



ACTIVE ENERGY INSPECTIONS

P.O. Box 232936 • Anchorage, Alaska 99523-2936

Phone: (907) 561-7474 • Fax: (907) 561-7474

INVOICE NO.

11102

NAME <i>Stapley Construction</i>		JOB SITE <i>13724 W. Avign Dr (light rail)</i>	
STREET & NO.		STREET & NO.	
CITY	STATE	ZIP	ZIP
		<i>Big Lake, AK</i>	<i>99652</i>
DATE COMPLETED <i>11/14/16</i>	PHONE	TERMS	ADJ
			DATE

DATE	DESCRIPTION	UNIT PRICE	AMOUNT
<i>11/14</i>	<i>Big Lake Beach Party, 12K total, mileage split w/ Amit</i>		<i>450.00</i>
	<i>5 fan flow tests</i>		<i>100.00</i>
	<i>Less fan test + client appreciation discount</i>		<i>-50.00</i>
<i>PD 11/14/16</i>			
<i>check # 1926</i>			
COMMENTS		TOTAL MATERIALS	
		TOTAL LABOR	
		GRAND TOTAL	<i>500.00</i>


1.5% per month Finance Charge on amounts over 30 days.
 A \$5.00 per month late charge will be assessed on accounts remaining unpaid for more than 60 days.

For closing

Home Energy Rating Certificate

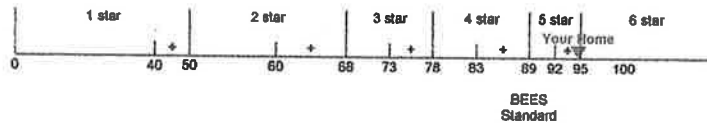


The Building Located At:
13724 W. Airigin Dr.
Big Lake, Alaska

Has Been Energy-Rated As:

Five Star Plus

Efficiency Score

94.7 points



Amount of CO2 Produced by the Home
13,011 pounds per year

Projected Annual Energy Costs
\$1,753 per year

Score with Renewables
94.7 points

Estimated Annual Energy Costs

Space Heating  \$476

Water Heating  \$150

Space Cooling: \$0

Lights & Appli.  \$1,127

Renewables \$0

Owner of Record: Stapley Construction

Legal Description

Oasis at Birch Lake Condominiums Unit 9, Plat No. 2016-117, Palmer Recording District, Third Judicial District, State of Alaska

Energy Rater: Bret D. Vice #2
Active Energy Inspections

Date Construction Began: 5/20/2016

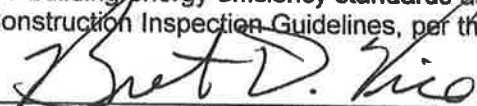
Certifying BEES: 2012

Energy Rating Date: 11/14/2016

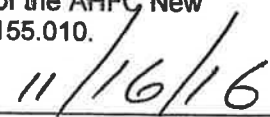
File: Stapley13724WAiriginDr.hm2

AkWarm: 2.6.1.0 **Library:** 8/9/2016

I certify that this Energy Rating is true and correct, to the best of my knowledge and belief, and the structure located on the above described property complies with the all the requirements of the building energy efficiency standards as required by Section .04 Part A. of the AHFC New Construction Inspection Guidelines, per the standards adopted by 15 AAC 155.010.



Energy Rater Signature



Date

Return to: _____

For records



Home Energy Rating Certificate



The Building Located At:

13724 W. Airigin Dr.
Big Lake, Alaska

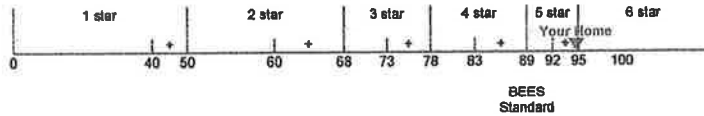
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I certify that this Energy Rating is true and correct, to the best of my knowledge and belief, and the structure located on the above described property complies with the all the requirements of the building energy efficiency standards as required by Section .04 Part A. of the AHFC New Construction Inspection Guidelines, per the standards adopted by 15 AAC 155.010.

Bret D. Vice

Energy Rater Signature

11/16/16

Date

Return to: _____

Energy Cost and Features Report

(DOCUMENT DOES NOT NEED TO BE RECORDED)

Property: Stapley Construction
13724 W. Airigin Dr.
Big Lake, Alaska

Rater: Bret D. Vice #2
Active Energy Inspections
PO Box 232936
Anchorage, Alaska 99523-2936

House: Multi-Family, One Unit
Living Floor Area: 1,271 square feet
Attached Garage, 405 square feet

Rating: BEES
ID: BDV11/14/16#2

Envelope Efficiency

Floor Insulation	R-47.7 *
Wall/Door Insulation	R-20.8
Ceiling Insulation	R-60.8
Window U-Value	U-0.29
Window SHGC	0.32
Window to Wall Ratio, Living Space	12.9%
South Facing Window Area	108 square feet
Air Leakage	3.5 Air Changes per Hour at 50 Pascals 0.16 Air Changes per Hour Natural

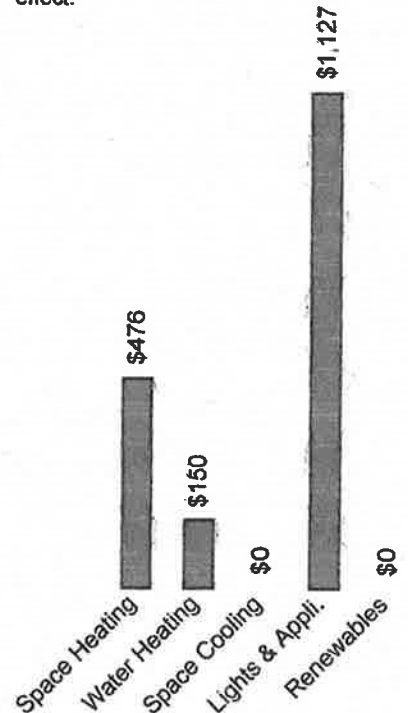
* Includes the insulating value of the ground in contact with these components.

Space Heating System

Fuel	Natural Gas
System Type	Boiler
Model	Navien NCB-240E,
Efficiency	95%
Btu/hr Output	18,000 - 112,000 Btu/hr
Primary Htg. Sys. Design Load	48,660 Btu/hr
Garage Htg. Sys. Design Load	0 Btu/hr
Supplemental Fuel	None
Thermostat Setting	70.0 degrees F
Setback Thermostat	Yes, Controls Entire Home

Estimated Annual Energy Costs

Actual use and costs may vary from these estimates depending upon weather conditions, occupant life styles and utility rates currently in effect.



Water Heater

Efficiency	95%
Location	Conditioned Space
Fuel Type	Natural Gas

Space Cooling System

None Present

Ventilation

System Type	Heat Recovery Ventilator
Required Ventilation	43 CFM
Measured Ventilation	200 CFM

Other

Number of Bedrooms	2
Clothes Dryer Fuel	Natural Gas
Cooking Range Fuel	Natural Gas
Oven Fuel	Natural Gas
Miscellaneous Lights/Appliance Use	Average
CAZ Test Normal Conditions	Pass

Electricity: \$0.2033/kWh, Natural Gas: \$1.13/cf
 Space Heating: 58 kWh of Electricity, 410 ccf of Natural Gas
 Water Heating: 132 ccf of Natural Gas
 Space Cooling:
 Lights & Appliances: 4,971 kWh of Electricity, 103 ccf of Natural Gas



Additional Information:

The entered EnergyFactor for the DHW heater is significantly different from the library value.

Rater Notes:

11/14/16 The foundation for this unit went in after July 1st 2013. Use 2012 BEES. I saw the following at the rating:

- PEX
- Depth markers in the attic, measured
- Living and garage slab OG
- Flashing covering vertical rigid insulation along the edge of slabs living and garage
- Radiant floor living and garage
- Rigid insulation under slabs confirmed with photos
- One dual use, on-demand boiler for heat and DHW

This house needs 43 CFM exhaust. the fan flow rates are as follows:

- | | |
|--------------------------------|-------------------|
| - Master bathroom fan w/timer | = 83 CFM. |
| - Hallway bathroom fan w/timer | = 59 CFM |
| - Kitchen microwave fan | = 240 CFM |
| - HRV intake | = 0 CFM no access |
| - HRV exhaust | = 58 CFM |

11/14/16 The center burner @ 10 ppm CO. This is a sealed combustion, modulating, on-demand boiler in combination with on-demand for the domestic hot water is in the garage.

The boiler is a Navien NCB-240E, 18,000 - 112,000 output. Boiler used as on-demand for radiant floor heat living and garage and as on-demand water heater.

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BUILDING LEAKAGE TEST

Date of Test: 11/14/16

Technician: Bret D. Vice

Test File: Unfiled

Customer: Stapley Construction

Building Address: 13724 W. Airgin Dr
Big Lake, Alaska 99652

Big Lake, Alaska 99652
Phone

Test Results

- Airflow at 50 Pascals:
(50 Pa = 0.2 w.c.)
941 CFM (+/- 0.2 %)
3.54 ACH
0.74 CFM per ft² floor area.
- Leakage Areas:
94.9 in² (+/- 0.7 %) Canadian EqLA @ 10 Pa
49.8 in² (+/- 1.2 %) LBL ELA @ 4 Pa
- Minneapolis Leakage Ratio: 0.18 CFM50 per ft² surface area
- Building Leakage Curve:
Flow Coefficient (C) = 69.9 (+/- 1.9 %)
Exponent (n) = 0.665 (+/- 0.005)
Correlation Coefficient = 0.99977
- Test Settings:
Test Standard: = CGSB
Test Mode: = Depressurization
Equipment = Model 3 Minneapolis Blower Door

Infiltration Estimates

- Estimated Average Annual Infiltration Rate:
67.2 CFM
0.25 ACH
22.4 CFM per person
- Estimated Design Infiltration Rate:
Winter: 52.9 CFM
0.20 ACH
Summer: 38.0 CFM
0.14 ACH
- Recommended Whole Building Mechanical
Ventilation Rate: (based on ASHRAE 62.2) 14.3 CFM

Cost Estimates

- Estimated Cost of Air Leakage for Heating:
- Estimated Cost of Air Leakage for Cooling:

AkWarm Heating Energy Flows Report

Client: Stapley Construction
 Home at: 13724 W. Airigin Dr.
 Big Lake, AK 99652

Energy Flows below are in Btu/hour

Month	Hours	Gross Loss	Gross Internal	Useable Internal	Gross Solar	Useable Solar	Natural Infil cfm
Jan	744	13,945	3,127	3,127	665	661	53
Feb	678	12,499	3,029	3,029	982	977	51
Mar	744	10,784	2,895	2,895	1,801	1,695	49
Apr	720	7,944	2,762	2,762	1,910	1,694	44
May	744	5,472	2,664	2,663	1,684	1,342	40
Jun	720	3,663	2,628	2,452	1,591	999	35
Jul	744	3,062	2,664	2,295	1,499	671	31
Aug	744	3,493	2,762	2,484	1,340	837	32
Sep	720	5,229	2,895	2,868	1,214	1,109	36
Oct	744	8,192	3,029	3,029	961	950	43
Nov	720	11,602	3,127	3,127	650	647	49
Dec	744	13,836	3,162	3,162	272	269	53

Annual Energy Flows

Gross Loss: 72.7 MMBtu

Gross Internal: 25.4 MMBtu

Useable Internal: 24.7 MMBtu

Internal Utilization: 0.975

Gross Solar: 10.6 MMBtu

Useable Solar: 8.6 MMBtu

Solar Utilization: 0.812

Net Heat Load: 39.3 MMBtu

Design Heat Load

See the 'Design Heat Loss Report' for detailed information on heating system sizing.

Main Home: 17,887 Btu/hour

Garage: 4,911 Btu/hour