

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0516040

Insp Area: 4

Thos Bros: 278A1

Site Address: 4351 MARYSVILLE BL SAC

Parcel No: 237-0152-006

Sub-Type: NSFR

Housing (Y/N): N

CONTRACTOR
OWNER BUILDER

OWNER
KOMAROVA LYUDMILA
3018 BERGAMO CT
SACRAMENTO, CA 95833

ARCHITECT

Nature of Work: NEW, 2 STORY SFR; 1ST FL. LIV. SP= 1271sf, ATTACHED GARAGE 211 COVERED PORCH= 87sf, 2ND 1308sf - DESIGN REVIEW AREA -

PAID
CITY OF SACRAMENTO

CONSTRUCTION LENDING AGENCY : I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C.)

NOV 30 2005

Lender's Name _____ Lender's Address _____
NEW CITY HALL

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class _____ License Number 0 _____ Date _____ Contractor Signature _____

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code; any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.00);

I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law).

I am exempt under Sec. _____ B & PC for this reason: _____
 Date 11/30/05 Owner Signature *[Signature]*

IN ISSUING THIS BUILDING PERMIT, the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and hereby authorize representative(s) of this city to enter upon the above mentioned property for inspection purposes.
 Date 11/30/05 Applicant/Agent Signature *[Signature]*

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury one of the following declarations:
I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.
I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier _____ Policy Number _____ Exp Date _____

(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date 11/30/05 Applicant Signature *[Signature]*

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

[Handwritten mark]

TITLE 24 REPORT

0516040

Title 24 Report for:
KOMAROV RES.
4351 MARYSVILLE BLVD
SACRAMENTO, CA

ISSUED
CITY OF SACRAMENTO
NOV 3 0 2005
DOWNTOWN PERMIT
CENTER

Project Designer:
FINELINE DRAFTING INC.
5777 MADISON AVE SUITE 300
SACRAMENTO, CA 95841
(916) 332 2282

Report Prepared By:
FINELINE DRAFTING INC.
Fineline Drafting, Inc.
5777 Madison Ave #300
Sacramento, CA 95841
(916) 332-2282

CITY OF SACRAMENTO
DOWNTOWN PERMIT
CENTER
OCT 10 2005
RECEIVED

Job Number:
05-133

Date:
10/3/2005

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2005 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC - www.energysoft.com.

TITLE 24 REPORT

Title 24 Report for:

KOMAROV RES.
4351 MARYSVILLE BLVD
SACRAMENTO, CA

Project Designer:

FINELINE DRAFTING INC.
5777 MADISION AVE SUITE 300
SACRAMENTO, CA 95841
(916) 332 2282

Report Prepared By:

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TABLE OF CONTENTS

Cover Page	1
Table of Contents	2
Form CF-1R Certificate of Compliance	3
Form MF-1R Mandatory Measures Summary	9
Form WS-5R Residential Kitchen Lighting	11
HVAC System Heating and Cooling Loads Summary	12
Room Load Summary	13
Room Heating Peak Loads	14
Room Cooling Peak Loads	16
Form ECON-1 Energy Use and Cost Summary	18

Certificate Of Compliance : Residential

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

KOMAROV RES.

10/3/2005

Project Title
4351 MARYSVILLE BLVD SACRAMENTO

Project Address
Fineline Drafting, Inc.

Telephone
(916) 332-2282

Documentation Author
EnergyPro

Climate Zone
12

Date
Building Permit #
Plan Check/Date
Field Check/Date

Source Energy Use (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	20.87	7.54	13.32
Space Cooling	15.07	17.30	-2.22
Fans	3.19	2.89	0.30
Domestic Hot Water	9.74	10.71	-0.97
Pumps	0.00	0.00	0.00
Totals	48.87	38.44	10.43

Not Valid for permit applications submitted on or after 01/23/06 because Energy Budget is based on SEER 10.

Percent better than Standard: **21.3%**

BUILDING COMPLIES - NO HERS VERIFICATION REQUIRED

Building Type: Single Family Addition
 Multi Family Existing + Add/Alt

Building Front Orientation: **(Northeast) 45 deg**

Fuel Type: **Natural Gas**

Fenestration:
 Area: **442 ft²** Avg. U: **0.60**
 Ratio: **17.1%** Avg. SHGC: **0.65**

Total Conditioned Floor Area: **2,579 ft²**

Existing Floor Area: **n/a ft²**

Raised Floor Area: **1,308 ft²**

Slab on Grade Area: **1,271 ft²**

Average Ceiling Height: **9.5 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 System	2,579	24,482	1.00	Conditioned	Setback	8	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
Wall	Wood	259	0.110	R-11	R-0.0	45	90	X	New	09-A2	1st Floor
Door	None	22	1.450	None	R-0.0	45	90	X	New	28-A1	1st Floor
Wall	Wood	380	0.110	R-11	R-0.0	135	90	X	New	09-A2	1st Floor
Wall	Wood	264	0.110	R-11	R-0.0	225	90	X	New	09-A2	1st Floor
Wall	Wood	371	0.110	R-11	R-0.0	315	90	X	New	09-A2	1st Floor
Roof	Wood	1,271	0.051	R-19	R-0.0	90	0	X	New	02-A5	1st Floor
Floor	Wood	1,308	0.071	R-11	R-0.0	0	180	X	New	21-A2	2nd Floor
Wall	Wood	253	0.110	R-11	R-0.0	45	90	X	New	09-A2	2nd Floor
Wall	Wood	325	0.110	R-11	R-0.0	135	90	X	New	09-A2	2nd Floor
Wall	Wood	257	0.110	R-11	R-0.0	225	90	X	New	09-A2	2nd Floor
Wall	Wood	338	0.110	R-11	R-0.0	315	90	X	New	09-A2	2nd Floor
Roof	Wood	1,308	0.051	R-19	R-0.0	90	0	X	New	02-A5	2nd Floor

Certificate Of Compliance : Residential

(Part 2 of 3) **CF-1R**

KOMAROV RES.

10/3/2005

Project Title

Date

FENESTRATION SURFACES

#	Type	Area	U-Factor ¹	SHGC ²	True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window Front (Northeast)	44.0	0.600 NFRC	0.65 NFRC	45	90	New	Double NonMtl Clear Default	1st Floor
2	Window Left (Southeast)	56.0	0.600 NFRC	0.65 NFRC	135	90	New	Double NonMtl Clear Default	1st Floor
3	Window Rear (Southwest)	61.0	0.600 NFRC	0.65 NFRC	225	90	New	Double NonMtl Clear Default	1st Floor
4	Window Right (Northwest)	64.0	0.600 NFRC	0.65 NFRC	315	90	New	Double NonMtl Clear Default	1st Floor
5	Window Front (Northeast)	40.0	0.600 NFRC	0.65 NFRC	45	90	New	Double NonMtl Clear Default	2nd Floor
6	Window Left (Southeast)	77.0	0.600 NFRC	0.65 NFRC	135	90	New	Double NonMtl Clear Default	2nd Floor
7	Window Rear (Southwest)	36.0	0.600 NFRC	0.65 NFRC	225	90	New	Double NonMtl Clear Default	2nd Floor
8	Window Right (Northwest)	64.0	0.600 NFRC	0.65 NFRC	315	90	New	Double NonMtl Clear Default	2nd Floor

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	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												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Inside Cond.	R-Val.	JA IV Reference	Condition Status	Location/ Comments
Frame Wall, Gyp. Board	259	-0.25	13	0.09	2	09-A2	New	1st Floor / Exterior Mass
Frame Wall, Gyp. Board	380	-0.25	13	0.09	2	09-A2	New	1st Floor / Exterior Mass
Frame Wall, Gyp. Board	264	-0.25	13	0.09	2	09-A2	New	1st Floor / Exterior Mass
Frame Wall, Gyp. Board	371	-0.25	13	0.09	2	09-A2	New	1st Floor / Exterior Mass
Frame Wall, Gyp. Board		-0.25	13	0.09	0	02-A5	New	1st Floor / Exterior Mass

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	92	None	No Insulation	26-A1	New	1st Floor
Slab Perimeter	155	None	No Insulation	26-A1	New	1st Floor

Run Initiation Time: 10/03/05 10:51:12

Run Code: 1128361872

EnergyPro 4.0 by EnergySoft

User Number: 5905

Job Number: 05-133

Page: 4 of 18

Certificate Of Compliance : Residential

(Part 3 of 3)

CF-1R

KOMAROV RES.

10/3/2005

Project Title

Date

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
HVAC System	Central Furnace	81% AFUE	Packaged Air Conditioner	10.0 SEER	New	Setback

HVAC DISTRIBUTION

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

Hydronic Piping System Name	Pipe Length	Pipe Diameter	Insul. Thick.

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.
Standard Gas 50 gal or Less	Small Gas	Parallel Piping	1	40,000	50	New	0.52	n/a	n/a

Multi-Family Central Water Heating Details Hot Water Pump

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

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

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: FINELINE DRAFTING INC.
 Address: 5777 MADISON AVE SUITE 300
SACRAMENTO, CA 95841
 Telephone: (916) 332 2282
 Lic. #: _____
 (signature) _____ (date) 10/3/05

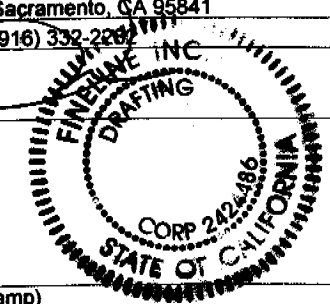
Documentation Author

Name: FINELINE DRAFTING INC.
 Title/Firm: Fineline Drafting, Inc.
 Address: 5777 Madison Ave #300
Sacramento, CA 95841
 Telephone: (916) 332 2282
 (signature) _____ (date) 10/3/05

Enforcement Agency

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

(signature/stamp) _____ (date) _____



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

NOTE: Low-rise 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 supercedes 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	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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. outside air intake with damper and control, flue damper and control	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. No continuous burning gas pilot lights allowed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
§ 150(f): Air retarding wrap installed to comply with §151 meets requirements specified in the ACM Residential Manual.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§ 150(g): Vapor barriers mandatory in Climate Zones 14 and 16 only.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§ 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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§ 118: Insulation specified or installed meets insulation installation quality standards. Indicate type and include CF-8R 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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Exterior doors and windows weatherstripped; all joints and penetrations caulked and sealed.	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input 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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Steam hydronic heating systems or hot water systems > 15 psi, meet requirements of Table 123-A.	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Solar water-heating systems/collectors are certified by the Solar Rating and Certification Corporation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	N/A	DESIGNER	ENFORCE- MENT
Instructions: Check or initial applicable boxes when completed or check N/A if not applicable.			
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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input 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 checked="" 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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. System is installed with:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. At least 36" of pipe between filter and heater for future solar heating.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cover for outdoor pools or outdoor spas.	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§ 118 (i): Cool Roof material meets specified criteria.	<input checked="" type="checkbox"/>	<input 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 checked="" 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 checked="" type="checkbox"/>	<input 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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Residential Kitchen Lighting Worksheet

WS-5R

KOMAROV RES.
Project Title

10/3/2005
Date

At least 50% of the total rated wattage of permanently installed luminaires in kitchens 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	Quantity	=	High Efficacy Watts	or	Other Watts
	Yes <input type="checkbox"/>	No <input type="checkbox"/>						
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
	Yes <input type="checkbox"/>	No <input type="checkbox"/>		x	=		or	
Total A:						0	B:	0

COMPLIES IF A ≥ B YES NO

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

PROJECT NAME KOMAROV RES.	DATE 10/3/2005
SYSTEM NAME HVAC System	FLOOR AREA 2,579

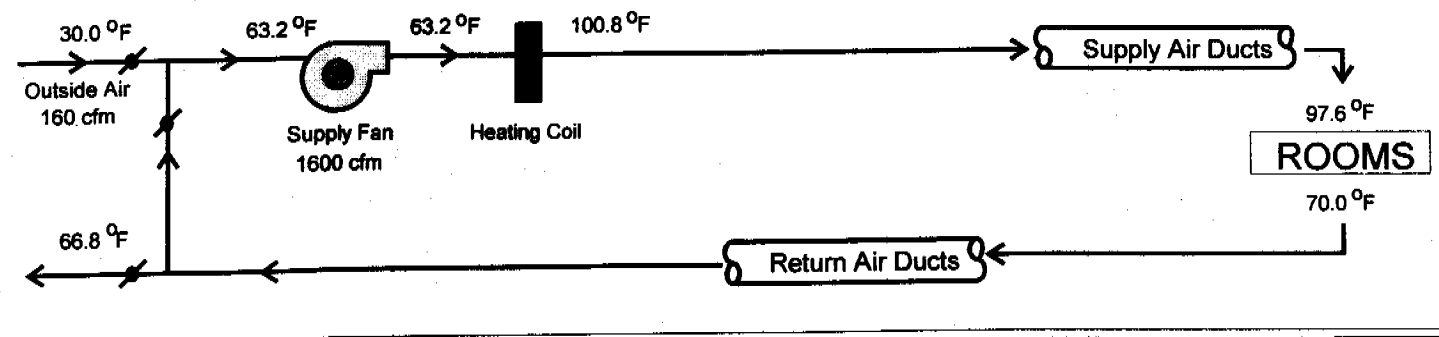
ENGINEERING CHECKS	
Number of Systems	1
Heating System	
Output per System	64,800
Total Output (Btuh)	64,800
Output (Btuh/sqft)	25.1
Cooling System	
Output per System	47,000
Total Output (Btuh)	47,000
Total Output (Tons)	3.9
- Total Output (Btuh/sqft)	18.2
Total Output (sqft/Ton)	658.5
Air System	
CFM per System	1,600
Airflow (cfm)	1,600
Airflow (cfm/sqft)	0.62
Airflow (cfm/Ton)	408.5
Outside Air (%)	10.0
Outside Air (cfm/sqft)	0.06

	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	Sensible	Latent	CFM	Sensible
Total Room Loads	3,122	48,992	702	1,616	48,025
Return Vented Lighting		0			
Return Air Ducts		6,070			5,452
Return Fan		0			0
Ventilation	160	3,017	-44	160	6,345
Supply Fan		0			0
Supply Air Ducts		6,070			5,452
TOTAL SYSTEM LOAD		64,150	657		65,274

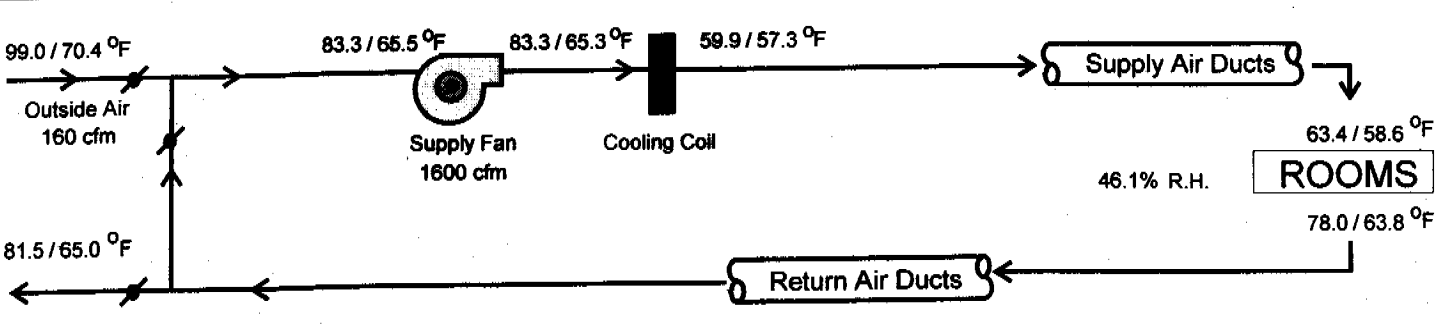
HVAC EQUIPMENT SELECTION			
CARRIER 48SS048080511	40,268	4,526	64,800
Total Adjusted System Output (Adjusted for Peak Design Conditions)			
	40,268	4,526	64,800
TIME OF SYSTEM PEAK		Aug 2 pm	Jan 12 am

Note: values above given at ARI conditions

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



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



RESIDENTIAL ROOM COOLING LOAD SUMMARY

Project Title: **KOMAROV RES.** Date: **10/3/2005**

Room Information	1st Floor	Design Conditions	
Room Name:		Outdoor Dry Bulb Temperature:	78°F
Floor Area:	1,271 sf	Outdoor Web Bulb Temperature:	100°F
Indoor Dry Bulb Temperature:	78°F	Outdoor Daily Range:	32°F

Opaque Surfaces	Orientation	Area	U-Factor	CLTD ¹	Btu/hr
R-13 Wall (W.13.2x4.16)	(Northeast)	259.0	0.1100	19.0	541
Solid Wood Door	(Northeast)	22.0	1.4500	19.0	606
R-13 Wall (W.13.2x4.16)	(Southeast)	380.0	0.1100	21.0	878
R-13 Wall (W.13.2x4.16)	(Southwest)	264.0	0.1100	21.0	610
R-13 Wall (W.13.2x4.16)	(Northwest)	371.0	0.1100	20.2	826
R-38 Roof (R.38.2x4.24)	(East)	1,271.0	0.0510	47.0	3,047
Page Total					6,507

Items shown with an asterisk (*) denote conduction through an interior surface to another room.
 1. Cooling Load Temperature Difference (CLTD)

Fenestration	Orientation	Shaded		Unshaded		Btu/hr
		Area	GLF	Area	GLF	
Window	(Northeast)	0.0	32.8	44.0	53.7	2,364
Window	(Southeast)	0.0	32.8	56.0	61.4	3,440
Window	(Southwest)	0.0	32.8	61.0	61.4	3,747
Window	(Northwest)	0.0	32.8	64.0	53.7	3,438
Page Total						12,989

Internal Gain				Btu/hr
Occupants	4	x Occupants	230	920
Equipment	1	x Dwelling Units	1,600	1,600
Infiltration:	1,077	x	1.17	x
Air Sensible	CFM	ELA	22	ΔT
				2,490

TOTAL HOURLY SENSIBLE HEAT GAIN FOR ROOM **24,506**

Latent Gain				Btu/hr
Occupants	4	x Occupants	200	800
Infiltration:	4,827	x	1.17	x
Air Latent	CFM	ELA	-0.00087	ΔW
				-443

TOTAL HOURLY LATENT HEAT GAIN FOR ROOM **357**

RESIDENTIAL ROOM COOLING LOAD SUMMARY

Project Title KOMAROV RES.		Date 10/3/2005
Room Information		Design Conditions
Room Name:	2nd Floor	Outdoor Dry Bulb Temperature: 78°F
Floor Area:	1,308 sf	Outdoor Web Bulb Temperature: 100°F
Indoor Dry Bulb Temperature:	78°F	Outdoor Daily Range: 32°F

Opaque Surfaces	Orientation	Area	U-Factor	CLTD ¹	Btu/hr
R-19 Floor (F.19.2x8.16)		1,308.0	x 0.0710	x 12.0	= 1,114
R-13 Wall (W.13.2x4.16)	(Northeast)	253.0	x 0.1100	x 19.0	= 529
R-13 Wall (W.13.2x4.16)	(Southeast)	325.0	x 0.1100	x 21.0	= 751
R-13 Wall (W.13.2x4.16)	(Southwest)	257.0	x 0.1100	x 21.0	= 594
R-13 Wall (W.13.2x4.16)	(Northwest)	338.0	x 0.1100	x 20.2	= 752
R-38 Roof (R.38.2x4.24)	(East)	1,308.0	x 0.0510	x 47.0	= 3,135
Page Total					6,875

Items shown with an asterisk (*) denote conduction through an interior surface to another room.
 1. Cooling Load Temperature Difference (CLTD)

Fenestration	Orientation	Shaded		Unshaded		Btu/hr	
		Area	GLF	Area	GLF		
Window	(Northeast)	0.0	x 32.8	+	40.0	x 53.7	= 2,149
Window	(Southeast)	0.0	x 32.8	+	77.0	x 61.4	= 4,730
Window	(Southwest)	0.0	x 32.8	+	36.0	x 61.4	= 2,211
Window	(Northwest)	0.0	x 32.8	+	64.0	x 53.7	= 3,438
Page Total						12,528	

Internal Gain					Btu/hr				
Occupants	4	x	Occupants	x	230 Btuh/occ. =	920			
Equipment	1	x	Dwelling Units	x	1,600 Watts/sqft =	1,600			
Infiltration:	1.077	x	1.17	x	92.29	x	22	=	2,562
	Air Sensible		CFM		ELA		ΔT		
TOTAL HOURLY SENSIBLE HEAT GAIN FOR ROOM									24,486

Latent Gain					Btu/hr				
Occupants	4	x	Occupants	x	200 Btuh/occ. =	800			
Infiltration:	4.827	x	1.17	x	92.29	x	-0.00087	=	-456
	Air Latent		CFM		ELA		ΔW		
TOTAL HOURLY LATENT HEAT GAIN FOR ROOM									344

ENERGY USE AND COST SUMMARY

ECON-1

PROJECT NAME
KOMAROV RES.

DATE
10/3/2005

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost (\$)	Energy Use (kWh)	Peak Demand (kW)	Cost (\$)	Energy Use (kWh)	Peak Demand (kW)	Cost (\$)
Jan	60	0		29	0		30	0	
Feb	38	0		17	0		21	0	
Mar	26	0		8	1		18	-1	
Apr	33	3		64	3		-32	-1	
May	113	6		161	7		-48	-2	
Jun	299	7		395	9		-96	-2	
Jul	472	7		567	8		-95	-1	
Aug	426	7		495	8		-69	0	
Sep	242	7		256	7		-14	0	
Oct	36	5		34	5		2	0	
Nov	26	2		16	3		10	-1	
Dec	54	0		23	0		31	0	
Year	1,824	7	\$	2,065	9	\$	-241	-2	\$

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost (\$)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost (\$)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost (\$)
Jan	173	83		97	84		77	0	
Feb	117	76		65	77		52	-1	
Mar	89	62		40	64		49	-2	
Apr	60	65		29	40		31	25	
May	24	24		25	7		-1	17	
Jun	21	6		24	6		-2	0	
Jul	21	6		24	6		-2	0	
Aug	21	6		23	6		-2	0	
Sep	20	6		22	6		-2	0	
Oct	27	33		24	16		3	17	
Nov	81	60		34	61		47	-1	
Dec	159	74		81	75		78	-1	
Year	815	83	\$	488	84	\$	327	0	\$

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	2,065 kWh	9 kW	\$ 0	0.00/sqft	\$ 0.00/kWh
Natural Gas	488 therms	84 kBtu/hr	\$ 0	0.00/sqft	\$ 0.00/therm
Total			\$ 0	0.00/sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.