Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

van Crayningen / van Hart Residence — Project Title — Date: 9/8/2006
835 Westridge Drive Portola Valley — Project Address — Building Permit #
Bear Technologys — Documentation Author — (760).635-2327 Telephone — Plan Check/Date
EnergyPro — Compliance Method — 3 Climate Zone — Field Check/Date

	Standard Design	Proposed Design	Compliance Margin
TDV (kBtu/sf.yr)			
Space Heating	13.67	11.04	2.63
Space Cooling	4.87	5.98	-1.10
Fans	1.54	0.94	0.61
Domestic Hot Water	4.88	2.61	2.28
Pumps	0.00	0.00	0.00
Totals	24.97	20.56	4.40

Percent better than Standard: 17.6%

BUILDING COMPLIES - NO HERS VERIFICATION REQUIRED

Building Type: [X] Single Family [ ] Addition [ ] Multi Family [ ] Existing + Add/Alt
Building Front Orientation: (W) 270 deg
Fuel Type: Natural Gas
Fenestration:
Area: 1,690 ft² Avg. U: 0.42
Ratio: 32.3% Avg. SHGC: 0.45

Total Conditioned Floor Area: 5,237 ft²
Existing Floor Area: n/a ft²
Raised Floor Area: 3,705 ft²
Slab on Grade Area: 0 ft²
Average Ceiling Height: 8.7 ft
Number of Dwelling Units: 1.00
Number of Stories: 2

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
HVAC	5,237	45,599	1.00	Conditioned	Setback	0	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac	Insulation Cav.	Insulation Cont.	Act. Azm.	Act. Tilt	Gains Y/N	Gains Status	JA IV Reference	Location / Comments
Roof	Wood	2,265	0.032	R-30	R-0.0	0	22	X	New	01-A7	1st Floor Zone
Wall	Wood	198	0.102	R-13	R-0.0	0	90	X	New	09-A3	1st Floor Zone
Wall	Wood	645	0.102	R-13	R-0.0	0	90	X	New	09-A3	1st Floor Zone
Wall	Wood	572	0.102	R-13	R-0.0	90	90	X	New	09-A3	1st Floor Zone
Wall	Wood	540	0.102	R-13	R-0.0	180	90	X	New	09-A3	1st Floor Zone
Door	None	24	1.450	None	R-0.0	180	90	X	New	28-A1	1st Floor Zone
Wall	Wood	665	0.102	R-13	R-0.0	270	90	X	New	09-A3	1st Floor Zone
Door	None	24	1.450	None	R-0.0	270	90	X	New	28-A1	1st Floor Zone
Floor	Wood	3,705	0.031	R-25	R-0.0	0	180	X	New	20-A5	1st Floor Zone
Roof	Wood	179	0.036	R-30	R-0.0	0	22	X	New	02-A3	2nd Floor Zone
Roof	Wood	1,440	0.032	R-30	R-0.0	0	22	X	New	01-A7	2nd Floor Zone
Wall	Wood	210	0.102	R-13	R-0.0	0	90	X	New	09-A3	2nd Floor Zone
Wall	Wood	325	0.102	R-13	R-0.0	90	90	X	New	09-A3	2nd Floor Zone
Wall	Wood	220	0.102	R-13	R-0.0	180	90	X	New	09-A3	2nd Floor Zone
Wall	Wood	308	0.102	R-13	R-0.0	270	90	X	New	09-A3	2nd Floor Zone

Run Initiation Time: 09/08/06 16:31:13 Run Code: 1157758273

Mandatory Measures Summary: Residential (Page 2 of 2) MF-1R

NOTE: Lowrise residential buildings subject to the Standards must contain these measures regardless of the compliance approach used. More stringent compliance requirements from the Certificate of Compliance supercede the items marked with an asterisk (*) below. When this checklist is incorporated into the permit documents, the features noted shall be considered by all parties as minimum component performance specifications for the mandatory measures whether they are shown elsewhere in the documents or on this checklist only.

DESCRIPTION — Instructions: Check or initial applicable boxes when completed or check N/A if not applicable	N/A	ENFORCE: DESIGNER	ENFORCE: MENT
Space Conditioning, Water Heating and Plumbing System Measures: (continued)			
150(m): Ducts and Fans			
1. All ducts and plenums installed, sealed and insulated to meet the requirements of the CMC Sections 601, 602, 603, 604, 605, and Standard 6-5; supply-air and return-air ducts and plenums are insulated to a minumum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used.			
2. Building cavities, support platforms for air handlers, and plenums defined or constructed with materials other than sealed sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cause reductions in the cross-sectional area of the ducts.			
3. Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.			
4. Exhaust fan systems have back draft or automatic dampers.			
5. Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operating dampers.			
6. Protection of Insulation. Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material.			
7. Flexible ducts cannot have porous inner cores.			
114: Pool and Spa Heating Systems and Equipment			
1. A thermal efficiency that complies with the Appliance Efficiency Regulations, on-off switch mounted outside of the heater, weatherproof operating instructions, no electric resistance heating and no pilot light.			
2. System is installed with:			
a. At least 36" of pipe between filter and heater for future solar heating.			
b. Cover for outdoor pools or outdoor spas.			
3. Pool system has directional inlets and a circulation pump time switch.			
115: Gas fired fan-type central furnaces, pool heaters, spa heaters or household cooking appliances have no continuously burning pilot light. (Exception: Non-electrical cooking appliances with pilot < 150 Btu/hr)		X	
118 (i): Cool Roof material meets specified criteria			
Lighting Measures			
150(k)1: HIGH EFFICACY LUMINAIRES OTHER THAN OUTDOOR HID: contain only high efficacy lamps as outlined in Table 150-C, and do not contain a medium screw base socket (E24/E26). Ballasts for lamps 13 Watts or greater are electric and have an output frequency no less than 20 kHz.		X	
150(k)1i: HIGH EFFICACY LUMINAIRES - OUTDOOR HID: contain only high efficacy lamps as outlined in Table 150-C, luminaire has factory installed HID ballast.			
150(k)2 Permanently installed luminaires in kitchens shall be high efficacy luminaires. Up to 50% of the Wattage, as determined in Section 130(c), of permanently installed luminaires in kitchens may be in luminaires that are not high efficacy luminaires, provided that these luminaires are controlled by switches separate from those controlling the high efficacy luminaires.		X	
150(k)3 Permanently installed luminaires in bathrooms, garages, laundry rooms, utility rooms shall be high efficacy luminaires. OR are controlled by an occupant sensor(s) certified to comply with Section 119(d).		X	
150(k)4 Permanently installed luminaires in closets, hallways, garages, laundry rooms, and utility rooms shall be high efficacy luminaires (except closets less than 70 ft) OR are controlled by a dimmer switch OR are controlled by an occupant sensor that complies with Section 119(d) that does not turn on automatically or have an always on option.		X	
150(k)5 Luminaires that are recessed into insulated ceilings are approved for zero clearance insulation cover (IC) and are certified to ASTM E283 and labeled as air tight (AT) to less than 2.0 CFM at 75 Pascals.		X	
150(k)6 Luminaires providing outdoor lighting and permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy luminaires (not including lighting around swimming pool/water features or other Article 680 locations) OR are controlled by occupant sensors with integral photo control certified to comply with Section 119(d).			
150(k)7: Lighting for parking lots for 8 or more vehicles shall have lighting that complies with Sections 130, 132, and 147. Lighting for parking garages for 8 or more vehicles shall have lighting that complies with Section 130, 131, and 146.			
150(k)8 Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires OR are controlled by occupant sensor(s) certified to comply with Section 119(d).			

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

van Crayningen / van Hart Residence — Project Title — Date: 9/8/2006

FENESTRATION SURFACES

#	Type		Area	U-Factor[1]	SHGC[1]	True Azm.	True Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Left (N)	345.0	0.430	NFRC 0.46	0	90	New	Dual Vinyl w/Air	1st Floor Zone
2	Window	Rear (E)	417.1	0.430	NFRC 0.46	90	90	New	Dual Vinyl w/Air	1st Floor Zone
3	Window	Right (S)	430.1	0.430	NFRC 0.46	180	90	New	Dual Vinyl w/Air	1st Floor Zone
4	Window	Front (W)	117.9	0.430	NFRC 0.46	270	90	New	Dual Vinyl w/Air	1st Floor Zone
5	Skylight	Left (N)	64.0	0.100	NFRC 0.20	NFRC	0	22	New	Kalwall 2nd Floor Zone
6	Window	Left (N)	45.8	0.430	NFRC 0.46	NFRC	0	90	New	Dual Vinyl w/Air 2nd Floor Zone
7	Window	Rear (E)	108.8	0.430	NFRC 0.46	NFRC	90	90	New	Dual Vinyl w/Air 2nd Floor Zone
8	Window	Right (S)	34.5	0.430	NFRC 0.46	NFRC	180	90	New	Dual Vinyl w/Air 2nd Floor Zone
9	Window	Front (W)	126.0	0.430	NFRC 0.46	NFRC	270	90	New	Dual Vinyl w/Air 2nd Floor Zone

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt	Window Wid	Overhang Len	Overhang Hgt	Overhang Hgt	Overhang Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
1	Bug Screen	0.76											
2	Bug Screen	0.76											
3	Bug Screen	0.76											
4	Bug Screen	0.76											
5	None	1.00											
6	Bug Screen	0.76											
7	Bug Screen	0.76											
8	Bug Screen	0.76											
9	Bug Screen	0.76											

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Inside Cond	R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments

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Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

van Crayningen / van Hart Residence — Project Title — Date: 9/8/2006

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
HVAC	Combined Hydronic	see below	Hydronic Heat Pump	11.0 EER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
HVAC	Radiant Floor	Ducted	Attic	4.2	New	No

Hydronic Piping

System Name	Pipe Length	Pipe Diameter	Insul. Thick.
Takagi Tankless	5	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated[1] Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE[1]	Standby[1] Loss (%)	Tank Insul. R-Value Ext.
Takagi Tankless	Large Gas	Kitchen Pipe Ins.	2	185,000	0	New	0.82	0.00%	0.0

Multi-Family Central Water Heating Details

Control	#	HP	Type	Hot Water Pump In Plenum	Hot Water Piping Length (ft) Outside	Buried	Add 1/2" Insulation

1 For small gas storage (rated input <= 75000 Btu/hr), electric resistance and heat pump water heaters, list energy factor. For large gas storage water heaters (rated input > 75000 Btu/hr), list Rated Input, Recovery Efficiency and Standby Loss. For instantaneous gas water heaters, list Rated Input, and Recovery Efficiency.

REMARKS

Attached Heating/Cooling load summary as well as the W S-SR are submitted as part of the calculations required by the current regulations. DO NOT USE FOR ACTUAL HEATING/COOLING or LIGHTING DESIGN.

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement theirThis certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)
Name:
Title/Firm: Architect
Address: 835 Westridge Drive Portola Valley, CA 92028
Telephone: (650) 561-9552
Lic. #:
(signature) (date)

Documentation Author
Name: Wayne Seward, CEA R05-04-5184
Title/Firm: Bear Technologys
Address: 7774 Calle Mejor Carlsbad, CA 92009
Telephone: (760) 635-2327
(signature) 9/8/2006 (date)

Enforcement Agency
Name:
Title/Firm:
Address:
Telephone:
(signature/stamp) (date)

Run Initiation Time: 09/08/06 16:31:13 Run Code: 1157758273

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

van Crayningen / van Hart Residence — Project Title — Date: 9/8/2006

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
The DHW System "Takagi Tankless" is a Large Gas water heater with Pilot Loss = 0 btu/h.		
The DHW System "Takagi Tankless" includes credit for a Solar System with a 25.0% Solar Fraction (see CF-SR).		
The HVAC System "HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating (see CF-1R).		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a CEC-approved HERS provider using CEC approved testing and/or verification methods and must be reported on the CF-4R installation certificate.

	Plan	Field

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Mandatory Measures Summary: Residential (Page 1 of 2) MF-1R

NOTE: Lowrise residential buildings subject to the Standards must contain these measures regardless of the compliance approach used. More stringent compliance requirements from the Certificate of Compliance supercede the items marked with an asterisk (*) below. When this checklist is incorporated into the permit documents, the features noted shall be considered by all parties as minimum component performance specifications for the mandatory measures whether they are shown elsewhere in the documents or on this checklist only.

DESCRIPTION — Check or initial applicable boxes when code sections N/A if not applicable and included with the permit application documentation.	N/A	ENFORCE: DESIGNER	ENFORCE: MENT
Building Envelope Measures			
* 150(a): Minimum R-19 in wood ceiling insulation or equivalent U-factor in metal frame ceiling.		X	
150(b): Loose fill insulation manufacturer's labeled R-Value:_____.			
* 150(c): Minimum R-13 wall insulation in wood framed walls or equivalent U-factor in metal frame walls (does not apply to exterior mass walls).		X	
* 150(d): Minimum R-13 raised floor insulation in framed floors or equivalent U-factor.		X	
150(e): Installation of Fireplaces, Decorative Gas Appliances and Gas Logs.			
1. Masonry and factory-built fireplaces have:			
a. closable metal or glass door covering the entire opening of the firebox		X	
b. outside air intake with damper and control, flue damper and control		X	
2. No continuous burning gas pilot lights allowed.			
150(f): Air retarding wrap installed to comply with 151 meets requirements specified in the ACM Residential Manual.			
150(g): Vapor barriers mandatory in Climate Zones 14 and 16 only.			
150(i): Slab edge insulation - water absorption rate for the insulation alone without facings no greater than 0.3%, water vapor permeance rate no greater than 2.0 perm/inch.			
118 Insulation specified or installed meets insulation installation quality standards. Indicate type and include CF-6R Form: _____			
116-17: Fenestration Products, Exterior Doors, and Infiltration/Exfiltration Controls.			
1. Doors and windows between conditioned and unconditioned spaces designed to limit air leakage.		X	
2. Fenestration products (except field fabricated) have label with certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration certification.		X	
3. Exterior doors and windows weatherstripped; all joints and penetrations caulked and sealed.			
Space Conditioning, Water Heating and Plumbing System Measures			
110-13: HVAC equipment, water heaters, showerheads and faucets certified by the Energy Commission.		X	
150(h): Heating and/or cooling loads calculated in accordance with ASHRAE, SMACNA or ACCA.			
150(i): Setback thermostat on all applicable heating and/or cooling systems.			
150(j): Water system pipe and tank insulation and cooling systems line insulation.			
1. Storage gas water heaters rated with an Energy Factor less than 0.58 must be externally wrapped with insulation having an installed thermal resistance of R-12 or greater.			
2. Back-up tanks for solar systems, unfired storage tanks, or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation and indicated on the exterior of the tank showing the R-value.			
3. The following piping is insulated according to Table 150-A/B or Equation 150-A Insulation Thickness:			
1. First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating systems, and entire length of recirculating sections of hot water pipes shall be insulated to Table 150B.			
2. Cooling system piping (suction, chilled water, or brine lines), piping insulated between heating source and indirect hot water tank shall be insulated to Table 150-B and Equation 150-A.			
4. Steam hydronic heating systems or hot water systems > 15 psi, meet requirements of Table 123-A.			
5. Insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.			
6. Insulation for chilled water piping and refrigerant suction piping includes a vapor retardant or is enclosed entirely in conditioned space.			
7. Solar water-heating systems/collectors are certified by the Solar Rating and Certification Corporation.			

Residential Mandatory Measures

(A) Before the building may be occupied, installation certificates for manufactured devices regulated by the Appliance Standards or Part 6 shall be posted adjacent to the building permit(s). Certificate shall:

1. Identify features required to verify compliance with the Appliance Standards and Part 6;
2. Include the statement indicating that the installed devices conform to the Appliance Standards and Part 6 and the requirements for such devices given in the plans and specifications approved by the local enforcement agency;
3. State the number of the building permit under which the construction or installation was performed.

Sec. 10-103 (a) (3) (A)

(B) The builder shall provide the building owner, manager and the original occupants the appropriate Certificate(s) of Compliance and a list of the features, materials, components, and mechanical devices installed in the building, and the instructions on how to use them efficiently. Sec. 10-103 (b) (1)

(C) After installing wall, ceiling, or floor insulation, the installer shall post in a conspicuous location in the building a certificate signed by the installer stating that the installation is consistent with the plans and the requirements of Section 10-103(a)(2)(A) and conforms with the requirements of Part 6. The certificate shall also state the manufacturer's name and material identifications and the installed R-value. Sec. 10-103 (a) (4)

(D) Manufactured fenestration products shall be certified for overall U-values and overall SHGC as rated by the National Fenestration Rating Council's NFRC 200:

1. Have a clearly visible temporary label, not to be removed before inspection by the enforcement agency, listing the certified U-value, solar heat gain coefficient (SHGC) of the product and the method used to derive those values. Also, the label should indicate compliance with sir infiltration requirements od Section 1116(a)(1).
2. Have a permanent label meeting the requirements of Section 10-111(a)(2)

Sec. 116 (a)

(E) Field fabricated skylights and windows, and exterior doors, shall be caulked between the fenestration product and the building, shall be weather-stripped.
EXCEPTION: Unframed glass doors and fire doors. Sec. 116 (b)

(F) Joints and other openings in the building envelope that are potential sources of air leakage shall be caulked, gasketed, weather-stripped, or otherwise sealed to limit infiltration and exfiltration. Sec. 117

(G) All insulating material shall be installed in compliance with the flame spread rating smoke density requirements of Section 707 of the UBC. Sec. 118 (c)

(H) Heat Pumps with supplementary electric resistance heaters shall have controls:
1. That prevent supplementary heater operation when the heating load can be met by the heat pump alone; and
2. In which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut off temperature for compression heating is higher than the cut-off temperature for supplementary heating.

Sec. 112 (b)

(I) Masonry or factory-built fireplaces shall have the following:
1. Closable metal or glass doors covering the entire opening of the firebox.
2. A combustion air intake to draw air from the outside of the building directly into the firebox, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight fitting damper or combustion air control device
EXCEPTION: Not required if fireplace is installed over a concrete slab and will not be located on an exterior wall.
3. A flue damper with a readily accessible control.
EXCEPTION: When a gas log, log lighter, or decorative gas appliance is installed in a fireplace, the flue damper shall be blocked open if required by the manufacturer's installation instructions or the State Mechanical Code.
4. Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building, are prohibited. Sec. 150 (e)

(J) All heating and/or cooling systems other than wood stoves shall have an automatic thermostat with a clock mechanism or other setback mechanism that shuts the system off during periods of non-use and that allows the building occupant to automatically set back the thermostat set points for at least 2 periods within 24 hours. Sec. 150 (i)

(K) The air handling duct system shall be constructed, installed, sealed and insulated as provided in Chapter 6 of the Uniform Mechanical Code. (Must be insulated to a minimum installed level of R-4.2 or be in conditioned space) Sec. 150 (m

(L) All fan systems exhausting air from the building to the outside shall be provided with backdraft or automatic dampers to prevent air leakage. Sec. 150 (m) (7)

(M) Storage gas water heaters with an energy factor < 0.58 shall be externally wrapped with insulation having installed thermal resistance of R-12 or greater. Sec. 150 (j) 1A

(N) Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water heating systems, shall be externally wrapped with insulation having an installed thermal resistance of R-12 or greater or have internal insulation of at least R-16 and a label on the exterior of the tank showing the insulation R-valve. Sec. 150 (j 1B

(O) Duct system openings, shall be sealed with mastic, tape aerosol sealant, or other duct closure system that meets the applicable requirements of UL 181, UL 181A, or UL181B including collars, connections and splices. If mastic or tape is used to seal opening greater than 1/4 inch, the combination of mastic and either mesh ot tape shall be used. Sec. 150 (m)

(P) Building cavities shall not be used for conveying conditioned air. Sec. 150 (m)

(Q) Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and drawbands. Sec. 150 (m)

(R) Piping, buried or unburied, for recirculating sections of domestic hot water systems, piping from the heating source to the storage tank for an indirect-fired domestic water heating system, cooling system piping below 55 F, and the first five feet of hot and cold water pipes from the storage tank for non-recirculating systems shall be thermally insulated in accordance with Table No. 1-T.
Sec. 150 (j) (2)

(S) Lamps used in luminaries for general lighting in kitchens and bathrooms shall have efficacy of not less than 40 lumens per watt. (Fluorescent type lighting will meet this requirement). Sec. 150 (k)

(T) In climate zones 14 and 16 a vapor barrier shall be installed on the conditioned space side of all insulation in all exterior walls, invented attics, and invented crawl spaces to protect insulation from condensation. Sec. 150 (g)

(U) Any new low-rise residential building shall meet the following minimum requirements:

1. Ceiling Insulation %%u The opaque portions of ceilings separating conditioned spaces from unconditioned spaces or ambient air shall meet the requirements of either a. or b. below:

a. Ceilings shall be insulated between framing members with insulation resulting in an installed thermal resistance of R-19 or greater for the insulation alone.

ALTERNATIVE to Section 150 (a) 1: Insulation which is not penetrated by framing members may meet an R-value equivalent to installing R-19 insulation between framing members and accounting for the thermal effects of framing members.

b. The weighted average U-value of ceiling shall not exceed the U-value that would result from installing R-19 insulation between framing members in the entire ceiling and accounting for the effects of framing members.

2. Loose Fill Insulation %%u When loose fill insulation is installed, the minimum installed weight per square foot shall conform with the insulation manufacturer's installed design weight per square foot at the manufacturer's label R-value.

3. Wall Insulation %%u The opaque portions of frame walls separating conditioned spaces from unconditioned spaces or ambient air shall meet the requirements of either a. or b. below:

a. framed walls shall be insulated between framing members with insulation have an installed thermal resistance of R-13 or greater. Framed foundation walls of heated basements or heated crawl spaces shall be insulated above the outside ground line with insulation having an installed thermal resistance of at least R-13.

ALTERNATIVE to Section 150 (c)1: Insulation which is not penetrated by framing members may meet an R-value equivalent to installing R-13 insulation between framing members and accounting for the thermal effects of framing members.

b. The weighted average U-value of walls shall not exceed the U-value that would result from installing R-13 insulation between framing members in the entire ceiling and accounting for the effects of framing members.

4. Raised Floor Insulation %%u Raised floors separating conditioned spaces from unconditioned spaces or ambient air shall meet the requirements of either a. or b. below:

a. Floors shall be insulated between framing members with insulation having an installed thermal resistance of R-13 or greater.

b. The weighted average U-value of floor assemblies shall not exceed the U-value that would result from installing R-13 insulation between framing members and accounting for the effects of framing members.
Sec. 150 (a)-(d)

(V) Systems, equipment, and building components listed below may be installed only if:

1. The manufacturer has certified that the system, equipment, or building component complies with the applicable manufacture provisions of Sections 111 through 119; and

2. The system, equipment, or building component complies with the applicable installation provisions of Sections 111 through 119.

Covered are:

a. Appliances regulated by the Appliance Efficiency Regulations (Sec. 111).
b. Space conditioning equipment (Sec. 112).
c. Pool and spa heating systems and equipment (Sec. 114).
d. Gas appliances (Sec.115).
e. Insulation (Sec. 118).

Sec. 110

Revisions

08/08/06	Submittal
09/15/06	Revision 1
DATE	DESCRIPTION

van Cruyningen / van Hart Residence
835 Westridge Drive, Portola Valley, CA 94028
650-561-9552 Tel. 650-561-9553 Fax ikevc@architier.com
www.835Westridge.com

Title 24 Main House

T24.1