

M12000141

**Load Short Form**  
**Entire House**  
**Love's Heating & Air Inc.**

Job:  
 Date: Jul 23, 2010  
 By:

P.O. Box 396, Severn, MD 21144 Phone: 410-551-1376 Fax: 410-551-2157 Email: john@lovesheatingandair.com Web: www.lovesgeothermal.com

**Project Information**

For: Stroud, Ralph & Sandy

**Design Information**

	Htg	Clg	Method	Infiltration
Outside db (°F)	15	91	Construction quality	Simplified Average
Inside db (°F)	70	75	Fireplaces	0
Design TD (°F)	55	16		
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	46	34		

**HEATING EQUIPMENT**

Make  
 Trade  
 Model  
 GAMA ID

Efficiency 80 AFUE  
 Heating input 0 Btuh  
 Heating output 0 Btuh  
 Temperature rise 0 °F  
 Actual air flow 2193 cfm  
 Air flow factor 0.039 cfm/Btuh  
 Static pressure 0 in H2O  
 Space thermostat

**COOLING EQUIPMENT**

Make  
 Trade  
 Cond  
 Coil  
 ARI ref no.  
 Efficiency 0 SEER  
 Sensible cooling 0 Btuh  
 Latent cooling 0 Btuh  
 Total cooling 0 Btuh  
 Actual air flow 2193 cfm  
 Air flow factor 0.066 cfm/Btuh  
 Static pressure 0 in H2O  
 Load sensible heat ratio 0.84

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
second floor p	1260	19393	16839	752	1115
base/first floor p	3488	37135	19386	1441	1284
Entire House d	4748	56528	33115	2193	2193
Other equip loads		0	0		
Equip. @ 0.96 RSM			31658		
Latent cooling			6310		
<b>TOTALS</b>	<b>4748</b>	<b>56528</b>	<b>37968</b>	<b>2193</b>	<b>2193</b>

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*Health Dept approved*  
*John W. [Signature]*

**Load Short Form**  
**base/first floor**  
 Love's Heating & Air Inc.

Job:  
 Date: Jul 23, 2010  
 By:

P.O. Box 398, Severn, MD 21144 Phone: 410-551-1376 Fax: 410-551-2157 Email: johnlove@lovesheatingandair.com Web: www.lovesgeothermal.com

**Project Information**

For: Stroud, Ralph & Sandy

**Design Information**

	Htg	Clg	Infiltration	Simplified Average
Outside db (°F)	15	91	Method	
Inside db (°F)	70	75	Construction quality	
Design TD (°F)	55	16	Fireplaces	0
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	46	34		

**HEATING EQUIPMENT**

Make	n/a
Trade	n/a
Model	n/a
GAMA ID	n/a
Efficiency	n/a
Heating input	0 Btuh
Heating output	0 °F
Temperature rise	0 cfm
Actual air flow	0 cfm/Btuh
Air flow factor	0 in H2O
Static pressure	n/a
Space thermostat	

**COOLING EQUIPMENT**

Make	n/a
Trade	n/a
Cond	n/a
Coil	n/a
ARI ref no.	n/a
Efficiency	n/a
Sensible cooling	0 Btuh
Latent cooling	0 Btuh
Total cooling	0 Btuh
Actual air flow	0 cfm
Air flow factor	0 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Basement	1260	10145	400	394	26
Basement 2	484	4793	194	186	13
1st floor	1260	14238	13548	552	897
1st flr bdrm	484	7958	5245	309	347
base/first floor	3488	37135	19386	1441	1284
Other equip loads		0	0		
Equip. @ 0.96 RSM			18533		
Latent cooling			4591		
<b>TOTALS</b>	<b>3488</b>	<b>37135</b>	<b>23125</b>	<b>1441</b>	<b>1284</b>

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**Load Short Form**  
**second floor**  
 Love's Heating & Air Inc.

Job:  
 Date: Jul 23, 2010  
 By:

P.O. Box 396, Severn, MD 21144 Phone: 410-551-1376 Fax: 410-551-2157 Email: johnlove@lovesheatingandair.com Web: www.loveseothermal.com

**Project Information**

For: Stroud, Ralph & Sandy

**Design Information**

	Htg	Clg	Method	Infiltration	Simplified
Outside db (°F)	15	91	Construction quality		Average
Inside db (°F)	70	75	Fireplaces		0
Design TD (°F)	55	16			
Daily range	-	M			
Inside humidity (%)	50	50			
Moisture difference (gr/lb)	46	34			

**HEATING EQUIPMENT**

Make	n/a
Trade	n/a
Model	n/a
GAMA ID	n/a
Efficiency	n/a
Heating input	
Heating output	0 Btuh
Temperature rise	0 °F
Actual air flow	0 cfm
Air flow factor	0 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	n/a

**COOLING EQUIPMENT**

Make	n/a
Trade	n/a
Cond	n/a
Coil	n/a
ARI ref no.	n/a
Efficiency	n/a
Sensible cooling	0 Btuh
Latent cooling	0 Btuh
Total cooling	0 Btuh
Actual air flow	0 cfm
Air flow factor	0 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
2nd flr	1260	19393	16839	752	1115
second floor	1260	19393	16839	752	1115
Other equip loads		0	0		
Equip. @ 0.96 RSM			16098		
Latent cooling			1719		
<b>TOTALS</b>	<b>1260</b>	<b>19393</b>	<b>17817</b>	<b>752</b>	<b>1115</b>

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**Project Information**

For: RALPH STROUD  
2590 LOUANNE CT, WEST FRIENDSHIP, MD 21794

**Design Information**

	Htg	Clg	Method	Infiltration
Outside db (°F)	17	91		Simplified
Inside db (°F)	70	75	Construction quality	Loose
Design TD (°F)	53	16	Fireplaces	0
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	45	37		

**HEATING EQUIPMENT**

Make Generic  
Trade  
Model EER 20.0, COP 3.97  
ARI ref no.  
Efficiency 3.6 COP  
Heating input 0 Btuh  
Heating output 0 Btuh  
Temperature rise 0 °F  
Actual air flow 930 cfm  
Air flow factor 0.017 cfm/Btuh  
Static pressure 0 in H2O  
Space thermostat

**COOLING EQUIPMENT**

Make Generic  
Trade  
Cond EER 20.0, COP 3.97  
Coil  
ARI ref no.  
Efficiency 18.86 EER  
Sensible cooling 0 Btuh  
Latent cooling 0 Btuh  
Total cooling 0 Btuh  
Actual air flow 930 cfm  
Air flow factor 0.040 cfm/Btuh  
Static pressure 0 in H2O  
Load sensible heat ratio 0.82

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Room2	2392	53386	23522	930	930
Entire House	2392	53386	23522	930	930
Other equip loads		0	0		
Equip. @ 0.96 RSM			22557		
Latent cooling			5044		
<b>TOTALS</b>	<b>2392</b>	<b>53386</b>	<b>27602</b>	<b>930</b>	<b>930</b>

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**Project Information**

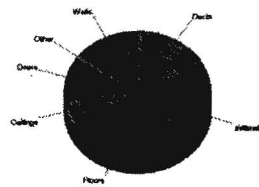
For: RALPH STROUD  
2590 LOUANNE CT, WEST FRIENDSHIP, MD 21794

**Design Conditions**

<b>Location:</b>		<b>Indoor:</b>		<b>Heating</b>	<b>Cooling</b>
Baltimore, MD, US		Indoor temperature (°F)		70	75
Elevation: 154 ft		Design TD (°F)		53	16
Latitude: 39°N		Relative humidity (%)		50	50
<b>Outdoor:</b>		Moisture difference (gr/lb)		44.8	37.0
Dry bulb (°F)	17	Cooling	91		
Daily range (°F)	-		19 (M)		
Wet bulb (°F)	-		74		
Wind speed (mph)	15.0		7.5		
		<b>Infiltration:</b>			
		Method		Simplified	
		Construction quality		Loose	
		Fireplaces		0	

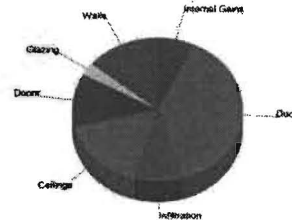
**Heating**

Component	Btuh/ft²	Btuh	% of load
Walls	4.9	7625	14.3
Glazing	30.4	729	1.4
Doors	32.0	5373	10.1
Ceilings	1.7	4080	7.6
Floors	5.2	12327	23.1
Infiltration	7.8	13807	25.9
Ducts		9446	17.7
Piping		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	0
<b>Total</b>		<b>53386</b>	<b>100.0</b>



**Cooling**

Component	Btuh/ft²	Btuh	% of load
Walls	2.1	3297	14.0
Glazing	28.3	679	2.9
Doors	16.8	2827	12.0
Ceilings	1.6	3946	16.8
Floors	0	0	0
Infiltration	1.2	2122	9.0
Ducts		8990	38.2
Ventilation		0	0
Internal gains		1660	7.1
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>23522</b>	<b>100.0</b>



Latent Cooling Load = 5044 Btuh  
Overall U-value = 0.086 Btuh/ft²·°F

WARNING: window to floor area ratio = 1.0% - less than 5%.

**Project Information**

For: RALPH STROUD  
2590 LOUANNE CT, WEST FRIENDSHIP, MD 21794

**Design Conditions**

<b>Location:</b>		<b>Indoor:</b>		<b>Heating</b>	<b>Cooling</b>
Baltimore, MD, US		Indoor temperature (°F)		70	75
Elevation: 154 ft		Design TD (°F)		53	16
Latitude: 39°N		Relative humidity (%)		50	50
<b>Outdoor:</b>		Moisture difference (gr/lb)		44.8	37.0
Dry bulb (°F)	Heating 17	Cooling 91	<b>Infiltration:</b>		
Daily range (°F)	-	19 ( M )	Method	Simplified	
Wet bulb (°F)	-	74	Construction quality	Loose	
Wind speed (mph)	15.0	7.5	Fireplaces	0	

**Construction descriptions**

	Or	Area ft <sup>2</sup>	U-value Btu/ft <sup>2</sup> ·°F	Insul R ft <sup>2</sup> ·°F/Btu	Htg HTM Btu/ft <sup>2</sup>	Loss Btu/h	Clg HTM Btu/ft <sup>2</sup>	Gain Btu/h
<b>Walls</b>								
12C-0sw: Frm wall, vnl ext, 3/8" wood shth, r-13 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm								
	n	456	0.091	13.0	4.85	2212	2.10	956
	e	414	0.091	13.0	4.85	2008	2.10	868
	s	456	0.091	13.0	4.85	2212	2.10	956
	w	246	0.091	13.0	4.85	1193	2.10	516
	all	1572	0.091	13.0	4.85	7625	2.10	3297
<b>Partitions</b> (none)								
<b>Windows</b>								
1D-c2ov: 2 glazing, clr outr, air gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk								
	n	12	0.570	0	30.4	365	20.0	240
	s	12	0.570	0	30.4	365	31.5	378
	all	24	0.570	0	30.4	729	25.7	617
<b>Doors</b>								
11J0: Door, ovhd mtl, fg core type								
	w	168	0.600	6.3	32.0	5373	16.8	2827
<b>Ceilings</b>								
16B-30ad: Attic ceiling, asphalt shingles roof mat, r-30 ceil ins, 1/2" gypsum board int fnsh								
		2392	0.032	30.0	1.71	4080	1.65	3946
<b>Floors</b>								
22A-tpm: Bg floor, heavy dry or light damp soil								
		196	1.180	0	62.9	12327	0	0

**Project Information**

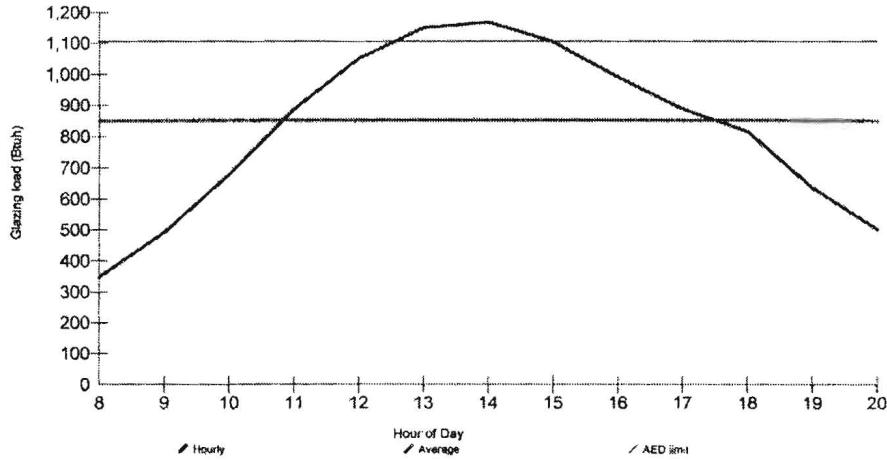
For: RALPH STROUD  
2590 LOUANNE CT, WEST FRIENDSHIP, MD 21794

**Design Conditions**

<b>Location:</b> Baltimore, MD, US Elevation: 154 ft Latitude: 39°N		<b>Indoor:</b> Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	<b>Heating</b> 70 53 50 44.8	<b>Cooling</b> 75 16 50 37.0
<b>Outdoor:</b> Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	<b>Heating</b> 17 - - 15.0	<b>Cooling</b> 91 19 ( M ) 74 7.5	<b>Infiltration:</b>	

**Test for Adequate Exposure Diversity**

**Hourly Glazing Load**



Maximum hourly glazing load exceeds average by 37.3%.

House does not have adequate exposure diversity (AED), based on AED limit of 30%.

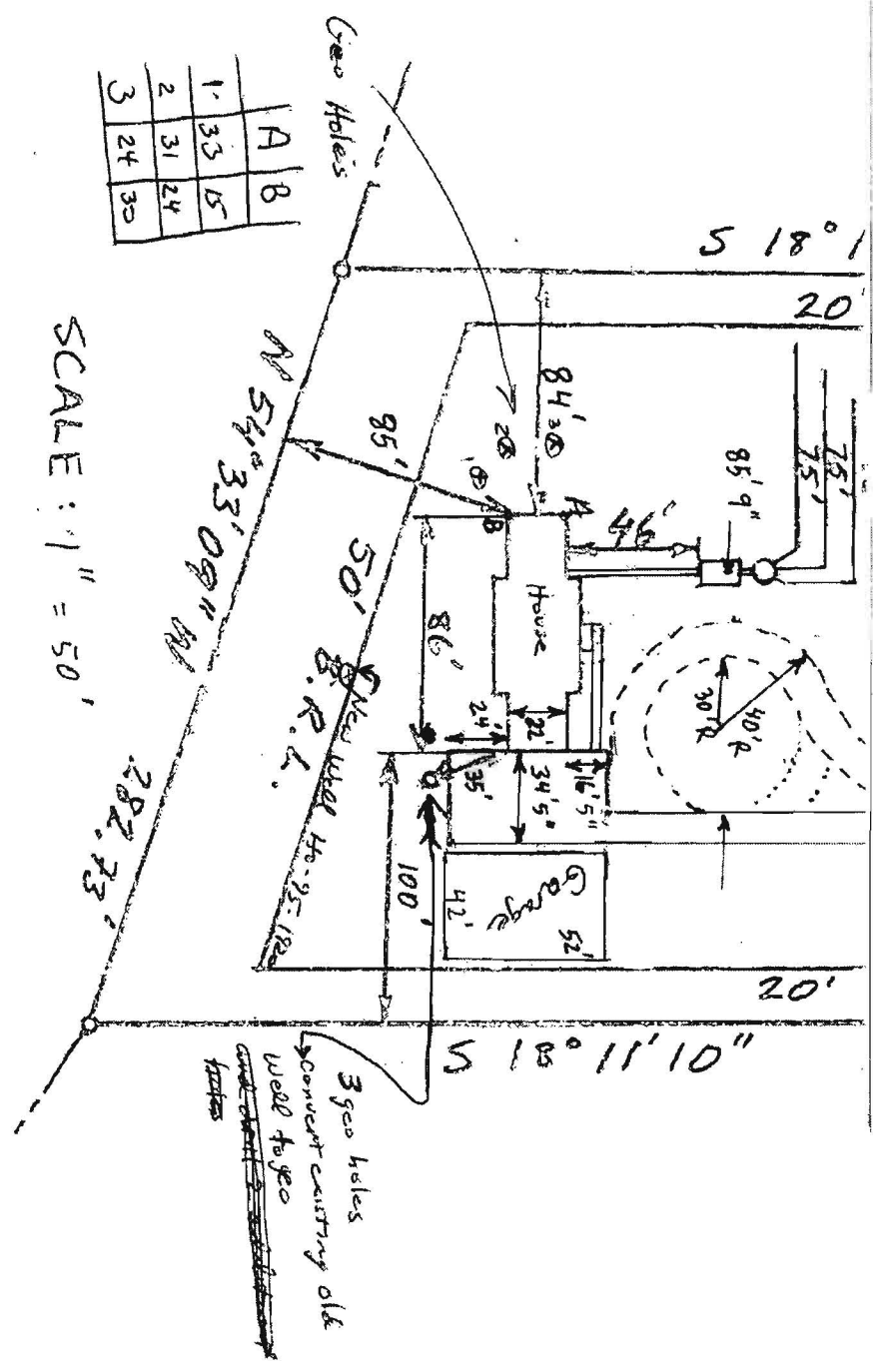
AED excursion: 62 Btuh (PFG - 1.3\*AFG)

1 Room name		Entire House		Room2										
2 Exposed wall		9.0 ft		196.0 ft										
3 Ceiling height		9.0 ft		52.0 x 46.0 ft										
4 Room dimensions		2392.0 ft²		2392.0 ft²										
5 Room area		2392.0 ft²		2392.0 ft²										
Ty	Construction number	U-value (Btu/ft²·°F)	Or	HTM (Btu/ft²)		Area (ft²) or perimeter (ft)		Load (Btu/h)		Area (ft²) or perimeter (ft)		Load (Btu/h)		
				Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	
8	W	12C-0sw	0.091	n	4.85	2.10	468	456	2212	956	468	456	2212	956
		1D-c2ov	0.570	n	30.38	19.96	12	0	365	240	12	0	365	240
	W	12C-0sw	0.091	e	4.85	2.10	414	414	2008	888	414	414	2008	888
	W	12C-0sw	0.091	s	4.85	2.10	468	456	2212	956	468	456	2212	956
		1D-c2ov	0.570	s	30.38	31.48	12	0	365	378	12	0	365	378
	W	12C-0sw	0.091	w	4.85	2.10	414	248	1193	518	414	246	1193	518
		11Jo	0.600	w	31.98	16.63	168	168	5373	2827	168	168	5373	2827
		16B-30ad	0.032	-	1.71	1.65	2392	2392	4080	3946	2392	2392	4080	3946
		22A-1pm	1.180	-	62.89	0.00	2392	196	12327	0	2392	196	12327	0
6	c) AED excursion									62			62	
Envelope loss/gain									30133	10750			30133	10750
12	a) Infiltration								13807	2122			13807	2122
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			2			480	2			480
			Appliances/other							1200				1200
Subtotal (lines 6 to 13)									43940	14531			43940	14531
Less external load									0	0			0	0
Less transfer									0	0			0	0
Redistribution									0	0			0	0
14	Subtotal								43940	14531			43940	14531
15	Duct loads								9446	8990			9446	8990
Total room load									53386	23522			53386	23522
Air required (cfm)									930	930			930	930

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	A	B
1	33	15
2	31	24
3	24	30

SCALE: 1" = 50'



Dweller  
 RALPH STEAD  
 2590 Louane Dr  
 West Friendship MD 21794

3 geo holes  
 convert existing old  
 well to geo  
 holes