

Certificate Of Compliance : Residential

(Part 1 of 4) **CF-1R**

Mekechuk-Sinclair Residence

2/25/2009

Project Title

17509 Via Sereno Monte Sereno

Project Address

MELINE ENGINEERING

(916) 366-3458

Documentation Author

Telephone

EnergyPro

CA Climate Zone 04

Compliance Method

Climate Zone

Date

Building Permit #

Plan Check/Date

Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	25.36	3.49	21.87
Space Cooling	0.46	0.01	0.45
Fans	0.08	0.00	0.08
Domestic Hot Water Pumps	5.62	5.03	0.59
	0.00	0.00	0.00
Totals	31.52	8.53	22.99

Percent better than Standard: 72.9%

BUILDING COMPLIES - NO HERS VERIFICATION REQUIRED

Building Type:	<input checked="" type="checkbox"/> Single Family	<input type="checkbox"/> Addition	Total Conditioned Floor Area:	4,784 ft ²	
	<input type="checkbox"/> Multi Family	<input checked="" type="checkbox"/> Existing + Add/Alt	Existing Floor Area:	2,582 ft ²	
Building Front Orientation:	(S) 180 deg		Raised Floor Area:	0 ft ²	
Fuel Type:	Natural Gas		Slab on Grade Area:	2,202 ft ²	
Fenestration:			Average Ceiling Height:	10.2 ft	
Area:	859 ft ²	Avg. U:	0.33	Number of Dwelling Units:	1.00
Ratio:	18.0%	Avg. SHGC:	0.37	Number of Stories:	1

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Air Handler West	2,517	23,954	0.53	Conditioned	Setback	2	n/a
Air Handler East	2,267	25,038	0.47	Conditioned	Setback	2	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Act. Cont.	Act. Azm.	Tilt	Gains Y / N	Condition Status	JA IV Reference	Location / Comments
Roof	Wood	20	0.022	R-36	R-6.5	13	0	X	New	03-A7	Main Level
Roof	Wood	97	0.022	R-36	R-6.5	13	0	X	New	03-A7	Main Level
Wall	Wood	73	0.069	R-21	R-0.0	283	90	X	Altered	09-A6 (E=09-A1)	Main Level
Roof	Wood	190	0.022	R-36	R-6.5	13	0	X	New	03-A7	Main Level
Wall	Wood	115	0.069	R-21	R-0.0	283	90	X	Altered	09-A6 (E=09-A1)	Main Level
Wall	Wood	92	0.069	R-21	R-0.0	13	90	X	New	09-A6	Main Level
Roof	Wood	40	0.022	R-36	R-6.5	13	0	X	New	03-A7	Main Level
Roof	Wood	132	0.022	R-36	R-6.5	13	0	X	New	03-A7	Main Level
Wall	Wood	136	0.069	R-21	R-0.0	283	90	X	Altered	09-A6 (E=09-A1)	Main Level
Roof	Wood	80	0.022	R-36	R-6.5	13	0	X	New	03-A7	Main Level
Wall	Wood	26	0.069	R-21	R-0.0	283	90	X	New	09-A6	Main Level
Roof	Wood	140	0.022	R-36	R-6.5	193	45	X	New	03-A7	Main Level
Roof	Wood	140	0.022	R-36	R-6.5	13	45	X	New	03-A7	Main Level
Wall	Wood	135	0.069	R-21	R-0.0	193	90	X	New	09-A6	Main Level
Wall	Wood	108	0.069	R-21	R-0.0	283	90	X	Altered	09-A6 (E=09-A1)	Main Level
Roof	Wood	117	0.022	R-36	R-6.5	193	45	X	New	03-A7	Main Level
Roof	Wood	117	0.022	R-36	R-6.5	13	45	X	New	03-A7	Main Level
Wall	Wood	106	0.069	R-21	R-0.0	193	90	X	New	09-A6	Main Level
Wall	Wood	34	0.074	R-19	R-0.0	193	90	X	New	09-A5	Lower Level
WallBG	None	77	0.038	None	R-28.0	0	90	X	New	13-H5	Lower Level - 132" deep
Wall	Wood	58	0.074	R-19	R-0.0	193	90	X	New	09-A5	Lower Level
WallBG	None	237	0.038	None	R-28.0	0	90	X	New	13-H5	Lower Level - 132" deep
WallBG	None	105	0.038	None	R-28.0	0	90	X	New	13-H5	Lower Level - 132" deep
WallBG	None	69	0.038	None	R-28.0	0	90	X	New	13-H5	Lower Level - 132" deep
WallBG	None	314	0.038	None	R-28.0	0	90	X	New	13-H5	Lower Level - 132" deep

Run Initiation Time: 11/26/08 09:13:26 Run Code: 1227719606

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TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
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Space Cooling	0.46	0.01	0.45
Fans	0.08	0.00	0.08
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Totals	31.52	8.53	22.99

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Fuel Type:	Natural Gas		Slab on Grade Area:	2,202 ft ²	
Fenestration:			Average Ceiling Height:	10.2 ft	
Area:	859 ft ²	Avg. U:	0.33	Number of Dwelling Units:	1.00
Ratio:	18.0%	Avg. SHGC:	0.37	Number of Stories:	1

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Act. Cont.	Act. Azm.	Tilt	Gains Y / N	Condition Status	JA IV Reference	Location / Comments
Wall	None	119	0.104	None	R-13.0	103	90	X	New	13-D5	Main Level
Roof	Wood	71	0.022	R-36	R-6.5	193	45	X	New	03-A7	Main Level
Roof	Wood	71	0.022	R-36	R-6.5	13	45	X	New	03-A7	Main Level
Wall	Wood	26	0.069	R-21	R-0.0	103	90	X	New	09-A6	Main Level
Wall	Wood	29	0.069	R-21	R-0.0	193	90	X	New	09-A6	Main Level
Door	None	21	0.500	None	R-0.0	193	90	X	New	28-A4	Main Level
Wall	None	72	0.104	None	R-13.0	103	90	X	New	13-D5	Main Level
Roof	Wood	469	0.022	R-36	R-6.5	13	0	X	New	03-A7	Main Level
Wall	Wood	34	0.069	R-21	R-0.0	283	90	X	New	09-A6	Main Level
Wall	Wood	34	0.069	R-21	R-0.0	193	90	X	New	09-A6	Main Level
Wall	Wood	34	0.069	R-21	R-0.0	13	90	X	New	09-A6	Main Level
Wall	Wood	34	0.069	R-21	R-0.0	103	90	X	New	09-A6	Main Level
Roof	Wood	134	0.022	R-36	R-6.5	13	0	X	New	03-A7	Main Level
Roof	Wood	211	0.022	R-36	R-6.5	193	45	X	New	03-A7	Main Level
Roof	Wood	211	0.022	R-36	R-6.5	13	45	X	New	03-A7	Main Level
Wall	Wood	26	0.069	R-21	R-0.0	283	90	X	New	09-A6	Main Level
Wall	Wood	33	0.069	R-21	R-0.0	13	90	X	New	09-A6	Main Level
Wall	Wood	26	0.069	R-21	R-0.0	13	90	X	New	09-A6	Main Level
Roof	Wood	106	0.022	R-36	R-6.5	13	0	X	New	03-A7	Main Level
Roof	Wood	50	0.022	R-36	R-6.5	283	45	X	New	03-A7	Main Level
Roof	Wood	25	0.022	R-36	R-6.5	193	45	X	New	03-A7	Main Level
Roof	Wood	25	0.022	R-36	R-6.5	13	45	X	New	03-A7	Main Level
Wall	None	168	0.076	None	R-15.0	13	90	X	New	13-D5	Main Level
Wall	Wood	112	0.069	R-21	R-0.0	103	90	X	Altered	09-A6 (E=09-A1)	Main Level
Wall	None	161	0.076	None	R-15.0	193	90	X	New	13-D5	Main Level

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FENESTRATION SURFACES

#	Type	Area	U-Factor ¹	SHGC ²	True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Skylight Rear (N)	6.0	0.330 NFRC	0.37 NFRC	13	0	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
2	Skylight Rear (N)	6.0	0.330 NFRC	0.37 NFRC	13	0	New	Sereno Vinyl Low-E Argon (Via Sereno)	Main Level
3	Window Left (W)	12.0	0.330 NFRC	0.37 NFRC	283	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
4	Window Left (W)	12.0	0.330 NFRC	0.37 NFRC	283	90	New	Sereno Vinyl Low-E Argon (Via Sereno)	Main Level
5	Window Rear (N)	43.5	0.330 NFRC	0.37 NFRC	13	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
6	Skylight Rear (N)	6.0	0.330 NFRC	0.37 NFRC	13	0	New	Sereno Vinyl Low-E Argon (Via Sereno)	Main Level
7	Window Left (W)	24.0	0.330 NFRC	0.37 NFRC	283	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
8	Window Left (W)	24.0	0.330 NFRC	0.37 NFRC	283	90	New	Sereno Vinyl Low-E Argon (Via Sereno)	Main Level
9	Window Front (S)	4.0	0.330 NFRC	0.37 NFRC	193	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
10	Window Left (W)	10.0	0.330 NFRC	0.37 NFRC	283	90	New	Sereno Vinyl Low-E Argon (Via Sereno)	Main Level
11	Window Front (S)	8.0	0.330 NFRC	0.37 NFRC	193	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
12	Window Front (S)	15.0	0.330 NFRC	0.37 NFRC	193	90	New	Sereno Vinyl Low-E Argon (Via Sereno)	Lower Level
13	Window Front (S)	25.0	0.330 NFRC	0.37 NFRC	193	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Lower Level
14	Window Right (E)	24.0	0.330 NFRC	0.37 NFRC	103	90	New	Sereno Vinyl Low-E Argon (Via Sereno)	Main Level
15	Window Front (S)	3.0	0.330 NFRC	0.37 NFRC	193	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
16	Window Front (S)	8.0	0.330 NFRC	0.37 NFRC	193	90	New	Sereno Vinyl Low-E Argon (Via Sereno)	Main Level
17	Window Front (S)	8.0	0.330 NFRC	0.37 NFRC	193	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
18	Window Left (W)	12.5	0.330 NFRC	0.37 NFRC	283	90	New	Sereno Vinyl Low-E Argon (Via Sereno)	Main Level
19	Window Left (W)	12.5	0.330 NFRC	0.37 NFRC	283	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level

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		Overhang				Left Fin			Right Fin		
			Hgt.	Wd.	Len.	Hgt.	LExt.	RExt.	Dist.	Len.	Hgt.	Dist.	Len.	Hgt.
1	None	1.00												
2	None	1.00												
3	Bug Screen	0.76	4.0	3.0	3.0	0.5	10.0	10.0						
4	Bug Screen	0.76	4.0	3.0	3.0	0.5	10.0	10.0						
5	Bug Screen	0.76	7.2	5.0	5.0	0.5	10.0	10.0						
6	None	1.00												
7	Bug Screen	0.76	4.0	6.0	3.0	0.5	10.0	10.0						
8	Bug Screen	0.76	4.0	6.0	4.0	0.0	3.0	3.0						
9	Bug Screen	0.76	4.0	1.0	4.0	0.5	10.0	10.0						
10	Bug Screen	0.76	4.0	2.5	3.0	0.5	10.0	10.0						
11	Bug Screen	0.76	8.0	1.0	4.0	0.5	10.0	10.0						
12	Bug Screen	0.76	5.0	3.0					7.8	20.0	0	1.0	20.0	0
13	Bug Screen	0.76	5.0	5.0					0.8	20.0	0	6.0	20.0	0
14	Bug Screen	0.76	4.0	6.0	4.0	0.0	3.0	3.0						
15	Bug Screen	0.76	1.0	3.0	4.0	0.5	10.0	10.0						
16	Bug Screen	0.76	8.0	1.0	4.0	0.5	10.0	10.0						
17	Bug Screen	0.76	8.0	1.0	4.0	0.5	10.0	10.0						
18	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
19	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Inside Cond.	R-Val.	JA IV Reference	Condition Status	Location/ Comments
Concrete, Heavyweight	26	9.00	28	0.98	2	n/a	New	Main Level / Interior Mass
Concrete, Heavyweight	103	9.00	28	0.98	2	n/a	New	Main Level / Interior Mass
Concrete, Heavyweight	190	9.00	28	0.98	2	n/a	New	Main Level / Interior Mass
Concrete, Heavyweight	40	9.00	28	0.98	2	n/a	New	Main Level / Interior Mass
Concrete, Heavyweight	138	9.00	28	0.98	2	n/a	New	Main Level / Interior Mass

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	11	R-5	Fully insulated slab	27-B20	New	Lower Level
Slab Perimeter	29	R-5	Fully insulated slab	27-B20	New	Lower Level
Slab Perimeter	10	R-5	Fully insulated slab	27-B20	New	Lower Level
Slab Perimeter	6	R-5	Fully insulated slab	27-B20	New	Lower Level
Slab Perimeter	28	R-5	Fully insulated slab	27-B20	New	Lower Level

Run Initiation Time: 11/26/08 09:13:26 Run Code: 1227719606

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FENESTRATION SURFACES

#	Type	Area	U-Factor ¹	SHGC ²	True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
20	Window Left (W)	12.5	0.330 NFRC	0.37 NFRC	283	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
21	Window Left (W)	12.5	0.330 NFRC	0.37 NFRC	283	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
22	Window Front (S)	12.5	0.330 NFRC	0.37 NFRC	193	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
23	Window Front (S)	12.5	0.330 NFRC	0.37 NFRC	193	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
24	Window Front (S)	12.5	0.330 NFRC	0.37 NFRC	193	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
25	Window Front (S)	12.5	0.330 NFRC	0.37 NFRC	193	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
26	Window Rear (N)	12.5	0.330 NFRC	0.37 NFRC	13	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
27	Window Rear (N)	12.5	0.330 NFRC	0.37 NFRC	13	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
28	Window Rear (N)	12.5	0.330 NFRC	0.37 NFRC	13	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
29	Window Rear (N)	12.5	0.330 NFRC	0.37 NFRC	13	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
30	Window Right (E)	12.5	0.330 NFRC	0.37 NFRC	103	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
31	Window Right (E)	12.5	0.330 NFRC	0.37 NFRC	103	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
32	Window Right (E)	12.5	0.330 NFRC	0.37 NFRC	103	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
33	Window Right (E)	12.5	0.330 NFRC	0.37 NFRC	103	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
34	Window Left (W)	24.0	0.330 NFRC	0.37 NFRC	283	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
35	Window Rear (N)	192.0	0.330 NFRC	0.37 NFRC	13	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
36	Window Rear (N)	24.0	0.330 NFRC	0.37 NFRC	13	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
37	Window Right (E)	40.0	0.330 NFRC	0.37 NFRC	103	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level
38	Window Right (E)	36.6	0.330 NFRC	0.37 NFRC	103	90	New	Linda Vinyl Low-E Argon (Via Sereno)	Main Level

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		Overhang				Left Fin			Right Fin		
			Hgt.	Wd.	Len.	Hgt.	LExt.	RExt.	Dist.	Len.	Hgt.	Dist.	Len.	Hgt.
20	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
21	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
22	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
23	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
24	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
25	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
26	Bug Screen	0.76	2.5	5.0	1.5	0.0	3.0	3.0						
27	Bug Screen	0.76	2.5	5.0	1.5	0.0	3.0	3.0						
28	Bug Screen	0.76	2.5	5.0	1.5	0.0	3.0	3.0						
29	Bug Screen	0.76	2.5	5.0	1.5	0.0	3.0	3.0						
30	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
31	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
32	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
33	Bug Screen	0.76	2.5	5.0	3.0	0.0	3.0	3.0						
34	Bug Screen	0.76	4.0	6.0	4.0	0.0	3.0	3.0						
35	Bug Screen	0.76	8.0	24.0	5.0	0.5	10.0	10.0						
36	Bug Screen	0.76	4.0	6.0	1.0	0.0	3.0	3.0						
37	Bug Screen	0.76	8.0	5.0	4.0	0.5	10.0	10.0						
38	Bug Screen	0.76	3.8	9.5	4.0	0.5	10.0	10.0						

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Inside Cond.	R-Val.	JA IV Reference	Condition Status	Location/ Comments
Concrete, Heavyweight	80	9.00	28	0.98	2	n/a	New	Main Level / Interior Mass
Concrete, Heavyweight	198	9.00	28	0.98	2	n/a	New	Main Level / Interior Mass
Concrete, Heavyweight	165	9.00	28	0.98	2	n/a	New	Main Level / Interior Mass
Concrete, Heavyweight	137	9.00	28	0.98	2	n/a	New	Lower Level / Interior Mass
Concrete, Heavyweight	137	12.00	28	0.98	0	27-B20	New	Lower Level / Slab on Grade

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	11	R-5	Fully insulated slab	27-B20	New	Lower Level
Slab Perimeter	7	R-5	Fully insulated slab	27-B20	New	Lower Level
Slab Perimeter	21	R-5	Fully insulated slab	27-B20	New	Lower Level
Slab Perimeter	10	R-5	Fully insulated slab	27-B20	New	Lower Level

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Certificate Of Compliance : Residential

(Part 3 of 4) **CF-1R**

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HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Air Handler West	Boiler	see below	Hydronic Heat Pump	15.1 EER	New	Setback
Air Handler East	Boiler	see below	Hydronic Heat Pump	15.1 EER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Air Handler West	Radiant Floor	Ducted	Attic	8.0	New	No
Air Handler East	Radiant Floor	Ducted	Attic	8.0	New	No

Hydronic Piping System Name	Pipe Length	Pipe Diameter	Insul. Thick.
Waterfurnace EW060	10	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
Waterfurnace EW020	Heat Pump	No Pipe Insulation	1	7,353	119	New	3.00	n/a	n/a
Waterfurnace EW060	Heat Pump	Hydronic Heating	1	19,449	119	New	3.00	n/a	n/a

Multi-Family Central Water Heating Details

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

REMARKS

Instantaneous water heater WH-2 to be used as supplemental backup only - will not be used under normal operating conditions.

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 them. This 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: Sereno Builders
 Address: 17509 Via Sereno
Monte Sereno, CA 95030
 Telephone: 408-665-0400 Lic. #: _____

(signature) _____ (date) _____

Documentation Author

Name: Meline Engineering
 Title/Firm: MELINE ENGINEERING
 Address: P.O. Box 276665
Sacramento, CA 95827
 Telephone: (916) 366-3458

(signature) _____ (date) _____

Enforcement Agency

Name: _____
 Title/Firm: _____
 Address: _____
 Telephone: _____

(signature) _____ (date) _____

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 or check NA if not applicable and included with the permit application documentation.			N/A	DESIGNER	ENFORCE- MENT
Building Envelope Measures						
* § 150(a): Minimum R-19 in wood ceiling insulation or equivalent U-factor in metal frame ceiling.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
§ 150(b): Loose fill insulation manufacturer's labeled R-Value:_____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
* § 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).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
* § 150(d): Minimum R-13 raised floor insulation in framed floors or equivalent U-factor.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
§ 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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
b. outside air intake with damper and control, flue damper and control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2. No continuous burning gas pilot lights allowed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
§ 150(f): Air retarding wrap installed to comply with §151 meets requirements specified in the ACM Residential Manual.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
§ 150(g): Vapor barriers mandatory in Climate Zones 14 and 16 only.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
§ 150(l): 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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
§ 118: Insulation specified or installed meets insulation installation quality standards. Indicate type and include CF-6R Form: _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
§ 116-17: Fenestration Products, Exterior Doors, and Infiltration/Exfiltration Controls.						
1. Doors and windows between conditioned and unconditioned spaces designed to limit air leakage.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Fenestration products (except field fabricated) have label with certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration certification.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
3. Exterior doors and windows weatherstripped; all joints and penetrations caulked and sealed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Space Conditioning, Water Heating and Plumbing System Measures						
§ 110-13: HVAC equipment, water heaters, showerheads and faucets certified by the Energy Commission.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
§ 150(h): Heating and/or cooling loads calculated in accordance with ASHRAE, SMACNA or ACCA.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
§ 150(i): Setback thermostat on all applicable heating and/or cooling systems.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
§ 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.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. Steam hydronic heating systems or hot water systems > 15 psi, meet requirements of Table 123-A.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5. Insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
6. Insulation for chilled water piping and refrigerant suction piping includes a vapor retardant or is enclosed entirely in conditioned space.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7. Solar water-heating systems/collectors are certified by the Solar Rating and Certification Corporation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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

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DESCRIPTION	Instructions: Check or initial applicable boxes when completed or check N/A if not applicable.	N/A	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 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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Exhaust fan systems have back draft or automatic dampers.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5. Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operating dampers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7. Flexible ducts cannot have porous inner cores.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
§ 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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. System is installed with:				
a. At least 36" of pipe between filter and heater for future solar heating.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
b. Cover for outdoor pools or outdoor spas.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Pool system has directional inlets and a circulation pump time switch.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
§ 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)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
§ 118 (i): Cool Roof material meets specified criteria	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
§ 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.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
§ 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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
§ 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).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
§ 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 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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
§ 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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
§ 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).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
§ 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.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
§ 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).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EnergyPro 4.4 by EnergySoft	User Number: 5030	Job Number: ME418	Page: 20 of 20	