2008 California Residential Energy Standards

Summary by
Matt Billy T-24 Energy Calcs
1111 J Street, Suite G-104
Modesto, California 95354
(209) 524-1623
7/7/2011

Project Name:	**Terry Reynolds-Alteration**
City:	Modesto
County:	Stanislaus County
Project Type:	Envelope Alteration
Compliance Method:	Computer Performance
	Energy Pro 5.1.5.4

Envelope Requirments:

Ceiling Insulation	R-19 Roof	(Altered Roof Only)
Wall Insulation	R-13 Wall	(Altered Walls Only)
Floor Insulation	R-19 Raised Floor	(Altered Floor Only)
Glazing	Dual Pane, Wood Frame Low E	(Altered Windows Only)
	U Factor: 0.4 SHGC: 0.4	

HERS Verifications Requirments: *None*

Mechanical Requirments: **Existing Gas Wall Furnace & Evaporative Cooler** (Whole House)

Heating Efficiency	AFUE:	75%			(Whole House)
Cooling Efficiency	SEER:	NA	EER:	NA	(Whole House)
Duct Location & Insulation	None	NA			(Whole House)
Heating Load	20,673	Btu/Hr			(Whole House)
Sensible Cooling Load	14,876	Btu/Hr			(Whole House)

HERS Verifications Requirments: *None*

Water Heating Requirments: *None* (Not Altered)

PERFORMANCE CERTIFICATE: Residential (Part 1 of 5) CF-1R

Project Name	Building Type	Date
Terry Reynolds-Alteration	☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	7/7/2011

Project Address	California Energy Climate Zone	Total Cond. Floor Area	Addition	# of Stories
2008 Hackett Ave. Ceres	CA Climate Zone 12	824	0	1

FIELD INSPECTION ENERGY CHECKLIST

☐ Yes ☑ No HERS Measures -- If Yes, A CF-4R must be provided per Part 2 of 5 of this form.

☑ Yes ☐ No Special Features -- If Yes, see Part 2 of 5 of this form for details.

INSULATION

Construction	Type	Cavity	Area (ft^2)	Special Features (see Part 2 of 5)	Status
Wall	Wood Framed	None	490		Existing
Door	Opaque Door	None	38		Existing
Wall	Wood Framed	R-13	370		Altered
Door	Opaque Door	None	18		New
Roof	Wood Framed Attic	R-11	456		Existing
Roof	Wood Framed Rafter	R-19	368		Altered
Floor	Wood Framed w/Crawl Space	None	456		Existing
Floor	Wood Framed w/Crawl Space	R-19	368		Altered

FENESTRATION

Orientation	Area(ft^2)	U-Factor	SHGC	Overhang	Sidefins	Exterior Shades	Status
Front (N)	30.0	0.990	0.74	none	none	Bug Screen	Existing
Left (E)	20.0	0.990	0.74	none	none	Bug Screen	Existing
Left (E)	10.0	0.990	0.74	none	none	Bug Screen	Removed
Left (E)	20.0	0.400	0.40	none	none	Bug Screen	New
Rear (S)	1.2	0.990	0.74	none	none	Bug Screen	Removed
Rear (S)	12.5	0.400	0.40	none	none	Bug Screen	New
Right (W)	10.0	0.990	0.74	none	none	Bug Screen	Removed
Right (W)	16.0	0.990	0.74	none	none	Bug Screen	Existing

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
1	Gravity Wall Furnace	75% AFUE	No Cooling	13.0 SEER	No Setback	Existing

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status
Existing Heating & Cooling	Ductless / No Fan	Ductless	n/a	n/a	Existing

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

PERFORMANCE CERTIFICATE: Residential	(Part 2 of 5)	CF-1R

Project Name	Building Type			Date
Terry Reynolds-Alteration	☑ Single Family ☐ Multi Family	☐ Addition Alone ☑ Existing+ Addition/Alteration		*7/7/2011*

SPECIAL FEATURES INSPECTION CHECKLIST

The 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 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.

The HVAC System Existing Gas Furnace & Evap, Cooling does not include a cooling system, field verification is not necessary.

HERS REQUIRED VERIFICATION

Items in this section require field testing and/or verification by a certified HERS Rater. The inspector must receive a completed CF-4R form for each of the measures listed below for final to be given.

PERFORMANCE CERTIFICATE: Residential (Part 3 of 5) CF-1R

Project Name	Building Type	Date
Terry Reynolds-Alteration	☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	*7/7/2011*

ANNUAL ENERGY USE SUMMARY

TDV (kBtu/ft²-yr)	Standard	Proposed	Margin
Space Heating	80.20	60.65	19.55
Space Cooling	58.34	45.93	12.42
Fans	13.14	10.55	2.59
Domestic Hot Water	0.00	0.00	0.00
Pumps	0.00	0.00	0.00
Totals	151.68	117.13	34.56
Percent Better Than Standard:			22.8 %

BUILDING COMPLIES - NO HERS VERIFICATION REQUIRED

				Fenestration Area
Building Front Orientation:	(N) 0 deg	Ext. Walls/Roof	Wall Area	
Number of Dwelling Units:	1.00	(N)	192	30
Fuel Available at Site:	Natural Gas	(E)	315	40
Raised Floor Area:	824	(S)	192	13
Slab on Grade Area:	0	(W)	315	16
Average Ceiling Height:	8.0	Roof	824	0
Fenestration Average U-Factor:	0.80		TOTAL:	99
Average SHGC:	0.63		Fenestration/CFA Ratio:	12.0 %

REMARKS

STATEMENT OF COMPLIANCE

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 the Administrative Regulations and Part 6 the Efficiency Standards of the California Code of Regulations.

CABEC
California Association of Building Energy Consultants
CERTIFIED ENERGY ANALYST

The documentation author hereby certifies that the documentation is accurate and complete.

Documentation Author

Company *Matt Billy T-24 Energy Calcs*
Address *1111 J Street, Suite G104* Name *Matthew Billy*
City/State/Zip *Modesto, CA 95354* Phone *(209) 524-1623*

Matt Billy 7/7/2011
Signed Date

The individual with overall design responsibility hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, duct sealing, verification of refrigerant charge, 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)

Company *National Computerized Design*
Address *1537 Albany Ave.* Name *Karen Croyle*
City/State/Zip *Modesto, CA 95350* Phone *(209) 524-0426*

Karen Croyle 7-7-11
Signed License # Date

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
Terry Reynolds-Alteration	☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	7/7/2011

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Wall	162	0.356	None					0	90	Existing	4.3.1-A1	Existing
Wall	152	0.356	None					90	90	Existing	4.3.1-A1	Existing
Door	20	0.500	None					90	90	Existing	4.5.1-A4	Existing
Wall	103	0.102	R-13					90	90	Altered	4.3.1-A3 (E=4.3.1-A1)	Existing
Wall	180	0.102	R-13					180	90	Altered	4.3.1-A3 (E=4.3.1-A1)	Existing
Wall	87	0.102	R-13					270	90	Altered	4.3.1-A3 (E=4.3.1-A1)	Existing
Door	18	0.500	None					270	90	New	4.5.1-A4	Existing
Door	18	0.500	None					270	90	Existing	4.5.1-A4	Existing
Wall	176	0.356	None					270	90	Existing	4.3.1-A1	Existing
Roof	456	0.079	R-11					0	33	Existing	4.2.1-A2	Existing
Roof	368	0.051	R-19					0	33	Altered	4.2.2-A12 (E=4.2.1-A2)	Existing
Floor	456	0.097	None					0	180	Existing	4.4.1-A1	Existing
Floor	368	0.037	R-19					0	180	Altered	4.4.1-A4 (E=4.4.1-A1)	Existing

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
1	Window	10.0	0.990	Default	0.74	Default	0	Existing	SP Wood Frame	Existing
2	Window	10.0	0.990	Default	0.74	Default	0	Existing	SP Wood Frame	Existing
3	Window	10.0	0.990	Default	0.74	Default	0	Existing	SP Wood Frame	Existing
4	Window	10.0	0.990	Default	0.74	Default	90	Existing	SP Wood Frame	Existing
5	Window	10.0	0.990	Default	0.74	Default	90	Existing	SP Wood Frame	Existing
6	Window	10.0	0.990	Default	0.74	Default	90	Removed	SP Wood Frame	Existing
7	Window	20.0	0.400	NFRC	0.40	NFRC	90	New	DP Wood Frame (N)	Existing
8	Window	1.2	0.990	Default	0.74	Default	180	Removed	SP Wood Frame	Existing
9	Window	4.0	0.400	NFRC	0.40	NFRC	180	New	DP Wood Frame (N)	Existing
10	Window	4.0	0.400	NFRC	0.40	NFRC	180	New	DP Wood Frame (N)	Existing
11	Window	4.5	0.400	NFRC	0.40	NFRC	180	New	DP Wood Frame (N)	Existing
12	Window	10.0	0.990	Default	0.74	Default	270	Removed	SP Wood Frame	Existing
13	Window	6.0	0.990	Default	0.74	Default	270	Existing	SP Wood Frame	Existing
14	Window	10.0	0.990	Default	0.74	Default	270	Existing	SP Wood Frame	Existing

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin 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	Bug Screen	0.76												
6	Bug Screen	0.76												
7	Bug Screen	0.76												
8	Bug Screen	0.76												
9	Bug Screen	0.76												
10	Bug Screen	0.76												
11	Bug Screen	0.76												
12	Bug Screen	0.76												
13	Bug Screen	0.76												
14	Bug Screen	0.76												

CERTIFICATE OF COMPLIANCE: Residential (Part 5 of 5) CF-1R

Project Name	Building Type	Date
Terry Reynolds-Alteration	☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	*7/7/2011*

BUILDING ZONE INFORMATION

System Name	Zone Name	Floor Area (ft^2) New	Existing	Altered	Removed	Volume	Year Built
Existing Heating & Cooling	*Existing*		*824*			*6,592*	*1940*
	Totals	*0*	*824*	*0*	*0*		

HVAC SYSTEMS

System Name	Qty.	Heating Type	Min. Eff.	Cooling Type	Min. Eff.	Thermostat Type	Status
Existing Heating & Cooling	*1*	*Gravity Wall Furnace*	*75% AFUE*	*Evaporative Cooling*	*n/a*	*No Setback*	*Existing*

HVAC DISTRIBUTION

System Name	Heating	Cooling	Duct Location	Duct R-Value	Ducts Tested?	Status
Existing Heating & Cooling	*Ductless / No Fan*	*Ductless*	*n/a*	*n/a*	☐	*Existing*
					☐	
					☐	
					☐	
					☐	

WATER HEATING SYSTEMS

System Name	Qty.	Type	Distribution	Rated Input (Btuh)	Tank Cap. (gal)	Energy Factor or RE	Standby Loss or Pilot	Ext. Tank Insul. R-Value	Status
CEC Standard									

MULTI-FAMILY WATER HEATING DETAILS

Control	Qty.	HP	Hot Water Piping Length (ft) Plenum	Outside	Buried	Add 1/2" Insulation
						☐
						☐
						☐
						☐
						☐

HYDRONIC HEATING SYSTEM PIPING

System Name	Pipe Length	Pipe Diameter	Insul. Thick.

MANDATORY MEASURES SUMMARY: Residential (Page 1 of 3) MF-1R

Project Name: *Terry Reynolds-Alteration*

Date: *7/7/2011*

NOTE: Low-rise residential buildings subject to the Standards must comply with all applicable mandatory measures listed, regardless of the compliance approach used. More stringent energy measures listed on the Certificate of Compliance (CF-1R, CF-1R-ADD, or CF-1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandatory Measures Summary shall be incorporated into the permit documents, and the applicable features shall be considered by all parties as minimum component performance specifications whether they are shown elsewhere in the documents or in this summary. Submit all applicable sections of the MF-1R Form with plans.

Building Envelope Measures:

§116(a)1: Doors and windows between conditioned and unconditioned spaces are manufactured to limit air leakage.

§116(a)4: Fenestration products (except field-fabricated windows) have a label listing the certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a).

§117: Exterior doors and windows are weather-stripped; all joints and penetrations are caulked and sealed.

§118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate type and include on CF-6R Form.

§118(i): The thermal emittance and solar reflectance values of the cool roofing material meets the requirements of §118(i) when the installation of a Cool Roof is specified on the CF-1R Form.

*§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.

§150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R-Value.

*§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.

*§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.

§150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(2000) when specified on the CF-1R Form.

§150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.

§150(l): Water absorption rate for slab edge insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch and shall be protected from physical damage and UV light deterioration.

Fireplaces, Decorative Gas Appliances and Gas Log Measures:

§150(e)1A: Masonry or factory-built fireplaces have a closable metal or glass door covering the entire opening of the firebox.

§150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, which is at least six square inches in area and is equipped with a with a readily accessible, operable, and tight-fitting damper and or a combustion-air control device.

§150(e)2: 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.

Space Conditioning, Water Heating and Plumbing System Measures:

§110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulated appliances are certified by the Energy Commission.

§113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise residential occupancies meet the air release valve, backflow prevention, pump isolation valve, and recirculation loop connection requirements of §113(c)5.

§115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces, household cooking appliances (appliances with an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt), and pool and spa heaters.

§150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMACNA or ACCA.

§150(i): Heating systems are equipped with thermostats that meet the setback requirements of Section 112(c).

§150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the federal minimal standard are externally wrapped with insulation having an installed thermal resistance of R-12 or greater.

§150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-heating system, or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.

§150(j)2: 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 are insulated per Standards Table 150-B.

§150(j)2: Cooling system piping (suction, chilled water, or brine lines),and piping insulated between heating source and indirect hot water tank shall be insulated to Table 150-B and Equation 150-A.

§150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 psi, meets the requirements of Standards Table 123-A.

§150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.

§150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor retardant or is enclosed entirely in conditioned space.

§150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating and Certification Corporation.

§150(m)1: All air-distribution system ducts and plenums installed, are sealed and insulated to meet the requirements of CMC Sections 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are insulated to a minimum 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

§150(m)1: 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.

§150(m)2D: 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.

§150(m)7: Exhaust fan systems have back draft or automatic dampers.

§150(m)8: Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.

§150(m)9: 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.

§150(m)10: Flexible ducts cannot have porous inner cores.

§150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2007 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of providing the Whole Building Ventilation required in Section 4 of that Standard.

Pool and Spa Heating Systems and Equipment Measures:

§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate or card with operating instructions; and shall not use electric resistance heating or a pilot light.

§114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe between filter and heater, or dedicated suction and return lines, or built-up connections for future solar heating.

§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover.

§114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.

§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, filters, and valve requirements of §150(p).

Residential Lighting Measures:

§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy that is no lower than the efficacies contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.

§150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §130(d).

§150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an output frequency no less than 20 kHz.

§150(k)5: Permanently installed night lights and night lights integral to a permanently installed luminaire or exhaust fan shall contain only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall not contain a line-voltage socket or line-voltage lamp holder; OR shall be rated to consume no more than five watts of power as determined by §130(d), and shall not contain a medium screw-base socket.

§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applicable requirements of §150(k).

§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7.

§150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting in kitchens shall be high efficacy. EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft^2 or 100 watts for dwelling units larger than 2,500 ft^2 may be exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen are controlled by a manual on occupant sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control system; and all permanently installed luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are high efficacy and controlled by a manual-on occupant sensor.

§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 watts of power per linear foot of illuminated cabinet.

§150(k)10: Permanently installed luminaires in bathrooms, attached and detached garages, laundry rooms, closets and utility rooms shall be high efficacy.
EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by a manual-on occupant sensor certified to comply with the applicable requirements of §119.
EXCEPTION 2: Permanently installed low efficacy luminaires in closets less than 70 square feet are not required to be controlled by a manual-on occupancy sensor.

§150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luimnaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11.

§150(k)12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the lumiunaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.

§150(k)13: Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photocontrol not having an override or bypass switch that disables the photocontrol; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to §150(k)13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires.

§150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d).

§150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146.

§150(k)16: 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. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name: Terry Reynolds-Alteration

Date: 7/7/2011

System Name: Existing Heating & Cooling

Floor Area: 824

ENGINEERING CHECKS

Number of Systems	1
Heating System	
Output per System	30,000
Total Output (Btuh)	30,000
Output (Btuh/sqft)	36.4
Cooling System	
Output per System	0
Total Output (Btuh)	0
Total Output (Tons)	0.0
Total Output (Btuh/sqft)	0.0
Total Output (sqft/Ton)	0.0
Air System	
CFM per System	0
Airflow (cfm)	0
Airflow (cfm/sqft)	0.00
Airflow (cfm/Ton)	0.0
Outside Air (%)	0.0 %
Outside Air (cfm/sqft)	0.00

Note: values above given at ARI conditions

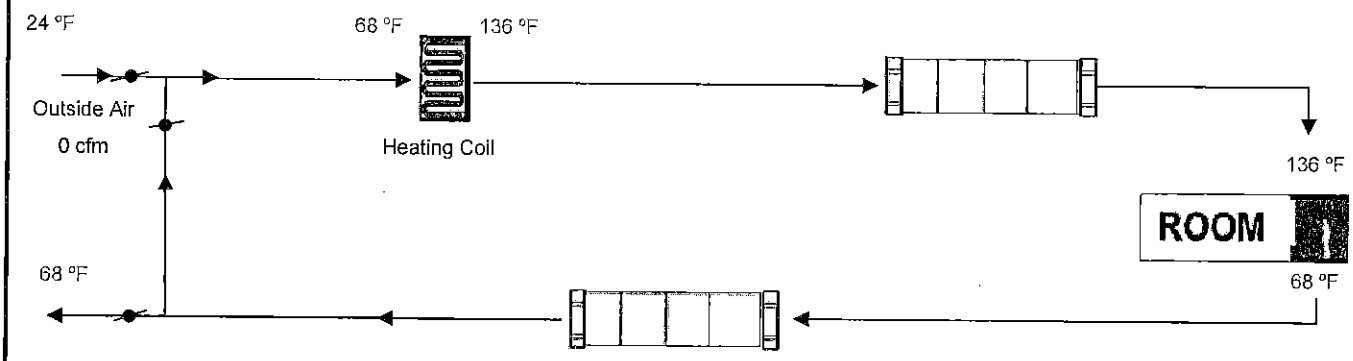
SYSTEM LOAD

	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	Sensible	Latent	CFM	Sensible
Total Room Loads	691	14,876	886	284	20,673
Return Vented Lighting		0			
Return Air Ducts		0			0
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		0			0
TOTAL SYSTEM LOAD		14,876	886		20,673

HVAC EQUIPMENT SELECTION

600 cfm Evaporative Cooler	3,245	0		
Existing Gas Furnace & Evap, Cooling	0	0		30,000
Total Adjusted System Output (Adjusted for Peak Design conditions)	3,245	0		30,000
TIME OF SYSTEM PEAK	Aug 3 PM			Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETICS (Airstream Temperatures at Time of Cooling Peak)