



HOWARD COUNTY HEALTH DEPARTMENT

66413

DATE 10/18/19

Received From

Allied Env. Services

PHONE #

301 776-8340

For

Well Permit / 10809 Graddock Rd.

CASH

CHECK

NO

179140

One hundred sixty

Dollars

\$ 160.00

Received By

D Kemp

C1 60744

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND WELL COMPLETION REPORT

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

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

FILL IN THIS FORM COMPLETELY PLEASE TYPE

COUNTY NUMBER

ST/CO USE ONLY DATE RECEIVED

DATE WELL COMPLETED 12-15-19

APPROVED 2/21/20

Depth of Well 320

PERMIT NO. FROM "PERMIT TO DRILL WELL" 40-18-0125

OWNER Shearer, Dawn + Ning WELL SITE ADDRESS 10809 Graetoch Rd TOWN Laurel MD SUBDIVISION Hammond Park SECTION LOT 11

WELL LOG Not required for driven wells

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

Table with columns: DESCRIPTION, FEET (FROM, TO), check if water bearing. Includes entries for Top Soil, Brown Soil, Sandstone, Broken Rock, Hard Brn Rock, Bed Rock, Grey Rock, Broken Rock, Grey Rock.

GRROUTING RECORD

WELL HAS BEEN GROUTED (Y/N) TYPE OF GROUTING MATERIAL (Cement, Bentonite Clay) NO. OF BAGS, NO. OF POUNDS, GALLONS OF WATER, DEPTH OF GROUT SEAL

CASING RECORD

MAIN CASING TYPE, Nominal diameter, Total depth of main casing

OTHER CASING (if used) diameter, depth

SCREEN RECORD

screen type or open hole, insert appropriate code below

DEPTH (nearest ft.)

Table with columns: E, C, S, R, E, N, SLOT SIZE, DIAMETER OF SCREEN

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

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

TELESCOPE CASING, LOG INDICATOR, OTHER DATA

PUMPING TEST

HOURS PUMPED, PUMPING RATE, METHOD USED TO MEASURE PUMPING RATE, WATER LEVEL, TYPE OF PUMP USED

PUMP INSTALLED

DRILLER INSTALLED PUMP, TYPE OF PUMP INSTALLED PLACE, CAPACITY, PUMP HORSE POWER, PUMP COLUMN LENGTH, CASING HEIGHT

LATITUDE 39.15298, LONGITUDE 76.88800

Pursuant to §10-624 of the State Govt. Article of the Maryland Code...

06-403174

EMERGENCY/TEMP NO. IF ANY

B 1
65884

SEQUENCE NO.
(MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
566413 please type

STATE PERMIT NUMBER
HO-18-0125
fill in this form completely

Date Received (APA) 10/18/19
OWNER INFORMATION
8 MM DD YY 13
15 Last Name Owner First Name 34
Shearer Davin + Nina
36 Street or RFD 55
10809 Graeloch Road
57 Town 70 State 72 Zip 76
Laurel MD 20723

B 3 LOCATION OF WELL
8 COUNTY Howard 21
23 SUBDIVISION Hammond Park 42
SECTION 44 46 LOT 11 48 50
52 NEAREST TOWN Laurel 71

DRILLER INFORMATION
Driller's Name 76 License No. 81
Marshal Arnette MS D 106
Firm Name
Allied Well Drilling
Address
PO Box 129 Annapolis Junction MD 20701
Signature Date
Marshal Arnette 10/15/19

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

10809 Graeloch Rd
11 STREET ADDRESS 30
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)
NORTH
WEST EAST
SOUTH
34 30 37
DISTANCE FROM ROAD ENTER FT OR MI FT 38 39
TAX MAP: 0041 BLK: 7 PARCE 0297

B 2 WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.) 8 12
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY) 14 20

USE FOR WATER (CIRCLE APPROPRIATE BOX)
 DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
 FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
 INDUSTRIAL, COMMERCIAL, DEWATERING
 PUBLIC WATER SUPPLY WELL
 TEST, OBSERVATION, MONITORING
 OPEN LOOP GEOTHERMAL
 CLOSED LOOP GEOTHERMAL 2 loops

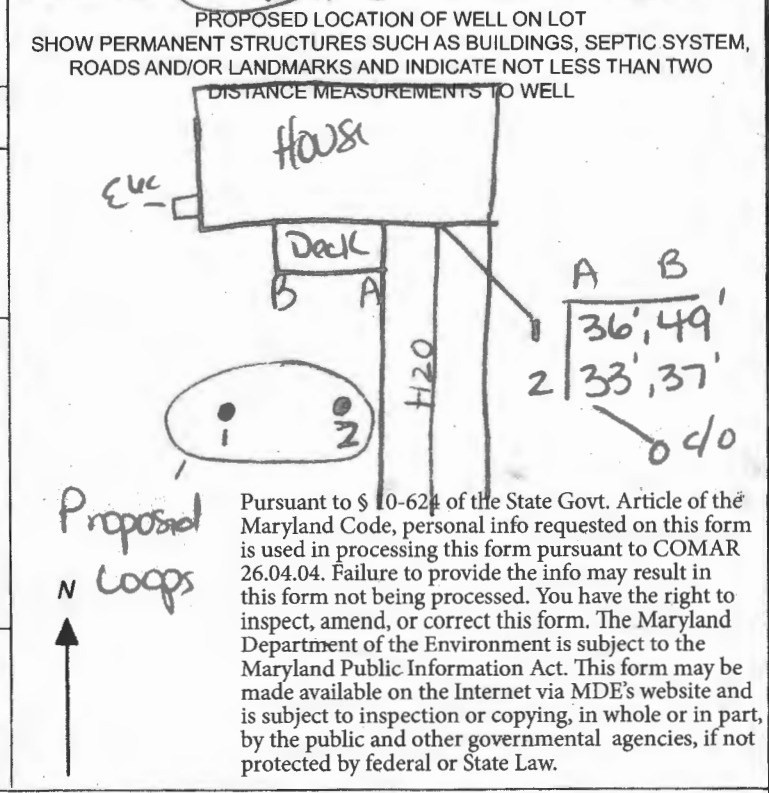
NOT TO BE FILLED IN BY DRILLER HEALTH DEPARTMENT APPROVAL
Howard COUNTY NAME
STATE SIGNATURE
DATE ISSUED 11/5/2019
CO SIGNATURE
EXP. DATE 11/5/2019

APPROXIMATE DEPTH OF WELL 320 FEET
APPROXIMATE DIAMETER OF WELL 6 INCH

METHOD OF DRILLING (circle one)
BORED (or Augered) JETTED Jetted & DRIVEN
30 AIR-ROTary AIR-PERCussion ROTARY (Hydraulic Rotary)
37 CABLE REVERSE-ROTary Drive-POINT
other 1

REPLACEMENT OR DEEPEMED WELLS (CIRCLE APPROPRIATE BOX)
 THIS WELL WILL NOT REPLACE AN EXISTING WELL
 THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
39 THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
 THIS WELL WILL DEEPEM AN EXISTING WELL
PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPEMED (IF AVAILABLE) 41 52

Not to be filled in by driller (MDE OR COUNTY USE ONLY)
APPROP. PERMIT NUMBER G
PERMIT No. HO-18-0125



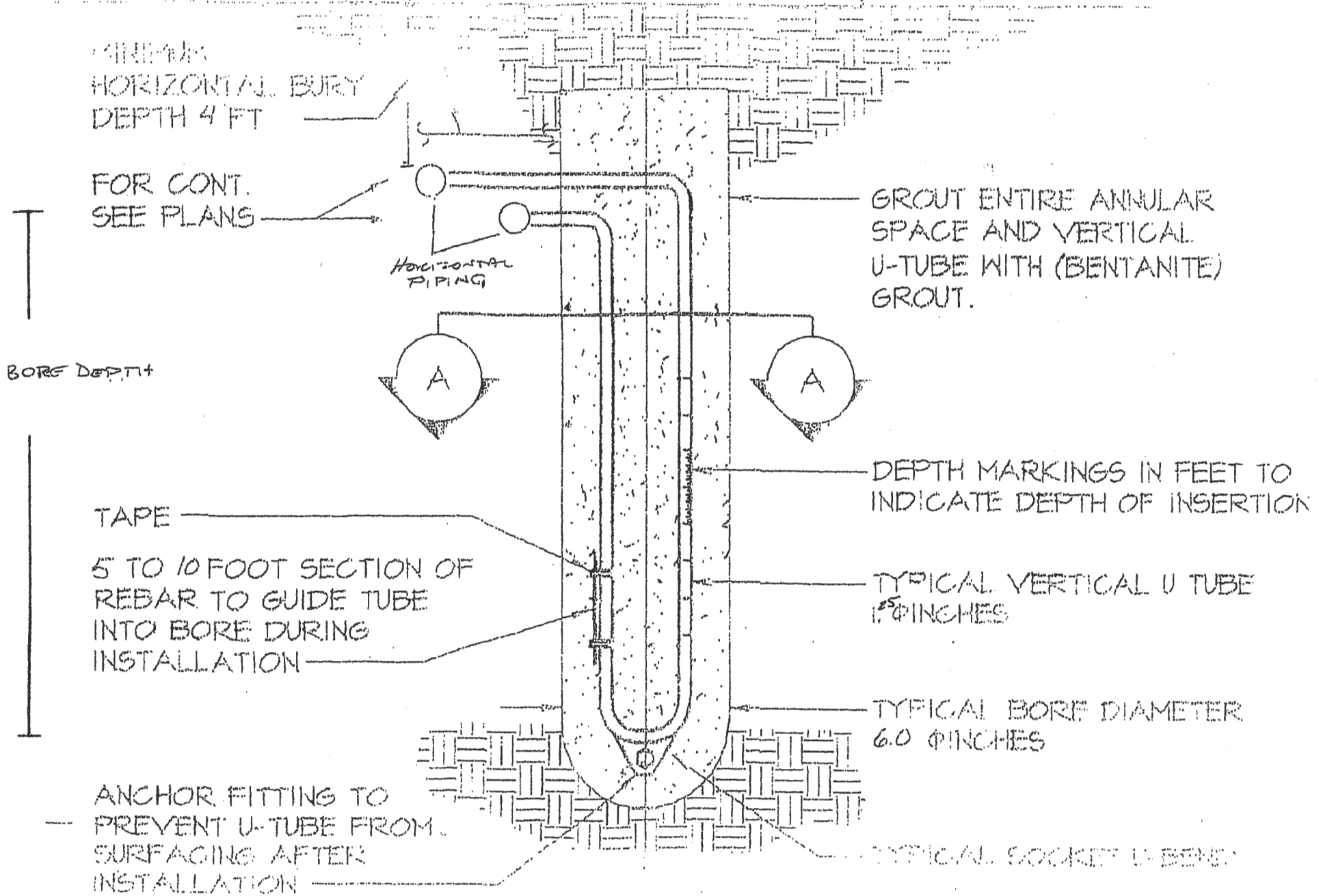
SPECIAL CONDITIONS
NOTE: APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED
CALC INSPE DRILLING ACTIVITY

HOWARD COUNTY GROUTING PROCEDURE

Boreholes will be grouted from the bottom to the top via a tremie pipe and positive displacement pump. Bentonite grout, known as Quik-Grout will be used according to the manufacturer's specifications to achieve a consistency of at least 20% solids (24 gallons potable water/50 lb. sack of grout) and a permeability no more than $2.5 \text{ E}(-08) \text{ cm/sec}$. Grouting will be completed immediately after installing the geothermal loop and no later than twenty-four (24) hours after installing the geothermal loop. Open boreholes/annular space will be protected as necessary to prevent the entry of surface water or pollutants.

GRADE

EACH BORE HOLE (TYP.)



MINIMUM HORIZONTAL BURY DEPTH 4 FT

FOR CONT. SEE PLANS

HORIZONTAL PIPING

BORE DEPTH

TAPE

5 TO 10 FOOT SECTION OF REBAR TO GUIDE TUBE INTO BORE DURING INSTALLATION

ANCHOR FITTING TO PREVENT U-TUBE FROM SURFACING AFTER INSTALLATION

GROUT ENTIRE ANNULAR SPACE AND VERTICAL U-TUBE WITH (BENTANITE) GROUT.

DEPTH MARKINGS IN FEET TO INDICATE DEPTH OF INSERTION

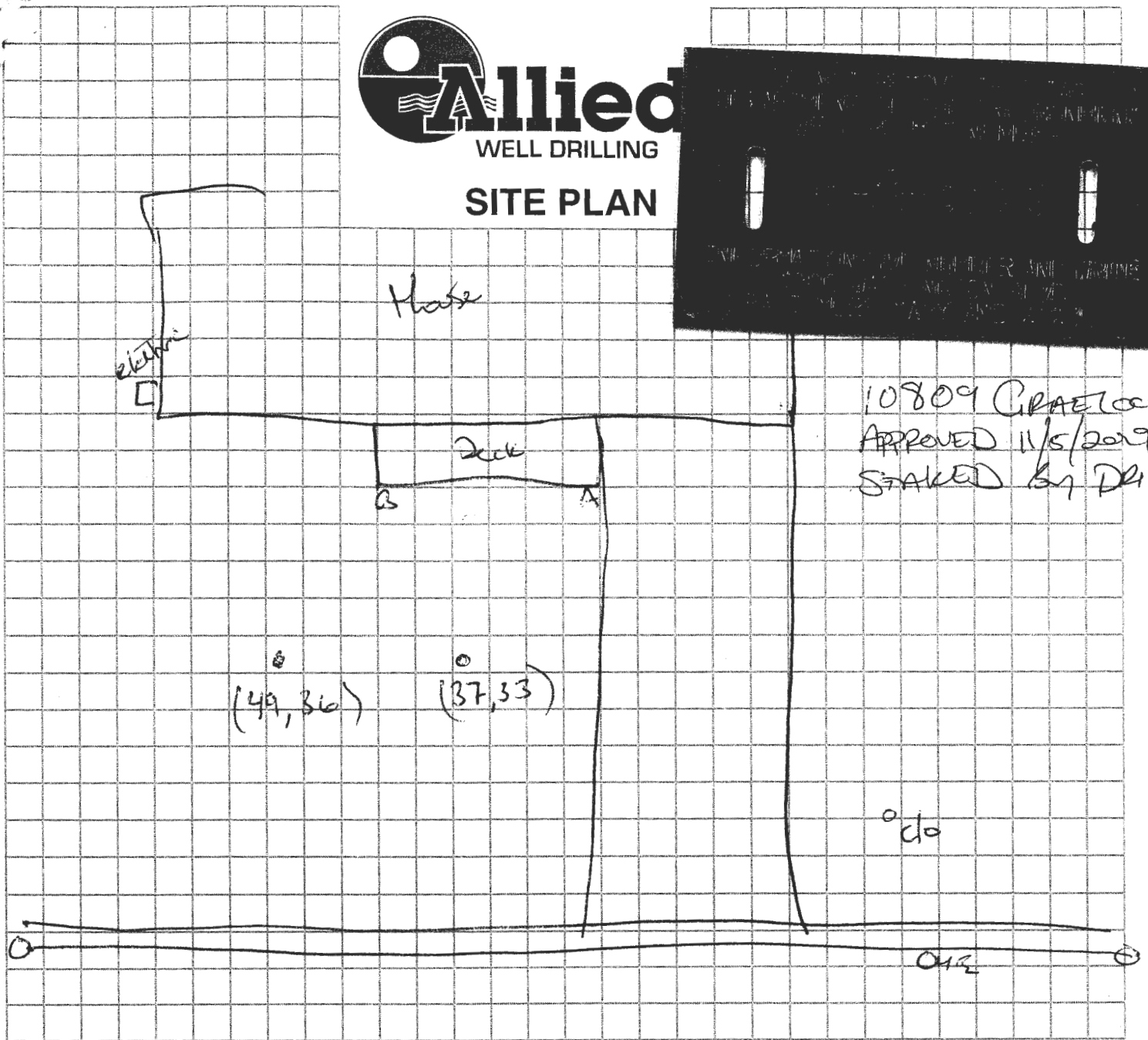
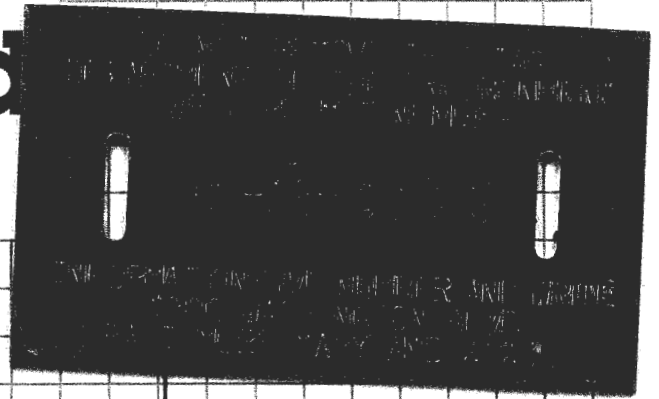
TYPICAL VERTICAL U TUBE 1.25 INCHES

TYPICAL BORE DIAMETER 6.0 INCHES

TYPICAL SOCKET U-BEND

Graebach

Allied WELL DRILLING SITE PLAN



Sediment Control Protocol: Silt bag

Distance From House: 40
 From Septic: NA
 From Sewer: 50+
 From Property Line: ~ 15
 From Street: 20

Trees Nearby: NO OH
 Utility Issues: the line?
 Mats Needed: no
 Access For H/U: NA
 Neighboring Tags: See Bid sheet

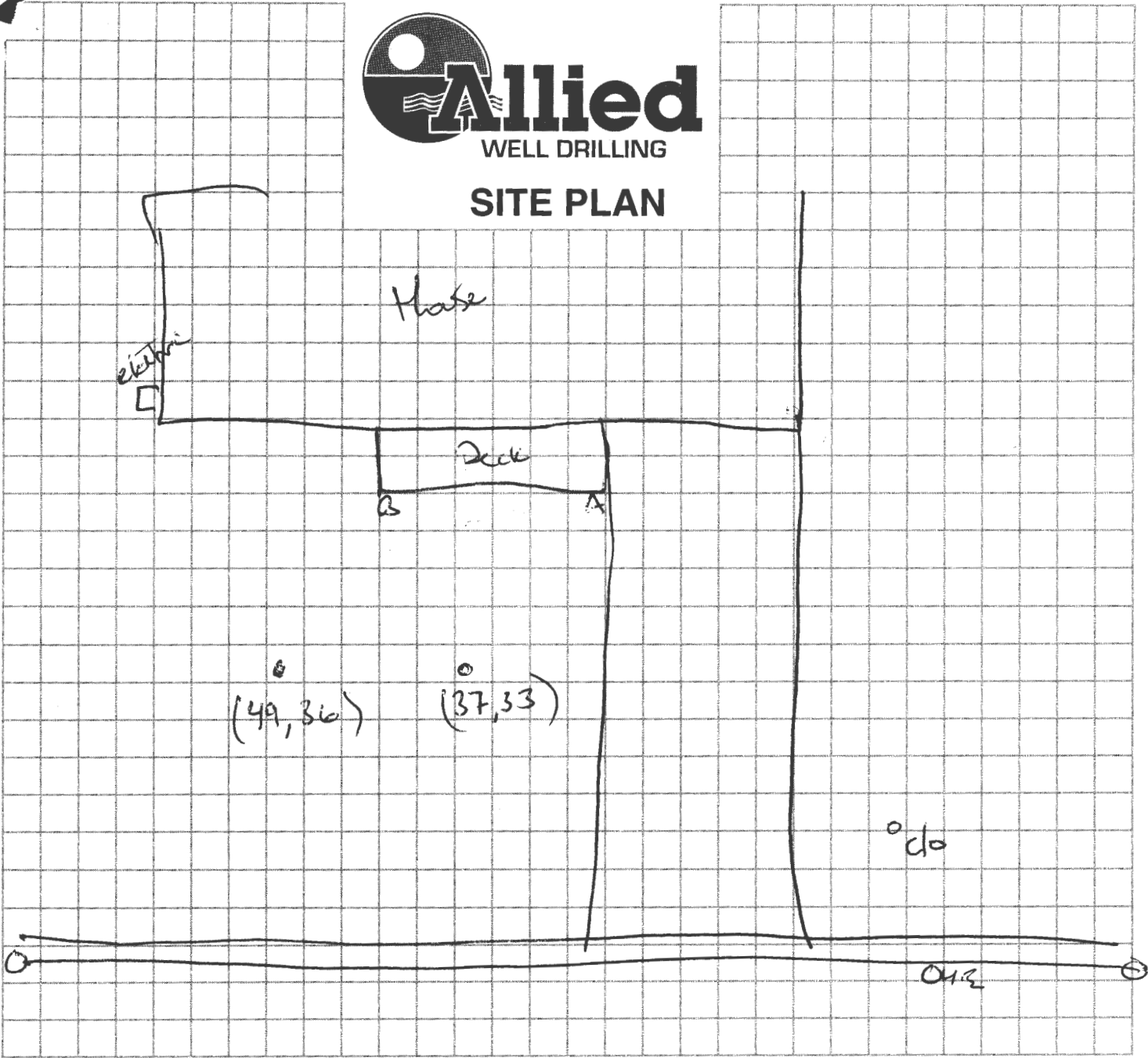
Comments: _____

Person Completing Form: _____

Groebach



SITE PLAN



Sediment Control Protocol: Silt bag

Distance From House: 40
 From Septic: NA
 From Sewer: 50+
 From Property Line: ~15
 From Street: 20

Trees Nearby: NO OH
 Utility Issues: the line?
 Mats Needed: no
 Access For H/U: NA
 Neighboring Tags: See Bid sheet

Comments: _____

Person Completing Form: _____

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 # M19000901
 BUILDING PERMIT #

BUILDING ADDRESS: SUITE/APT:

SUBDIVISION:
 CENSUS TRACT: SECTION: AREA:
 LOT: TAX MAP: PARCEL:
 BLOCK: ZONE:

PROPERTY ID: MAP COORDINATES:

TYPE OF IMPROVEMENTS: USE:

OWNERS NAME: Davin + Nina Shearer
 ADDRESS: 10809 Grae Loch Road
 CITY: Laurel
 STATE: Maryland ZIP CODE: 20723
 HOME PHONE: (443) 465-5855 WORK PHONE:

CHECK ONE	HOW MANY
SINGLE FAMILY DWELLING <input checked="" type="checkbox"/>	<u>1</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: 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
- Handwritten: EQUIPMENTS 1 UNIT WATER FURNACE 4 TON NVV048
- 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) = \$4.00
 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 10-7-2019
 SIGNATURE OF LICENSEE DATE

MICHAEL CULLUM
 PRINT NAME OF LICENSEE
tina@groundloop.com
 Email Address

Validation

Check Number: 25852
 Cash: _____
 Receipt Number: 595345

CITY WATER & SEWER

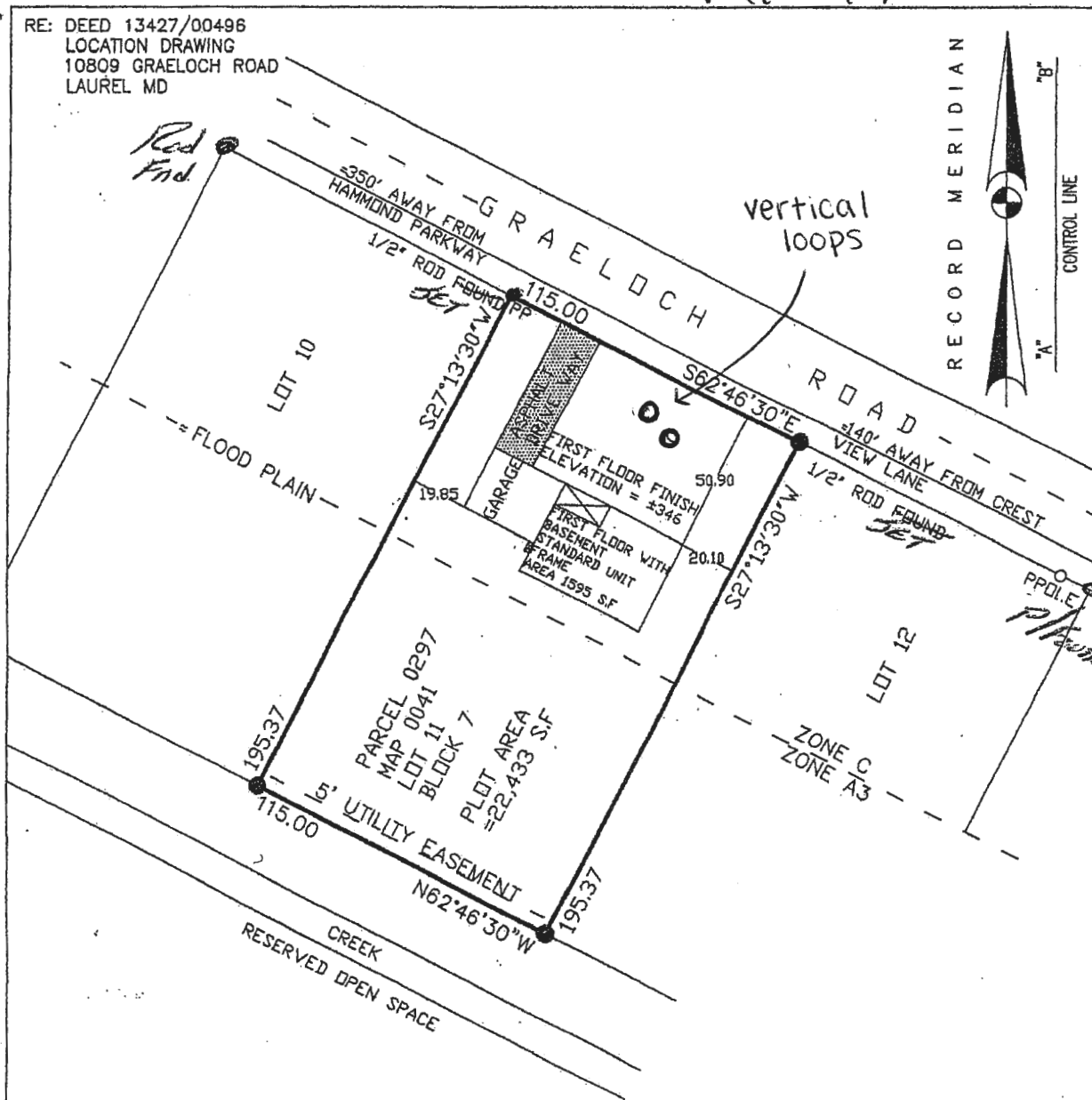
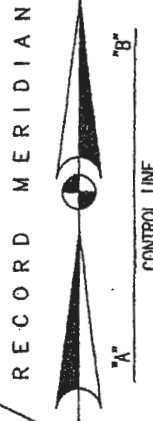
Make check payable to: DIRECTOR OF FINANCE OF HOWARD COUNTY

Word doc: T:Updated Formshvac application
 Rev:10.2009

RECEIVED
Approved Septic System Plan
Howard County Health Department 2019
10/29/15
 Signature Date

M(9000901

RE: DEED 13427/00496
LOCATION DRAWING
10809 GRAELOCH ROAD
LAUREL MD



CERTIFICATION

THIS IS TO CERTIFY THAT WE MADE AN ACCURATE FIELD SURVEY OF THE PREMISES SHOWN HEREON, THAT ALL IMPROVEMENTS AND VISIBLE EASEMENTS ARE SHOWN HEREON, THAT THERE ARE NO ENCROACHMENTS BY IMPROVEMENTS EITHER FROM ADJOINING PREMISES, OR FROM SUBJECT PREMISES UPON ADJOINING PREMISES, OTHER THAN AS SHOWN HEREON.

NOTES:

TITLE BINDER NOT PROVIDED.

WATERS OF THE UNITED STATES ARE NOT DESIGNATED BY THIS SURVEY.

WETLANDS AND SUBAQUEOUS AREA OF WETLANDS MAY BE SUBJECT TO THE FEE RIGHTS OF THE STATE OF MARYLAND. THESE AREAS HAVE NO SPECIFIC JUDICIAL DETERMINATION OF TITLE AND NO OPINION OF TITLE IS AVAILABLE AS OF DATE OF SURVEY.

THIS PROPERTY IS LOCATED IN A SPECIAL FLOOD AREA AS DESIGNATED BY THE SECRETARY OF HOUSING & URBAN DEVELOPMENT. (PREMISES LOCATED IN ZONE A3 AND ZONE C. COMMUNITY PANEL # 24004400388. DATED ON 12.04.1986)

REFERENCE IS HEREBY MADE TO ALL EASEMENTS, RESTRICTIONS, AND CONDITIONS OF RECORD WHICH MAY LAWFULLY APPLY TO SAID PROPERTY.

THE INFORMATION CONVEYED HEREON IS THE WORK PRODUCT OF LANDMARK/FLEET SURVEYOR'S P.C. AND IS SOLELY FOR THE EXCLUSIVE USE OF OUR CLIENTS AND THEIR AGENTS FOR MORTGAGE PURPOSE

I HEREBY CERTIFY THAT THIS LOCATION SURVEY, TO THE BEST OF MY KNOWLEDGE AND BELIEF, IS CORRECT AND COMPLIES WITH THE MINIMUM PROCEDURES AND STANDARDS ESTABLISHED BY THE STATE OF MARYLAND BOARD OF ARCHITECTS, PROFESSIONAL ENGINEERS, LAND SURVEYORS, AND CERTIFIED ARCHITECTS.

ANY CERTIFICATION OR SPECIAL PROVISIONS OF THIS SURVEY ARE SUBJECT TO TERMS CONTAINED IN THE

**LOCATION SURVEY
OF PROPERTY SITUATED
EAST OF GRAELOCH ROAD
SOUTH OF CRESTVIEW ROAD
6TH ELECTION
DISTRICT**

HOWARD COUNTY, MD

JULY 17 2012 SCALE 1" = 50'

**Bruce C. Landes Surveyor
SURVEYORS & PLANNERS**

**8014 MIDLOTHIAN TURNPIKE, SUITE 103
RICHMOND, VA. 23235**

PH. 804-327-0333



EXP. 4/27/2014

Bla

COPYRIGHT 2012 by Landmark-fleet Surveyors, P.C. This product style and format is protected by Copyright and all rights are reserved. These drawings are the exclusive property of Landmark-fleet Surveyors P.C. Signatures in blue ink denotes original. If signature not in blue ink drawings have been duplicated unlawfully in violation

FILE XXXXXXXXX



Load Short Form Entire House

M19000901

Job:
Date: May 15, 2014
By:

Project Information

For: Shearer

Design Information

	Htg	Clg	Infiltration	
Outside db (°F)	12	94	Method	Simplified
Inside db (°F)	72	70	Construction quality	Average
Design TD (°F)	60	24	Fireplaces	0
Daily range	-	M		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	27	47		

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	1091 cfm
Air flow factor	0.040 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	1091 cfm
Air flow factor	0.061 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0.91

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Base	1189	5171	0	205	0
1st fl	1189	22332	17908	886	1091
Entire House	2378	27503	17908	1091	1091
Other equip loads		0	0		
Equip. @ 1.00 RSM			17908		
Latent cooling			1701		
TOTALS	2378	27503	19610	1091	1091

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

Project Information

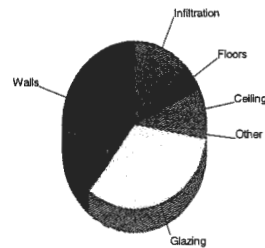
For: Shearer

Design Conditions

Location:		Indoor:		Heating	Cooling
Baltimore, MD, US		Indoor temperature (°F)		72	70
Elevation: 154 ft		Design TD (°F)		60	24
Latitude: 39°N		Relative humidity (%)		30	50
		Moisture difference (gr/lb)		26.8	47.0
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	12	94	Method	Simplified	
Daily range (°F)	-	19 (M)	Construction quality	Average	
Wet bulb (°F)	-	75	Fireplaces	0	
Wind speed (mph)	15.0	7.5			

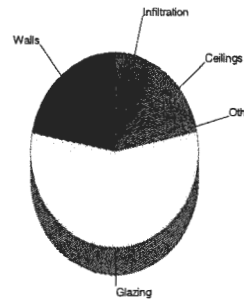
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	4.4	10766	39.1
Glazing	51.3	9108	33.1
Doors	23.3	489	1.8
Ceilings	1.9	2226	8.1
Floors	1.2	1420	5.2
Infiltration	2.5	3494	12.7
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	0
Total		27503	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	1.6	3919	21.9
Glazing	56.9	10107	56.4
Doors	13.9	293	1.6
Ceilings	1.9	2209	12.3
Floors	0	0	0
Infiltration	1.0	1381	7.7
Ducts		0	0
Ventilation		0	0
Internal gains		0	0
Blower		0	0
Adjustments		0	0
Total		17908	100.0



Latent Cooling Load = 1701 Btuh
Overall U-value = 0.080 Btuh/ft²-°F

Data entries checked.

Project Information

For: Shearer

Design Conditions

Location:		Indoor:		Heating	Cooling
Baltimore, MD, US		Indoor temperature (°F)		72	70
Elevation: 154 ft		Design TD (°F)		60	24
Latitude: 39°N		Relative humidity (%)		30	50
		Moisture difference (gr/lb)		26.8	47.0
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	12	94	Method	Simplified	
Daily range (°F)	-	19 (M)	Construction quality	Average	
Wet bulb (°F)	-	75	Fireplaces	0	
Wind speed (mph)	15.0	7.5			

Construction descriptions

	Or	Area ft²	U-value Btu/ft²·°F	Insul R ft²·°F/Btu	Htg HTM Btu/ft²	Loss Btu/h	Clg HTM Btu/ft²	Gain Btu/h
Walls								
12B-0sw: Fm wall, wd ext, 3/8" wood shth, r-11 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud								
	n	373	0.097	11.0	5.79	2160	3.23	1207
	e	261	0.097	11.0	5.79	1511	3.23	844
	s	336	0.097	11.0	5.79	1948	3.23	1088
	w	241	0.097	11.0	5.79	1396	3.23	780
	all	1211	0.097	11.0	5.79	7015	3.23	3919
15B11-0wc-8: Bg wall, heavy damp soil, 2"x4" wood int frm, concrete wall, r-11 cav ins, 10" thk, 1/2" gypsum board int fnsh								
	n	384	0.051	11.0	3.04	1169	0	0
	e	232	0.051	11.0	3.04	706	0	0
	s	384	0.051	11.0	3.04	1169	0	0
	w	232	0.051	11.0	3.04	706	0	0
	all	1232	0.051	11.0	3.04	3751	0	0
Partitions (none)								
Windows								
10B-w: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/4" thk; 6.67 ft head ht								
	n	35	0.600	0	35.8	1254	15.2	533
	n	24	0.570	0	34.0	817	24.4	584
	s	35	0.600	0	35.8	1254	20.8	729
	s	40	0.570	0	34.0	1350	35.9	1423
	w	20	0.570	0	34.0	681	66.4	1328
	all	154	0.570	0	34.8	5354	29.9	4597
8Bcw-6c: Sky glazing, small, wood curb, insl shaft lgt shaft, clad wd sash								
		24	2.620	0	156	3754	230	5509
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-30 cell ins, 1/2" gypsum board int fnsh								
		1165	0.032	30.0	1.91	2226	1.90	2209
Floors								
21A-32w: Bg floor, heavy damp soil, 8' depth, hrd wd fir fnsh								
		1189	0.020	0	1.19	1420	0	0

Project Information

For: Shearer

Design Conditions

Location:		Indoor:		Heating	Cooling
Baltimore, MD, US		Indoor temperature (°F)		72	70
Elevation: 154 ft		Design TD (°F)		60	24
Latitude: 39°N		Relative humidity (%)		30	50
		Moisture difference (gr/lb)		26.8	47.0
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	12	94	Method	Simplified	
Daily range (°F)	-	19 (M)	Construction quality	Average	
Wet bulb (°F)	-	75	Fireplaces	0	
Wind speed (mph)	15.0	7.5			

Construction descriptions

	Or	Area ft²	U-value Btu/h/ft²·°F	Insul R ft²·°F/Btu/h	Htg HTM Btu/h/ft²	Loss Btu/h	Clg HTM Btu/h/ft²	Gain Btu/h
Walls								
15B11-0wc-8: Bg wall, heavy damp soil, 2"x4" wood int frm, concrete wall, r-11 cav ins, 10" thk, 1/2" gypsum board int fnsh								
	n	384	0.051	11.0	3.04	1169	0	0
	e	232	0.051	11.0	3.04	706	0	0
	s	384	0.051	11.0	3.04	1169	0	0
	w	232	0.051	11.0	3.04	706	0	0
	all	1232	0.051	11.0	3.04	3751	0	0
Partitions								
(none)								
Windows								
(none)								
Doors								
(none)								
Ceilings								
(none)								
Floors								
21A-32w: Bg floor, heavy damp soil, 8' depth, hrd wd flr fnsh								
		1189	0.020	0	1.19	1420	0	0

Project Information

For: Shearer

Design Conditions

Location:		Indoor:		Heating	Cooling
Baltimore, MD, US		Indoor temperature (°F)		72	70
Elevation:	154 ft	Design TD (°F)		60	24
Latitude:	39°N	Relative humidity (%)		30	50
Outdoor:		Moisture difference (gr/lb)		26.8	47.0
		Heating	Cooling		
Dry bulb (°F)		12	94		
Daily range (°F)		-	19 (M)		
Wet bulb (°F)		-	75		
Wind speed (mph)		15.0	7.5		
		Infiltration:			
		Method		Simplified	
		Construction quality		Average	
		Fireplaces		0	

Construction descriptions

	Or	Area ft²	U-value Btu/ft²·°F	Insul R ft²·F/Btu	Htg HTM Btu/ft²	Loss Btu	Clg HTM Btu/ft²	Gain Btu
Walls								
12B-0sw: Fm wall, wd ext, 3/8" wood shth, r-11 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood fm, 16" o.c. stud								
	n	373	0.097	11.0	5.79	2160	3.23	1207
	e	261	0.097	11.0	5.79	1511	3.23	844
	s	336	0.097	11.0	5.79	1948	3.23	1088
	w	241	0.097	11.0	5.79	1396	3.23	780
	all	1211	0.097	11.0	5.79	7015	3.23	3919
Partitions (none)								
Windows								
10B-w: 2 glazing, clr outr, air gas, wd fm mat, clr innr, 1/4" gap, 1/4" thk; 6.67 ft head ht								
	n	35	0.600	0	35.8	1254	15.2	533
	n	24	0.570	0	34.0	817	24.4	584
	s	35	0.600	0	35.8	1254	20.8	729
	s	40	0.570	0	34.0	1350	35.9	1423
	w	20	0.570	0	34.0	681	66.4	1328
	all	154	0.570	0	34.8	5354	29.9	4597
8Bcw-6c: Sky glazing, small, wood curb, insl shaft lgt shaft, clad wd sash								
		24	2.620	0	156	3754	230	5509
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-30 cell ins, 1/2" gypsum board int fnsh								
		1165	0.032	30.0	1.91	2226	1.90	2209
Floors (none)								

Project Information

For: Shearer

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 27503 Btuh
Ducts 0 Btuh
Central vent (0 cfm) 0 Btuh
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 27503 Btuh

Sensible Cooling Equipment Load Sizing

Structure 17908 Btuh
Ducts 0 Btuh
Central vent (0 cfm) 0 Btuh
Blower 0 Btuh
Use manufacturer's data y
Rate/swing multiplier 1.00
Equipment sensible load 17908 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

	Heating	Cooling
Area (ft²)	2378	2378
Volume (ft³)	10701	10701
Air changes/hour	0.30	0.30
Equiv. AVF (cfm)	54	54

Latent Cooling Equipment Load Sizing

Structure 1701 Btuh
Ducts 0 Btuh
Central vent (0 cfm) 0 Btuh
Equipment latent load 1701 Btuh
Equipment total load 19610 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 1091 cfm
Air flow factor 0.040 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 1091 cfm
Air flow factor 0.061 cfm/Btuh
Static pressure 0 in H2O
Load sensible heat ratio 0.91

Bold/italic values have been manually overridden

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

Project Information

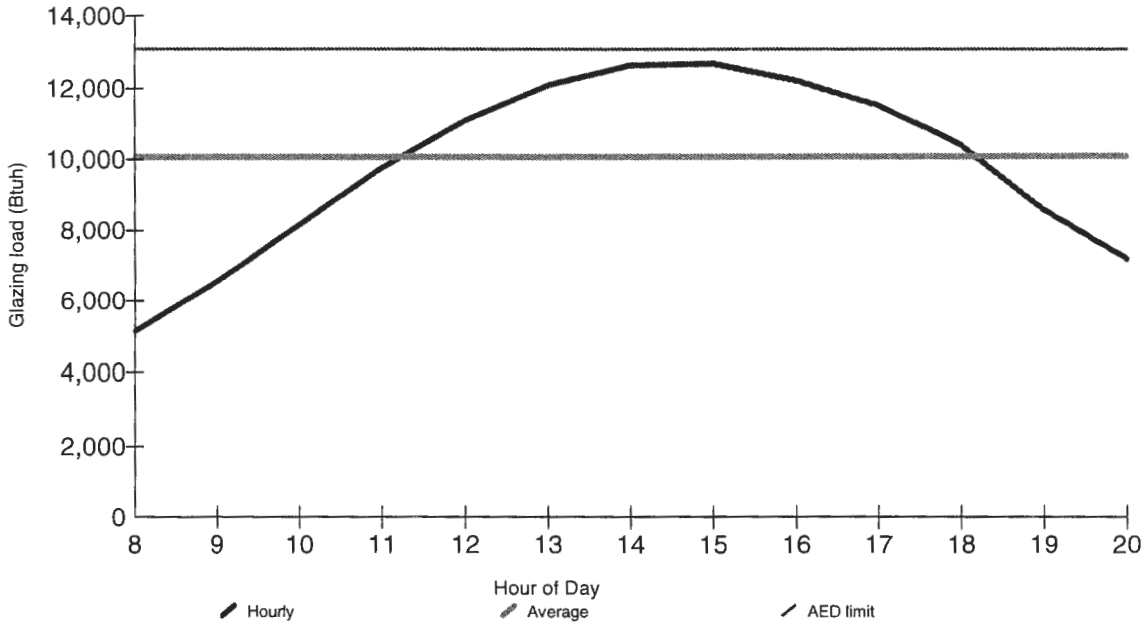
For: Shearer

Design Conditions

Location:		Indoor:		Heating	Cooling
Baltimore, MD, US		Indoor temperature (°F)		72	70
Elevation: 154 ft		Design TD (°F)		60	24
Latitude: 39°N		Relative humidity (%)		30	50
		Moisture difference (gr/lb)		26.8	47.0
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	12	94			
Daily range (°F)	-	19 (M)			
Wet bulb (°F)	-	75			
Wind speed (mph)	15.0	7.5			

Test for Adequate Exposure Diversity

Hourly Glazing Load



Maximum hourly glazing load exceeds average by 26.1%.

House has adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 0 Btuh

Right-J® Worksheet Entire House

Job:
Date: May 15, 2014
By:

1 Room name				Entire House		Base								
2 Exposed wall				308.0 ft		154.0 ft								
3 Room height				8.5 ft		8.0 ft								
4 Room dimensions						1.0 x 1189.0 ft								
5 Room area				2378.0 ft²		1189.0 ft²								
6	Ty	Construction number	U-value (Btu/h/ft²·°F)	Or	HTM (Btu/h/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
6	W	12B-0sw	0.097	n	5.79	3.23	432	373	2160	1207	0	0	0	0
	G	10B-w	0.600	n	35.82	15.23	35	0	1254	533	0	0	0	0
	G	1D-c2ow	0.570	n	34.03	24.35	24	0	817	584	0	0	0	0
	W	15B11-0wc-8	0.099	n	3.04	0.00	384	384	1169	0	384	384	1169	0
11	W	12B-0sw	0.097	e	5.79	3.23	261	261	1511	844	0	0	0	0
	W	15B11-0wc-8	0.099	e	3.04	0.00	232	232	706	0	232	232	706	0
	W	12B-0sw	0.097	s	5.79	3.23	432	336	1948	1088	0	0	0	0
	G	10B-w	0.600	s	35.82	20.84	35	0	1254	729	0	0	0	0
	G	1D-c2ow	0.570	s	34.03	35.87	40	0	1350	1423	0	0	0	0
	D	11D0	0.390	s	23.28	13.94	21	21	489	293	0	0	0	0
	W	15B11-0wc-8	0.099	s	3.04	0.00	384	384	1169	0	384	384	1169	0
	W	12B-0sw	0.097	w	5.79	3.23	261	241	1396	780	0	0	0	0
	G	1D-c2ow	0.570	w	34.03	66.39	20	0	681	1328	0	0	0	0
	W	15B11-0wc-8	0.099	w	3.04	0.00	232	232	706	0	232	232	706	0
	G	16B-30ad	0.032	-	1.91	1.90	1189	1165	2226	2209	0	0	0	0
	G	8Bcw-6c	2.620	-	156.41	229.55	24	0	3754	5509	0	0	0	0
	F	21A-32w	0.020	-	1.19	0.00	1189	1189	1420	0	1189	1189	1420	0
6	c) AED excursion									0				0
	Envelope loss/gain								24008	16527			5171	0
12	a) Infiltration								3494	1381			0	0
	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)								27503	17908			5171	0
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			0	0
14	Subtotal								27503	17908			5171	0
15	Duct loads								0%	0%			0	0
	Total room load								27503	17908			5171	0
	Air required (cfm)								1091	1091			205	0

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

						1st fl								
1	Room name					9.0 ft		154.0 ft		heat/cool				
2	Exposed wall													
3	Room height													
4	Room dimensions					1.0		x		1189.0 ft				
5	Room area					1189.0 ft ²								
	Ty	Construction number	U-value (Btu/h/ft ² ·°F)	Or	HTM (Btu/h/ft ²)		Area (ft ²) or perimeter (ft)		Load (Btu/h)		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	432	373	2160	1207				
	G	10B-w	0.600	n	35.82	15.23	35	0	1254	533				
	G	1D-c2ow	0.570	n	34.03	24.35	24	0	817	584				
	W	15B11-0wc-8	0.099	n	3.04	0.00	0	0	0	0				
11	W	12B-0sw	0.097	e	5.79	3.23	261	261	1511	844				
	W	15B11-0wc-8	0.099	e	3.04	0.00	0	0	0	0				
	W	12B-0sw	0.097	s	5.79	3.23	432	336	1948	1088				
	G	10B-w	0.600	s	35.82	20.84	35	0	1254	729				
	G	1D-c2ow	0.570	s	34.03	35.87	40	0	1350	1423				
	D	11D0	0.390	s	23.28	13.94	21	21	489	293				
	W	15B11-0wc-8	0.099	s	3.04	0.00	0	0	0	0				
	W	12B-0sw	0.097	w	5.79	3.23	261	241	1396	780				
	G	1D-c2ow	0.570	w	34.03	66.39	20	0	681	1328				
	W	15B11-0wc-8	0.099	w	3.04	0.00	0	0	0	0				
	G	16B-30ad	0.032	-	1.91	1.90	1189	1165	2226	2209				
	G	8Bcw-6c	2.620	-	156.41	229.55	24	0	3754	5509				
	F	21A-32w	0.020	-	1.19	0.00	0	0	0	0				
6	c) AED excursion									0				
	Envelope loss/gain								18838	16527				
12	a) Infiltration								3494	1381				
	b) Room ventilation								0	0				
13	Internal gains:		Occupants @	230			0			0				
			Appliances/other							0				
	Subtotal (lines 6 to 13)								22332	17908				
	Less external load								0	0				
	Less transfer								0	0				
	Redistribution								0	0				
14	Subtotal								22332	17908				
15	Duct loads						-0%	0%	0	0				
	Total room load								22332	17908				
	Air required (cfm)								886	1091				

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

Project Information

For: Shearer

Design Conditions

Location:		Indoor:	Heating	Cooling
Baltimore, MD, US		Indoor temperature (°F)	72	70
Elevation: 154 ft		Design TD (°F)	60	24
Latitude: 39°N		Relative humidity (%)	30	50
		Moisture difference (gr/lb)	26.8	47.0
Outdoor:	Heating	Cooling		
Dry bulb (°F)	12	94		
Daily range (°F)	-	19 (M)		
Wet bulb (°F)	-	75		
Wind speed (mph)	15.0	7.5		

Front Door	North	Northeast	East	Southeast	South	Southwest	West	Northwest
Sensible Load (Btuh)	17908	19749	20525	19610	17728	19787	20755	19926
Latent Load (Btuh)	1701	1701	1701	1701	1701	1701	1701	1701
Total Load (Btuh)	19610	21450	22226	21311	19429	21489	22456	21628
Heating AVF (cfm)	1091	1204	1251	1195	1080	1206	1265	1214
Cooling AVF (cfm)	1091	1204	1251	1195	1080	1206	1265	1214

Building Orientation Cooling Load



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

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

Project Information

For: Shearer

Design Conditions

Location:		Indoor:		Heating	Cooling
Baltimore, MD, US		Indoor temperature (°F)		72	70
Elevation: 154 ft		Design TD (°F)		60	24
Latitude: 39°N		Relative humidity (%)		30	50
		Moisture difference (gr/lb)		26.8	47.0
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	12	94			
Daily range (°F)	-	19 (M)			
Wet bulb (°F)	-	75			
Wind speed (mph)	15.0	7.5			

Front Door	North	Northeast	East	Southeast	South	Southwest	West	Northwest
Sensible Load (Btuh)	17908	19749	20525	19610	17728	19787	20755	19926
Latent Load (Btuh)	1701	1701	1701	1701	1701	1701	1701	1701
Total Load (Btuh)	19610	21450	22226	21311	19429	21489	22456	21628
Heating AVF (cfm)	1091	1204	1251	1195	1080	1206	1265	1214
Cooling AVF (cfm)	1091	1204	1251	1195	1080	1206	1265	1214

Building Orientation Cooling Load



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

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