2019 HeatCAD

Load Summary

Manual J8 Load Calculation

Project #:1 June 28, 2019

> 1,407 ft² 1,375 ft² 2,782 ft² 2,782 ft²

Cooling Heat Recovery 0.34 76 cfm 50 %

Project Information

Project #:	1
Name:	Home
Location:	Milmay NJ 08340

Notes:

Outdoor Conditions			Indoor Conditions			Floorplan/Levels
Location:	١	/ineland (Millville		Heating	Cooling	Basement
		DD),New Jersey	Room Temp:	70 °F	75 °F	Main Floor
Elevation:		88'	Design Temp Diff:	59.0 °F	14.0 °F	
Latitude:		39	Humidity:	35	50	Total Heated Area:
	Heating	Cooling	Moisture Diff (Grains):		37.8	Total Cooled Area:
Dry Bulb:	11.0 °F	89.0 °F	Ventilation			
Daily Range:		Medium	Num Occupants:		1	
Wet Bulb:		74.0 °F	Num Occupants.		Heating	
Infiltration			Type:	Hea	t Recoverv	Type:
Method:		Simple	ACH:		0.34	ACH:
Stories:		1	Outside Air:		76 cfm	Outside Air:
Construction:		Average	Sensible Eff:		50 %	Sensible Eff:
Exposure Category:	Three or	Four Exposures				
Num Fireplaces:		None				
Net Air Changes (H/C):		0.33/0.17				
Net Flow (H/C):		74 cfm/38 cfm				

Total Heating: 46,278 Btu/hr

Total Sensible: 22,507 Btu/hr

Total Latent: 3,745 Btu/hr

Load Breakdown

Heating ΔT^1 : 70.0

Cooling ΔT^1 : 18.0

Est. Heating CFM²: 0

Est. Cooling CFM²: 1024

Name	Heating	Sensible	Latent
Windows*	5,085	5,333	
Skylights*	0	0	
Doors	920	520	
Walls	18,432	6,085	
Below Grade Walls	5,821		
Ceilings	6,692	5,583	
Floors	2,075	0	
Infiltration	4,796	576	961
Internal		2,120	840
Other	0		
Duct Loads	0	0	0
Ventilation	2,457	583	1,944
Humidification	0		
Piping Load	0		
Radiant Back Loss	0		
Blower Heat		1,706	
AED*		0	
Total	46,278	22,507	3,745
Total Area	2,782 ft ²	2,782 ft ²	
*Average Load Procedure			



Heating Load Breakdown

Sensible Load Breakdown



Fenestration Load vs Hour of Day - Block Load (Summer)



CFM/SqFt: 0.37 (1) ΔT : Difference between supply air and return air (2) Estimated air flow based on specified supply air ΔT

JSHR: 0.86

MJ8 Tons: 2.19

SqFt/Ton: 1272

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Air Flow = cfm Heat Loss = Btu/hr Unit Heat Loss = Btu/hr·ft² . Rv = hr·ft²·°F/btu Head Loss = ft water RH = Radiant Floor Heating FA = Forced Air OTH = Other Heating SM = Snowmelt BB = Baseboard N = Not Heated

Created Using HeatCAD 2019 (7/1/2019) Version:19.0.0280 R (Trial)

See sections at end of report for important Notes, Assumptions and Disclaimers.

Warnings

This application has glass areas that produced relatively large cooling loads for part of the day. Zoning may be required to overcome spikes in solar load for one or more rooms. A zoned system may be required or some rooms may require zone control (provided by individual, motorized, thermostatically controlled dampers).

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The calculated values shown in this report are based on the data input by the user of the software. Inaccurate or erroneous data input will result in inaccurate or erroneous results. You are strongly advised to review all input data carefully, and to have the calculated results reviewed by an experienced heating professional to ensure reasonableness and suitability for your application.

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(1) ΔT : Difference between supply air and return air (2) Estimated air flow based on specified supply air ΔT

Length = ft Area = ft²Temperature = °FFlowrate = USGPMAir Flow = cfmHeat Loss = Btu/hrUnit Heat Loss = Btu/hr·ft²Rv = hr·ft².°F/btuHead Loss = ft waterRH = Radiant Floor HeatingBB = BaseboardFA = Forced AirOTH = Other HeatingSM = SnowmeltN = Not Heated

HeatCAD[®] 2019

Load Report

Manual J8 Load Calculation

Project #:1 June 28, 2019

Project	Information						
Project #:	1			Notes:			
vame:	Home						
_ocation:	Milmay NJ 08340						
Manual	J Load Summary						
Total H	eating: 46,278 Btu/hr	Total Sensi	ible: 22,507 Btu/hr	Total Latent: 3,745	Btu/hr		
Outdoo	or Conditions			Indoor Conditions			
Location:		Vinelar	nd (Millville DD),New		Heating	Cooling	
			Jersey	Room Temp:	70 °F	75 °F	
Elevation	:		88'	Design Temp Diff:	59.0 °F	14.0 °F	
Latitude:			39	Humidity:	35	50	
		Heating	Cooling	Moisture Diff (Grains):		37.8	
Dry Bulb:		11.0 °F	89.0 °F				
Daily Rar	nge:		Medium				
Wet Bulb	:		74.0 °F				
Infiltrat	tion			Ventilation			
Method:			Simple	Num Occupants:	4		
Stories:			1		Heating		Cooling
Construct	tion:		Average	Туре:	Heat Recovery	Type:	Heat Recovery
Exposure	e Category:	Thre	ee or Four Exposures	ACH:	0.34	ACH:	0.34
Num Fire	places:		None	Outside Air:	76 cfm	Outside Air:	76 cfm
Net Air C	hanges (Heat/Cool):		0.33 / 0.17	Sensible Eff:	50 %	Sensible Eff:	50 %
Net Flow	(Heat/Cool):		74 cfm / 38 cfm				
Floorpl	an/Levels						
Basemen	ıt		1,407 ft²	Total Heated Area:	2,782 ft ²		
Main Floo	or		1,375 ft²	Total Cooled Area:	2,782 ft ²		

(1) ΔT : Difference between supply air and return air Length = ft Area = ft² Temperature = °F Flowrate = USGPM Air Flow = cfm Heat Loss = Btu/hr Unit Heat Loss = Btu/hr ·ft²

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Air Flow = cfm Heat Loss = Btu/hr Unit Heat Loss = Btu/hr ft² Rv = hr ft² °F/btu Head Loss = ft water RH = Radiant Floor Heating BB = Baseboard FA = Forced Air OTH = Other Heating SM = Snowmelt N = Not Heated

Constructions

Walls

Code	Description	U-Value	Area	Heating	Cooling
15A-0oc	Concrete Block Wall; No Cavity Insulation; Open Core; No Interior Finish	0.584	362	12,470	3,466
12B-0sw	Frame Wall or Partition; Wood Framing; R-11 Insulation in 2 x 4 Stud Cavity; Stucco or Wood Siding; Plus Interior Finish	0.097	988	5,655	2,214
12A-0sw	Frame Wall or Partition; Wood Framing; No Cavity Insulation; Stucco or Wood Siding; Plus Interior Finish	0.240	98	260	350
12B-0sw	Frame Wall or Partition; Wood Framing; R-11 Insulation in 2 x 4 Stud Cavity; Stucco or Wood Siding; Plus Interior Finish	0.097	44	47	54

Below Grade Walls

Code	Description	U-Value	Area	Heating	Cooling
15A-0oc (6 ft)	Concrete Block Wall; No Cavity Insulation; Open Core; No Interior Finish	0.584	677	5,821	0

Doors

Code	Description	U-Value	Area	Heating	Cooling
111	Wood Door with Panel with Metal Storm	0.360	18	70	160
111	Wood Door with Panel with Metal Storm	0.360	40	850	360

Floors

Code	Description	U-Value	Area	Heating	Cooling
21A-24p		ERROR!	1,407	2,075	0

Ceilings

Code	Description	U-Value	Area	Heating	Cooling
16B-11ad	FHA vented attic; No radiant barrier over ceiling or same type of air space behind an attic knee wall; R-11 Insulation; Materials: Asphalt Shingles(a), Metal(m), Tar / Gravel(x), Membrane(z); Colors: Dark(d);	0.081	8	7	31
16B-11ad	FHA vented attic; No radiant barrier over ceiling or same type of air space behind an attic knee wall; R-11 Insulation; Materials: Asphalt Shingles(a), Metal(m), Tar / Gravel(x), Membrane(z); Colors: Dark(d);	0.081	1,399	6,685	5,552

Glazing

Windows

Code	Description	Exposure	U-Value	SHGC	Area	Heating	Cooling
1A-cb	Single pane operable window or sliding glass door, with Clear Glass - Metal with Break Framing, Outside (50%), 0'-6", 0'-6" above., GreenGrass	SW	1.08	0.75	6	396	394
1A-cb	Single pane operable window or sliding glass door, with Clear Glass - Metal with Break Framing, Outside (50%), 0'-6", 0'-6" above., GreenGrass	NE	1.08	0.75	3	198	180
1A-cb	Single pane operable window or sliding glass door, with Clear Glass - Metal with Break Framing, Outside (50%), 0'-6", 0'-6" above., GreenGrass	SE	1.08	0.75	6	396	394
1A-cw	Single pane operable window or sliding glass door, with Clear Glass - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above., GreenGrass	N	0.90	0.64	16	157	301
1D-cw	Double pane operable window or sliding glass door, with Clear Glass - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), Outside (50%), 1', 1' above., GreenGrass	SW	0.57	0.56	27	908	945
1D-cw	Double pane operable window or sliding glass door, with Clear Glass - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above.	N	0.57	0.56	8	49	106
1D-cw	Double pane operable window or sliding glass door, with Clear Glass - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), Outside (50%), 1', 1' above., GreenGrass	NE	0.57	0.56	38	1,283	1,181
1D-cw	Double pane operable window or sliding glass door, with Clear Glass - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), Outside (50%), 1', 1' above., GreenGrass	SE	0.57	0.56	9	319	336
1D-cw	Double pane operable window or sliding glass door, with Clear Glass - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), Outside (50%), 1', 1' above., GreenGrass	SE	0.57	0.56	9	319	336
1D-cw	Double pane operable window or sliding glass door, with Clear Glass - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), Outside (50%), 1', 1' above., GreenGrass	SW	0.57	0.56	9	319	336
1D-cw	Double pane operable window or sliding glass door, with Clear Glass - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), Outside (50%), 1', 1' above., GreenGrass	SE	0.57	0.56	7	227	236

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				-	-		
1E-cw	Double pane window, fixed sash, with Clear Glass -	NE	0.56	0.66	16	515	588
	Wood, Wood with Metal Clad or Vinyl Framing,						
	BlindsMedium45 (50%), 1', 1' above., GreenGrass						

Project #:1

Internal Loads

Description	Sensible	Latent
Default (1,200 Btuh)	1,200	0
4 Occupants:	920	800
Plants	0	40
Total	2,120	840

Other Loads Blower Load

1,706 Btu/hr

Load Breakdown

Name	Heating	Sensible	Latent
Windows*	5,085	5,333	
Skylights*	0	0	
Doors	920	520	
Walls	18,432	6,085	
Below Grade Walls	5,821		
Ceilings	6,692	5,583	
Floors	2,075	0	
Infiltration	4,796	576	961
Internal		2,120	840
Other	0		
Duct Loads	0	0	0
Ventilation	2,457	583	1,944
Humidification	0		
Piping Load	0		
Radiant Back Loss	0		
Blower Heat		1,706	
AED*		0	
Total	46,278	22,507	3,745
Total Area	2,782 ft ²	2,782 ft ²	

*Average Load Procedure

Heating ΔT ¹ : 70.0	JSHR: 0.86
Cooling ΔT ¹ : 18.0	MJ8 Tons: 2.19
Est. Heating CFM ² : 0	SqFt/Ton: 1272
Est. Cooling CFM ² : 1024	CFM/SqFt: 0.37

Heating Load Breakdown



Sensible Load Breakdown



 (1) ΔT : Difference between supply air and return air
 (2) Estimated air flow based on specified supply air ΔT

 Length = ft Area = ft²
 Temperature = °F
 Flowrate = USGPM
 Air Flow = cfm
 Heat Loss = Btu/hr
 Unit Heat Loss = Btu/hr·ft²
 Rv = hr·ft²·°F/btu

 Head Loss = ft water
 RH = Radiant Floor Heating
 BB = Baseboard
 FA = Forced Air
 OTH = Other Heating
 SM = Snowmelt
 N = Not Heated

Project #:1

AED



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Heating Zones

Zone	Area	Room Temp	Total Load
Zone 101	1,407	70	23,750
Zone 201	406	70	6,573
Zone 202	421	70	5,907
Zone 203	236	70	4,874
Zone 204	124	70	1,683
Zone 205	188	70	3,491

Heating Rooms

Room	Area	Room Temp	Total Load
Back Foyer	16	70	671
Back Foyer	28	70	158
Basement	1,272	70	19,798
Bathroom Closet	10	70	60
CB Closet	17	70	95
C-Bedroom	172	70	3,395
Half Basement	134	70	3,952
Hallway	37	70	214
K-Bedroom	124	70	1,683
Kitchen	281	70	4,965
Laundry	63	70	678
Living Room	325	70	4,736
LRC	8	70	47
Main Bathroom	49	70	898
Master Bedroom	205	70	4,425
MB Closet-1	15	70	88
MB Closet-2	16	70	361
Toilet Rm.	9	70	54

Cooling Zones

Zone	Area	Room Temp	AED	Sensible Load
C1	406	75	NO	5,508
C2	421	75	NO	4,533
C3	236	75	NO	3,110
C4	124	75	NO	1,963

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C5	188	75	NO	2,570
C6	1,407	75	NO	6,056

(Peak Load Procedure)

Cooling Rooms

Room	Area	Room Temp	AED	Sensible Load
Back Foyer	16	75	YES	291
Back Foyer	28	75	YES	130
Basement	1,272	75	NO	4,960
Bathroom Closet	10	75	YES	49
CB Closet	17	75	YES	78
C-Bedroom	172	75	NO	2,492
Half Basement	134	75	YES	1,096
Hallway	37	75	YES	176
K-Bedroom	124	75	NO	1,963
Kitchen	281	75	NO	4,139
Laundry	63	75	YES	865
Living Room	325	75	NO	3,407
LRC	8	75	YES	39
Main Bathroom	49	75	NO	901
Master Bedroom	205	75	NO	2,884
MB Closet-1	15	75	YES	72
MB Closet-2	16	75	YES	154
Toilet Rm.	9	75	YES	45

(Peak Load Procedure)

Warnings

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