WS-5R

RESIDENTIAL KITCHEN LIGHTING WORKSHEET — WS-5R

PROJECT TITLE: CUSTOM RESIDENCE — DATE: 2007

At least 50% of the total rated wattage of permanently installed luminaires in the kitchen must be in luminaires that are high efficacy luminaires as defined in Table 150-C. Luminaires that are not high efficacy must be switched separately.

Kitchen Lighting Schedule. Provide the following information for all luminaires to be installed in kitchens.

Luminaire Type	High Efficacy?	Watts	x	Quantity	=	High Efficacy Watts	or	Other Watts
Incand. Downlight	Yes ☐ No ☑	75	x	2	=		or	150
Comp. Fluor. Dn'lt	Yes ☑ No ☐	18	x	7	=	126	or	
Under Cab. T-8 Fluor.	Yes ☑ No ☐	8/ft	x	4'	=	32	or	
	Yes ☐ No ☐		x		=		or	
	Yes ☐ No ☐		x		=		or	
	Yes ☐ No ☐		x		=		or	
				Total:	A:	158	B:	150

COMPLIES IF A ≥ B Yes ☑ No ☐

Rules for Determining Residential Kitchen Luminaire Wattage

Screw Base Sockets §130(c) 1
(Not containing permanently installed ballasts) The maximum relamping rated wattage of the luminaire, as listed on a permanent factory-installed label (luminaire wattage is not based on type or wattage of lamp that is used).

Permanently or Remotely Installed Ballasts §130(c) 2
The operating input wattage of the rated lamp/ballast combination based on values published in manufacturer's catalogs
based on independent testing lab reports.

Line Voltage Track Lighting (90 through 480 volts) §130(c) 3
1. Volt-ampere (VA) rating of the branch circuit(s) feeding the tracks; or
2. The higher of
   - The wattage (or VA) rating of an approved integral current limiter controlling the track system or
   - 15 watts per linear foot of the track; or
3. The higher of
   - 45 W per linear foot of the track or
   - The total wattage of all of the luminaires included in the system.

Low Voltage Track Lighting (less than 90 volts) §130(c) 4
Rated wattage of the transformer feeding the system, as shown on a permanent factory-installed label

Other Lighting §130(c) 5
(Lighting systems that are not addressed in §130 (c) 1-4) The maximum rated wattage, or operating input wattage of the system, listed on a permanent factory installed label, or published in manufacturer's catalogs, based on independent testing lab reports.

GENERAL LIGHTING NOTE:

KITCHENS : 50% OF THE TOTAL WATTAGE FOR KITCHEN LIGHTING TO BE HIGH EFFICACY (e.g. FLUORESCENT). (SEE FORM WS-5R).

BATHROOMS, GARAGE, LAUNDRY , UTILITY ROOMS: MUST BE HIGH EFFICACY OR PROVIDE MANUAL "ON"/ OCCUPANCY SENSOR.

ALL OTHER ROOMS: PROVIDE DIMMER CONTROLS FOR ALL HARDWIRED FIXTURES

MF-1R

MANDATORY MEASURES SUMMARY: RESIDENTIAL — 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 supersede the items marked with an asterisk (*). 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.

BUILDING ENVELOPE MEASURES (n/a / Designer / Enforcement)

*150(a): Minimum R-19 insulation in wood framed ceiling or equivalent U-factor in metal frame ceiling
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)
*150(d): Minimum R-13 raised floor insulation in framed floors or equivalent U-factor
150(e): Installation of Fireplaces, Decorative Gas Appliances and Gas Logs
1. Masonry and factory-built fireplaces have:
a. Closeable metal or glass door covering the entire opening of the firebox
b. Outside air intake with damper and control, flue damper and control
2. No continuous burning gas pilot lights allowed
150(f): Air retarding wrap installed to comply with Sec. 151 meets requirements specified in ACM Residential Manual
150(g): Vapor barriers mandatory in Climate Zones 14,16 only
150(l): Slab edge insulation - water absorption rate for the insulation material 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 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
2. Fenestration products (except field-fabricated) have label with certified U-factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration certification
3. Exterior doors and windows weatherstripped; all joints and penetrations caulked and sealed

SPACE CONDITIONING, WATER HEATING AND PLUMBING SYSTEM MEASURES (n/a / Designer / Enforcement)

110-113: HVAC equipment, water heaters, showerheads and faucets certified by the Energy Commission
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 R12 or greater
2. Back-up tanks for solar system, unfired storage tanks, or other indirect hot water tanks have R-12 external insulation or R-16 internal 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
*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 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
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 backed 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 operated dampers
6. Protection of Insulation. Insulation shall be protected from damage 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 inches 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 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)
118(i): Cool Roof material meets specified criteria

RESIDENTIAL LIGHTING MEASURES (n/a / Designer / Enforcement)

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). Ballast for lamps 13 watts or greater are electronic and have an output frequency no less than 20 kHz
150(k)1: 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 percent of the wattage, as determined in Sec. 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
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) that does not turn on automatically or have an always on option
150(k)4: Permanently installed luminaires located other than in kitchens, bathrooms, garages, laundry rooms, and utility rooms shall be high efficacy luminaires (except closets less than 70 ft2), OR are controlled by a dimmer switch OR are controlled by an occupant sensor(s) that complies with Section 119(d) that does not turn on automatically or have an always on option
150(k)5: Luminaires that are recessed into insulated ceilings are approved for zero clearance insulation cover (IC) and are certified air tight to ASTM E283 and labeled as air tight (AT) to less than 2.0 CFM at 75 Pascals
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 pools/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 Sec. 130, 132, and 147. Lighting for parking garages for 8 or more vehicles shall have lighting that complies with Sec. 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 an occupant sensor(s) certified to comply with Section 119(d)

CF-1R

CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD — CF-1R Page 1

Project Title.......... CUSTOM RESIDENCE — Date..10/05/07 09:40:14
Project Address........ 1491 GLENNEYRE STREET, LAGUNA BEACH, CA — ******* *v7.10* *******
Documentation Author... DOCUMENTATION AUTHOR, Southland Energy Consultants, 1491 Glenneyre St, Laguna Beach, CA 92651, 949-497-3591
Building Permit # / Plan Check / Date / Field Check/ Date
Climate Zone........... 06
Compliance Method...... MICROPAS7 v7.10 for 2005 Standards by Enercomp, Inc.

MICROPAS7 v7.10 File-CUSTOM Wth-CTZ06S05 Program-FORM CF-1R
User#-MP0298 User-Southland Energy Consulta Run-NEW RESIDENCE

MICROPAS7 ENERGY USE SUMMARY

Energy Use (kTDV/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating..........	4.48	3.78	0.70
Space Cooling..........	4.04	4.19	-0.15
Water Heating..........	14.75	13.56	1.19
Total	23.27	21.53	1.74

*** Building complies with Computer Performance ***

GENERAL INFORMATION

HERS Verification.......... Not Required
Conditioned Floor Area..... 1600 sf
Building Type.............. Single Family Detached
Construction Type .... New
Fuel Type .... NaturalGas
Building Front Orientation. Front Facing 0 deg (N)
Number of Dwelling Units... 1
Number of Building Stories. 1
Weather Data Type.......... FullYear

Floor Construction Type.... Slab On Grade
Number of Building Zones... 1
Conditioned Volume......... 16000 cf
Slab-On-Grade Area......... 1600 sf
Glazing Percentage......... 19 % of floor area
Average Glazing U-factor... 0.55 Btu/hr-sf-F
Average Glazing SHGC....... 0.65
Average Ceiling Height..... 10 ft

CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD — CF-1R Page 2

Project Title.......... CUSTOM RESIDENCE — Date..10/05/07 09:40:14

MICROPAS7 v7.10 File-CUSTOM Wth-CTZ06S05 Program-FORM CF-1R
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BUILDING ZONE INFORMATION

Zone Type	Floor Area (sf)	Volume (cf)	# of Dwell Units	# of Peop-le	Cond-it-ioned	Thermo-stat Type	Vent Height (ft)	Vent Area (sf)	Verified Leakage or Housewrap
Residence	1600	16000	1.00	4.0	Yes	Setback	2.0	Standard	No

OPAQUE SURFACES

Surface	Frame Type	Area (sf)	U-fact-or	Cavity R-val	Sheath-ing R-val	Act Azm	Tilt	Solar Gains	Appendix IV Reference	Location/ Comments
1 Wall	Wood	296	0.102	13	0	0	90	Yes	IV.9 A3	
2 Wall	Wood	452	0.102	13	0	90	90	Yes	IV.9 A3	
3 Wall	Wood	252	0.102	13	0	180	90	Yes	IV.9 A3	
4 Wall	Wood	436	0.102	13	0	270	90	Yes	IV.9 A3	
5 Roof	Wood	1600	0.049	19	0	n/a	0	Yes	IV.1 A4	
6 Door	Other	20	0.500	0	0	0	90	Yes	IV.5 A4	

PERIMETER LOSSES

Surface	Length (ft)	F2 Factor	Insul R-val	Solar Gains	Appendix IV Reference	Location/ Comments
7 SlabEdge	176	0.730	R-0	No	IV.26 A1	

FENESTRATION SURFACES

Orientation	Area (sf)	U-factor	SHGC	Act Azm	Tilt	Exterior Shade Type	Location/Comments
1 Wind Front (N)	24.0	0.580	0.650	0	90	Standard	F1/Wd/Vin Op. Dual
2 Door Front (N)	40.0	0.530	0.650	0	90	Standard	F2/Wd/Vin Hin. Dual
3 Wind Left (E)	24.0	0.580	0.650	90	90	Standard	L1/Wd/Vin Op. Dual
4 Door Left (E)	24.0	0.530	0.650	90	90	Standard	L2/Wd/Vin Hin. Dual
5 Wind Back (S)	48.0	0.580	0.650	180	90	Standard	B1/Wd/Vin Op. Dual
6 Door Back (S)	80.0	0.530	0.650	180	90	Standard	B2/Wd/Vin Hin. Dual
7 Wind Right (W)	32.0	0.580	0.650	270	90	Standard	R1/Wd/Vin Op. Dual
8 Door Right (W)	32.0	0.530	0.650	270	90	Standard	R2/Wd/Vin Hin. Dual

CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD — CF-1R Page 3

Project Title.......... CUSTOM RESIDENCE — Date..10/05/07 09:40:14

MICROPAS7 v7.10 File-CUSTOM Wth-CTZ06S05 Program-FORM CF-1R
User#-MP0298 User-Southland Energy Consulta Run-NEW RESIDENCE

THERMAL MASS

Mass Type	Area (sf)	Thick (in)	Heat Cap	Conduct-ivity	UIMC	Surface R-value	Location/Comments
1 SlabOnGrade	560	3.5	28.0	0.98	4.60	R-0.0	ENT/KIT/BA/LAU
2 SlabOnGrade	1040	3.5	28.0	0.98	1.80	R-2.0	TYPICAL
3 InteriorVert	192	1.0	24.0	0.67	1.70	R-0.0	CNTR/SHWR/TUB

HVAC SYSTEMS

System Type	Number of Systems	Minimum Efficiency	Verified EER	Verified Refrig Charge or TXV	Verified Adequate Airflow	Verified Fan Watt Draw	Verified Maximum Cooling Capacity
Furnace	1	0.800 AFUE	n/a	n/a	n/a	n/a	n/a
ACSplit	1	13.00 SEER	No	No	No	No	No

HVAC SIZING

System Type	Total Heating Load (Btu/hr)	Sensible Cooling Load (Btu/hr)	Design Cooling Capacity (Btu/hr)	Verified Maximum Cooling Capacity (Btu/hr)
Furnace	36543	n/a	n/a	n/a
ACSplit	n/a	24397	27496	n/a

Sizing Location............ LAGUNA BEACH
Winter Outside Design...... 30 F
Winter Inside Design....... 70 F
Summer Outside Design...... 81 F
Summer Inside Design....... 75 F
Summer Range............... 18 F

DUCT SYSTEMS

System Type	Duct Location	Duct R-value	Verified Duct Leakage	Verified Surface Area	Verified Buried Ducts
Furnace	Attic	R-4.2	No	No	No
ACSplit	Attic	R-4.2	No	No	No

CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD — CF-1R Page 4

Project Title.......... CUSTOM RESIDENCE — Date..10/05/07 09:40:14

MICROPAS7 v7.10 File-CUSTOM Wth-CTZ06S05 Program-FORM CF-1R
User#-MP0298 User-Southland Energy Consulta Run-NEW RESIDENCE

WATER HEATING SYSTEMS

Tank Type	Heater Type	Distribution Type	Number in System	Energy Factor	Tank Size (gal)	External Insulation R-value
1 Storage	Gas	Standard	1	0.62	50	R- n/a

SPECIAL FEATURES AND MODELING ASSUMPTIONS

*** Items in this section should be documented on the plans, ***
*** installed to manufacturer and CEC specifications, and ***
*** verified during plan check and field inspection. ***

This building incorporates a High Mass Design.

REMARKS

Note: The loads shown are only one of the criteria affecting the selection of HVAC equipment. Other relevant design factors such as air flow requirements, outside air, outdoor design temps., coil sizing, availability of equipment, oversizing safety margin, etc., must also be considered. It is the HVAC designer's responsibility to consider all factors when selecting the HVAC equipment.

FRONT: STREET FACADE
NOTE: GOVERNING AGENCY MAY REQUIRE RIGID DUCT CONNECTION FROM RETURN AIR GRILL TO FURNACE.

FAU: BDP#311J036090 71KBTUH .80 AFUE OR APPROVED
A/C: OPTIONAL BDP#550A-036 36KBTUH 13.0 SEER OR APPROVED
WH: AMERICAN G52-50T38-3NV 50 GAL. OR APPROVED EQUAL

CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD — CF-1R Page 5

Project Title.......... CUSTOM RESIDENCE — Date..10/05/07 09:40:14

MICROPAS7 v7.10 File-CUSTOM Wth-CTZ06S05 Program-FORM CF-1R
User#-MP0298 User-Southland Energy Consulta Run-NEW RESIDENCE

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and performance specifications needed to comply with Title-24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility.

DESIGNER or OWNER

Name....
Company.
Address.
Phone...
License.
Signed.. ______ (date)

DOCUMENTATION AUTHOR

Name.... DOCUMENTATION AUTHOR
Company. Southland Energy Consultants
Address. 1491 Glenneyre St, Laguna Beach, CA 92651
Phone... 949-497-3591
Signed.. ______ (date)

ENFORCEMENT AGENCY

Name....
Title...
Agency..
Phone...
Signed.. ______ (date)

REVISIONS | BY

SOUTHLAND
energy consultants
title 24 calculations
hvac, plumbing and electrical design
1491 Glenneyre St., Laguna Beach, CA 92651
PH: 949/497-3591 FAX: 949/497-3210
E-mail Address: peksland@aol.com

TITLE 24 ANALYSIS FOR:

CUSTOM RESIDENCE
1491 GLENNEYRE STREET
LAGUNA BEACH, CALIFORNIA

DRAWN: LB
CHECKED: LB
DATE: 10/5/07
SCALE: NTS.
JOB NO.
SHEET: T-24
OF SHEETS