

*499 Jay Windom Martin Residence Hvac Design
HVAC Load Calculations*

for

499 Jay Windom Martin Residence
6406 Westover Dr. Granbury, TX.



Prepared By:

499 Jay Windom Martin Residence
6406 Westover Dr. Granbury, TX.

Monday, October 13, 2025



Project Report

General Project Information

Project Filename: C:\Users\User\AppData\Local\Elite Software\Rhvac 10\499 Jay Windom RESIDENCE GREEN HOUSE.r10
 Project Title: 499 Jay Windom Martin Residence Hvac Design
 Designed By: Engr Rahaman
 Project Date: Friday, October 22, 2025
 Client Address: 499 Jay Windom Martin Residence
 Client City: 6406 Westover Dr. Granbury, TX.
 Company Address: 499 Jay Windom Martin Residence
 Company City: 6406 Westover Dr. Granbury, TX.
 Permit Number(s): HV2025001

Design Data

Reference City: Fort Worth Carswell AFB, Texas
 Building Orientation: Front door faces North
 Daily Temperature Range: Medium
 Latitude: 32 Degrees
 Elevation: 650 ft.
 Altitude Factor: 0.977

	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	40	20.42	0%	30%	72	46.90
Summer:	100	74	30%	50%	75	21

Check Figures

Total Building Supply CFM:	788	CFM Per Square ft.:	1.752
Square ft. of Room Area:	450	Square ft. Per Ton:	163
Volume (ft³) (Above Grade):	3,600		
Volume (ft³) (Total):	3,600		

Building Loads

Total Heating Required Including Ventilation Air:	35,095 Btuh	35.095 MBH
Total Sensible Gain:	21,240 Btuh	64 %
Total Latent Gain:	11,947 Btuh	36 %
Total Cooling Required Including Ventilation Air:	33,187 Btuh	2.77 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.
 Calculations are performed per ACCA Manual J 8th Edition, Version 2.50, and ACCA Manual D.
 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 according to the manufacturer's performance data at your design conditions.



Load Preview Report

Scope	Has AED	Net Ton	ft. ² /Ton	Area	Sen Gain	Lat Gain	Net Gain	Sen Loss	Min Htg CFM	Min Clg CFM	Sys Htg CFM	Sys Clg CFM	Sys Act CFM	
Building		2.77	163	450	21,240	11,947	33,187	35,095	393	788	393	788	788	
System 1 Main Floor	Yes	2.77	163	450	21,240	11,947	33,187	35,095	393	788	393	788	788	10x15
Ventilation					4,298	5,658	9,956	5,501			400	400	400	
Humidification								12,458						
Zone 1				450	16,942	6,288	23,231	17,135	393	788	393	788	788	10x15
1-Second Floor Green House				450	16,942	6,288	23,231	17,135	393	788	393	788	788	1-14



Duct Size Preview

Room or Duct Name	Source	Minimum Velocity	Maximum Velocity	Rough Factor	Design L/100	SP Loss	Duct Velocity	Duct Length	Htg Flow	Clg Flow	Act. Flow	Duct Size	Reg Size
System 1													
Supply Runouts													
Zone 1													
1-Second Floor Green House	Built-In	0	750	0.01	0.1		737.6		393	788	788	1-14	
Other Ducts in System 1													
Supply Main Trunk	Built-In	0	900	0.003	0.1		756.9		393	788	788	10x15	

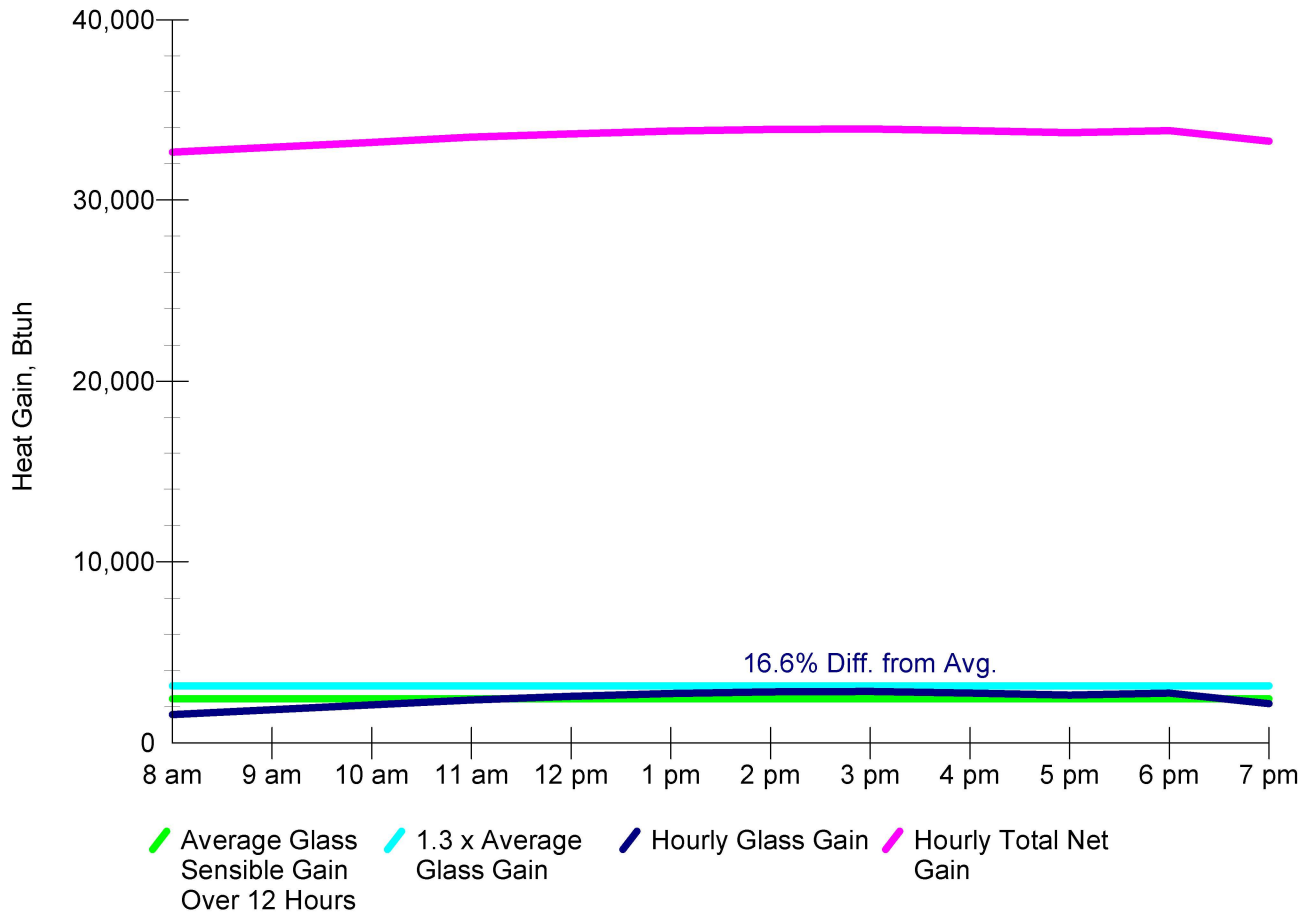
Summary

System 1
Heating Flow: 393
Cooling Flow: 788



System 1 - Main Floor - Adequate Exposure Diversity Test

Test For Adequate Exposure Diversity



AED Calculation Summary

--- SYSTEM HAS ADEQUATE EXPOSURE DIVERSITY. ---

System is on N, E, S, W rosette.

Peak load exceeds 12-hour average load by 16.6%.

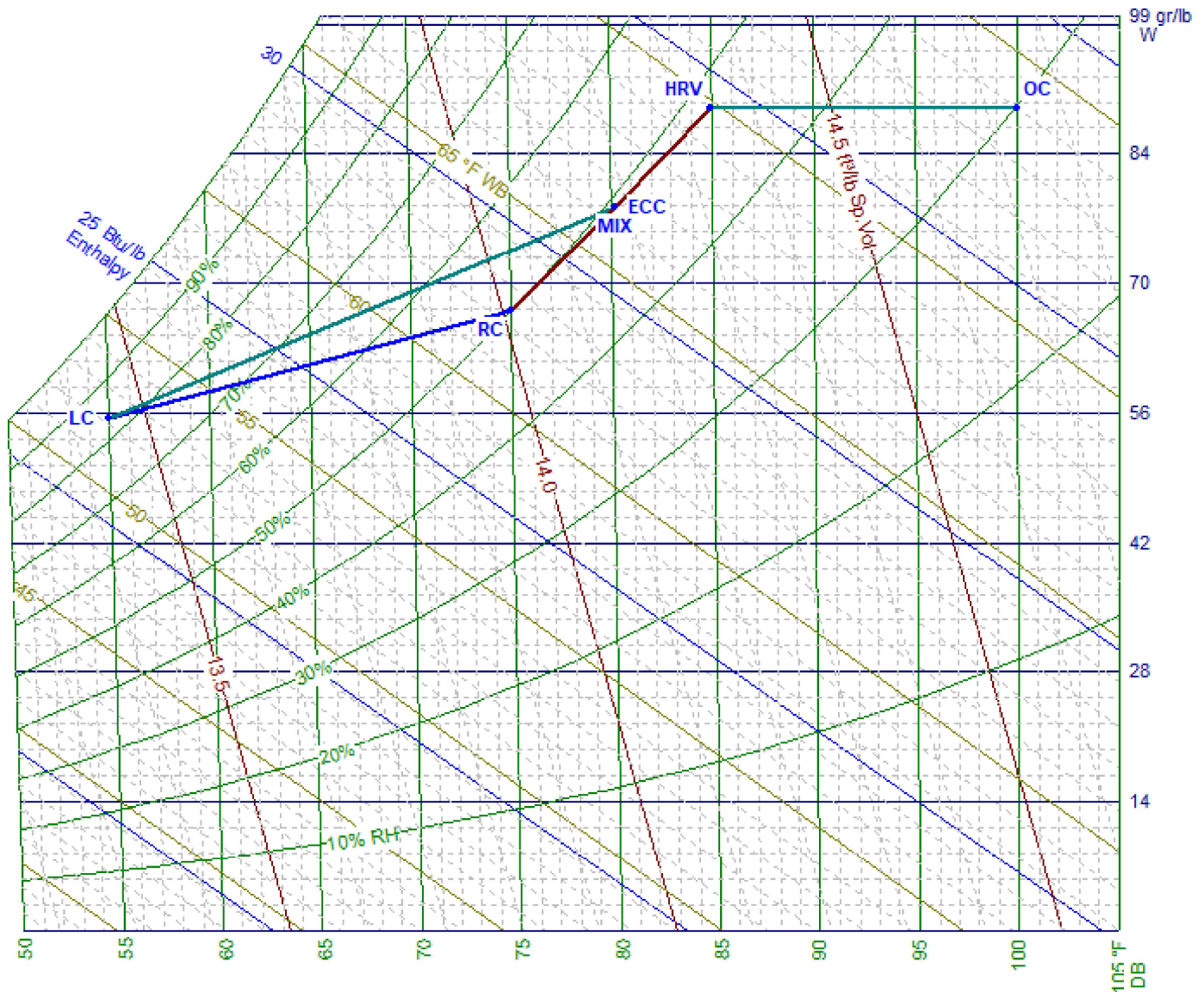
AED Excursion (amount by which peak exceeds 1.3 x average): 0 Btuh

Definition: A system has adequate exposure diversity if the peak-hour glass load for the entire conditioned space does not exceed the average glass load for the entire conditioned space by more than 30 percent.



System 1 - Main Floor - Psychrometric Chart

Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	75	62.4	OC	Outdoor Condition	100	74
LC	Leaving Coil Condition	55	52.2	ECC	Entering Coil Condition	80.2	66.4
SD	Supply Duct Gain	n/a	n/a	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	n/a	n/a	MIX	Mixed Air Point	80.2	66.4
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	85	69.8				





Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
1G-cm-s: Glazing-Double pane with storm, clear, metal frame no break, U-value 0.55, SHGC 0.62	80	1,408	0	2,122	2,122
11F: Door-Wood - Solid Core With Metal Storm, U-value 0.28	48	430	0	484	484
Frame wall-R-23: Wall-Frame, Custom, R-23 insulation, U-value 0.043	312	433	0	298	298
16A-38: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Unvented Attic, No Radiant Barrier, Any Roofing Material, Any Roof Color, R-38 insulation, U-value 0.026	450	374	0	936	936
19A1-11op: Floor-Over enclosed crawl space, No insulation on exposed walls, sealed or vented space, spray foam insulation, passive, R-11 open cell 1/2 lb. spray foam, 3 inches in 2 x 10 joist cavity, U-value 0.072	450	738	0	576	576
Subtotals for structure:		3,383	0	4,416	4,416
People:	1		230	300	530
Equipment:			400	800	1,200
Lighting:	200			682	682
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 400, Summer CFM: 400		13,752	5,658	10,744	16,403
Ventilation: Winter CFM: 400, Summer CFM: 400		5,501	5,658	4,298	9,956
Humidification (Winter) 33.97 gal/day :		12,458	0	0	0
Total Building Load Totals:		35,095	11,947	21,240	33,187

Check Figures

Total Building Supply CFM:	788	CFM Per Square ft.:	1.752
Square ft. of Room Area:	450	Square ft. Per Ton:	163
Volume (ft³) (Above Grade):	3,600		
Volume (ft³) (Total):	3,600		

Building Loads

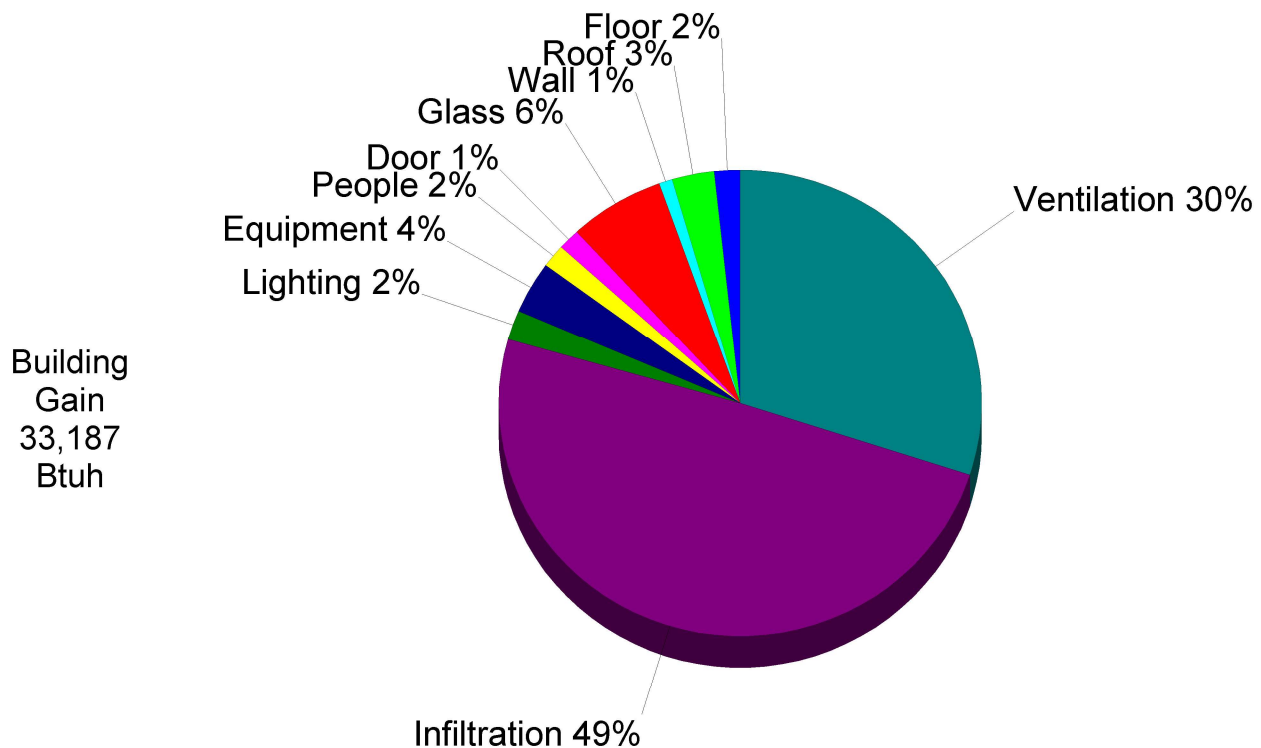
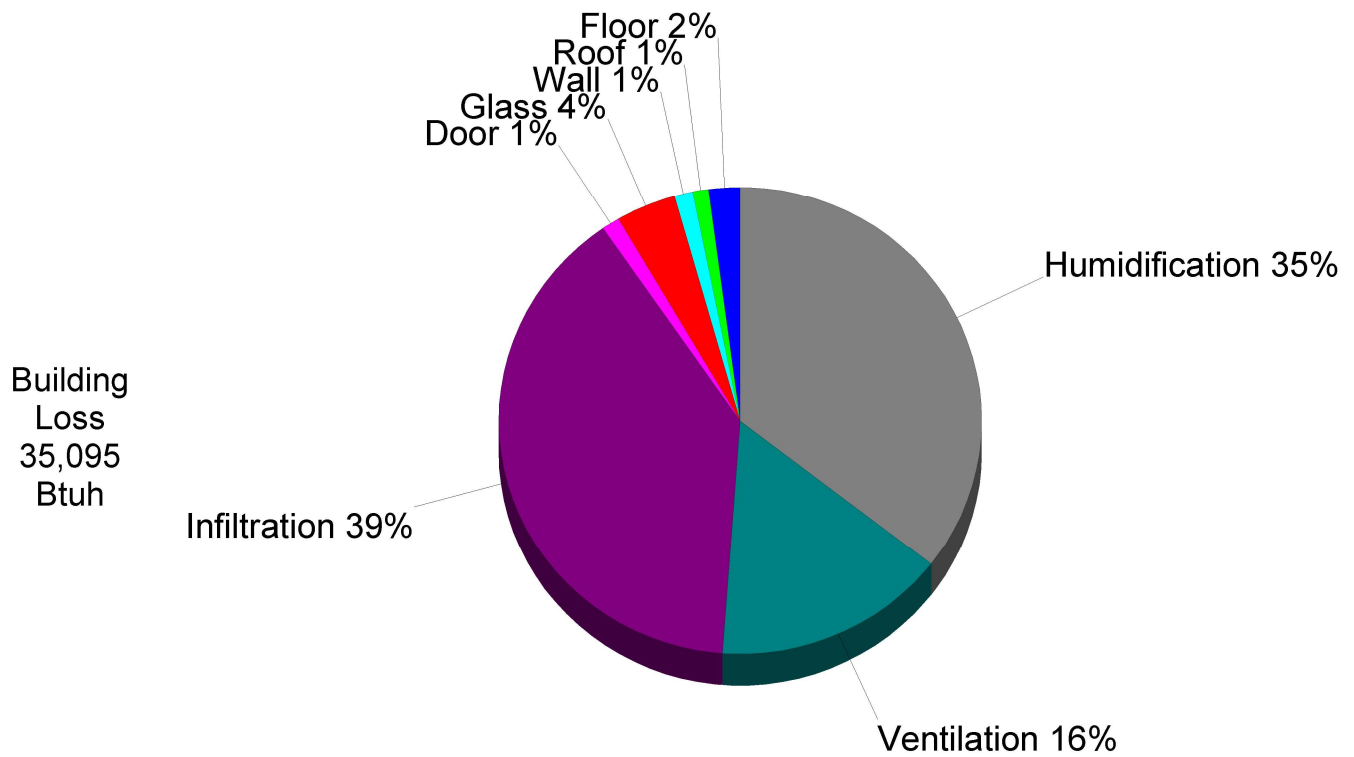
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Total Cooling Required Including Ventilation Air:	33,187 Btuh	2.77 Tons (Based On Sensible + Latent)

Notes

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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 according to the manufacturer's performance data at your design conditions.

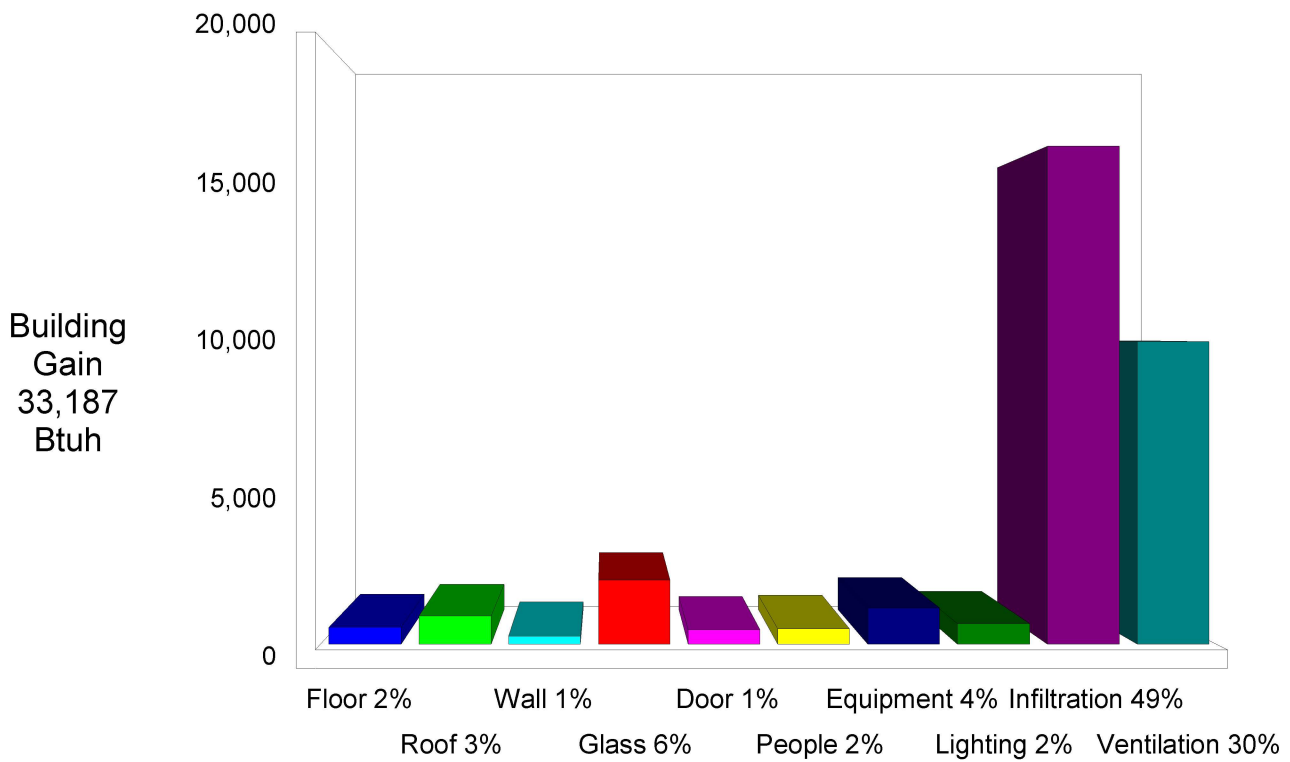
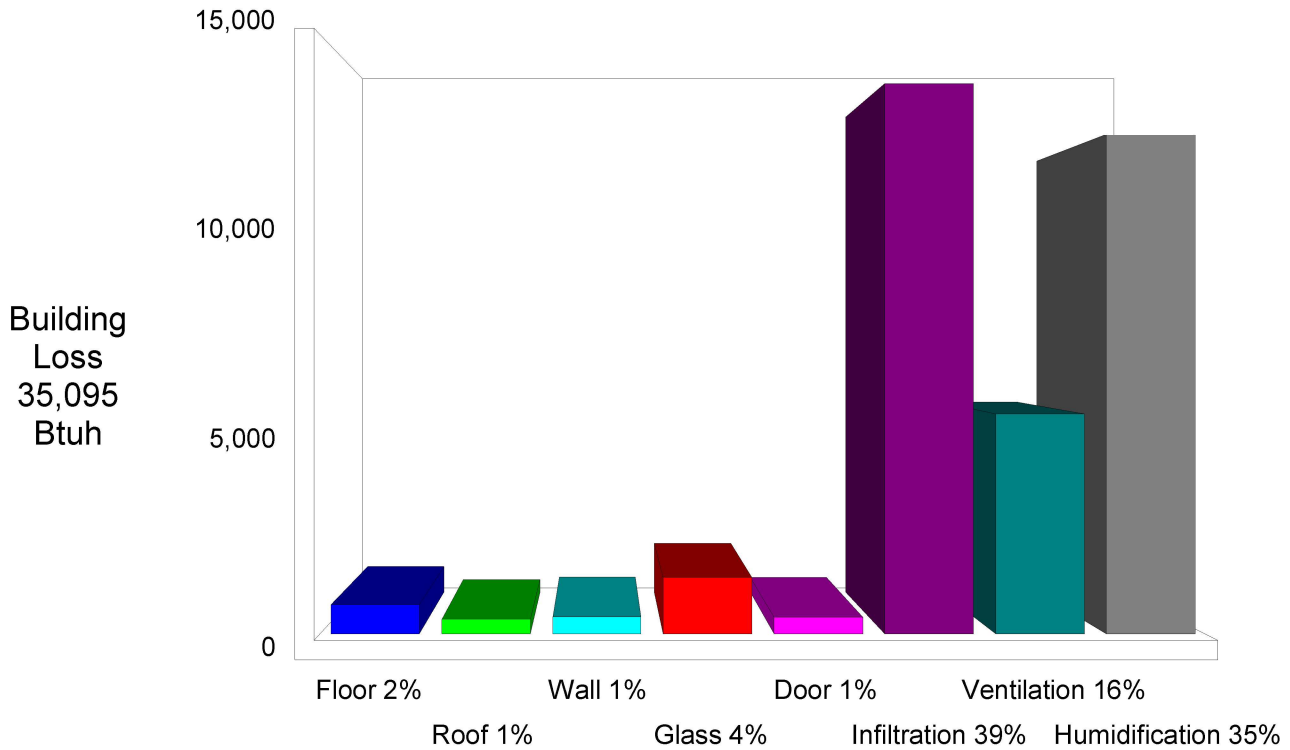


Building Pie Chart





Building Bar Graph



**System 1 Main Floor Summary Loads**

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
1G-cm-s: Glazing-Double pane with storm, clear, metal frame no break, U-value 0.55, SHGC 0.62	80	1,408	0	2,122	2,122
11F: Door-Wood - Solid Core With Metal Storm, U-value 0.28	48	430	0	484	484
Frame wall-R-23: Wall-Frame, Custom, R-23 insulation, U-value 0.043	312	433	0	298	298
16A-38: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Unvented Attic, No Radiant Barrier, Any Roofing Material, Any Roof Color, R-38 insulation, U-value 0.026	450	374	0	936	936
19A1-11op: Floor-Over enclosed crawl space, No insulation on exposed walls, sealed or vented space, spray foam insulation, passive, R-11 open cell 1/2 lb. spray foam, 3 inches in 2 x 10 joist cavity, U-value 0.072	450	738	0	576	576
Subtotals for structure:		3,383	0	4,416	4,416
People:	1		230	300	530
Equipment:			400	800	1,200
Lighting:	200			682	682
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 400, Summer CFM: 400		13,752	5,658	10,744	16,403
Ventilation: Winter CFM: 400, Summer CFM: 400		5,501	5,658	4,298	9,956
Humidification (Winter) 33.97 gal/day :		12,458	0	0	0
System 1 Main Floor Load Totals:		35,095	11,947	21,240	33,187

Check Figures

Supply CFM:	788	CFM Per Square ft.:	1.752
Square ft. of Room Area:	450	Square ft. Per Ton:	163
Volume (ft ³) (Above Grade):	3,600		
Volume (ft ³) (Total):	3,600		

System Loads

Total Heating Required Including Ventilation Air:	35,095 Btuh	35.095 MBH
Total Sensible Gain:	21,240 Btuh	64 %
Total Latent Gain:	11,947 Btuh	36 %
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Notes

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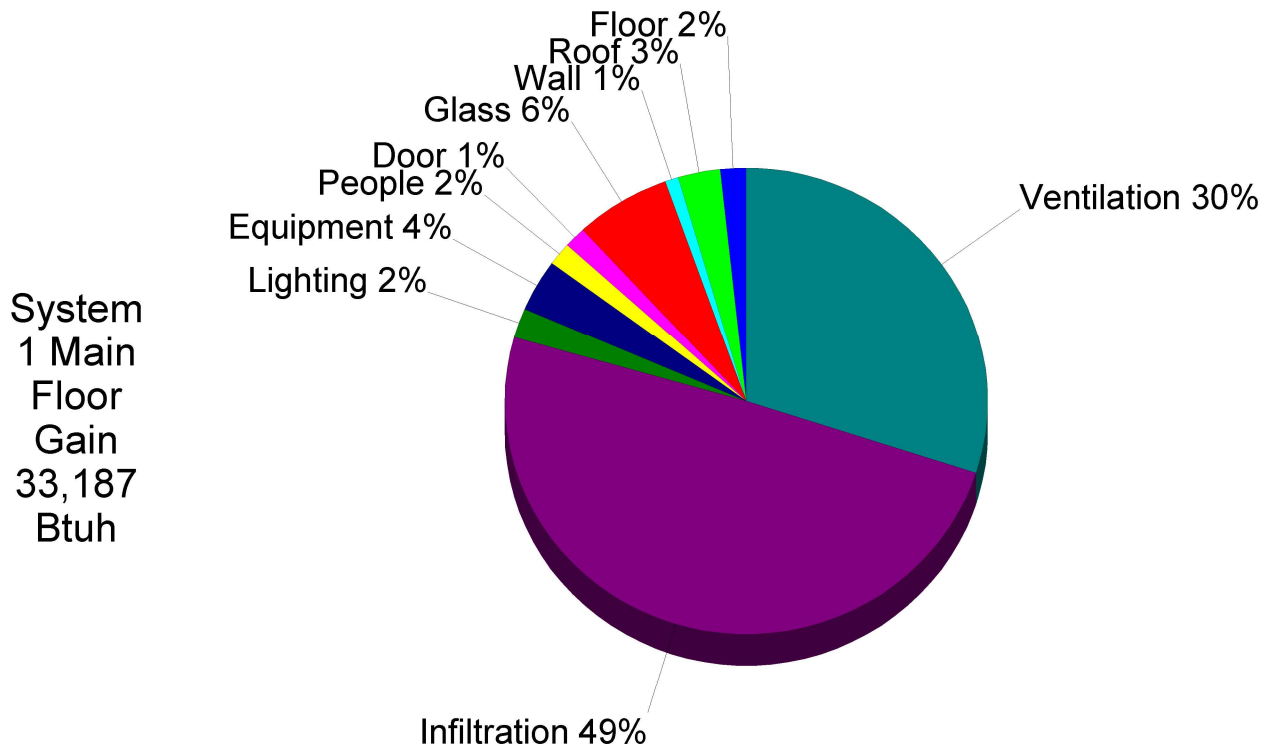
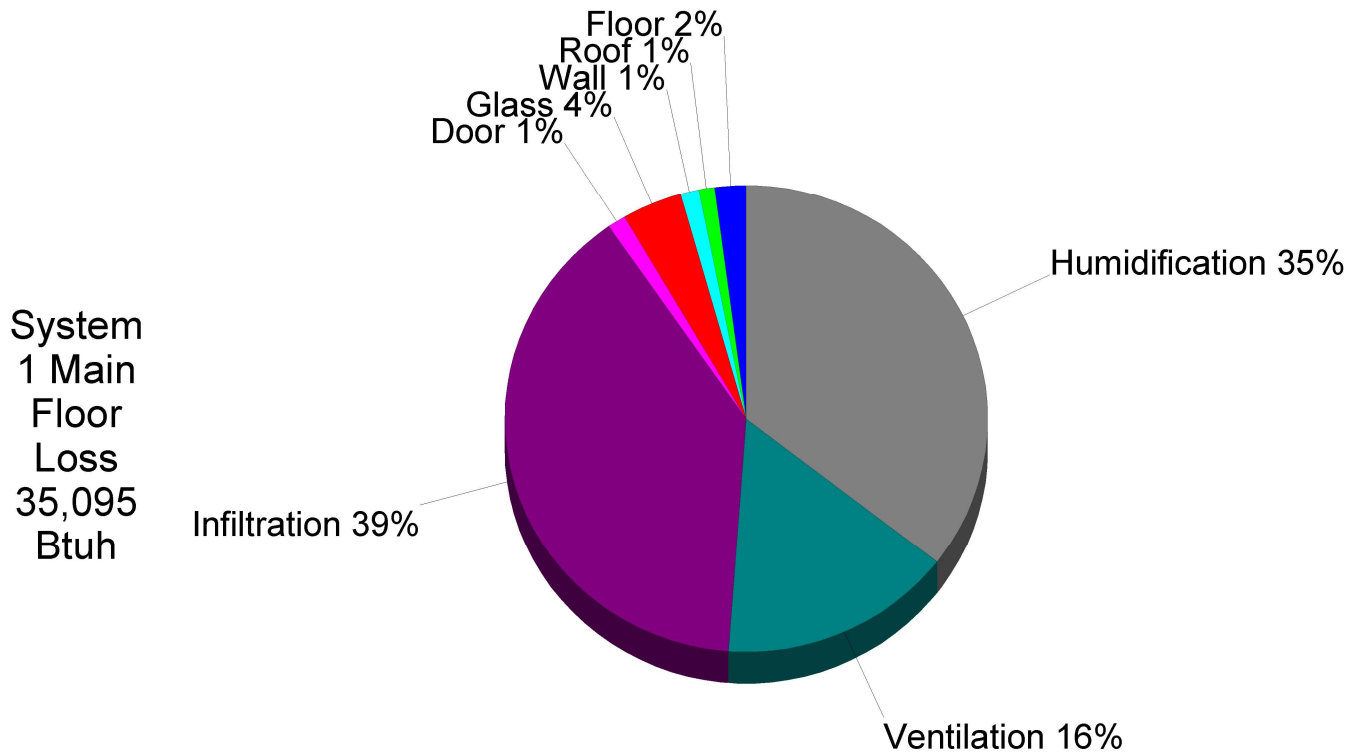
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All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



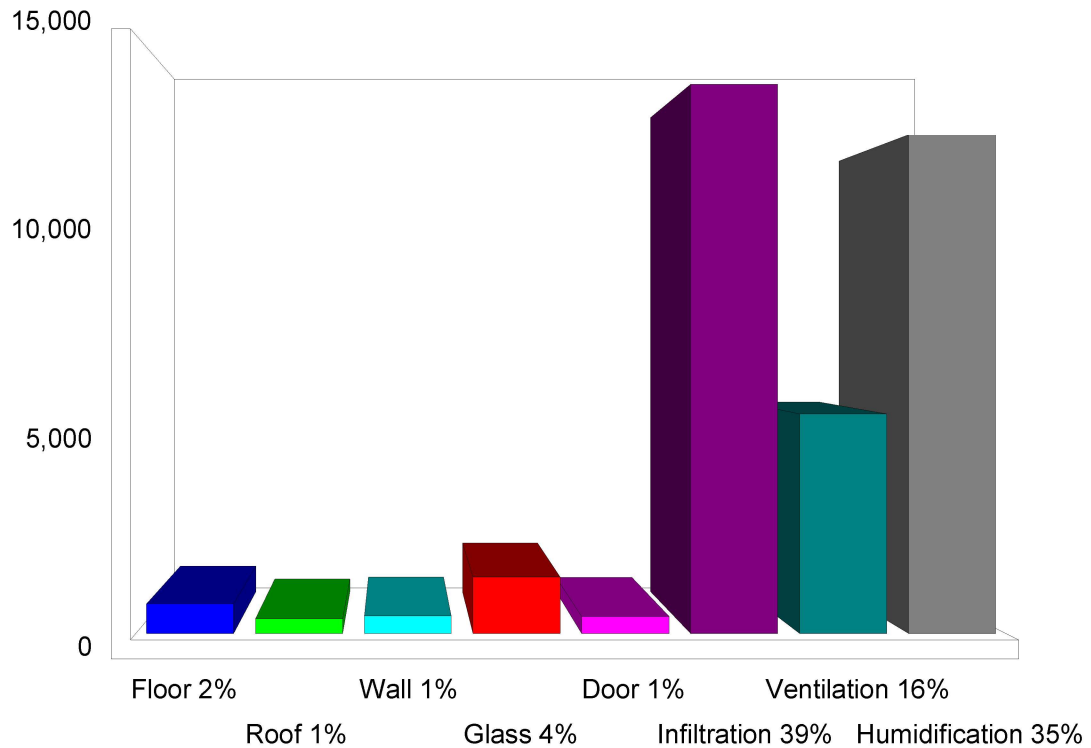
System 1 Main Floor Pie Chart



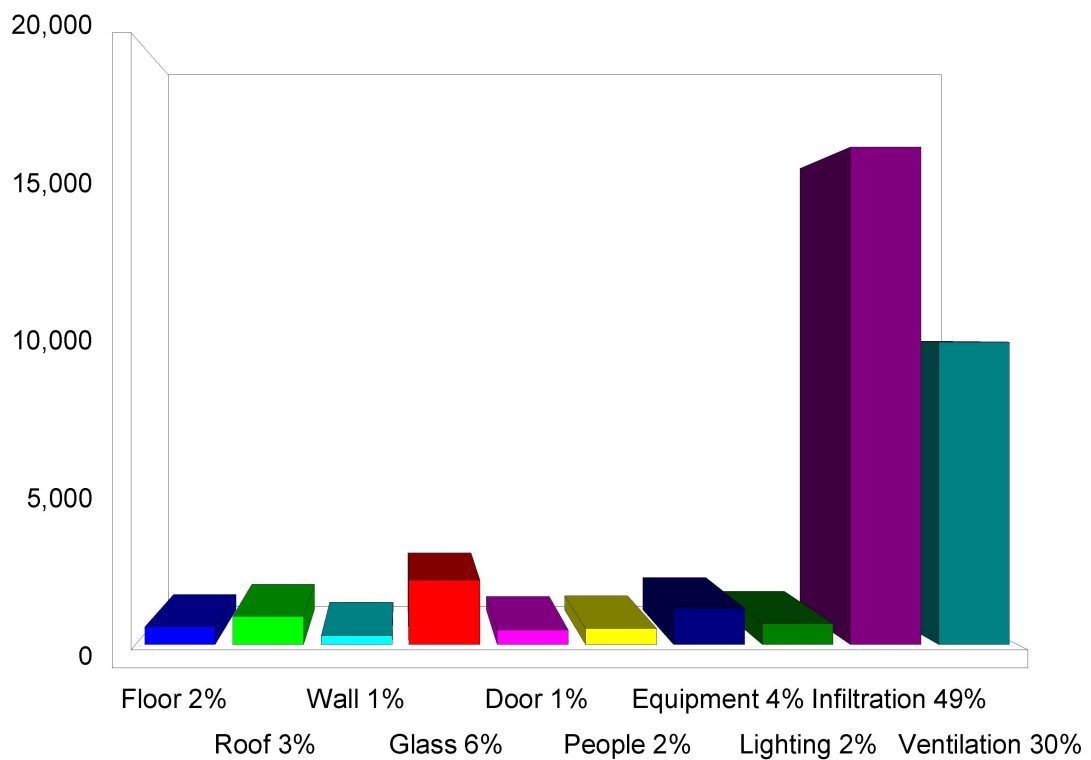


System 1 Main Floor Bar Graph

System
1 Main
Floor
Loss
35,095
Btuh



System
1 Main
Floor
Gain
33,187
Btuh





Equipment Data - System 1 - Main Floor

Cooling

System Type:	Standard Air Conditioner
Outdoor Model:	PACKAGE UNIT MODEL :GPG1336090M418
Outdoor Manufacturer:	GOODMAN
Description:	0
Nominal Capacity:	36,000
Adjusted Capacity:	36000
Adjusted Sensible Capacity:	36000
Efficiency:	16 SEER

Heating

System Type:	Electric Resistance
Model:	PACKAGE UNIT MODEL :GPG1336090M418
Manufacturer:	GOODMAN
Description:	0
Capacity:	36,000
Efficiency:	0%

This system's equipment was selected in accordance with ACCA Manual S.

Manual S equipment sizing data: SODB: 100F, SOWB: 74F, WODB: 40F, SIDB: 75F, SIRH: 50%, WIDB: 72F, Sen. gain: 21,240 Btuh, Lat. gain: 11,947 Btuh, Sen. loss: 35,095 Btuh, Entering clg. coil DB: 87.7F, Entering clg. coil WB: 68.7F, Entering htg. coil DB: 59F, Clg. coil TD: 20F, Htg. coil TD: 70F, Req. clg. airflow: 788 CFM, Req. htg. airflow: 393 CFM



Manual S Performance Data - System 1 - Main Floor

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	100	Sensible Gain:	21.240
Outdoor Wet Bulb:	74	Latent Gain:	11.947
Indoor Dry Bulb:	75	Total Gain:	33.187
Indoor RH:	50	Load SHR:	0.64
Supply Airflow:	779	Entering Dry Bulb:	87.9
		Entering Wet Bulb:	68.7

Heating:

Outdoor Dry Bulb:	40	Sensible Loss:	35.095
Indoor Dry Bulb:	72	Entering Dry Bulb:	59.0
Indoor RH:	30	Supply Airflow:	393

Equipment Performance Data at System Design Conditions

This system's equipment was selected in accordance with ACCA Manual S.

Cooling:

Model Type: Standard Air Conditioner, Model: PACKAGE UNIT MODEL :GPG1336090M418
Nominal Capacity: 36.000, Manufacturer: GOODMAN

Entered Interpolation Data:

EWB °F	Air Flow CFM	ODB °F	Total Capacity MBtuh	Power Input kW	EDB 87.9 °F	
					S/T	Sensible Capacity MBtuh
68.73	779	100	60	0	1	60

Interpolation Results:

		<u>Load</u>	<u>Percent of Load</u>
Sensible Capacity:	60.000	21.240	282%
Latent Capacity:	0.000	11.947	0%
Total Capacity:	60.000	33.187	181%

Heating:

Model Type: Electric Resistance, Model: PACKAGE UNIT MODEL :GPG1336090M418, Nominal Capacity: 36.000,
Manufacturer: GOODMAN

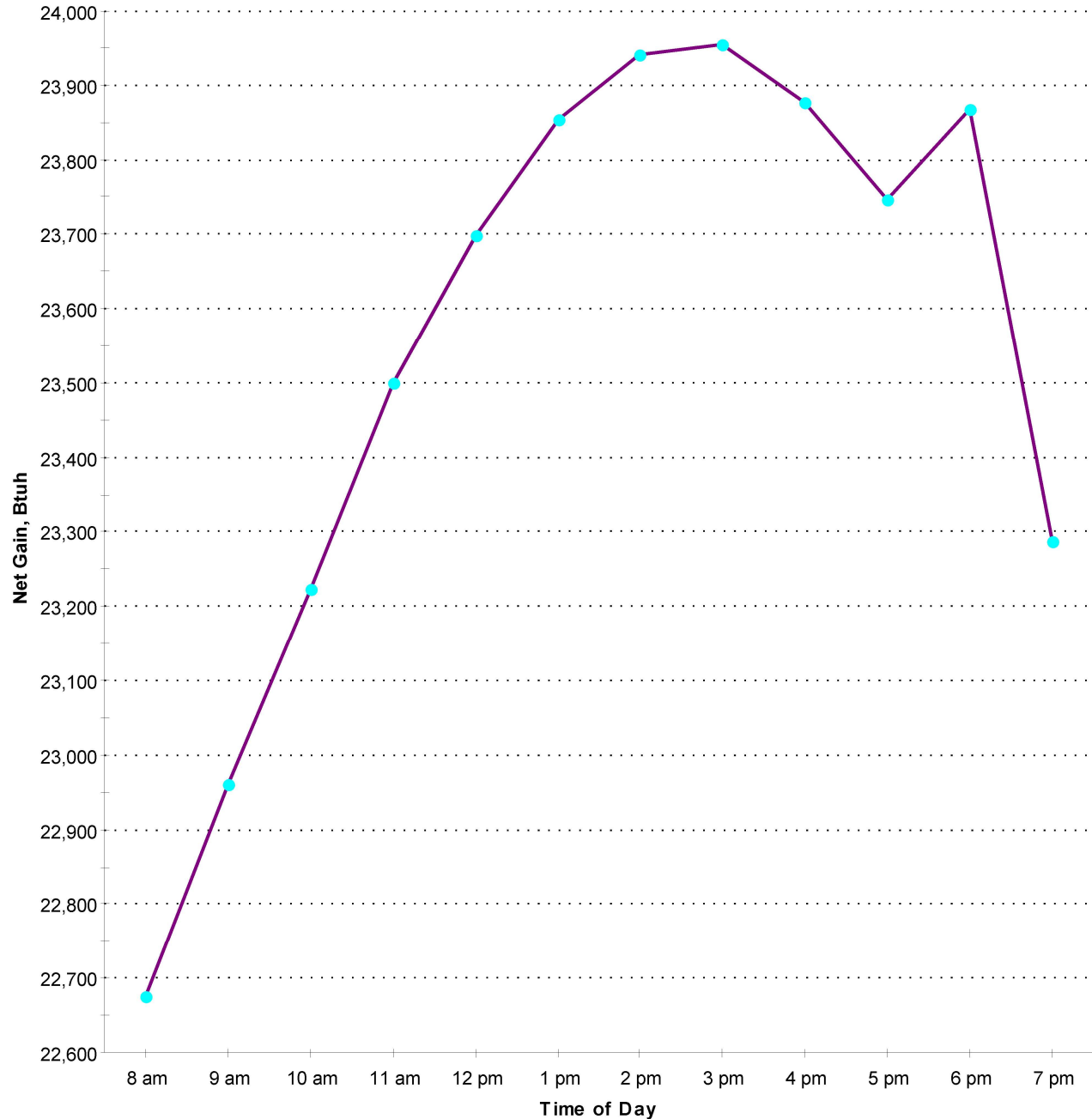
Results:

		<u>Load</u>	<u>Percent of Load</u>
Heating Capacity:	36.000	35.095	103%



System 1 - Hourly Room Net Gain

System 1 Hourly Room Net Gain



—●— Second Floor Green House (9%)

Note: Glass gain as a percent of net gain is shown in parenthesis. Although floor, roof, wall and door gains also vary throughout the day, for this graph and in Manual J glass gains are the only ones that fluctuate.

**System 1, Zone 1 Summary Loads (Average Load Procedure for Rooms)**

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
1G-cm-s: Glazing-Double pane with storm, clear, metal frame no break, U-value 0.55, SHGC 0.62	80	1,408	0	2,122	2,122
11F: Door-Wood - Solid Core With Metal Storm, U-value 0.28	48	430	0	484	484
Frame wall-R-23: Wall-Frame, Custom, R-23 insulation, U-value 0.043	312	433	0	298	298
16A-38: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Unvented Attic, No Radiant Barrier, Any Roofing Material, Any Roof Color, R-38 insulation, U-value 0.026	450	374	0	936	936
19A1-11op: Floor-Over enclosed crawl space, No insulation on exposed walls, sealed or vented space, spray foam insulation, passive, R-11 open cell 1/2 lb. spray foam, 3 inches in 2 x 10 joist cavity, U-value 0.072	450	738	0	576	576
Subtotals for structure:		3,383	0	4,416	4,416
People:	1		230	300	530
Equipment:			400	800	1,200
Lighting:	200			682	682
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 400, Summer CFM: 400		13,752	5,658	10,744	16,403
System 1, Zone 1 Load Totals:		17,135	6,288	16,942	23,231

Check Figures

Supply CFM:	788	CFM Per Square ft.:	1.752
Square ft. of Room Area:	450	Square ft. Per Ton:	232
Volume (ft ³) (Above Grade):	3,600		
Volume (ft ³) (Total):	3,600		

Zone Loads

Total Heating Required:	17,135 Btuh	17.135 MBH
Total Sensible Gain:	16,942 Btuh	73 %
Total Latent Gain:	6,288 Btuh	27 %
Total Cooling Required:	23,231 Btuh	1.94 Tons (Based On Sensible + Latent)

Notes

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Calculations are performed per ACCA Manual J 8th Edition, Version 2.50, and ACCA Manual D.

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Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.



Detailed Room Loads - Room 1 - Second Floor Green House (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	10.0 ft.	System Number:	1
Room Width:	45.0 ft.	Zone Number:	1
Area:	450.0 sq.ft.	Supply Air:	788 CFM
Ceiling Height:	8.0 ft.	Supply Air Changes:	13.1 AC/hr
Volume:	3,600 cu.ft.	Req. Vent. Clg:	400 CFM
Number of Registers:	1	Actual Winter Vent.:	400 CFM
Runout Air:	788 CFM	Percent of Supply.:	51 %
Runout Duct Size:	14 in.	Actual Summer Vent.:	400 CFM
Runout Air Velocity:	738 ft./min.	Percent of Supply:	51 %
Runout Air Velocity:	738 ft./min.	Actual Winter Infil.:	400 CFM
Actual Loss:	0.107 in.wg./100 ft.	Actual Summer Infil.:	400 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 45 X 8	232	0.043	1.4	322	1.0	0	222
E -Wall-Frame wall-R-23 10 X 8	80	0.043	1.4	111	1.0	0	76
N -Door-11F 3 X 8	24	0.280	9.0	215	10.1	0	242
N -Door-11F 3 X 8	24	0.280	9.0	215	10.1	0	242
N -Gls-1G-cm-s shgc-0.62 100%S	80	0.550	17.6	1,408	26.5	0	2,122
UP-Ceil-16A-38 10 X 45	450	0.026	0.8	374	2.1	0	936
Floor-19A1-11op 45 X 10	450	0.072	1.6	738	1.3	0	576
Subtotals for Structure:				3,383		0	4,416
Infil.: Win.: 400.0, Sum.: 400.0	440		31.256	13,752	24.418	5,658	10,744
People: 230 lat/per, 300 sen/per:	1					230	300
Equipment:						400	800
Lighting:	200						682
Room Totals:				17,135		6,288	16,942



System 1 Room Load Summary

No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
1	Second Floor Green House	450	17,135	393	1-14	738	16,942	6,288	788	788
	Ventilation		5,501				4,298	5,658		
	Humidification		12,458							
	System 1 total	450	35,095	393			21,240	11,947	788	788
System 1 Main Trunk Size:			10x15 in.							
Velocity:			757 ft./min							
Loss per 100 ft.:			0.100 in.wg							

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	2.77	64% / 36%	21,240	11,947	33,187
Actual:	3.00				36,000

Equipment Data

	Heating System	Cooling System
Type:	Electric Resistance	Standard Air Conditioner
Model:	PACKAGE UNIT MODEL :GPG1336090M418	PACKAGE UNIT MODEL :GPG1336090M418
Indoor Model:		
Brand:		
Description:	0	0
Efficiency:	0%	16 SEER
Sound:	0	0
Capacity:	36,000 Btuh	36,000 Btuh
Adjusted Capacity:	n/a	36,000 Btuh
Sensible Capacity:	n/a	0 Btuh
Adjusted Sensible Capacity:	n/a	36,000 Btuh
Latent Capacity:	n/a	0 Btuh

This system's equipment was selected in accordance with ACCA Manual S.

Manual S equipment sizing data: SODB: 100F, SOWB: 74F, WODB: 40F, SIDB: 75F, SIRH: 50%, WIDB: 72F, Sen. gain: 21,240 Btuh, Lat. gain: 11,947 Btuh, Sen. loss: 35,095 Btuh, Entering clg. coil DB: 87.7F, Entering clg. coil WB: 68.7F, Entering htg. coil DB: 59F, Clg. coil TD: 20F, Htg. coil TD: 70F, Req. clg. airflow: 788 CFM, Req. htg. airflow: 393 CFM



Building Rotation Duct Sizes

Room or Duct Name	Direction Front door Faces																Max Duct Size
	N		NE		E		SE		S		SW		W		NW		
	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	
System 1																	
Supply Runouts																	
Zone 1																	
1-Second Floor Green House	393	788	393	903	393	940	393	850	393	805	393	938	393	1,054	393	981	1–17
Other Ducts in System																	
Supply Main Trunk	393	788	393	903	393	940	393	850	393	805	393	938	393	1,054	393	981	11x16
Bldg. High Dir.: Southwest																	
Sensible Gain: 24,454																	
Latent Gain: 11,947																	

Summary

System 1

Heating Flow: 393

Cooling Flow: 788



Building Rotation Report

All rotation degree values in this report are clockwise with respect to the project's original orientation.
Building orientation as entered (zero degrees rotation): Front door faces North

Individual Rooms

Rm. No.	Room Name	0° Rot. CFM	45° Rot. CFM	90° Rot. CFM	135° Rot. CFM	180° Rot. CFM	225° Rot. CFM	270° Rot. CFM	315° Rot. CFM	High Duct Size
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System 1:

Zone 1:

1	Second Floor Green House	788	903	940	850	805	938	*1,054	981	1--17
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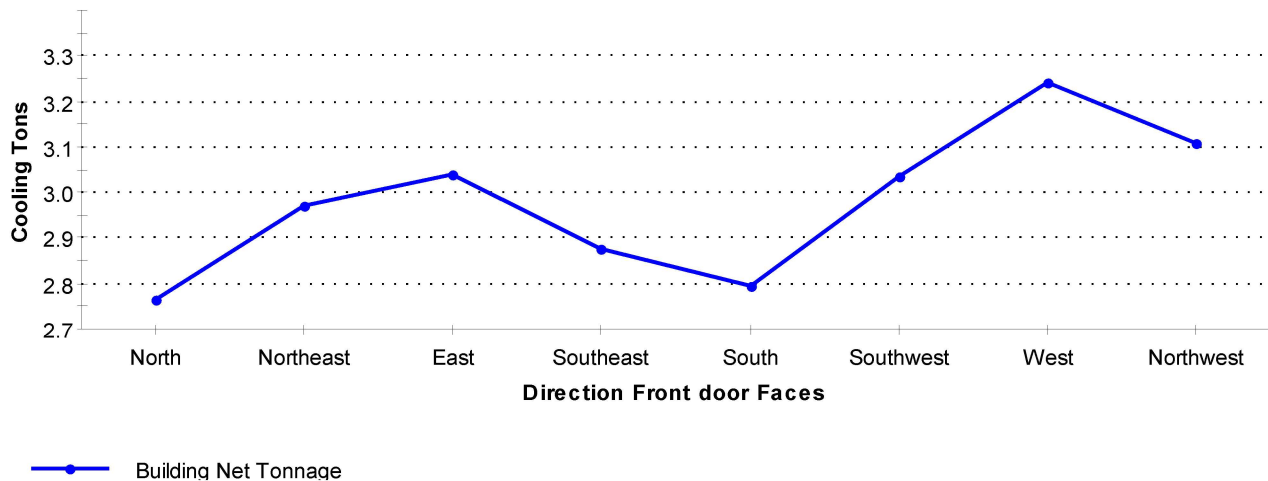
* Indicates highest CFM of all rotations.

Whole Building

Rotation Degrees	Front door Faces	Supply CFM	Sensible Gain	Latent Gain	Net Tons
0°	North	788	21,240	*11,947	2.77
45°	Northeast	903	23,707	11,947	2.97
90°	East	940	24,501	11,947	3.04
135°	Southeast	850	22,564	11,947	2.88
180°	South	805	21,605	11,947	2.80
225°	Southwest	938	24,454	11,947	3.03
270°	West	*1,054	*26,940	11,947	*3.24
315°	Northwest	981	25,371	11,947	3.11

* Indicates highest value of all rotations.

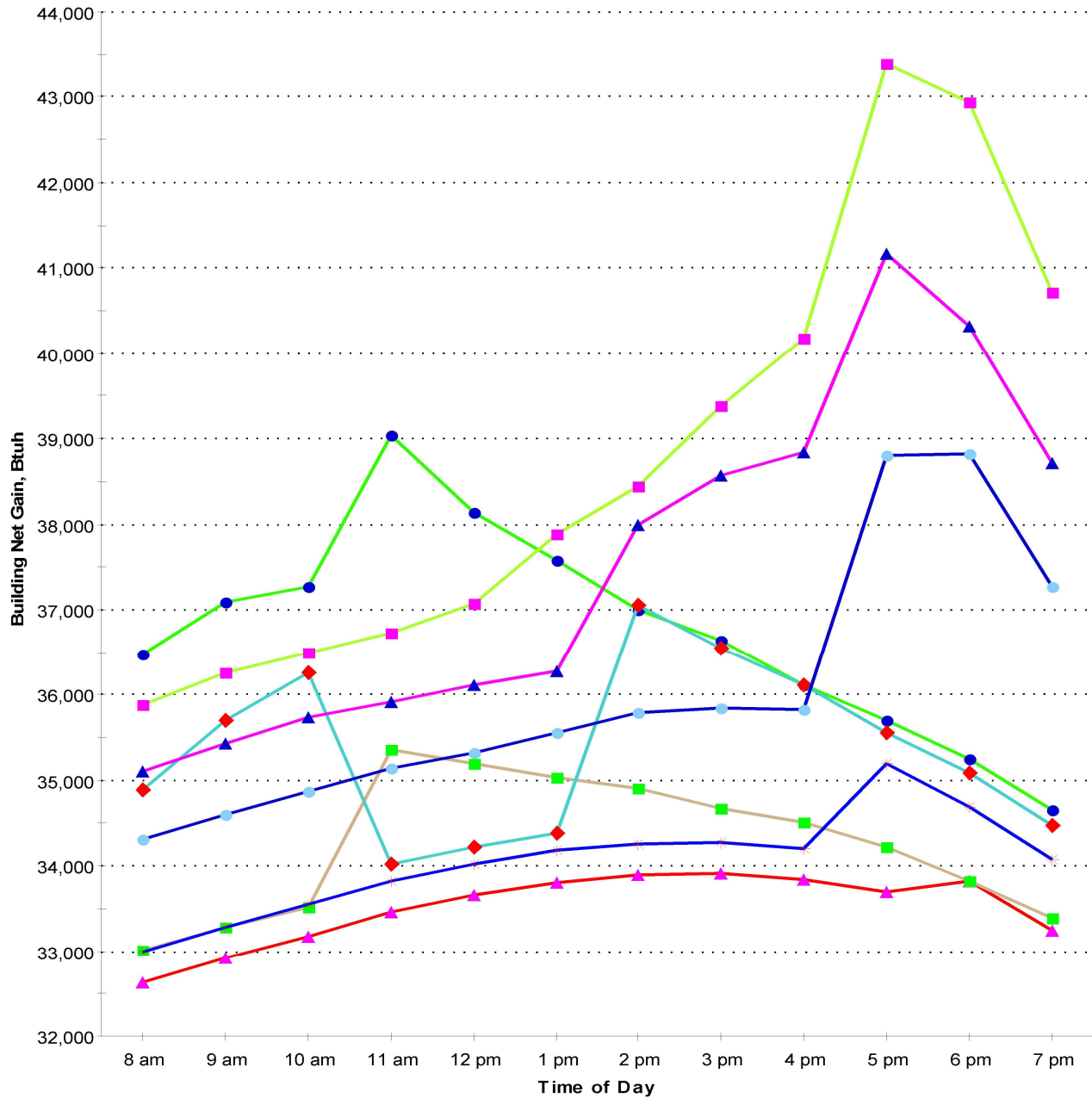
Building Rotation Tonnage





Building Rotation Report (cont'd)

Building Rotation Hourly Net Gain



- Front door faces North
- Front door faces Northeast
- Front door faces East
- Front door faces Southeast
- Front door faces South
- Front door faces Southwest
- Front door faces West
- Front door faces Northwest



Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor John Doe
Mechanical License # 12345
Building Plan # _____
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):	Yes ☐	No ☒
or MJ1AE Form ² (and supporting worksheets):	Yes ☐	No ☒
OEM performance data (heating, cooling, blower):	Yes ☐	No ☒
Manual D Friction Rate Worksheet:	Yes ☐	No ☒
Duct distribution system sketch:	Yes ☐	No ☒

ATTACHED

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature 40 °F
Indoor temperature 72 °F
Total heat loss 35095 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 21240 Btu/h
Latent heat gain 11947 Btu/h
Total heat gain 33187 Btu/h

Building Construction Information

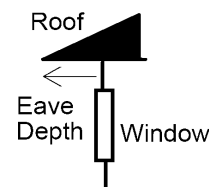
Building

Orientation (Front door faces) North
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 450 Sq Ft
Number of occupants 1

Windows

Eave overhang depth 4 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type Electric Resistance
Furnace, Heat pump, Boiler, etc.

PACKAGE UNIT MODEL : GPG1336090M418

Heating output capacity 36000 Btu/h
Heat pumps - capacity at winter design outdoor conditions

Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.

PACKAGE UNIT MODEL : GPG1336090M418

Sensible cooling capacity 60000 Btu/h

Latent cooling capacity _____ Btu/h

Total cooling capacity 60000 Btu/h

Blower Data

Heating CFM 788 CFM

Cooling CFM 788 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM	Longest supply duct: _____ Ft	Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC	Longest return duct: _____ Ft	Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Component Pressure Losses (CPL) _____ IWC	Total Effective Length (TEL) _____ Ft	Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Available Static Pressure (ASP) _____ IWC	Friction Rate: _____ IWC	
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL		

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name John Doe

Date _____

Contractor's Signature John Doe

Reserved for use by County, Town, Municipality, or Authority having jurisdiction.

¹ The AHJ shall have the discretion to accept Required Attachments printed from approved ACCA software vendors, see list on page 2 of instructions.

² If abridged version of Manual J is used for load calculation, then verify residence meets requirements, see Abridged Edition Checklist on page 13 of instructions.



Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):	Yes ☐	No ☐
or MJ1AE Form ² (and supporting worksheets):	Yes ☐	No ☐
OEM performance data (heating, cooling, blower):	Yes ☐	No ☐
Manual D Friction Rate Worksheet:	Yes ☐	No ☐
Duct distribution system sketch:	Yes ☐	No ☐

ATTACHED

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature _____ °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature _____ °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

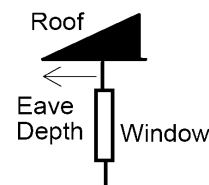
Orientation (Front door faces) _____
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms _____
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth _____ Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights _____



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type _____
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type _____
Air Conditioner, Heat pump, etc.
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM	Longest supply duct: _____ Ft	Duct Materials Used (circle) Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
External Static Pressure (ESP) _____ IWC	Longest return duct: _____ Ft	
Component Pressure Losses (CPL) _____ IWC	Total Effective Length (TEL) _____ Ft	Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Available Static Pressure (ASP) _____ IWC	Friction Rate: _____ IWC	

ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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² If abridged version of Manual J is used for load calculation, then verify residence meets requirements, see Abridged Edition Checklist on page 13 of instructions.



Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor John Doe
Mechanical License # 12345
Building Plan # _____
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):	Yes ☐	No ☒
or MJ1AE Form ² (and supporting worksheets):	Yes ☐	No ☒
OEM performance data (heating, cooling, blower):	Yes ☐	No ☒
Manual D Friction Rate Worksheet:	Yes ☐	No ☒
Duct distribution system sketch:	Yes ☐	No ☒

ATTACHED

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature 40 °F
Indoor temperature 72 °F
Total heat loss 35095 Btu/h

Summer Design Conditions

Outdoor temperature 100 °F
Indoor temperature 75 °F
Grains difference 21 Δ Gr @ 50 % Rh
Sensible heat gain 21240 Btu/h
Latent heat gain 11947 Btu/h
Total heat gain 33187 Btu/h

Building Construction Information

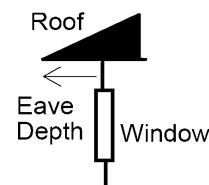
Building

Orientation (Front door faces) North
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms 0
Conditioned floor area 450 Sq Ft
Number of occupants 1

Windows

Eave overhang depth 4 Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights 0



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type Electric Resistance
Furnace, Heat pump, Boiler, etc.

PACKAGE UNIT MODEL : GPG1336090M418

Heating output capacity 36000 Btu/h
Heat pumps - capacity at winter design outdoor conditions

Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type Standard Air Conditioner
Air Conditioner, Heat pump, etc.

PACKAGE UNIT MODEL : GPG1336090M418

Sensible cooling capacity 60000 Btu/h

Latent cooling capacity _____ Btu/h

Total cooling capacity 60000 Btu/h

Blower Data

Heating CFM 788 CFM

Cooling CFM 788 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM	Longest supply duct: _____ Ft	Duct Materials Used (circle)
External Static Pressure (ESP) _____ IWC	Longest return duct: _____ Ft	Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Component Pressure Losses (CPL) _____ IWC	Total Effective Length (TEL) _____ Ft	Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Available Static Pressure (ASP) _____ IWC	Friction Rate: _____ IWC	

ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name John Doe

Date _____

Contractor's Signature John Doe

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² If abridged version of Manual J is used for load calculation, then verify residence meets requirements, see Abridged Edition Checklist on page 13 of instructions.



Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1.01
8 Mar 10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J1 Form (and supporting worksheets):	Yes ☐	No ☐
or MJ1AE Form ² (and supporting worksheets):	Yes ☐	No ☐
OEM performance data (heating, cooling, blower):	Yes ☐	No ☐
Manual D Friction Rate Worksheet:	Yes ☐	No ☐
Duct distribution system sketch:	Yes ☐	No ☐

ATTACHED

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature _____ °F
Indoor temperature _____ °F
Total heat loss _____ Btu/h

Summer Design Conditions

Outdoor temperature _____ °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu/h
Latent heat gain _____ Btu/h
Total heat gain _____ Btu/h

Building Construction Information

Building

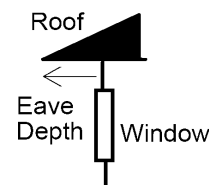
Orientation (Front door faces) _____
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms _____
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth _____ Ft
Internal shade _____
Blinds, drapes, etc _____
Number of skylights _____



HVAC EQUIPMENT SELECTION

Heating Equipment Data

Equipment type _____
Furnace, Heat pump, Boiler, etc.
Model _____
Heating output capacity _____ Btu/h
Heat pumps - capacity at winter design outdoor conditions
Auxiliary heat output capacity _____ Btu/h

Cooling Equipment Data

Equipment type _____
Air Conditioner, Heat pump, etc
Model _____
Sensible cooling capacity _____ Btu/h
Latent cooling capacity _____ Btu/h
Total cooling capacity _____ Btu/h

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow _____ CFM	Longest supply duct: _____ Ft	Duct Materials Used (circle) Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
External Static Pressure (ESP) _____ IWC	Longest return duct: _____ Ft	
Component Pressure Losses (CPL) _____ IWC	Total Effective Length (TEL) _____ Ft	Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify) _____
Available Static Pressure (ASP) _____ IWC	Friction Rate: _____ IWC	
ASP = ESP - CPL Friction Rate = (ASP × 100) ÷ TEL		

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

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² If abridged version of Manual J is used for load calculation, then verify residence meets requirements, see Abridged Edition Checklist on page 13 of instructions.



ENERGY STAR Single-Family New Homes

National HVAC Design Report, Version 3 / 3.1 / 3.2 (Rev. 13)¹

HVAC Designer Responsibilities:

- Complete one National HVAC Design Report for each system design for a house plan, created for either the specific plan configuration (i.e., elevation, option, orientation, & county) of the home to be certified or for a plan that is intended to be built with different configurations (i.e., different elevations, options, and/or orientations). Visit www.energystar.gov/newhomeshvacdesign and see Footnote 2 for more information.²
- Obtain efficiency features (e.g., window performance, insulation levels, and infiltration rate) from the builder or Rater.³
- Provide the completed National HVAC Design Report to the builder or credentialed HVAC contractor and to the Rater.

1. Design Overview

1.1 Designer Name: Engr Rahaman Designer company: _____ Date: October 22, 2025

1.2 Select which party you are providing these design services to: ☐ Builder or ☐ Credentialed HVAC contractor

1.3 Name of company you are providing these design services to (if different than Item 1.1): _____

1.4 Area that system serves: ☐ Whole-house ☐ Upper-level ☐ Lower-level ☐ Other _____

1.5 Is cooling system for a temporary occupant load? ⁴ ☐ Yes ☐ No

1.6 House plan: 499 Jay Windom Martin Residence Hvac Design Check box to indicate whether the system design is site-specific or part of a group: ²

☐ Site-specific design. Option(s) & elevation(s) modeled: _____

☐ Group design. Group #: _____ out of _____ total groups for this house plan. Configuration modeled: _____

2. Dwelling Unit Mechanical Ventilation System Design ("Vent System") ^{5, 6, 7} & Inlets in Return Duct ⁸

Designer
Verified

Airflow:

2.1 Ventilation airflow design rate & run-time meet the requirements of ASHRAE 62.2-2010 or later. ⁹	☒
2.2 Ventilation airflow rate required by 62.2 for a continuous system <u>10</u> CFM	-
2.3 Design for this system: Vent. airflow rate: <u>400</u> CFM Run-time per cycle: _____ minutes Cycle time: _____ minutes	-

System Type & Controls:

2.4 Specified system type: ☐ Supply ☐ Exhaust ☐ Balanced	-
2.5 Specified control location: _____ (e.g., Master bath, utility room)	-
2.6 Specified controls allow the system to operate automatically, without occupant intervention	☐
2.7 Specified controls include a readily-accessible ventilation override and a label has also been specified if its function is not obvious (e.g., a label is required for a toggle wall switch, but not for a switch that's on the ventilation equipment).	☐
2.8 For any outdoor air inlet designed to connect to a ducted return of the HVAC system, specified controls automatically restrict airflow using a motorized damper during ventilation off-cycle and occupant override. ^{8, 10}	☐

Sound:	2.9 The fan of the specified system is rated ≤ 3 sones if intermittent and ≤ 1 sone if continuous, or exempted. ¹¹	☐
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Efficiency:

2.10 If Vent System controller operates the HVAC fan, then HVAC fan operation is intermittent and either the fan type in Item 4.7 is ECM / ICM or the controls will reduce the run-time by accounting for HVAC system heating or cooling hours. ¹²	☐
2.11 If bathroom fans are specified as part of the system, then they are ENERGY STAR certified. ¹³	☐

Air Inlet Location: (Complete this section if system has a specified air inlet location; otherwise check "N/A") ¹⁴

☐ N/A

2.12 Inlet pulls ventilation air directly from outdoors and not from attic, crawlspace, garage, or adjacent dwelling unit	☐
2.13 Inlet is ≥ 2 ft. above grade or roof deck; ≥ 10 ft. of stretched-string distance from known contamination sources (e.g., stack, vent, exhaust, vehicles) not exiting the roof, and ≥ 3 ft. from known sources exiting the roof. ¹⁵	☐

3. Room-by-Room Heating & Cooling Loads ¹⁶

3.1 Room-by-room loads calculated using: ☐ Unabridged ACCA Manual J v8 ☐ 2013 ASHRAE Fundamentals ☐ Other per AHJ ¹⁷	-
3.2 Indoor design temperatures used in loads are 70°F for heating and 75°F for cooling	☐
3.3 Outdoor design temperatures used in loads: (See Footnote 18 and www.energystar.gov/hvacdesigntemps) ¹⁸ County & State, or US Territory, selected: _____ Cooling season: <u>100</u> °F Heating season: <u>40</u> °F	-
3.4 Number of occupants used in loads: ¹⁹ <u>1</u>	-
3.5 Conditioned floor area used in loads: ²⁰ <u>450</u> Sq. Ft.	-
3.6 Window area used in loads: ²¹ <u>80</u> Sq. Ft.	-
3.7 Predominant window SHGC used in loads: ²² <u>0.62</u>	-
3.8 Infiltration rate used in loads: ²³ Summer: <u>400</u> Winter: <u>400</u>	-
3.9 Mechanical ventilation rate used in loads: <u>400</u> CFM	-
Loads At Design Conditions (kBtuh)	
	N NE E SE S SW W NW
Cooling	
3.10 Sensible heat gain (By orientation ²⁴)	21.2 23.7 24.5 22.6 21.6 24.5 26.9 25.4
3.11 Latent heat gain (Not by orientation)	11.9
3.12 Total heat gain (By orientation ²⁴)	33.2 35.7 36.4 34.5 33.6 36.4 38.9 37.3
3.13 Maximum - minimum total heat gain (Item 3.12) across orientations = <u>5.7</u> kBtuh Variation is ≤ 6 kBtuh ^{24, 25}	☒
Heating	
3.14 Total heat loss (Not by orientation)	35.1



ENERGY STAR Single-Family New Homes

National HVAC Design Report, Version 3 / 3.1 / 3.2 (Rev. 13)¹

4. Heating & Cooling Equipment Selection ¹⁶						Designer Verified
4.1 Equipment selected per ACCA Manual S (see Footnote 25 & 26) ^{26, 27}						☒
Air Conditioner / Heat Pump (Complete if air conditioner or heat pump will be installed; otherwise check "N/A")						☐ N/A
4.2 Equipment type: ☐ Cooling-only air conditioner or ☐ Cooling & heating heat pump						-
4.3 Condenser manufacturer & model: GOODMAN, PACKAGE UNIT MODEL :GPG1336090M418						-
4.4 Evaporator / fan coil manufacturer & model:						-
4.5 AHRI reference #: ²⁸						-
4.6 Rated cooling efficiency: ²⁹ 16 SEER / Rated heating efficiency:						-
4.7 Evaporator fan type: ☐ PSC ☐ ECM / ICM ☐ Other:						-
4.8 Compressor type: ☐ Single-speed ☐ Two-speed ☐ Variable-speed						-
4.9 Latent capacity at design conditions, from OEM expanded performance data: ³¹ 0 kBtuh						-
4.10 Sensible capacity at design conditions, from OEM expanded performance data: ³¹ 60 kBtuh						-
4.11 Total capacity at design conditions, from OEM expanded performance data: ³¹ 60 kBtuh						-
4.12 Air-source heat pump capacity: At 17°F: 0 kBtuh At 47°F: 0 kBtuh ☐ N/A						-
4.13 Cooling sizing % = Total capacity (Item 4.11) divided by maximum total heat gain (Item 3.12): 154 %						-
4.14 Complete this item if Condition B Climate will be used to select sizing limit in Item 4.15. Otherwise, check "N/A": ³² ☐ N/A						-
4.14.1 Load sensible heat ratio = Max sensible heat gain (Item 3.10) / Max. total heat gain (Item 3.12) = 64 %						-
4.14.2 HDD / CDD ratio (Visit energystar.gov/hvacdesigntemps to determine this value for the design location) =						-
4.15 Check box of applicable cooling sizing limit from chart below: ^{26, 27}						-
Equipment Type (Per Item 4.2) & Climate Condition (Per Item 4.14)		Compressor Type (Per Item 4.8)				
		Single-Speed	Two-Speed	Variable-Speed		
For Cooling-Only Equipment or For Cooling Mode of Heat Pump in Condition A Climate		☐ Recommended: 90 - 115% Allowed: 90 - 130%	☐ Recommended: 90 - 120% Allowed: 90 - 140%	☐ Recommended: 90 - 130% Allowed: 90 - 160%		
For Cooling Mode of Heat Pump in Condition B Climate		☐ 90% - 100%, plus 15 kBtuh	☐ 90% - 100%, plus 15 kBtuh	☐ 90% - 100%, plus 15 kBtuh		
4.16 Cooling sizing % (4.13) is within cooling sizing limit (4.15)						☐
Furnace (Complete if furnace will be installed; otherwise check "N/A")						☐ N/A
4.17 Furnace manufacturer & model: GOODMAN, PACKAGE UNIT MODEL :GPG1336090M418						-
4.18 Rated heating efficiency: 0 AFUE						-
4.19 Total capacity: ³³ 36 kBtuh						-
4.20 Heating sizing % = Total capacity (Item 4.19) divided by total heat loss (Item 3.14): 103 %						-
4.21 Check box of applicable heating sizing limit from chart below:						-
When Used for Heating Only			When Paired With Cooling			
☐ 100 - 140%			☒ Recommended: 100 - 140% Allowed: 100 - 400%			
4.22 Heating sizing % (4.20) is within heating sizing limit (4.21)						☒
5. Duct Design (Complete if heating or cooling equipment will be installed with ducts; otherwise check "N/A") ¹⁶						☐ N/A
5.1 Duct system designed for the equipment selected in Section 4, per ACCA Manual D						☐
5.2 Design HVAC fan airflow: ³⁴ Cooling mode 788 CFM Heating mode 393 CFM						-
5.3 Design HVAC fan speed setting (e.g., low, medium, high): ³⁵ Cooling mode Heating mode						-
5.4 Design total external static pressure (corresponding to the mode with the higher airflow in Item 5.2): ³⁶ 0 IWC						-
5.5 Room-by-room design airflows documented below (which must sum to the mode with the higher airflow in Item 5.2) ^{37, 38}						-
Room Name	Design Airflow (CFM)	Room Name	Design Airflow (CFM)	Room Name	Design Airflow (CFM)	
1 Second Floor Green House	788	12		23		
2		13		24		
3		14		25		
4		15		26		
5		16		27		
6		17		28		
7		18		29		
8		19		30		
9		20		31		
10		21		32		
11		22		Total for all rooms	788	



ENERGY STAR Single-Family New Homes

National HVAC Design Report, Version 3 / 3.1 / 3.2 (Rev. 13)¹

HVAC Designer Responsibilities:

- Complete one National HVAC Design Report for each system design for a house plan, created for either the specific plan configuration (i.e., elevation, option, orientation, & county) of the home to be certified or for a plan that is intended to be built with different configurations (i.e., different elevations, options, and/or orientations). Visit www.energystar.gov/newhomeshvacdesign and see Footnote 2 for more information.²
- Obtain efficiency features (e.g., window performance, insulation levels, and infiltration rate) from the builder or Rater.³
- Provide the completed National HVAC Design Report to the builder or credentialed HVAC contractor and to the Rater.

1. Design Overview

1.1 Designer Name: _____ Designer company: _____ Date: _____

1.2 Select which party you are providing these design services to: ☐ Builder or ☐ Credentialed HVAC contractor

1.3 Name of company you are providing these design services to (if different than Item 1.1): _____

1.4 Area that system serves: ☐ Whole-house ☐ Upper-level ☐ Lower-level ☐ Other _____

1.5 Is cooling system for a temporary occupant load? ⁴ ☐ Yes ☐ No

1.6 House plan: _____ Check box to indicate whether the system design is site-specific or part of a group: ²

☐ Site-specific design. Option(s) & elevation(s) modeled: _____

☐ Group design. Group #: _____ out of _____ total groups for this house plan. Configuration modeled: _____

2. Dwelling Unit Mechanical Ventilation System Design ("Vent System") ^{5, 6, 7} & Inlets in Return Duct ⁸

Designer
Verified

Airflow:

2.1 Ventilation airflow design rate & run-time meet the requirements of ASHRAE 62.2-2010 or later. ⁹	☐
2.2 Ventilation airflow rate required by 62.2 for a continuous system _____ CFM	-
2.3 Design for this system: Vent. airflow rate: _____ CFM Run-time per cycle: _____ minutes Cycle time: _____ minutes	-

System Type & Controls:

2.4 Specified system type: ☐ Supply ☐ Exhaust ☐ Balanced	-
2.5 Specified control location: _____ (e.g., Master bath, utility room)	-
2.6 Specified controls allow the system to operate automatically, without occupant intervention	☐
2.7 Specified controls include a readily-accessible ventilation override and a label has also been specified if its function is not obvious (e.g., a label is required for a toggle wall switch, but not for a switch that's on the ventilation equipment).	☐
2.8 For any outdoor air inlet designed to connect to a ducted return of the HVAC system, specified controls automatically restrict airflow using a motorized damper during ventilation off-cycle and occupant override. ^{8, 10}	☐

Sound: 2.9 The fan of the specified system is rated ≤ 3 sones if intermittent and ≤ 1 sone if continuous, or exempted. ¹¹	☐
--	--------------------------

Efficiency:

2.10 If Vent System controller operates the HVAC fan, then HVAC fan operation is intermittent and either the fan type in Item 4.7 is ECM / ICM or the controls will reduce the run-time by accounting for HVAC system heating or cooling hours. ¹²	☐
2.11 If bathroom fans are specified as part of the system, then they are ENERGY STAR certified. ¹³	☐

Air Inlet Location: (Complete this section if system has a specified air inlet location; otherwise check "N/A") ¹⁴

☐ N/A

2.12 Inlet pulls ventilation air directly from outdoors and not from attic, crawlspace, garage, or adjacent dwelling unit	☐
2.13 Inlet is ≥ 2 ft. above grade or roof deck; ≥ 10 ft. of stretched-string distance from known contamination sources (e.g., stack, vent, exhaust, vehicles) not exiting the roof, and ≥ 3 ft. from known sources exiting the roof. ¹⁵	☐

3. Room-by-Room Heating & Cooling Loads ¹⁶

3.1 Room-by-room loads calculated using: ☐ Unabridged ACCA Manual J v8 ☐ 2013 ASHRAE Fundamentals ☐ Other per AHJ ¹⁷	-
3.2 Indoor design temperatures used in loads are 70°F for heating and 75°F for cooling	☐
3.3 Outdoor design temperatures used in loads: (See Footnote 18 and www.energystar.gov/hvacdesigntemps) ¹⁸ County & State, or US Territory, selected: _____ Cooling season: _____°F Heating season: _____°F	-
3.4 Number of occupants used in loads: ¹⁹ _____	-
3.5 Conditioned floor area used in loads: ²⁰ _____ Sq. Ft.	-
3.6 Window area used in loads: ²¹ _____ Sq. Ft.	-
3.7 Predominant window SHGC used in loads: ²² _____	-
3.8 Infiltration rate used in loads: ²³ Summer: _____ Winter: _____	-
3.9 Mechanical ventilation rate used in loads: _____ CFM	-
Loads At Design Conditions (kBtuh)	
	N NE E SE S SW W NW
Cooling 3.10 Sensible heat gain (By orientation ²⁴)	-
3.11 Latent heat gain (Not by orientation)	-
3.12 Total heat gain (By orientation ²⁴)	-
3.13 Maximum - minimum total heat gain (Item 3.12) across orientations = _____ kBtuh Variation is ≤ 6 kBtuh ^{24, 25}	☐
Heating 3.14 Total heat loss (Not by orientation)	-



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4. Heating & Cooling Equipment Selection ¹⁶						Designer Verified
4.1 Equipment selected per ACCA Manual S (see Footnote 25 & 26) ^{26, 27}						☐
Air Conditioner / Heat Pump (Complete if air conditioner or heat pump will be installed; otherwise check "N/A")						☐ N/A
4.2 Equipment type: ☐ Cooling-only air conditioner or ☐ Cooling & heating heat pump						-
4.3 Condenser manufacturer & model: _____						-
4.4 Evaporator / fan coil manufacturer & model: _____						-
4.5 AHRI reference #: ²⁸ _____						-
4.6 Rated cooling efficiency: ²⁹ _____ / _____ Rated heating efficiency: _____						-
4.7 Evaporator fan type: ☐ PSC ☐ ECM / ICM ☐ Other: _____						-
4.8 Compressor type: ☐ Single-speed ☐ Two-speed ☐ Variable-speed						-
4.9 Latent capacity at design conditions, from OEM expanded performance data: ³¹ _____ kBtuh						-
4.10 Sensible capacity at design conditions, from OEM expanded performance data: ³¹ _____ kBtuh						-
4.11 Total capacity at design conditions, from OEM expanded performance data: ³¹ _____ kBtuh						-
4.12 Air-source heat pump capacity: At 17°F: _____ kBtuh At 47°F: _____ kBtuh ☐ N/A						-
4.13 Cooling sizing % = Total capacity (Item 4.11) divided by maximum total heat gain (Item 3.12): _____ %						-
4.14 Complete this item if Condition B Climate will be used to select sizing limit in Item 4.15. Otherwise, check "N/A": ³² ☐ N/A						-
4.14.1 Load sensible heat ratio = Max sensible heat gain (Item 3.10) / Max. total heat gain (Item 3.12) = _____ %						-
4.14.2 HDD / CDD ratio (Visit energystar.gov/hvacdesigntemps to determine this value for the design location) = _____						-
4.15 Check box of applicable cooling sizing limit from chart below: ^{26, 27}						-
Equipment Type (Per Item 4.2) & Climate Condition (Per Item 4.14)		Compressor Type (Per Item 4.8)				
		Single-Speed	Two-Speed	Variable-Speed		
For Cooling-Only Equipment or For Cooling Mode of Heat Pump in Condition A Climate		☐ Recommended: 90 - 115% Allowed: 90 - 130%	☐ Recommended: 90 - 120% Allowed: 90 - 140%	☐ Recommended: 90 - 130% Allowed: 90 - 160%		
For Cooling Mode of Heat Pump in Condition B Climate		☐ 90% - 100%, plus 15 kBtuh	☐ 90% - 100%, plus 15 kBtuh	☐ 90% - 100%, plus 15 kBtuh		
4.16 Cooling sizing % (4.13) is within cooling sizing limit (4.15)						☐
Furnace (Complete if furnace will be installed; otherwise check "N/A")						☐ N/A
4.17 Furnace manufacturer & model: _____						-
4.18 Rated heating efficiency: _____ AFUE						-
4.19 Total capacity: ³³ _____ kBtuh						-
4.20 Heating sizing % = Total capacity (Item 4.19) divided by total heat loss (Item 3.14): _____ %						-
4.21 Check box of applicable heating sizing limit from chart below:						-
When Used for Heating Only			When Paired With Cooling			
☐ 100 - 140%			☐ Recommended: 100 - 140% Allowed: 100 - 400%			
4.22 Heating sizing % (4.20) is within heating sizing limit (4.21)						☐
5. Duct Design (Complete if heating or cooling equipment will be installed with ducts; otherwise check "N/A") ¹⁶						☐ N/A
5.1 Duct system designed for the equipment selected in Section 4, per ACCA Manual D						☐
5.2 Design HVAC fan airflow: ³⁴ _____ Cooling mode _____ CFM Heating mode _____ CFM						-
5.3 Design HVAC fan speed setting (e.g., low, medium, high): ³⁵ _____ Cooling mode _____ Heating mode _____						-
5.4 Design total external static pressure (corresponding to the mode with the higher airflow in Item 5.2): ³⁶ _____ IWC						-
5.5 Room-by-room design airflows documented below (which must sum to the mode with the higher airflow in Item 5.2) ^{37, 38}						-
Room Name	Design Airflow (CFM)	Room Name	Design Airflow (CFM)	Room Name	Design Airflow (CFM)	
1		12		23		
2		13		24		
3		14		25		
4		15		26		
5		16		27		
6		17		28		
7		18		29		
8		19		30		
9		20		31		
10		21		32		
11		22		Total for all rooms		