HOWARD COUNTY HEALTH DEPARTMENT

W5 65567

DATE 1/23/19

Received From Allen Environmental PHONE #

For Well - 3760 Plumtree Ct.
Ellicott City, MD

☐ CASH
☒ CHECK
NO 14221

One hundred Sixty Dollars — 00/100 Dollars

$ 160.00

Received By V. Delaney

C 1 | 57-2-0 | SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER XIII

ST/CO USE ONLY
DATE Received MM 09 DD 13 YY 19 (8–13)

DATE WELL COMPLETED MM 8 DD 19 YY 19 (15–20)

Depth of Well 22 320 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" 28–37: H0-18-0105

OWNER Carrs, Alexis (last name, first name)

WELL SITE ADDRESS 3768 Plum Hill Ct TOWN Ellicott City, MD

SUBDIVISION SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Top Soil	0	1	
Brn Clay	1	10	
Brn Sand + Clay	10	40	
Brn Sand	40	60	
Brn Weathered Rock	60	77	
Brn Rock	77	85	
Gry Rock	85	120	
Md Gry Rock	120	320	
2 Closed Loops			

Ground Level

NUMBER OF UNSUCCESSFUL WELLS: _____

WELL HYDROFRACTURED yes Y no N

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M S D 106

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: W R D 097

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
3 loops

WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y no N (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT CM (45 46) BENTONITE CLAY BC (45 46)

NO. OF BAGS 32 NO. OF POUNDS 1600

GALLONS OF WATER 800

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 TOP 52) ft. to 320 (54 BOTTOM 58) ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

ST STEEL; CO CONCRETE; PL PLASTIC; OT OTHER

MAIN CASING TYPE (60 61)	Nominal diameter top (main) casing (nearest inch) (63 64)	Total depth of main casing (nearest foot) (66 70)

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below

ST STEEL; BR BRASS BRONZE; HO OPEN HOLE; PL PLASTIC; OT OTHER

C 2 (1 2)

DEPTH (nearest ft.)

EACH SCREEN				
1	6 9	11 15	17 21	
2	23 24	26 30	32 36	
3	38 39	41 45	47 51	

SLOT SIZE 1 _____ 2 _____ 3 _____

DIAMETER OF SCREEN _____ (56 60) (NEAREST INCH)

from to

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (70) (E.R.O.S.) (72) W Q (74 75 76)

TELESCOPE CASING; LOG INDICATOR; OTHER DATA

C 3 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) (8 9)

PUMPING RATE (gal. per min.) (11 15)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING (17 20) ft.

WHEN PUMPING (22 25) ft.

TYPE OF PUMP USED (for test) (27)

A air; P piston; T turbine; C centrifugal; R rotary; O other (describe below); J jet; S submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)

+ above; – below (49) LAND SURFACE (nearest foot) (50 51)

LATITUDE 39.21769 (#1)

LONGITUDE 76.83777

(DEFAULT COORD. WGS 84)

Pursuant to §10-624 of the State Govt. Article of the Maryand Code personal info. requested on this form is used in processing this form pursuant to COMAR 26.04.04. Failure to provide the info. may result in this form not being processed. You have the right to inspect, amend, or correct this form. The Maryland Department of the Environment is subject to the Maryland Public Information Act. This form may be made available on the Internet via MDE's website and is subject to inspection or copying, in whole or in part, by the pulic and other governmental agencies, if not protected by federal or state law.

MDE/WMA/PER.071

COUNTY

EMERGENCY/TEMP NO. IF ANY TAG = N/A

B 1 | 65034 | SEQUENCE NO. (MDE USE ONLY) | 5055673

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HO-18-0105
fill in this form completely

Date Received (APA): 07/25/19

OWNER INFORMATION
Carras, Alexis J.
Last Name, Owner, First Name
3768 Plum Hill Ct
Street or RFD
Ellicott City, MD 21042
Town, State, Zip

DRILLER INFORMATION
Allied Well Drilling MSD 106
Driller's Name, License No.
Marshal Arnett
Firm Name
P.O. Box 126 Annapolis Junction
Address
Marshal Arnett
Signature, Date

B 2 WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.)
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY)

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- [D] DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
- [I] INDUSTRIAL, COMMERCIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [T] TEST, OBSERVATION, MONITORING
- [O] OPEN LOOP GEOTHERMAL
- [C] CLOSED LOOP GEOTHERMAL

Public H2O + sewer
2@320'

APPROXIMATE DEPTH OF WELL ____ FEET
APPROXIMATE DIAMETER OF WELL ____ NEAREST INCH

METHOD OF DRILLING (circle one)
BORED (or Augered) | JETTED | Jetted & DRIVEN
AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)
CABLE | REVerse-ROTary | DRive-POINT
other ____

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)
- [N] THIS WELL WILL NOT REPLACE AN EXISTING WELL
- [Y] THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE) ____

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER ____G____

PERMIT No. HO-18-0105

B 3 LOCATION OF WELL
Howard
COUNTY
SUBDIVISION
SECTION ____ LOT 21
Ellicott City
NEAREST TOWN

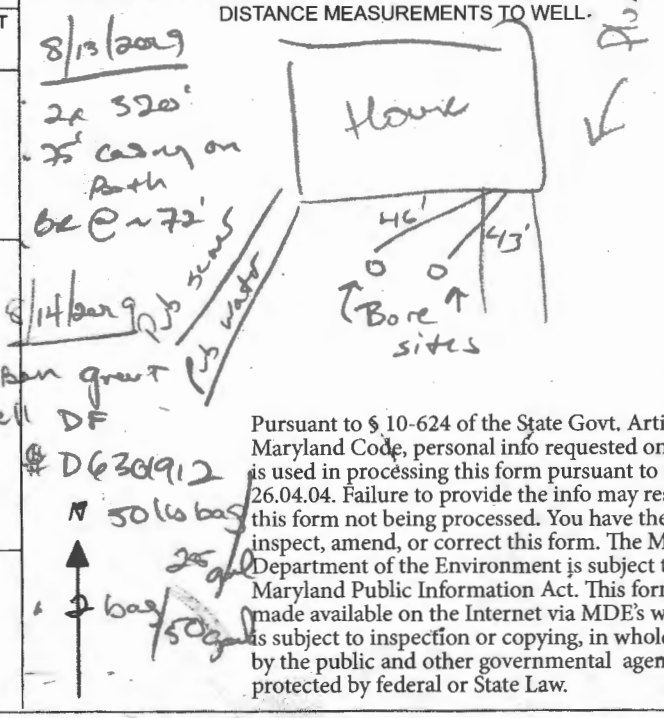
B 4
SOURCES OF DRILLING WATER
1. Public
2.
3.

3768 Plum Hill
STREET ADDRESS

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)
NORTH (N) WEST (W) EAST (E) SOUTH (S)
34 33 37
DISTANCE FROM ROAD ____
ENTER FT OR MI 38 39
TAX MAP: 0024 BLK: ____ PARCEL 1108

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
Howard (13)
COUNTY NAME, COUNTY NO.
STATE SIGNATURE ____ INSERT S
DATE ISSUED 8/2/19 CO SIGNATURE 8/2/19 EXP. DATE
DRN: 8/13/2019 Date: 8/14/2019

PROPOSED LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURES SUCH AS BUILDINGS, SEPTIC SYSTEM, ROADS AND/OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCE MEASUREMENTS TO WELL.



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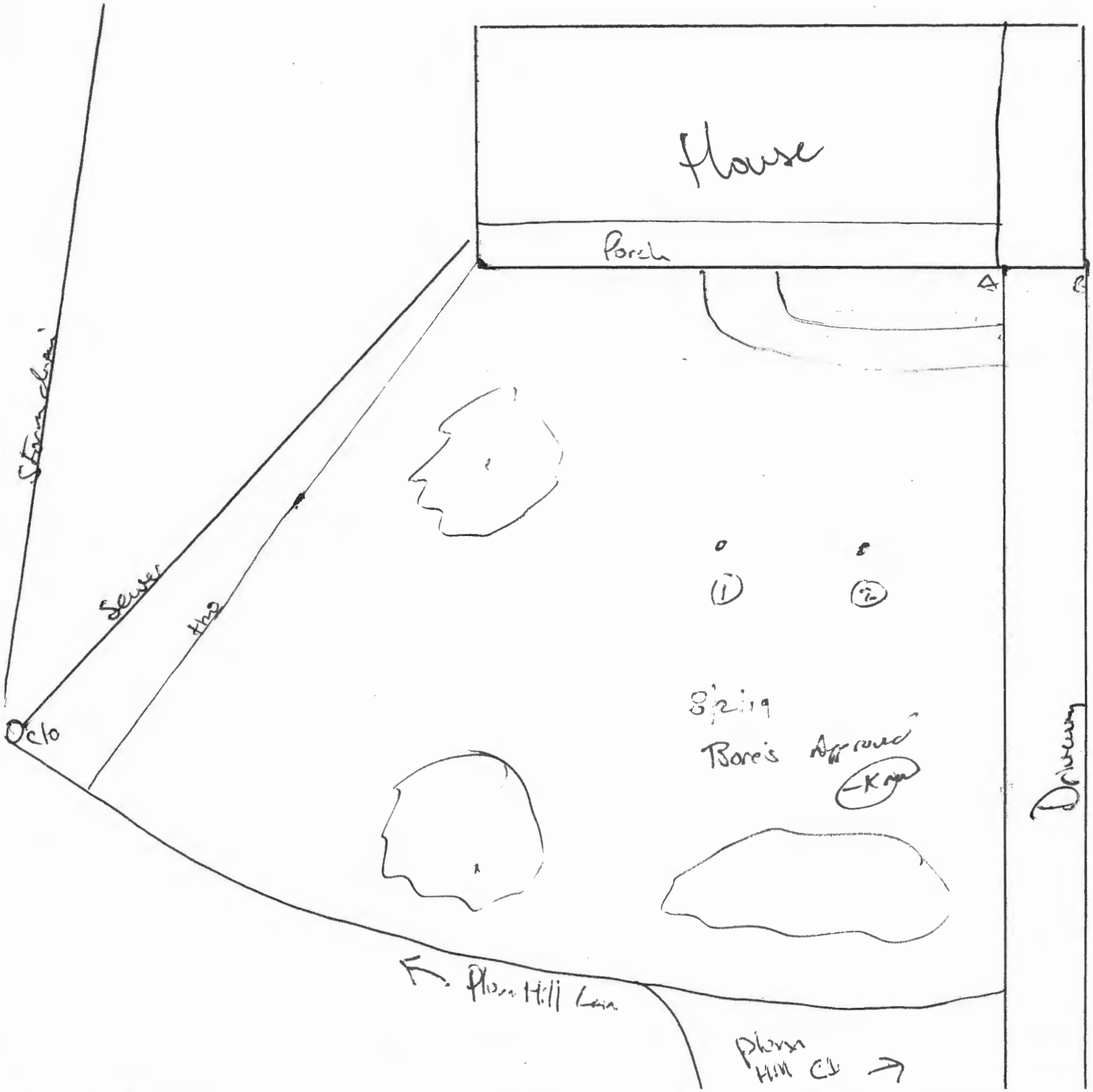
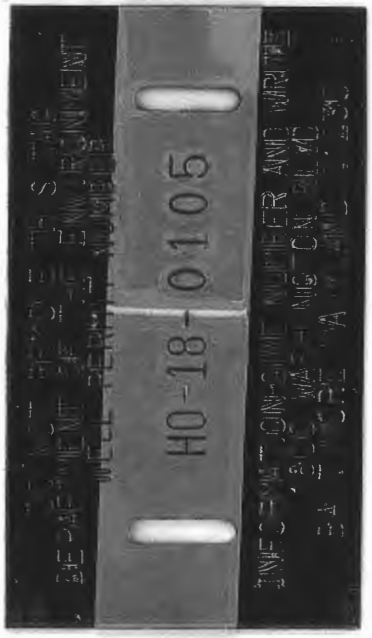
SPECIAL CONDITIONS
NOTE APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

MDE/WMA/PER.071 ② COUNTY


House
Porch
A
B
Distances
A B
① 46, 61
② 43, 52
Sewer
Line
Oak
①
②
8/2/19
Boris Approved
EK
Driveway
Plum Hill Lane
Plum Hill Ct


HO-18-0105

Sent 7/17/19

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 # M19000636
BUILDING PERMIT #

BUILDING ADDRESS: 3708 Plum Hill Ct. Ellicott City, MD 21042 SUITE/APT:
SUBDIVISION: 0000
CENSUS TRACT: SECTION: AREA:
LOT: 21 TAX MAP: PARCEL: 1108
BLOCK: ZONE:
PROPERTY ID: 02-257971 MAP COORDINATES:
TYPE OF IMPROVEMENTS: USE:

OWNERS NAME: Michelle Carras
ADDRESS: 3708 Plum Hill Ct.
CITY: Ellicott City
STATE: MD ZIP CODE: 21042
HOME PHONE: 410-750-1917 WORK PHONE:

	CHECK ONE	HOW MANY
SINGLE FAMILY DWELLING	X	1 ZONES
SINGLE FAMILY TOWNHOUSE	☐	____ ZONES
MULTI-FAMILY / HOTEL/MOTEL	☐	____ ROOMS
ASSISTED LIVING HOMES (16 OR FEWER RESIDENTS)	☐	____ ROOMS

COMPANY NAME: Ground Loop Heating & Air Cond., Inc.
LICENSEE NAME: Michael E. Cullum
ADDRESS: 1701 Whiteford Road
CITY: Darlington
STATE: MD ZIP CODE: 21034
PHONE: 410-836-1706 HVACR LICENSE NO: 6539

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

EQUIPMENT: WATER FURNACE 4 TON NDV049

Additions and Alterations
- ☐ Heating
- ☐ Air Conditioning
- ☐ Heating and Air Conditioning

****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 =	$40.00
Technology Fee (10% of Permit Fee) =	$ 4.
Plus Application Fee	$50.00
Total Fees Due =	$94.00

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.

Michael Cullum
SIGNATURE OF LICENSEE

7/22/19
DATE

MICHAEL CULLUM
PRINT NAME OF LICENSEE

finley.@groundloop.com
Email Address

Validation
Check Number: 25655
Cash: ____
Receipt Number: 583930

CITY WATER & SEWER

Make check payable to: DIRECTOR OF FINANCE OF HOWARD COUNTY

Approved Septic System Plan
Howard County Health Department
Signature 7/30/19 Date

RECEIVED
JUL 25 2019
LICENSES & PERMITS DIVISION

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

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HVACR PERMIT # M19000636

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TYPE OF IMPROVEMENTS: USE:

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HOME PHONE: 410-750-1917 WORK PHONE:

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SINGLE FAMILY TOWNHOUSE	☐	____ ZONES
MULTI-FAMILY / HOTEL/MOTEL	☐	____ ROOMS
ASSISTED LIVING HOMES (16 OR FEWER RESIDENTS)	☐	____ ROOMS

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Replacement
- ☐ Heating
- ☐ Air Conditioning
- ☒ Heating and Air Conditioning

EQUIPMENT: WATER FURNACE 4 TON NDV049

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SIGNATURE OF LICENSEE DATE

MICHAEL CULLUM
PRINT NAME OF LICENSEE

tinsley@groundloop.com
Email Address

Validation
Check Number: 256055
Cash: ____
Receipt Number: 583930

CITY WATER & SEWER

Make check payable to: DIRECTOR OF FINANCE OF HOWARD COUNTY

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

M190006636

WaterFurnace

Load Short Form
Entire House

Job:
Date: May 15, 2014
By:

Project Information

For: Carras, Michele

Design Information

	Htg	Clg
Outside db (°F)	12	94
Inside db (°F)	72	70
Design TD (°F)	60	24
Daily range	-	M
Inside humidity (%)	30	50
Moisture difference (gr/lb)	27	47

Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	0

HEATING EQUIPMENT

Make		
Trade		
Model		
AHRI ref		
Efficiency	80 AFUE	
Heating input	0	Btuh
Heating output	0	Btuh
Temperature rise	0	°F
Actual air flow	1128	cfm
Air flow factor	0.034	cfm/Btuh
Static pressure	0	in H2O
Space thermostat		

COOLING EQUIPMENT

Make		
Trade		
Cond		
Coil		
AHRI ref		
Efficiency	0 SEER	
Sensible cooling	0	Btuh
Latent cooling	0	Btuh
Total cooling	0	Btuh
Actual air flow	1128	cfm
Air flow factor	0.065	cfm/Btuh
Static pressure	0	in H2O
Load sensible heat ratio	0.78	

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
1st fl	1350	18814	9725	644	634
2nd fl	1350	14123	7567	484	494
Entire House	2700	32938	17292	1128	1128
Other equip loads		0	0		
Equip. @ 1.00 RSM			17292		
Latent cooling			4884		
TOTALS	2700	32938	22175	1128	1128

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

WaterFurnace

Building Analysis
Entire House

Job:
Date: May 15, 2014
By:

Project Information

For: Carras, Michele

Design Conditions

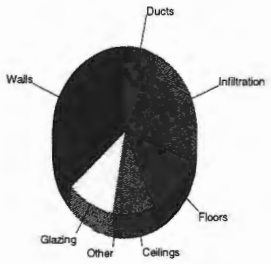
Location:
Baltimore, MD, US
Elevation: 154 ft
Latitude: 39°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	12	94
Daily range (°F)	-	19 (M)
Wet bulb (°F)	-	75
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	72	70
Design TD (°F)	60	24
Relative humidity (%)	30	50
Moisture difference (gr/lb)	26.8	47.0
Infiltration:		
Method	Simplified	
Construction quality	Average	
Fireplaces	0	

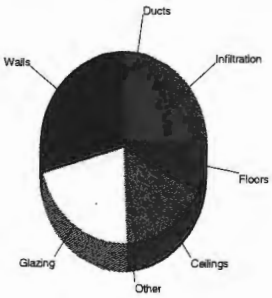
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	5.2	12051	36.6
Glazing	34.0	3539	10.7
Doors	23.3	489	1.5
Ceilings	1.9	2579	7.8
Floors	3.1	4169	12.7
Infiltration	3.7	7935	24.1
Ducts		2176	6.6
Piping		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	
Total		**32938**	**100.0**



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.2	5066	29.3
Glazing	35.5	3697	21.4
Doors	13.9	293	1.7
Ceilings	1.9	2560	14.8
Floors	1.2	1648	9.5
Infiltration	1.5	3137	18.1
Ducts		892	5.2
Ventilation		0	0
Internal gains		0	0
Blower		0	0
Adjustments		0	
Total		**17292**	**100.0**



Latent Cooling Load = 4884 Btuh
Overall U-value = 0.075 Btuh/ft²-°F

WARNING: window to floor area ratio = 3.9% - less than 5%.

WaterFurnace

Component Constructions
Entire House

Job:
Date: May 15, 2014
By:

Project Information

For: Carras, Michele

Design Conditions

Location:
Baltimore, MD, US
Elevation: 154 ft
Latitude: 39°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	12	94
Daily range (°F)	-	19 (M)
Wet bulb (°F)	-	75
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	72	70
Design TD (°F)	60	24
Relative humidity (%)	30	50
Moisture difference (gr/lb)	26.8	47.0

Infiltration:

Method	Simplified
Construction quality	Average
Fireplaces	0

Construction descriptions	Or	Area ft²	U-value Btuh/ft²-°F	Insul R ft²-°F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls								
12B-0sw: Frm wall, vnl ext, 3/8" wood shth, r-11 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud	n	252	0.097	11.0	5.79	1459	3.23	815
	e	240	0.097	11.0	5.79	1390	3.23	776
	s	303	0.097	11.0	5.79	1755	3.23	980
	w	240	0.097	11.0	5.79	1390	3.23	776
	all	1035	0.097	11.0	5.79	5994	3.23	3348
15B-10sfc-2: Bg wall, light dry soil, concrete wall, r-10 ins, 8" thk	n	393	0.061	10.0	4.65	1829	1.32	519
	e	270	0.061	10.0	4.66	1259	1.33	360
	s	369	0.061	10.0	4.63	1710	1.30	478
	w	270	0.061	10.0	4.66	1259	1.33	360
	all	1302	0.061	10.0	4.65	6058	1.32	1717
Partitions								
(none)								
Windows								
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/4" thk; 6.67 ft head ht	n	20	0.570	0	34.0	681	24.4	487
	n	12	0.570	0	34.0	408	24.4	292
	s	36	0.570	0	34.0	1225	35.9	1291
	all	68	0.570	0	34.0	2314	30.5	2071
1D-c2ov: 2 glazing, clr outr, air gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk; 6.67 ft head ht	s	36	0.570	0	34.0	1225	35.9	1291
Doors								
11D0: Door, wd sc type	s	21	0.390	0	23.3	489	13.9	293
Ceilings								
16B-30ad: Attic ceiling, asphalt shingles roof mat, r-20 roof ins, r-30 ceil ins		1350	0.032	30.0	1.91	2579	1.90	2560
Floors								
19A-11bswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, r-11 cav ins, tight bsmt ovr		1350	0.073	11.0	3.09	4169	1.22	1648

Project Information

For: Carras, Michele

Design Conditions

Location:
Baltimore, MD, US
Elevation: 154 ft
Latitude: 39°N

Outdoor:	Heating	Cooling
Dry bulb (°F)	12	94
Daily range (°F)	-	19 (M)
Wet bulb (°F)	-	75
Wind speed (mph)	15.0	7.5

Indoor:	Heating	Cooling
Indoor temperature (°F)	72	70
Design TD (°F)	60	24
Relative humidity (%)	30	50
Moisture difference (gr/lb)	26.8	47.0

Infiltration:

Method	Simplified
Construction quality	Average
Fireplaces	0

Construction descriptions	Or	Area ft²	U-value Btuh/ft²-°F	Insul R ft²-°F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls								
12B-0sw: Frm wall, vnl ext, 3/8" wood shth, r-11 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud	n	252	0.097	11.0	5.79	1459	3.23	815
	e	240	0.097	11.0	5.79	1390	3.23	776
	s	303	0.097	11.0	5.79	1755	3.23	980
	w	240	0.097	11.0	5.79	1390	3.23	776
	all	1035	0.097	11.0	5.79	5994	3.23	3348
Partitions								
(none)								
Windows								
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/4" thk; 6.67 ft head ht	n	20	0.570	0	34.0	681	24.4	487
1D-c2ov: 2 glazing, clr outr, air gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk; 6.67 ft head ht	s	36	0.570	0	34.0	1225	35.9	1291
Doors								
11D0: Door, wd sc type	s	21	0.390	0	23.3	489	13.9	293
Ceilings								
(none)								
Floors								
19A-11bswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, r-11 cav ins, tight bsmt ovr		1350	0.073	11.0	3.09	4169	1.22	1648

Project Information

For: Carras, Michele

Design Conditions

Location:
Baltimore, MD, US
Elevation: 154 ft
Latitude: 39°N

Outdoor:	Heating	Cooling
Dry bulb (°F)	12	94
Daily range (°F)	-	19 (M)
Wet bulb (°F)	-	75
Wind speed (mph)	15.0	7.5

Indoor:	Heating	Cooling
Indoor temperature (°F)	72	70
Design TD (°F)	60	24
Relative humidity (%)	30	50
Moisture difference (gr/lb)	26.8	47.0

Infiltration:

Method	Simplified
Construction quality	Average
Fireplaces	0

Construction descriptions	Or	Area ft²	U-value Btuh/ft²-°F	Insul R ft²-°F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls								
15B-10sfc-2: Bg wall, light dry soil, concrete wall, r-10 ins, 8" thk	n	393	0.061	10.0	4.65	1829	1.32	519
	e	270	0.061	10.0	4.66	1259	1.33	360
	s	369	0.061	10.0	4.63	1710	1.30	478
	w	270	0.061	10.0	4.66	1259	1.33	360
	all	1302	0.061	10.0	4.65	6058	1.32	1717
Partitions								
(none)								
Windows								
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/4" thk; 6.67 ft head ht	n	12	0.570	0	34.0	408	24.4	292
	s	36	0.570	0	34.0	1225	35.9	1291
	all	48	0.570	0	34.0	1633	33.0	1584
Doors								
(none)								
Ceilings								
16B-30ad: Attic ceiling, asphalt shingles roof mat, r-20 roof ins, r-30 ceil ins		1350	0.032	30.0	1.91	2579	1.90	2560
Floors								
(none)								

WaterFurnace

Project Summary
Entire House

Job:
Date: May 15, 2014
By:

Project Information

For: Carras, Michele

Notes:

Design Information

Weather: Baltimore, MD, US

Winter Design Conditions

Outside db	12	°F
Inside db	72	°F
Design TD	60	°F

Summer Design Conditions

Outside db	94	°F
Inside db	70	°F
Design TD	24	°F
Daily range	M	
Relative humidity	50	%
Moisture difference	47	gr/lb

Heating Summary

Structure	30762	Btuh
Ducts	2176	Btuh
Central vent (0 cfm)	0	Btuh
Humidification	0	Btuh
Piping	0	Btuh
Equipment load	32938	Btuh

Sensible Cooling Equipment Load Sizing

Structure	16400	Btuh
Ducts	892	Btuh
Central vent (0 cfm)	0	Btuh
Blower	0	Btuh
Use manufacturer's data	y	
Rate/swing multiplier	1.00	
Equipment sensible load	17292	Btuh

Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	0

	Heating	Cooling
Area (ft²)	2700	2700
Volume (ft³)	20250	20250
Air changes/hour	***0.36***	***0.36***
Equiv. AVF (cfm)	122	122

Latent Cooling Equipment Load Sizing

Structure	3864	Btuh
Ducts	1020	Btuh
Central vent (0 cfm)	0	Btuh
Equipment latent load	4884	Btuh
Equipment total load	22175	Btuh
Req. total capacity at 0.70 SHR	2.1	ton

Heating Equipment Summary

Make		
Trade		
Model		
AHRI ref		
Efficiency	80	AFUE
Heating input	0	Btuh
Heating output	0	Btuh
Temperature rise	0	°F
Actual air flow	1128	cfm
Air flow factor	0.034	cfm/Btuh
Static pressure	0	in H2O
Space thermostat		

Cooling Equipment Summary

Make		
Trade		
Cond		
Coil		
AHRI ref		
Efficiency	0	SEER
Sensible cooling	0	Btuh
Latent cooling	0	Btuh
Total cooling	0	Btuh
Actual air flow	1128	cfm
Air flow factor	0.065	cfm/Btuh
Static pressure	0	in H2O
Load sensible heat ratio	0.78	

Bold/italic values have been manually overridden

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

WaterFurnace

AED Assessment
Entire House

Job:
Date: May 15, 2014
By:

Project Information

For: Carras, Michele

Design Conditions

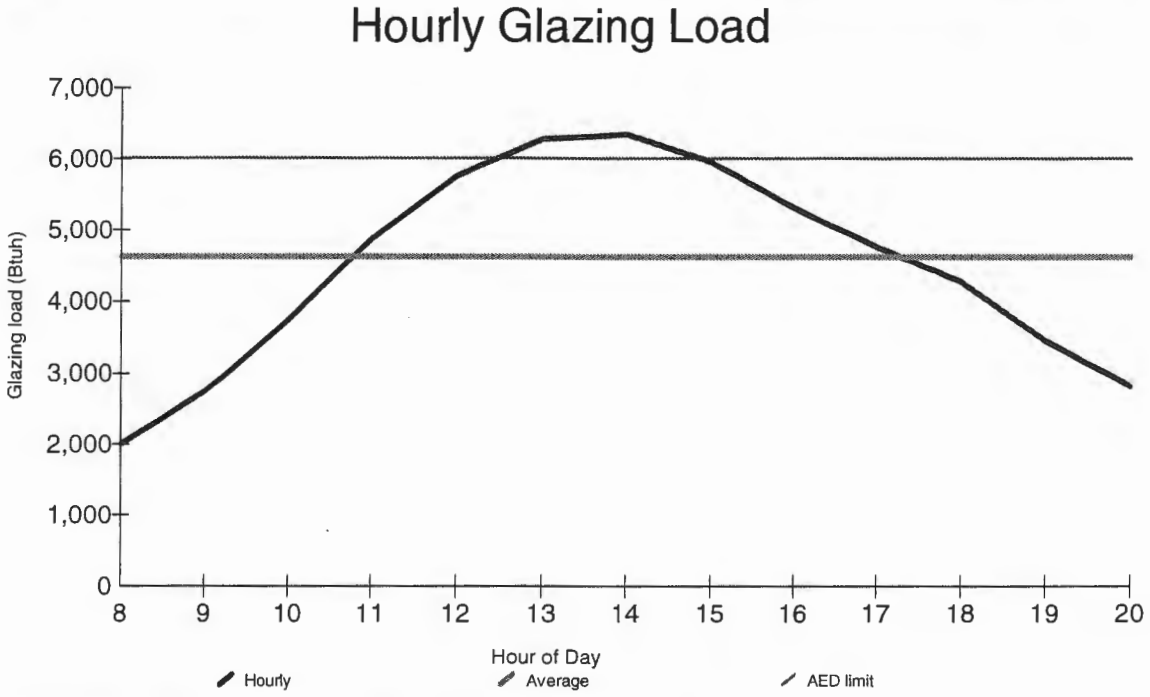
Location:
Baltimore, MD, US
Elevation: 154 ft
Latitude: 39°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	12	94
Daily range (°F)	-	19 (M)
Wet bulb (°F)	-	75
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	72	70
Design TD (°F)	60	24
Relative humidity (%)	30	50
Moisture difference (gr/lb)	26.8	47.0

Infiltration:

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 37.2%.

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

AED excursion: 335 Btuh (PFG - 1.3*AFG)

WaterFurnace

Right-J® Worksheet
Entire House

Job:
Date: May 15, 2014
By:

1	Room name					Entire House				1st fl				
2	Exposed wall					289.0 ft				139.0 ft				
3	Room height					8.5 ft				8.0 ft				heat/cool
4	Room dimensions									45.0 x 30.0 ft				
5	Room area					2700.0 ft²				1350.0 ft²				
	Ty	Construction number	U-value (Btuh/ft²-°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12B-0sw	0.097	n	5.79	3.23	272	252	1459	815	272	252	1459	815
.	└G	1D-c2ow	0.570	n	34.03	24.35	20	0	681	487	20	0	681	487
.	W	15B-10sfc-2	0.083	n	4.65	1.32	405	393	1829	519	0	0	0	0
.	└G	1D-c2ow	0.570	n	34.03	24.35	12	0	408	292	0	0	0	0
11	W	12B-0sw	0.097	e	5.79	3.23	240	240	1390	776	240	240	1390	776
	W	15B-10sfc-2	0.083	e	4.66	1.33	270	270	1259	360	0	0	0	0
	W	12B-0sw	0.097	s	5.79	3.23	360	303	1755	980	360	303	1755	980
	└G	1D-c2ov	0.570	s	34.03	35.87	36	0	1225	1291	36	0	1225	1291
	└D	11D0	0.390	s	23.28	13.94	21	21	489	293	21	21	489	293
	W	15B-10sfc-2	0.083	s	4.63	1.30	405	369	1710	478	0	0	0	0
	└G	1D-c2ow	0.570	s	34.03	35.87	36	0	1225	1291	0	0	0	0
	W	12B-0sw	0.097	w	5.79	3.23	240	240	1390	776	240	240	1390	776
	W	15B-10sfc-2	0.083	w	4.66	1.33	270	270	1259	360	0	0	0	0
	C	16B-30ad	0.032	-	1.91	1.90	1350	1350	2579	2560	0	0	0	0
	F	19A-11bswp	0.073	-	3.09	1.22	1350	1350	4169	1648	1350	1350	4169	1648
6	c) AED excursion									335				152
	Envelope loss/gain								22827	13263			12557	7219
12	a) Infiltration								7935	3137			4081	1613
	b) Room ventilation								0	0			0	0
13	Internal gains:	Occupants @ 230					0			0	0			0
		Appliances/other								0				0
	Subtotal (lines 6 to 13)								30762	16400			16638	8833
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			0	0
14	Subtotal								30762	16400			16638	8833
15	Duct loads						7%	5%	2176	892	13%	10%	2176	892
	Total room load								32938	17292			18814	9725
	Air required (cfm)								1128	1128			644	634

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

WaterFurnace

Right-J® Worksheet
Entire House

Job:
Date: May 15, 2014
By:

1	Room name					2nd fl								
2	Exposed wall					150.0 ft								
3	Room height					9.0 ft		heat/cool						
4	Room dimensions					45.0 x 30.0 ft								
5	Room area					1350.0 ft²								
	Ty	Construction number	U-value (Btuh/ft²-°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area or perimeter		Load	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12B-0sw	0.097	n	5.79	3.23	0	0	0	0				
.	└G	1D-c2ow	0.570	n	34.03	24.35	0	0	0	0				
.	W	15B-10sfc-2	0.083	n	4.65	1.32	405	393	1829	519				
.	└G	1D-c2ow	0.570	n	34.03	24.35	12	0	408	292				
11	W	12B-0sw	0.097	e	5.79	3.23	0	0	0	0				
	W	15B-10sfc-2	0.083	e	4.66	1.33	270	270	1259	360				
	W	12B-0sw	0.097	s	5.79	3.23	0	0	0	0				
	└G	1D-c2ov	0.570	s	34.03	35.87	0	0	0	0				
	└D	11D0	0.390	s	23.28	13.94	0	0	0	0				
	W	15B-10sfc-2	0.083	s	4.63	1.30	405	369	1710	478				
	└G	1D-c2ow	0.570	s	34.03	35.87	36	0	1225	1291				
	W	12B-0sw	0.097	w	5.79	3.23	0	0	0	0				
	W	15B-10sfc-2	0.083	w	4.66	1.33	270	270	1259	360				
	C	16B-30ad	0.032	-	1.91	1.90	1350	1350	2579	2560				
	F	19A-11bswp	0.073	-	3.09	1.22	0	0	0	0				
6	c) AED excursion									183				
	Envelope loss/gain								10270	6044				
12	a) Infiltration								3854	1523				
	b) Room ventilation								0	0				
13	Internal gains:	Occupants @ 230					0			0				
		Appliances/other								0				
	Subtotal (lines 6 to 13)								14123	7567				
	Less external load								0	0				
	Less transfer								0	0				
	Redistribution								0	0				
14	Subtotal								14123	7567				
15	Duct loads						-0%	0%	0	0				
	Total room load								14123	7567				
	Air required (cfm)								484	494				

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

WaterFurnace

Loads for Multiple Orientations
Entire House

Job:
Date: May 15, 2014
By:

Project Information

For: Carras, Michele

Design Conditions

Location:
Baltimore, MD, US
Elevation: 154 ft
Latitude: 39°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	12	94
Daily range (°F)	-	19 (M)
Wet bulb (°F)	-	75
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	72	70
Design TD (°F)	60	24
Relative humidity (%)	30	50
Moisture difference (gr/lb)	26.8	47.0

Infiltration:

Front Door	North	Northeast	East	Southeast	South	Southwest	West	Northwest
Sensible Load (Btuh)	17292	20272	21641	19008	16494	19008	20660	19362
Latent Load (Btuh)	4884	5025	5075	4971	4870	4971	5058	4975
Total Load (Btuh)	22175	25297	26715	23979	21364	23979	25718	24337
Heating AVF (cfm)	1128	1318	1406	1241	1079	1242	1347	1264
Cooling AVF (cfm)	1128	1318	1406	1241	1079	1242	1347	1264

Building Orientation Cooling Load

Current Orientation: Front Door faces North
Highest Cooling Load: Front Door faces East

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

WaterFurnace

Loads for Multiple Orientations
Entire House

Job:
Date: May 15, 2014
By:

Project Information

For: Carras, Michele

Design Conditions

Location:
Baltimore, MD, US
Elevation: 154 ft
Latitude: 39°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	12	94
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Front Door	North	Northeast	East	Southeast	South	Southwest	West	Northwest
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Building Orientation Cooling Load

Current Orientation: Front Door faces North
Highest Cooling Load: Front Door faces East

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.