

Changed to #3015, call H# KN

DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS  
300 COURT HOUSE DRIVE  
ELLSWORTH CITY, MD 21043  
PERMITS (410) 313-2466 INSPECTIONS (410) 313-1910  
AUTOMATED INFORMATION (410) 313-3800

**HOWARD COUNTY  
PERMIT APPLICATION**

**PERMIT NUMBER**  
1300143541

Building Address 2994 Woodbine Rd  
Woodbine, MD 21797  
Suite/Apt. #: \_\_\_\_\_ SDP/WP/Petition #: \_\_\_\_\_  
Census Tract 6001002 Subdivision New Horizon Farm  
Section \_\_\_\_\_ Area \_\_\_\_\_ Lot 1  
Tax Map 13 Parcel 320 Grid 37  
Zoning R10 Map Coordinates 753 Lot size \_\_\_\_\_

Property Owner's Name Jon Shaw  
Address 4762 Stonehouse Dr  
City Ellsworth City State MD Zip Code 21078  
Home Phone 410-313-4274 Work Phone 301-902-4260  
Applicant's Name & Mailing Address, (if other than stated hereon): \_\_\_\_\_  
Phone \_\_\_\_\_ Fax \_\_\_\_\_

Existing Use Vacant land  
Proposed Use Single Family Home  
Estimated Construction Cost \$ 257,000  
Description of Work New custom single family home  
3 br, 3 car garage attached, unfinished basement  
w/rough-in, 3 1/2 bath, concrete porch, lawn, pool Deck

Contractor Company Owner  
Contact Person \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
License No. \_\_\_\_\_  
Phone \_\_\_\_\_ Fax \_\_\_\_\_

Occupant or Tenant Owner  
Contact Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
Phone \_\_\_\_\_ Fax \_\_\_\_\_

Engineer or Architect Company \_\_\_\_\_  
Contact Person \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
Phone \_\_\_\_\_ Fax \_\_\_\_\_

**BUILDING DESCRIPTION - COMMERCIAL**

**BUILDING DESCRIPTION - RESIDENTIAL**

Building Characteristics	Utilities
Height: <u>30'</u>	Water Supply: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private
No. of stories: <u>2</u>	Sewage Disposal: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private
Gross area, sq. ft. per floor: <u>1800</u>	Electric Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Gas Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Use group: _____	Heating System: Electric <input checked="" type="checkbox"/> Oil <input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane Gas <input type="checkbox"/>
Construction type: <input type="checkbox"/> Reinforced Concrete <input type="checkbox"/> Structural Steel <input type="checkbox"/> Masonry <input checked="" type="checkbox"/> Wood Frame	Sprinkler system: <u>N/A</u> <input checked="" type="checkbox"/> <input type="checkbox"/> Full <input type="checkbox"/> Partial <input type="checkbox"/> Other Suppression # of Heads _____
<input type="checkbox"/> State Certified Modular	

Building Characteristics	Utilities
SF Dwelling <input checked="" type="checkbox"/> SF Townhouse <input type="checkbox"/>	Water Supply: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private
1st floor: Depth <u>43'</u> Width <u>43'</u>	Sewage Disposal: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private
2nd floor: <u>43'</u> <u>43'</u>	Electric Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Gas Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Basement: <u>43'</u> <u>43'</u>	Heating System: Electric <input checked="" type="checkbox"/> Oil <input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane Gas <input type="checkbox"/>
Finished Basement <input type="checkbox"/> Unfinished Basement <input checked="" type="checkbox"/>	Sprinkler system: <u>N/A</u> <input checked="" type="checkbox"/> <input type="checkbox"/> NFPA #13D <input type="checkbox"/> NFPA #13R <input type="checkbox"/> Other:
Crawl space <input type="checkbox"/> Slab on Grade <input type="checkbox"/>	
No. of Bedrooms <u>3</u>	
Multi-family dwellings: No. of efficiency units: _____ No. of 1 BR units: _____ No. of 2 BR units: _____ No. of 3 BR units: _____	
Other Structure: _____	
Dimensions: _____	
Footings: _____	
Roof: _____	
<input type="checkbox"/> State Certified Modular <input type="checkbox"/> Manufactured Home	

THE UNDERSIGNED HEREBY CERTIFIES AND AGREES AS FOLLOWS: (1) THAT HE/SHE IS AUTHORIZED TO MAKE THIS APPLICATION; (2) THAT THE INFORMATION IS CORRECT; (3) THAT HE/SHE WILL COMPLY WITH ALL REGULATIONS OF HOWARD COUNTY WHICH ARE APPLICABLE THERE TO; (4) THAT HE/SHE WILL PERFORM NO WORK ON THE ABOVE REFERENCED PROPERTY NOT SPECIFICALLY DESCRIBED IN THIS APPLICATION; (5) THAT HE/SHE GRANTS COUNTY OFFICIALS THE RIGHT TO ENTER ONTO THIS PROPERTY FOR THE PURPOSE OF INSPECTING THE WORK PERMITTED AND POSTING NOTICES.

Applicant's Signature [Signature]  
Title/Company Owner

Print Name Jon J. Shaw  
Date 8/11/02

Checks payable to: **DIRECTOR OF FINANCE OF HOWARD COUNTY**  
\*\* PLEASE WRITE NEATLY AND LEGIBLY. \*\*  
- FOR OFFICE USE ONLY -

AGENCY	DATE	SIGNATURE APPROVAL
Land Development, DPZ		
State Highways		
Building Official		
Dev. Engineering, DPZ		
Health	<u>9/16/03</u>	<u>Steven R. Krieg</u>
Fire Protection		

**DPZ SETBACK INFORMATION**  
Front: 75'  
Rear: 100'  
Side: 30'  
Side St.: N/A  
All minimum setbacks met? YES  NO   
Is Entrance Permit required? YES  NO   
Historic District? YES  NO   
Lot Coverage for NewTown Zone \_\_\_\_\_  
SDP/Red-line approval date \_\_\_\_\_

**PROPERTY ID#:** 59212  
Filing fee \$ 100  
Permit fee \$ \_\_\_\_\_  
Excise tax \$ \_\_\_\_\_  
Add'l per. fee \$ \_\_\_\_\_  
TOTAL FEES \$ \_\_\_\_\_  
Sub-total paid \$ \_\_\_\_\_  
Balance due \$ \_\_\_\_\_  
Check # 279  
Validation # 32477  
Accepted by [Signature]

Is Sediment Control approval required prior to issuance?  
YES  NO   
CONTINGENCY CONSTRUCTION START:   
ONE STOP SHOP:

**Briggs, Mary**

---

**From:** Anest, Cathy <sup>7.1804</sup>  
**Sent:** Friday, April 23, 2010 10:48 AM  
**To:** Briggs, Mary  
**Subject:** 3015 Woodbine Road - ICOP Letter  
**Attachments:** 3015-3055-3075-3085 Woodbine Road

Good morning Mary Lou!

Our records indicate that the address should be '2991' Woodbine Road for building permit #B00143541.

We had a change of address form dated March 2009 (see attached) from Dept. of Planning and Zoning for 2931 only to 3015. So, it appears the address should be 2991.

Please let me know if you have a different change of address from DPZ.

Thanks!

---

**From:** Briggs, Mary  
**Sent:** Friday, April 23, 2010 10:40 AM  
**To:** jonjshaw@hotmail.com; Anest, Cathy; Corbin, Avis; DeMarco, Rebecca; Forejt, Bruce; Harkins, Bonnie; Huskins, Thomas; Kelly, Sean; Neill, Jim; Russell, Linda; Sandra Sauerwein; Wingo, Judy  
**Subject:** 3015 Woodbine Road - ICOP Letter

Please see attached letter.

Confirmed that 2991 is the proper address, and that 2931 was changed to 3015.

2991 is on building permit and is correct address for lot where structure is built

Correct all documents to reflect these addresses

4/26/10

Homeowner says '3015' is correct.

Changed to #3065

call H# KN

DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS  
3430 COURT HOUSE DRIVE  
ELLSWORTH CITY, MD 21043  
PERMITS (410) 313-2488 INSPECTIONS (410) 313-1810  
AUTOMATED INFORMATION (410) 313-3000

### HOWARD COUNTY PERMIT APPLICATION

PERMIT NUMBER  
**1300/43541**

Building Address 2994 Woodbine Rd  
Woodbine, MD 21797

Property Owner's Name Jon Shaw  
Address 2762 Stonehouse Dr

Suite/Apt. #: \_\_\_\_\_ SDP/WP/Petition #: \_\_\_\_\_

City Ellicott City State MD Zip Code 21047

Census Tract 6001002 Subdivision New Horizon Farm

Home Phone 410-313-4574 Work Phone 301-902-4260

Section \_\_\_\_\_ Area \_\_\_\_\_ Lot 1

Applicant's Name & Mailing Address, (if other than stated hereon):

Tax Map 13 Parcel 320 Grid 27

Phone \_\_\_\_\_ Fax \_\_\_\_\_

Zoning R100 Map Coordinates 753 Lot size \_\_\_\_\_

Existing Use Vacant land

Contractor Company Owner

Proposed Use Single Family Home

Contact Person \_\_\_\_\_

Estimated Construction Cost \$ 252,000

Address \_\_\_\_\_

Description of Work New custom single family home

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

3 br, 3 car garage attached unfinished basement w/rough in, 3 1/2 bath, recessed porch front porch Deck

License No. \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

Occupant or Tenant Owner

Engineer or Architect Company \_\_\_\_\_

Contact Name \_\_\_\_\_

Contact Person \_\_\_\_\_

Address \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

#### BUILDING DESCRIPTION - COMMERCIAL

#### BUILDING DESCRIPTION - RESIDENTIAL

Building Characteristics	Utilities
Height: <u>30'</u>	Water Supply: Public _____ Private <input checked="" type="checkbox"/>
No. of stories: <u>2</u>	Sewage Disposal: Public _____ Private <input checked="" type="checkbox"/>
Gross area, sq. ft. per floor: <u>1800</u>	Electric Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Gas Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Use group: _____	Heating System: Electric <input checked="" type="checkbox"/> Oil <input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane Gas <input type="checkbox"/>
Construction type: Reinforced Concrete _____ Structural Steel _____ Masonry _____ <input checked="" type="checkbox"/> Wood Frame	Sprinkler system: <u>N/A</u> <input checked="" type="checkbox"/> Full _____ Partial _____ Other Suppression _____ # of Heads _____
State Certified Modular _____	

Building Characteristics	Utilities
SF Dwelling <input checked="" type="checkbox"/> SF Townhouse <input type="checkbox"/>	Water Supply: Public _____ Private <input checked="" type="checkbox"/>
1st floor: Depth <u>43'</u> Width <u>43'</u>	Sewage Disposal: Public _____ Private <input checked="" type="checkbox"/>
2nd floor: <u>43'</u> <u>43'</u>	Electric Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Gas Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Basement: <u>43'</u> <u>43'</u>	Heating System: Electric <input checked="" type="checkbox"/> Oil <input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane Gas <input type="checkbox"/>
Finished Basement <input type="checkbox"/> Unfinished Basement <input checked="" type="checkbox"/>	Sprinkler system: <u>N/A</u> <input checked="" type="checkbox"/> NFA #13D _____ NFA #13R _____ Other: _____
Crawl space <input type="checkbox"/> Slab on Grade <input type="checkbox"/>	
No. of Bedrooms <u>3</u>	
Multi-family dwellings: No. of efficiency units: _____ No. of 1 BR units: _____ No. of 2 BR units: _____ No. of 3 BR units: _____	
Other Structure: _____	
Dimensions: _____	
Footings: _____	
Roof: _____	
State Certified Modular _____	
Manufactured Home _____	

THE UNDERSIGNED HEREBY CERTIFIES AND AGREES AS FOLLOWS: (1) THAT HE/SHE IS AUTHORIZED TO MAKE THIS APPLICATION; (2) THAT THE INFORMATION IS CORRECT; (3) THAT HE/SHE WILL COMPLY WITH ALL REGULATIONS OF HOWARD COUNTY WHICH ARE APPLICABLE THERETO; (4) THAT HE/SHE WILL PERFORM NO WORK ON THE ABOVE REFERENCED PROPERTY NOT SPECIFICALLY DESCRIBED IN THIS APPLICATION; (5) THAT HE/SHE GRANTS COUNTY OFFICIALS THE RIGHT TO ENTER ONTO THIS PROPERTY FOR THE PURPOSE OF INSPECTING THE WORK PERMITTED AND POSTING NOTICES.

Applicant's Signature [Signature]

Print Name Jon J. Shaw  
Date 8/11/02

Title/Company \_\_\_\_\_

Checks payable to: **DIRECTOR OF FINANCE OF HOWARD COUNTY**  
\*\* PLEASE WRITE NEATLY AND LEGIBLY. \*\*  
- FOR OFFICE USE ONLY -

AGENCY	DATE	SIGNATURE APPROVAL
Land Development, DPZ		
State Highways		
Building Official		
Dev. Engineering, DPZ		
Health	<u>9/16/03</u>	<u>Steven R. Krieg</u>
Fire Protection		
Is Sediment Control approval required prior to issuance?		
YES <input type="checkbox"/> NO <input type="checkbox"/>		
CONTINGENCY CONSTRUCTION START: <input type="checkbox"/>		
ONE STOP SHOP: <input type="checkbox"/>		

DPZ SETBACK INFORMATION

Front: 75'  
Rear: 100'  
Side: 30'  
Side St.: N/A

All minimum setbacks met?  
YES  NO

Is Entrance Permit required?  
YES  NO

Historic District?  
YES  NO

Lot Coverage for NewTown Zone 52

SDP/Red-line approval date \_\_\_\_\_

PROPERTY ID#: 59212

Filing fee \$ 100

Permit fee \$ \_\_\_\_\_

Excise tax \$ \_\_\_\_\_

Add'l per. fee \$ \_\_\_\_\_

TOTAL FEES \$ \_\_\_\_\_

Sub-total paid \$ \_\_\_\_\_

Balance due \$ \_\_\_\_\_

Check # 279

Validation # 32477

Accepted by [Signature]

Distribution of Copies- White: Building Official Green: LDD, DPZ Yellow: DED, DPZ Pink: Health Gold: SHA

MD1000  
M0900329

DEPARTMENT OF INSPECTIONS, LICENSES & PERMITS 3430 COURT HOUSE DRIVE ELLCOTT CITY, MD 21043 PERMITS (410) 313-2455 INSPECTIONS (410) 313-1850	HOWARD COUNTY RESIDENTIAL HEATING-VENTILATION-AIR CONDITIONING AND REFRIGERATION PERMIT APPLICATION	HVACR PERMIT # BUILDING PERMIT #
		M0900329 B00143541 4344995

BUILDING ADDRESS:	SUITE/APT:	OWNERS NAME:	JON J. SHAW
SUBDIVISION:		ADDRESS:	2991 WOODBINE RD.
CENSUS TRACT:	SECTION:	AREA:	
LOT:	TAX MAP:	PARCEL:	
BLOCK:	ZONE:		
PROPERTY ID:	MAP COORDINATES:	CITY:	WOODBINE
		STATE:	MD
		ZIP CODE:	21797
TYPE OF IMPROVEMENTS:	USE:	HOME PHONE:	410-598-0982
		WORK PHONE:	301-902-4260

CHECK ONE	HOW MANY	COMPANY NAME:	Lease Brothers Sheetmetal
SINGLE FAMILY DWELLING <input checked="" type="checkbox"/>	3 ZONES	LICENSEE NAME:	GERARD G. Lease
SINGLE FAMILY TOWNHOUSE <input type="checkbox"/>	___ ZONES	ADDRESS:	4580 B MACK AVE
MULTI-FAMILY / HOTEL/MOTEL <input type="checkbox"/>	___ ROOMS	CITY:	FREDERICK
ASSISTED LIVING HOMES (16 OR FEWER RESIDENTS) <input type="checkbox"/>	___ ROOMS	STATE:	MD
		ZIP CODE:	21703
		PHONE:	301-695-1254
		HVACR LICENSE NO:	9411

New

Heating and Air Conditioning

Geo Thermal System

Heating System Only

Ductless Mini Splits

Other Work (Describe):

Thru The Wall Systems

Replacement

Heating

Air Conditioning

Heating and Air Conditioning

3/5/2010 Approved

BB

\*\*\*\*Replacement Geo Thermal Systems are not permitted. If a permit is being sought a permit is required\*\*\*\*

Zones	Rooms
Permit Fee = # of Zones x \$40 =	Permit Fee = # of Rooms x \$80 =
Technology Fee (10% of Permit Fee) =	Technology Fee (10% of Permit Fee) =
Plus Application Fee	Plus Application Fee \$50
Total Fees Due =	Total Fees Due =
\$50.00	\$50.00

I HAVE CAREFULLY EXAMINED AND READ THIS APPLICATION AND KNOW IT IS TRUE AND CORRECT. THE WORK DESCRIBED HEREIN WILL BE PERFORMED BY A STATE HVACR LICENSED PERSON(S), AND ALL WORK WILL BE PERFORMED IN COMPLIANCE WITH APPLICABLE CODES AND STANDARDS OF HOWARD COUNTY THE STATE OF MARYLAND.

Gerard G. Lease 2/23/10  
SIGNATURE OF LICENSEE DATE

Gerard G. Lease  
PRINT NAME OF LICENSEE

gerard@lease-brothers.com  
Email Address

Validation
Check Number: _____
Cash: _____
Receipt Number: _____

Make check payable to: DIRECTOR OF FINANCE OF HOWARD COUNTY

Word doc: T:\Updated Forms\hvac application  
Rev:10.2009

Cannot Approve In Accela  
Health Dept. Not Listed

2/2/2010

The original HVAC permit showed a standard heat pump as the heating/cooling source. In fact, a ground-source heat pump is being used. I have submitted a new heat loss/gain calculation that shows the proper equipment. I have also submitted a site plan that shows the location of the geo wells.

M09000329  
B00143541

Jon Shaw  
Home owner  
410-598-0982

REC-1 6/13/10

**wrightsoft** Load Short Form  
**Entire House**  
 Affordable Geothermal

Job: 0223-1  
 Date: Feb 23, 2010  
 By: David Cahoon

15515 Eudd Rd, Poolesville, MD 20857 Phone: 301-972-7650 Fax: 301-972-7282 Email: dcahoon@msn.com Web: AffordableGeo.com

**Project Information**

For: John Shaw, Lease Brothers  
 2891 Woodbine Rd, Woodbine, MD 21797

**Design Information**

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

**HEATING EQUIPMENT**

Make Econar  
 Trade GeoSource Ultra  
 Model GV 481  
 ARI ref no.  
 Efficiency 3.82 COP  
 Heating input 52841 Btuh  
 Heating output 52841 Btuh  
 Temperature rise 31 °F  
 Actual air flow 1550 cfm  
 Air flow factor 0.048 cfm/Btuh  
 Static pressure 0 in H2O  
 Space thermostat

**COOLING EQUIPMENT**

Make Econar  
 Trade GeoSource Ultra  
 Cond GV 481  
 Coil  
 ARI ref no.  
 Efficiency 15.08 EER  
 Sensible cooling 35927 Btuh  
 Latent cooling 15397 Btuh  
 Total cooling 51324 Btuh  
 Actual air flow 1550 cfm  
 Air flow factor 0.111 cfm/Btuh  
 Static pressure 0 in H2O  
 Load sensible heat ratio 0.76

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Living Room	256	3018	679	143	75
Dining Room	208	1578	457	75	51
Kitchen	280	2255	615	107	68
Pantry	80	0	0	0	0
Hall	297	1103	267	52	30
Breakfast	126	2530	1463	120	152
Sunroom	224	3141	1287	149	143
Office	224	209	25	10	3
Hall2	80	1633	1265	78	140
Bath	160	0	0	0	0
Breezeway	75	1758	769	84	85
Bath2	135	1572	646	75	72
HVAC	96	2057	815	98	91
Master Bath	238	1793	832	85	92
Closet	49	339	37	16	10
Bath3	63	91	36	4	4

Printout certified by ACCA to meet all requirements of Manual J 8th Ed.

Bedroom2	304	2289	957	109	105
Bedroom3	448	2842	893	135	99
Closet2	50	72	29	3	3
Bath4	45	65	26	3	3
Upstairs Hall	211	980	770	47	86
MBR	221	1516	1570	72	174
Closet4	306	1782	471	85	52
Entire House	4176	32624	13959	1550	1550
Other equip loads		10957	3268		
Equip. @ 0.96 RSM			16521		
Latent cooling			5482		
TOTALS	4176	43581	22003	1550	1550

1115-11 11 3:10

Printout certified by ACCA to meet all requirements of Manual J 8th Ed.

**wrightsoft** Component Constructions  
Entire House  
Affordable Geothermal

Job: G223-1  
Date: Feb 23, 2010  
By: David Cahoon

16615 Budd Rd, Poolesville, MD 20837 Phone: 301-972-7550 Fax: 301-972-7282 Email: dcahoon@msn.com Web: AffordableGeo.com

### Project Information

For: John Shaw, Lease Brothers  
2891 Woodbine Rd, Woodbine, MD 21797

### Design Conditions

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

Construction descriptions	Or	Area ft <sup>2</sup>	U-value Btu/hr-ft <sup>2</sup> -°F	Insul R ft <sup>2</sup> -hr/Btu	Htg HTM Btu/hr-ft <sup>2</sup>	Loss Btu/hr	Cig HTM Btu/hr-ft <sup>2</sup>	Gain Btu/hr
<b>Walls</b>								
12F-2sw: Frm wall, 1/2" wood shth, r-25 cav ins, 1/2" gypsum board	n	658	0.060	23.0	3.20	2103	0.89	586
int fsh, r-2 ext bd ins, 2"x6" wood frm	e	823	0.060	23.0	3.20	2632	0.89	733
	s	703	0.060	23.0	3.20	2247	0.89	626
	w	853	0.060	23.0	3.20	2728	0.89	760
	all	3036	0.060	23.0	3.20	9710	0.89	2705
<b>Partitions</b> (none)								
<b>Windows</b>								
4A5-2ov: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm mat,	n	95	0.470	0	25.1	2388	13.5	1288
clr innr, 1/4" gap, 1/8" thk	e	48	0.470	0	25.1	1202	38.8	1765
	s	71	0.470	0	25.1	1787	19.9	1418
	w	71	0.470	0	25.1	1779	36.8	2611
	all	286	0.470	0	25.1	7156	24.8	7062
4A5-2ov: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm mat,	e	32	0.470	0	25.1	802	42.3	1353
clr innr, 1/4" gap, 1/8" thk; bay								
<b>Doors</b>								
11K0: Door, mtl fbrgl type, mtl strn strn	n	21	0.360	6.3	19.2	403	10.1	212
	e	42	0.360	6.3	19.2	806	10.1	424
	w	21	0.360	6.3	19.2	403	10.1	212
	all	84	0.360	6.3	19.2	1612	10.1	848
<b>Ceilings</b>								
17A-34zd: Rf/cig ceiling, asphalt shingles roof mat, wd cons, 1/2" gypsum board int fsh, 1" thkns, r-38 cell ins		2241	0.027	34.0	1.44	3225	0.64	1425
<b>Floors</b>								
22B-5tph: 3g floor, heavy damp soil, tile fir fsh		20	0.589	5.0	31.4	628	0	0
		186	0.589	5.0	31.4	5639	0	0
	all	206	0.589	5.0	31.4	6467	0	0

**wrightsoft** Component Constructions  
**Entire House**  
 Affordable Geothermal

Job: G223-1  
 Date: Feb 23, 2010  
 By: David Cahoon

16615 Budd Rd, Poolesville, MD 20837 Phone: 301-972-7550 Fax: 301-972-7282 Email: dcahoon@msn.com Web: AffordableGeo.com

**Project Information**

For: John Shaw, Lease Brothers  
 2891 Woodbine Rd, Woodbine, MD 21797

**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> Method Construction quality Fireplaces
		Simplified Tight 0	

**Construction descriptions**

Construction descriptions	Or	Area ft²	U-value Btu/h·ft²·°F	Insul R ft²·h/Btu	Htg HTM Btu/h²	Loss Btu/h	Cig HTM Btu/h²	Gain Btu/h
<b>Walls</b>								
12F-2sw: Frm wall, 1/2" wood shth, r-25 cav ins, 1/2" gypsum board	n	658	0.060	23.0	3.20	2103	0.89	586
int fnsh, r-2 ext bc ins, 2"x6" wood frm	e	823	0.060	23.0	3.20	2532	0.89	733
	s	763	0.060	23.0	3.20	2247	0.89	626
	w	853	0.060	23.0	3.20	2728	0.89	760
	all	3036	0.060	23.0	3.20	9710	0.89	2705
<b>Partitions</b> (none)								
<b>Windows</b>								
4A5-2ov: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm mat,	n	95	0.470	0	25.1	2388	13.5	1288
clr innr, 1/4" gap, 1/8" thk	e	48	0.470	0	25.1	1202	36.8	1765
	s	71	0.470	0	25.1	1787	19.9	1418
	w	71	0.470	0	25.1	1779	36.8	2511
	all	286	0.470	0	25.1	7156	24.8	7052
4A5-2ov: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm mat,	e	32	0.470	0	25.1	802	42.3	1353
clr innr, 1/4" gap, 1/8" thk; bay								
<b>Doors</b>								
11K0: Door, mtl fbrgl type, mtl strn strn	n	21	0.360	6.3	19.2	403	10.1	212
	e	42	0.360	6.3	19.2	806	10.1	424
	w	21	0.360	6.3	19.2	403	10.1	212
	all	84	0.360	6.3	19.2	1612	10.1	848
<b>Ceilings</b>								
17A-34ad: Rf/cg ceiling, asphalt shingles roof mat, wd cons, 1/2" gypsum board int fnsh, 1" thkns, r-38 cell ins		2241	0.027	34.0	1.44	3225	0.64	1425
<b>Floors</b>								
22B-5tph: Bg floor, heavy damp soil, tile flr fnsh		20	0.589	5.0	31.4	628	0	0
		186	0.589	5.0	31.4	5639	0	0
	all	206	0.589	5.0	31.4	6467	0	0

**wrightsoft** **Project Summary**  
**Entire House**  
**Affordable Geothermal**

Job: 0223-1  
 Date: Feb 23, 2010  
 By: David Cahoon

16515 Budd Rd, Poolesville, MD 20837 Phone: 301-972-7550 Fax: 301-972-7282 Email: dcahoon@msn.com Web: AffordableGeo.com

**Project Information**

For: John Shaw, Lease Brothers  
 2891 Woodbine Rd, Woodbine, MD 21797

Notes:

**Design Information**

Weather: Baltimore, MD, US

**Winter Design Conditions**

Outside db 17 °F  
 Inside db 70 °F  
 Design TD 53 °F

**Summer Design Conditions**

Outside db 91 °F  
 Inside db 75 °F  
 Design TD 16 °F  
 Daily range M  
 Relative humidity 50 %  
 Moisture difference 37 gr/lb

**Heating Summary**

Structure 32624 Btuh  
 Ducts 0 Btuh  
 Central vent (188 cfm) 10957 Btuh  
 Humidification 0 Btuh  
 Piping 0 Btuh  
 Equipment load 43581 Btuh

**Infiltration**

Method Simplified  
 Construction quality Tight  
 Fireplaces 0

	<b>Heating</b>	<b>Cooling</b>
Area (ft <sup>2</sup> )	4176	4176
Volume (ft <sup>3</sup> )	37584	37584
Air changes/hour	0.10	0.05
Equip. AVF (cfm)	63	31

**Heating Equipment Summary**

Make	Econar
Trade	GeoSource Ultra
Model	GV 481
ARI ref no.	

Efficiency	3.82 COP
Heating input	52841 Btuh
Heating output	52841 Btuh
Temperature rise	31 °F
Actual air flow	1550 cfm
Air flow factor	0.048 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	

**Sensible Cooling Equipment Load Sizing**

Structure 13959 Btuh  
 Ducts 0 Btuh  
 Central vent (188 cfm) 3268 Btuh  
 Blower 0 Btuh

Use manufacturer's data  
 Rate/swing multiplier 0.96  
 Equipment sensible load 16521 Btuh

**Latent Cooling Equipment Load Sizing**

Structure 783 Btuh  
 Ducts 0 Btuh  
 Central vent (188 cfm) 4699 Btuh  
 Equipment latent load 5482 Btuh

Equipment total load 22003 Btuh  
 Req. total capacity at 0.70 SHR 2.0 ton

**Cooling Equipment Summary**

Make	Econar
Trade	GeoSource Ultra
Cond	GV 481
Coil	
ARI ref no.	

Efficiency	15.08 EER
Sensible cooling	35927 Btuh
Latent cooling	15357 Btuh
Total cooling	51324 Btuh
Actual air flow	1550 cfm
Air flow factor	0.111 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0.75

Printout certified by ACCA to meet all requirements of Manual J 8th Ed.

