

DEPARTMENT OF INSPECTIONS,
 LICENSES & PERMITS
 3430 COURT HOUSE DRIVE
 ELLICOTT CITY, MD 21043
 PERMITS (410) 313-2455
 INSPECTIONS (410) 313-1850

**HOWARD COUNTY
 RESIDENTIAL
 HEATING-VENTILATION-AIR
 CONDITIONING AND
 REFRIGERATION PERMIT
 APPLICATION**

HVACR PERMIT # M18001025
 BUILDING PERMIT #

SARDH

BUILDING ADDRESS: 13705 Lotia CT. SUITE/APT:
 SUBDIVISION:
 CENSUS TRACT: SECTION: AREA:
 LOT: TAX MAP: PARCEL:
 BLOCK: ZONE:
 PROPERTY ID: MAP COORDINATES:
 TYPE OF IMPROVEMENTS: USE:

OWNERS NAME: Sarah Parkin
 ADDRESS: 13705 Lotia CT.
 CITY: Clarksville,
 STATE: md. ZIP CODE: 21029
 HOME PHONE: 340-455-8129 WORK PHONE:

CHECK ONE	HOW MANY
SINGLE FAMILY DWELLING <input checked="" type="checkbox"/>	<u>3</u> ZONES
SINGLE FAMILY TOWNHOUSE <input type="checkbox"/>	___ ZONES
MULTI-FAMILY / HOTEL/MOTEL <input type="checkbox"/>	___ ROOMS
ASSISTED LIVING HOMES (16 OR FEWER RESIDENTS) <input type="checkbox"/>	___ ROOMS

COMPANY NAME: Watervale Heating & A.C.
 LICENSEE NAME: Joseph F. Opldyke
 ADDRESS: 2116 Watervale Rd.
 CITY: Fallston
 STATE: md. ZIP CODE: 21047
 PHONE: 410-879-0292 HVACR LICENSE NO: 7629

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

WATER FUNDING
1-2 TON ND2026
1-3 TON ND2038
1-4 TON ND2049
(No outside work!)
REPLACE EXISTING HVAC UNITS.

****Replacement Geo Thermal Systems are not required; However, if a tax credit is being sought a permit is required****

Zones
 Permit Fee = # of Zones x \$40 = 120.00
 Technology Fee (10% of Permit Fee) = 12.00
 Plus Application Fee \$50.00
 Total Fees Due = 182.00

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

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.

SIGNATURE OF LICENSEE Joseph F Opldyke DATE 12-10-18

PRINT NAME OF LICENSEE Joseph F Opldyke

Email Address watervalegeo@gmail.com

Validation
 Check Number: 25391
 Cash: _____
 Receipt Number: 558323

Approved Geo System Plan
 Howard County Health Department
[Signature]
 Date 12/27/18

RECEIVED

Make check payable to: DIRECTOR OF FINANCE OF HOWARD COUNTY DEC 10 2018

Word doc: T:\Updated Forms\hvac application
 Rev:10.2009 LICENSES & PERMITS

MIF001025

Sarah Parkin
HVAC Load Calculations

for

Sarah Parkin
13705 Loria, Ct.
Clarksville, Md. 21029

Elite Software

RHVAC RESIDENTIAL
HVAC LOADS

Prepared By:

Watervale Heating & A.C.
2116 Watervale, Rd.
Fallston, Md. 21047
410-879-0292
Sunday, December 09, 2018

Project Report

General Project Information

Project Title: Sarah Parkin
 Project Date: Monday, October 15, 2018
 Client Name: Sarah Parkin
 Client Address: 13705 Loria, Ct.
 Client City: Clarksville, Md. 21029
 Client Phone: 540-455-8129
 Company Name: Watervale Heating & A.C.
 Company Address: 2116 Watervale, Rd.
 Company City: Fallston, Md. 21047
 Company Phone: 410-879-0292

Reference City: Baltimore, Maryland
 Daily Temperature Range: Medium
 Latitude: 39 Degrees
 Elevation: 148 ft.
 Altitude Factor: 0.995
 Elevation Sensible Adj. Factor: 1.000
 Elevation Total Adj. Factor: 1.000
 Elevation Heating Adj. Factor: 1.000
 Elevation Heating Adj. Factor: 1.000

	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	5	0	30	72	29
Summer:	95	75	50	75	34

Total Building Supply CFM: 3,955
 Square ft. of Room Area: 5,414
 Volume (ft³) of Cond. Space: 50,412
 CFM Per Square ft.: 0.730
 Square ft. Per Ton: 563
 Air Turnover Rate (per hour): 4.7

Total Heating Required With Outside Air: 128,712 Btuh 128.712 MBH
 Total Sensible Gain: 86,541 Btuh 93 %
 Total Latent Gain: 6,433 Btuh 7 %
 Total Cooling Required With Outside Air: 92,974 Btuh
 7.75 Tons (Based On Sensible + Latent)
 9.62 Tons (Based On 75% Sensible Capacity)

Calculations are based on 8th edition of ACCA Manual J.
 All computed results are estimates as building use and weather may vary.
 Be sure to select a unit that meets both sensible and latent loads.

Load Preview Report

Scope	Has AED	Net Ton	Rec Ton	ft. ² /Ton	Area	Sen Gain	Lat Gain	Net Gain	Sen Loss	Sys Htg CFM	Sys Clg CFM	Sys Act CFM	Duct Size
Building		7.75	9.62	563	5,414	86,541	6,433	92,974	128,712	1,681	3,955	3,955	
System 1	Yes	2.02	2.45	937	2,300	22,085	2,167	24,252	48,005	627	1,009	1,009	12x15
Duct Latent							1,408	1,408					
Zone 1					1,150	22,114	698	22,812	32,486	424	1,011	1,011	12x15
1-Bed Room Area					1,150	22,114	698	22,812	32,486	424	1,011	1,011	9-6
Zone 2					1,150	520	61	581	15,519	203	24	24	4x4
2-Basement					1,150	520	61	581	15,519	203	24	24	1-4
System 2	Yes	4.68	5.86	410	2,400	52,720	3,384	56,103	63,532	830	2,409	2,409	20x20
Duct Latent							1,565	1,565					
Zone 1					2,400	52,720	1,819	54,539	63,532	830	2,409	2,409	20x20
3-Main House					2,400	52,720	1,819	54,539	63,532	830	2,409	2,409	22-6
System 3	No	1.05	1.30	548	714	11,736	882	12,619	17,175	224	536	536	9x13
Duct Latent							397	397					
Zone 1					714	11,736	485	12,221	17,175	224	536	536	9x13
4-Second Floor					714	11,736	485	12,221	17,175	224	536	536	5-6

Sum of room airflows may be greater than system airflow because system has multiple zones.

Detailed Room Loads - Room 1 - Bed Room Area (Peak Fenestration Gain Procedure)

Room is in zone 1, which peaks at 5 pm

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	50.0 ft.	System Number:	1
Room Width:	23.0 ft.	Zone Number:	1
Area:	1,150.0 sq.ft.	Supply Air:	1,011 CFM
Ceiling Height:	10.0 ft.	Supply Air Changes:	5.3 AC/hr
Volume:	11,500.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	9	Actual Winter Vent.:	0 CFM
Runout Air:	0 CFM	Percent of Supply:	0 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	572 ft./min.	Percent of Supply:	0 %
Runout Air Velocity:	572 ft./min.	Actual Winter Infil.:	58 CFM
Actual Loss:	0.208 in.wg./100 ft.	Actual Summer Infil.:	30 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
E -Wall-12C-0sw 50 X 10	435	0.091	6.1	2,652	2.4	0	1,049
N -Wall-12C-0sw 23 X 10	230	0.091	6.1	1,402	2.4	0	555
W -Wall-12C-0sw 23 X 10	164	0.091	6.1	1,000	2.4	0	395
S -Wall-12C-0sw 63 X 3	189	0.091	6.1	1,152	2.4	0	456
E -Gls-1D-cw-o shgc-0.56 0%S	65	0.570	38.2	2,482	41.3	0	2,686
W -Gls-1D-cw-o shgc-0.56 0%S	66	0.570	38.2	2,521	99.8	0	6,590
UP-Sky-8Bc-uwi shgc-0.66 (2)	16	1.130	75.7	1,212	149.6	0	2,394
UP-Ceil-16A-30 50 X 23	1134	0.032	2.1	2,431	2.4	0	2,722
Subtotals for Structure:				14,852		0	16,847
Infil.: Win.: 58.4, Sum.: 30.1	1,149		3.726	4,281	0.574	698	660
Ductwork:				13,353			4,607
Room Totals:				32,486		698	22,114

Detailed Room Loads - Room 2 - Basement (Peak Fenestration Gain Procedure)

Room is in zone 2, which peaks at 7 pm

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	50.0 ft.	System Number:	1
Room Width:	23.0 ft.	Zone Number:	2
Area:	1,150.0 sq.ft.	Supply Air:	24 CFM
Ceiling Height:	8.0 ft.	Supply Air Changes:	0.2 AC/hr
Volume:	9,200.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	0 CFM
Runout Air:	0 CFM	Percent of Supply.:	0 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	273 ft./min.	Percent of Supply:	0 %
Runout Air Velocity:	273 ft./min.	Actual Winter Infil.:	5 CFM
Actual Loss:	0.086 in.wg./100 ft.	Actual Summer Infil.:	3 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
E -Wall-15A-4sfoc-6 50 X 8	400	0.081	7.0	2,801	0.9	0	355
N -Wall-15B0-2s3-10 23 X 8	184	0.082	5.5	1,011	0.0	0	0
W -Wall-15A-4s3oc-8 50 X 8	400	0.083	5.6	2,224	0.0	0	0
S -Wall-15A-0fc-10 23 X 8	184	0.084	5.6	1,036	0.0	0	0
Floor-21A-28 23 X 50	1150	0.022	1.5	1,695	0.0	0	0
Subtotals for Structure:				8,767		0	355
Infil.: Win.: 5.1, Sum.: 2.6	100		3.730	373	0.570	61	57
Ductwork:				6,379			108
Room Totals:				15,519		61	520

Detailed Room Loads - Room 3 - Main House (Average Load Procedure)

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	60.0 ft.	System Number:	2
Room Width:	40.0 ft.	Zone Number:	1
Area:	2,400.0 sq.ft.	Supply Air:	2,409 CFM
Ceiling Height:	10.0 ft.	Supply Air Changes:	6.0 AC/hr
Volume:	24,000.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	22	Actual Winter Vent.:	0 CFM
Runout Air:	0 CFM	Percent of Supply.:	0 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	558 ft./min.	Percent of Supply:	0 %
Runout Air Velocity:	558 ft./min.	Actual Winter Infil.:	88 CFM
Actual Loss:	0.198 in.wg./100 ft.	Actual Summer Infil.:	44 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
E -Wall-12C-0sw 60 X 10	418	0.091	6.1	2,549	2.4	0	1,008
N -Wall-12C-0sw 40 X 10	176	0.091	6.1	1,073	2.4	0	424
W -Wall-12C-0sw 60 X 10	418	0.091	6.1	2,549	2.4	0	1,008
S -Wall-12C-0sw 40 X 10	176	0.091	6.1	1,073	2.4	0	424
S -Door-11J 6 X 7	42	0.600	40.2	1,688	18.6	0	781
N -Gls-1D-cw-o shgc-0.56 100%S (2)	176	0.570	38.2	6,722	22.3	0	3,928
N -Gls-1D-cw-o shgc-0.56 100%S	48	0.570	38.2	1,833	22.3	0	1,071
E -Gls-1D-cw-o shgc-0.56 0%S	182	0.570	38.2	6,951	64.4	0	11,713
S -Gls-1D-cw-o shgc-0.56 0%S	182	0.570	38.2	6,951	33.7	0	6,133
W -Gls-1D-cw-o shgc-0.56 0%S	182	0.570	38.2	6,951	64.4	0	11,713
UP-Sky-8Bc-swi shgc-0.66 (3)	24	0.610	40.9	981	150.0	0	3,600
UP-Ceil-16A-30 42 X 40	1656	0.032	2.1	3,550	2.4	0	3,974
Floor-19A-19p 40 X 60	2400	0.049	2.6	6,175	0.8	0	1,843
Subtotals for Structure:				49,046		0	47,620
Infil.: Win.: 88.0, Sum.: 44.0	2,000		3.226	6,451	0.482	1,019	963
Ductwork:				8,035			2,017
People: 200 lat/per, 230 sen/per:	4					800	920
Equipment:						0	1,200
Room Totals:				63,532		1,819	52,720

Detailed Room Loads - Room 4 - Second Floor (Average Load Procedure)

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	34.0 ft.	System Number:	3
Room Width:	21.0 ft.	Zone Number:	1
Area:	714.0 sq.ft.	Supply Air:	536 CFM
Ceiling Height:	8.0 ft.	Supply Air Changes:	5.6 AC/hr
Volume:	5,712.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	5	Actual Winter Vent.:	0 CFM
Runout Air:	0 CFM	Percent of Supply.:	0 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	0 CFM
Runout Air Velocity:	546 ft./min.	Percent of Supply:	0 %
Runout Air Velocity:	546 ft./min.	Actual Winter Infil.:	39 CFM
Actual Loss:	0.190 in.wg./100 ft.	Actual Summer Infil.:	21 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
E -Wall-12C-0sw 34 X 8	212	0.091	6.1	1,293	2.4	0	511
N -Wall-12C-0sw 21 X 8	168	0.091	6.1	1,024	2.4	0	405
W -Wall-12C-0sw 34 X 8	272	0.091	6.1	1,658	2.4	0	656
S -Wall-12C-0sw 21 X 8	168	0.091	6.1	1,024	2.4	0	405
E -Gls-1D-cw-o shgc-0.56 0%S	60	0.570	38.2	2,291	64.4	0	3,861
UP-Ceil-16A-30 34 X 21	714	0.032	2.1	1,531	2.4	0	1,714
Subtotals for Structure:				8,821		0	7,552
Infil.: Win.: 39.0, Sum.: 20.9	880		3.251	2,861	0.520	485	458
Ductwork:				5,493			3,186
AED Excursion:							540
Room Totals:				17,175		485	11,736