, or Monier-approved special accessory.

4. **Flashing:** New vent stack flashing and minimum 24-inch-wide valley flashing must be installed over existing flashing. Flexible flashing should be used with all contour-shaped tiles.

D. **Identification:** Each shipping pallet is identified by means of a tag containing the evaluation report number, the Monier name, tile profile, and plant location. In addition, the lightweight tiles are identified by the name Premium Duralite on the pallet.

III. **Evidence Submitted:** Data in accordance with ICBO ES Acceptance Criteria for Special Roofing Systems dated July, 1994.

Findings

IV. **Findings:** That the Monier Concrete Tiles described in this report are Class 'A' roof coverings as defined in the 1991 *Uniform Building Code*™, subject to the following conditions:

1. They are manufactured, identified and installed in accordance with this report and the manufacturer's instructions.
2. They are manufactured at the Monier Roof Tile, Inc., plants, located in Corona, California; Ft. Lauderdale, Florida; Gilroy, California; Ewa Beach, Hawaii; Lakeland, Florida; Henderson, Nevada; Phoenix, Arizona; Salem, Oregon; Tacoma, Washington; French Camp, California; and Winters, California.

1993 Accumulative Supplement to the U.B.C.: This report is unaffected by the supplement.

This report is subject to re-examination in one year.

TABLE NO. I—INSTALLATION PROCEDURES FOR MAXIMUM WIND VELOCITY UP TO 80 MPH ROOF HEIGHTS NOT EXCEEDING 40 FEET^{1,2}

ROOF SLOPE	FIELD TILE NAILING		NAILING FOR PERIMETER TILE AND TILE ON CANTILEVERED AREAS ³
	Spaced or Solid Sheathing With Battens	Solid Sheathing Without Battens ⁴	
3:12 to less than 5:12	Not required	Every tile	Every tile
5:12 to less than 12:12	Every tile every other row	Every tile	Every tile
12:12 and over	Every tile	Every tile	Every tile

In areas designated by the building official as being subject to repeated wind velocities in excess of 80 mph or where roof height exceeds 40 feet above grade, all tiles shall be attached in accordance with the Building Code or as set forth below, whichever is more restrictive:

- a. The heads of all tiles shall be nailed.
 - b. The noses of all eave course tiles shall be fastened with a special clip.
 - c. All rake tiles shall be nailed with two nails.
 - d. The noses of all ridge, hip and rake tiles shall be set in a bead of approved roofer's mastic.
 - e. The installed weight of the concrete tiles must be a minimum of 9 pounds per square foot. For fastening of lightweight tiles refer to Chapter 32 of the code.
- ²Structures or portions thereof with large, unglazed openings and without solid roof sheathing or solid ceilings, such as garages, shall have all tile in alternate rows within the field of the roof, attached in accordance with the code when wind velocities are between 70 and 80 mph.
- ³Perimeter nailing areas include three tile courses but not less than 36 inches from either side of hips or ridges and edges of eaves and gable rates. In special wind areas as designated by the building official, additional fastenings may be required.
- ⁴For slopes exceeding 7:12, battens are required.

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