499 Jay Windom Martin Residence Hvac Design
HVAC Load Calculations

for

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

Elite Software

RHVAC Residential HVAC Loads

Prepared By:

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

Monday, October 13, 2025

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.

Project Report

General Project Information

Project Filename:	C:\Users\User\AppData\Local\Elite Software\Rhvac 10\499 Jay Windom RESIDENCE first and second floor.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:	2,461	CFM Per Square ft.:	0.852
Square ft. of Room Area:	2,889	Square ft. Per Ton:	583
Volume (ft³) (Above Grade):	26,050		
Volume (ft³) (Total):	26,050		

Building Loads

Total Heating Required Including Ventilation Air:	27,275	Btuh	27.275	MBH
Total Sensible Gain:	52,884	Btuh	89	%
Total Latent Gain:	6,540	Btuh	11	%
Total Cooling Required Including Ventilation Air:	59,424	Btuh	4.95	Tons (Based On Sensible + Latent)

Notes

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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.

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		4.95	583	2,889	52,884	6,540	59,424	27,275	363	2,461	363	2,461	2,461	
System 1 Main Floor	Yes	4.95	583	2,889	52,884	6,540	59,424	27,275	363	2,461	363	2,461	2,461	17x24
Zone 1				2,889	52,884	6,540	59,424	27,275	363	2,461	363	2,461	2,461	17x24
1-Main Floor Enterance				340	5,189	0	5,189	3,578	48	241	48	241	241	1--9
2-Main Floor Office				140	6,596	860	7,456	3,349	45	307	45	307	307	1--10
3-Main Floor Kitchen				230	4,752	0	4,752	3,134	42	221	42	221	221	1--9
4-Main Floor Dinning				280	6,168	920	7,088	3,327	44	287	44	287	287	1--10
5-Main Floor Living				300	7,354	1,550	8,904	3,405	45	342	45	342	342	1--10
6-Main Floor Pantry				24	817	100	917	198	3	38	3	38	38	1--5
7-Main Floor Powder				25	1,162	230	1,392	200	3	54	3	54	54	1--5
8-Main Floor Rear Enterance				130	1,407	0	1,407	981	13	65	13	65	65	1--6
9-Second Floor Laundry				130	1,952	500	2,452	576	8	91	8	91	91	1--6
10-Second Floor Dressing Room				170	1,972	0	1,972	1,368	18	92	18	92	92	1--6
11-Second Floor Masterbed				240	4,574	960	5,534	1,749	23	213	23	213	213	1--9
12-Second Floor Master Bath				180	1,159	0	1,159	756	10	54	10	54	54	1--5
13-Second Floor Bedroom 2				180	3,280	760	4,040	1,340	18	153	18	153	153	1--8
14-Second Floor Bathroom				90	1,018	0	1,018	579	8	47	8	47	47	1--5
15-Second Floor Bedroom-3				170	3,653	660	4,313	1,693	23	170	23	170	170	1--8
16-Second Floor Hallway				260	1,831	0	1,831	1,042	14	85	14	85	85	1--6

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-Main Floor Enterance	Built-In	0	750	0.01	0.1		546.6		48	241	241	1--9	
2-Main Floor Office	Built-In	0	750	0.01	0.1		562.8		45	307	307	1--10	
3-Main Floor Kitchen	Built-In	0	750	0.01	0.1		500.6		42	221	221	1--9	
4-Main Floor Dinning	Built-In	0	750	0.01	0.1		526.3		44	287	287	1--10	
5-Main Floor Living	Built-In	0	750	0.01	0.1		627.5		45	342	342	1--10	
6-Main Floor Pantry	Built-In	0	750	0.01	0.1		278.8		3	38	38	1--5	
7-Main Floor Powder	Built-In	0	750	0.01	0.1		396.6		3	54	54	1--5	
8-Main Floor Rear Enteran	Built-In	0	750	0.01	0.1		333.5		13	65	65	1--6	
9-Second Floor Laundry	Built-In	0	750	0.01	0.1		462.7		8	91	91	1--6	
10-Second Floor Dressing Room	Built-In	0	750	0.01	0.1		467.3		18	92	92	1--6	
11-Second Floor Masterbe	Built-In	0	750	0.01	0.1		481.8		23	213	213	1--9	
12-Second Floor Master Ba	Built-In	0	750	0.01	0.1		395.6		10	54	54	1--5	
13-Second Floor Bedroom	Built-In	0	750	0.01	0.1		437.3		18	153	153	1--8	
14-Second Floor Bathroom	Built-In	0	750	0.01	0.1		347.4		8	47	47	1--5	
15-Second Floor Bedroom	Built-In	0	750	0.01	0.1		487		23	170	170	1--8	
16-Second Floor Hallway	Built-In	0	750	0.01	0.1		434		14	85	85	1--6	
Other Ducts in System 1													
Supply Main Trunk	Built-In	0	900	0.003	0.1		868.6		363	2,461	2,461	17x24	

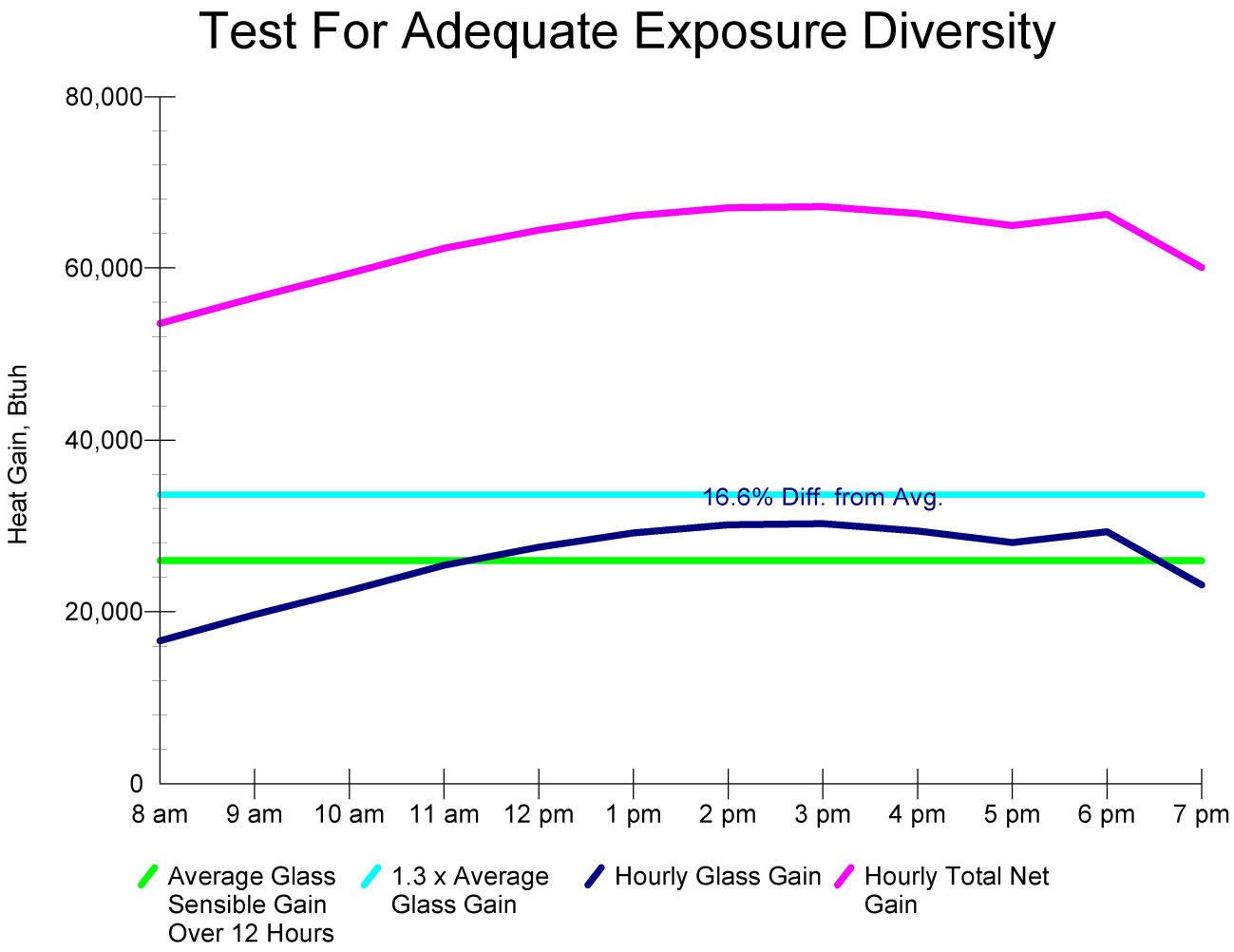
Summary

System 1

Heating Flow: 363

Cooling Flow: 2461

System 1 - Main Floor - Adequate Exposure Diversity Test



AED Calculation Summary

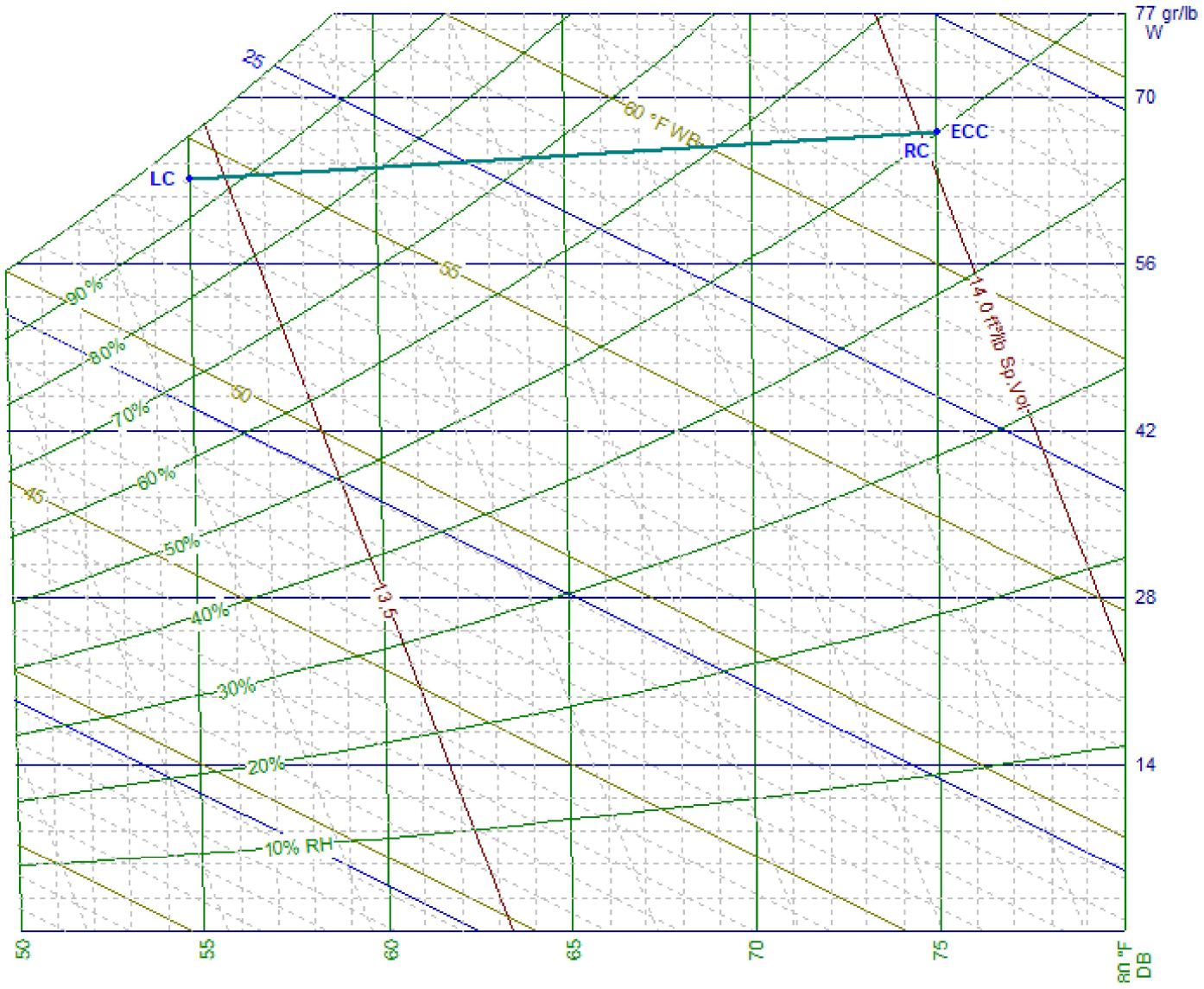
--- SYSTEM HAS ADEQUATE EXPOSURE DIVERSITY. ---

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	n/a	n/a
LC	Leaving Coil Condition	55	54.1	ECC	Entering Coil Condition	75	62.4
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	n/a	n/a
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	n/a	n/a				



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	849	14,943	0	22,517	22,517
11F: Door-Wood - Solid Core With Metal Storm, U-value 0.28	69	618	0	696	696
Frame wall-R-23: Wall-Frame, Custom, R-23 insulation, U-value 0.043	3178	4,412	0	3,027	3,027
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	2889	2,403	0	6,007	6,007
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	2989	4,899	0	3,828	3,828
Subtotals for structure:		27,275	0	36,075	36,075
People:	18		4,140	5,400	9,540
Equipment:			2,400	5,100	7,500
Lighting:	1850			6,309	6,309
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 0, Summer CFM: 0		0	0	0	0
Ventilation: Winter CFM: 0, Summer CFM: 0		0	0	0	0
Total Building Load Totals:		27,275	6,540	52,884	59,424

Check Figures

Total Building Supply CFM:	2,461	CFM Per Square ft.:	0.852
Square ft. of Room Area:	2,889	Square ft. Per Ton:	583
Volume (ft³) (Above Grade):	26,050		
Volume (ft³) (Total):	26,050		

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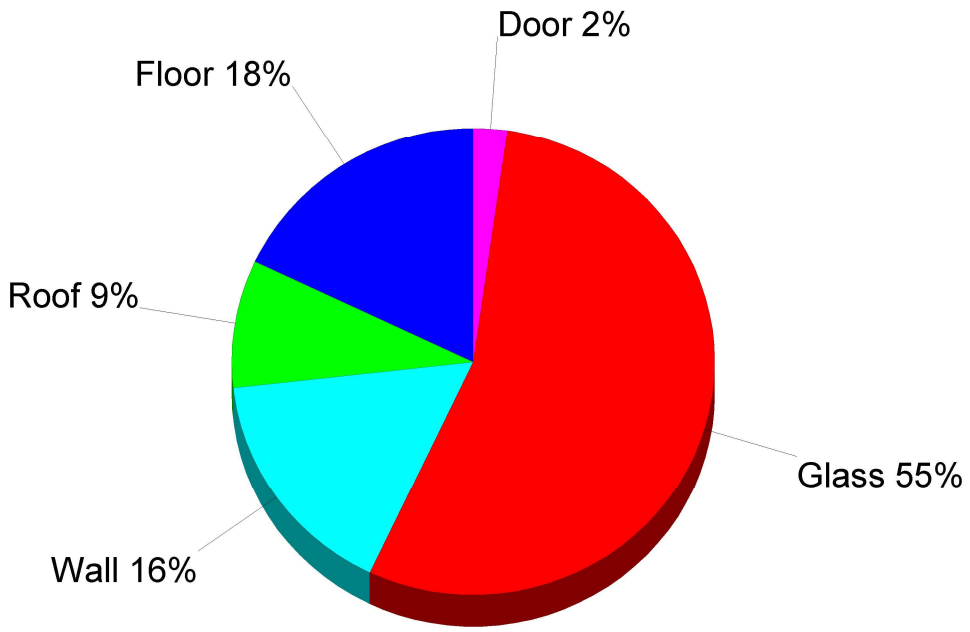
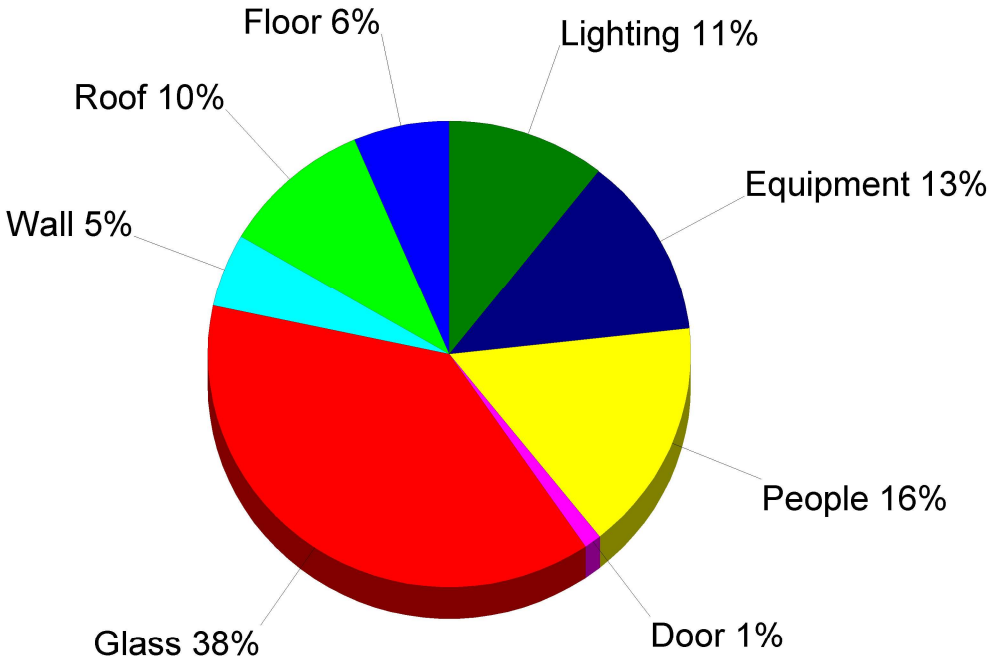
Building Pie Chart

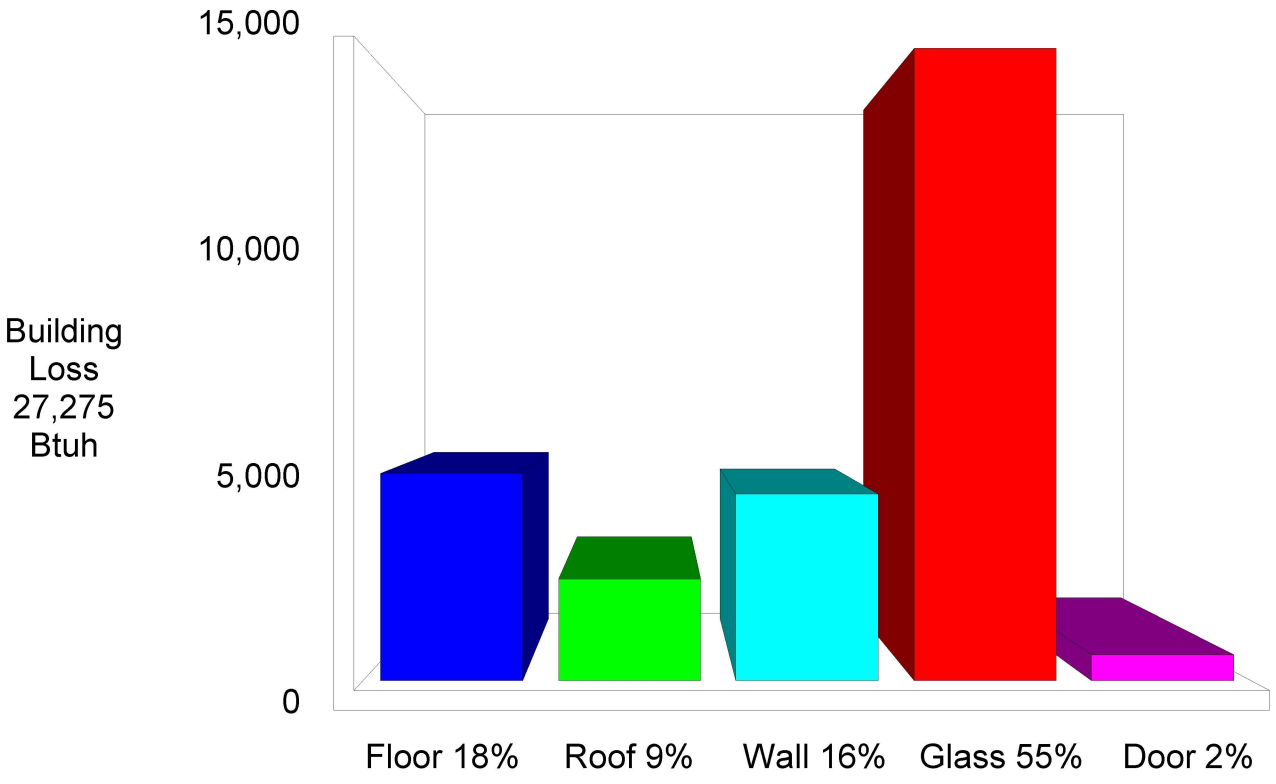
Building Loss 27,275 Btuh

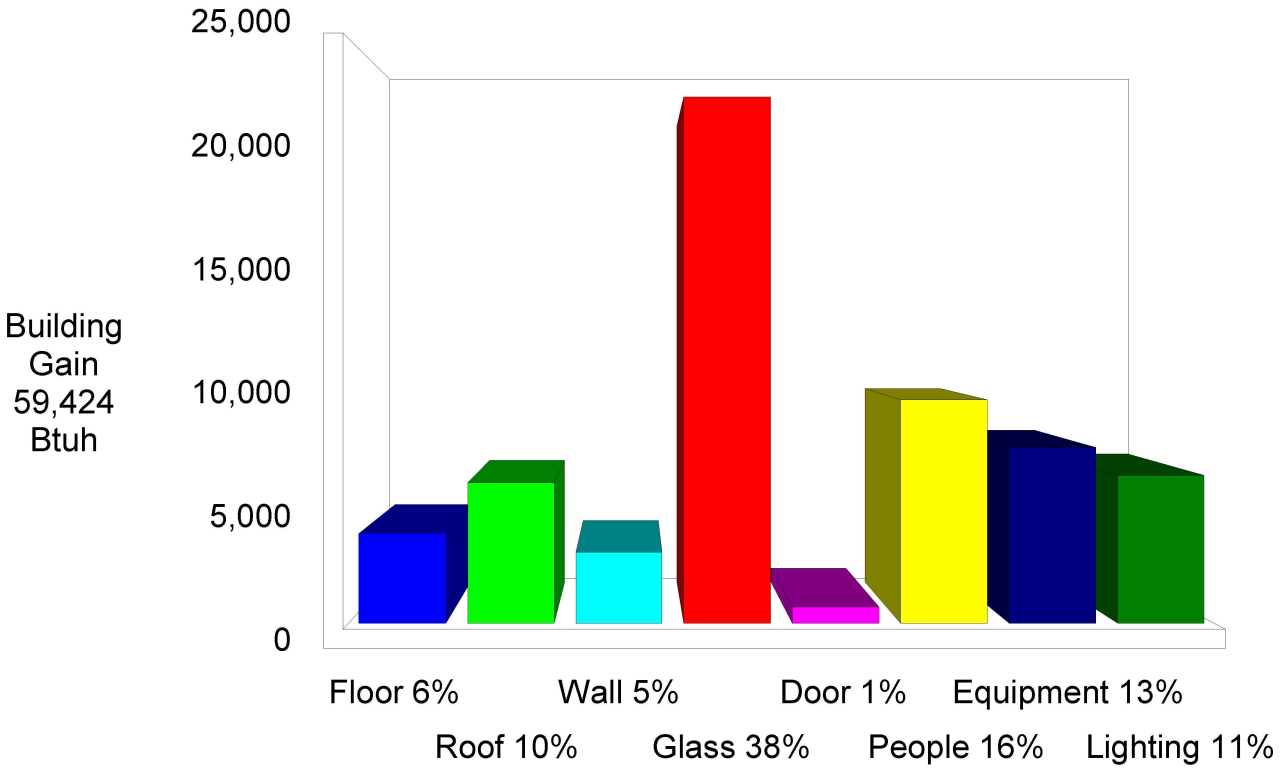


Building Gain 59,424 Btuh



Building Bar Graph





System 1 Main Floor Summary Loads

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Subtotals for structure:		27,275	0	36,075	36,075
People:	18		4,140	5,400	9,540
Equipment:			2,400	5,100	7,500
Lighting:	1850			6,309	6,309
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 0, Summer CFM: 0		0	0	0	0
Ventilation: Winter CFM: 0, Summer CFM: 0		0	0	0	0
System 1 Main Floor Load Totals:		27,275	6,540	52,884	59,424

Check Figures

Supply CFM:	2,461	CFM Per Square ft.:	0.852
Square ft. of Room Area:	2,889	Square ft. Per Ton:	583
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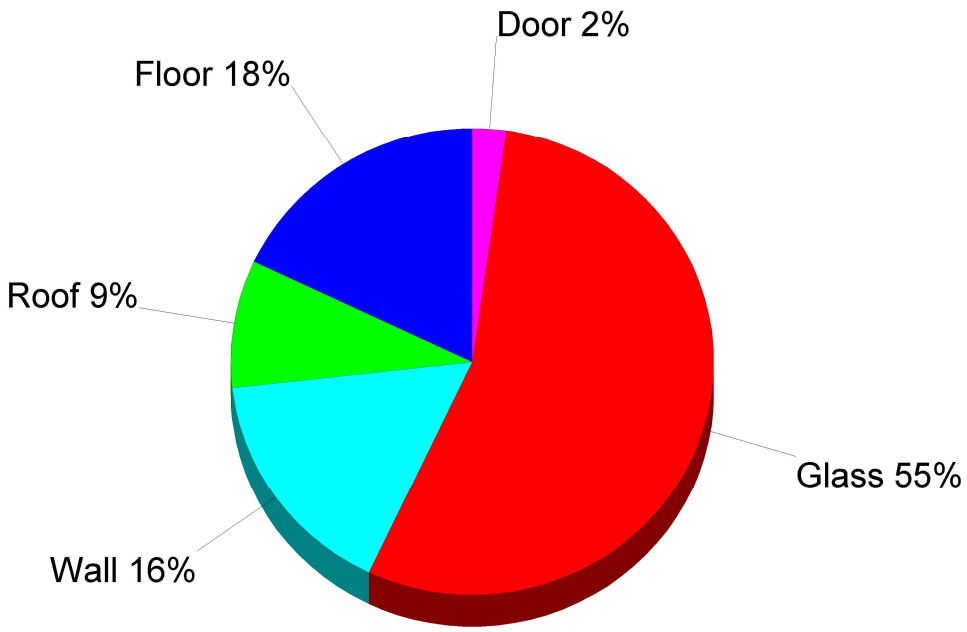
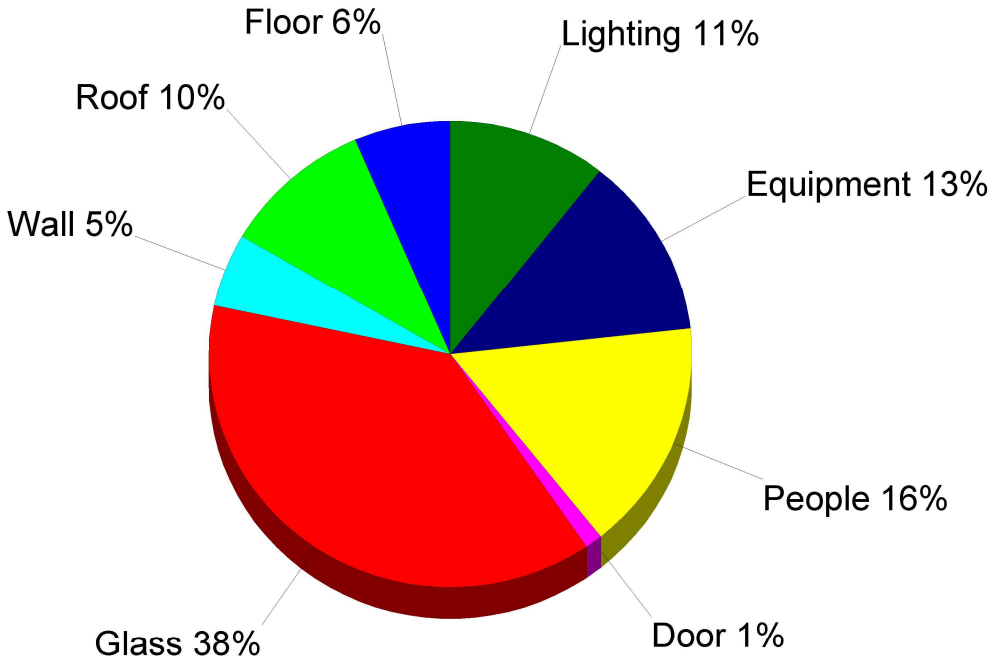
System 1 Main Floor Pie Chart

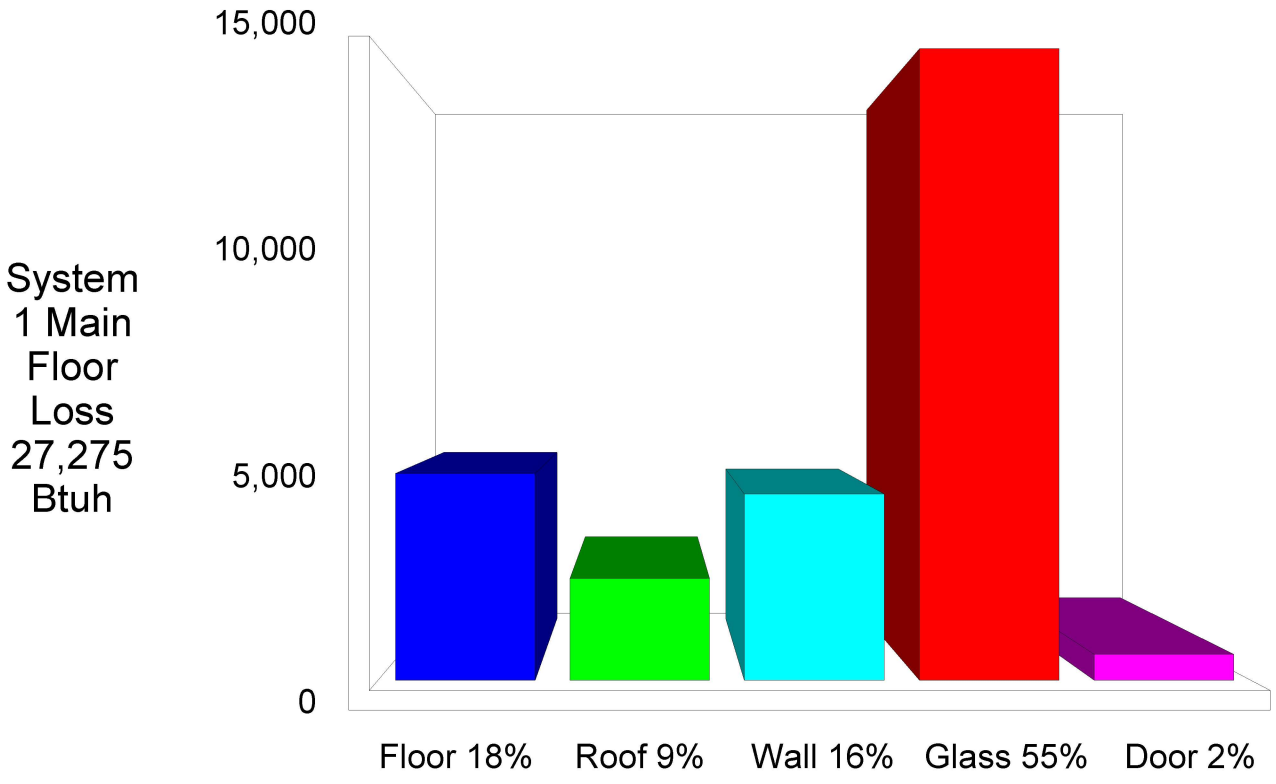
System 1 Main Floor Loss 27,275 Btuh

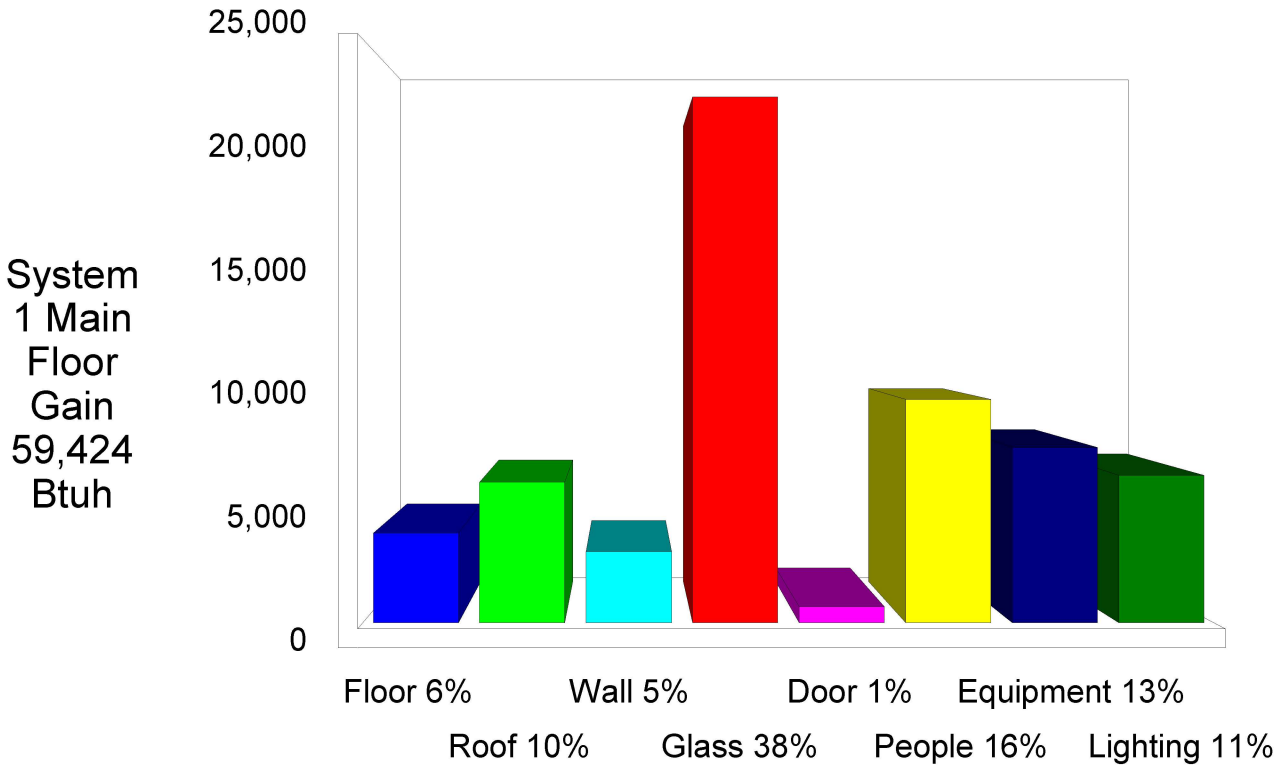


System 1 Main Floor Gain 59,424 Btuh



System 1 Main Floor Bar Graph





Equipment Data - System 1 - Main Floor

Cooling

System Type:	Standard Air Conditioner
Outdoor Model:	Heat Pump:CHPE4860D4+.outdoor unit:GSX160611F
Outdoor Manufacturer:	GOODMAN
Description:	0
Nominal Capacity:	60,000
Adjusted Capacity:	60000
Adjusted Sensible Capacity:	60000
Efficiency:	16 SEER

Heating

System Type:	Electric Resistance
Model:	Heat Pump Indoor:CHPE4860D4+.outdoor unit:GSZH506010A
Manufacturer:	GOODMAN
Description:	0
Capacity:	60,000
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: 52,884 Btuh, Lat. gain: 6,540 Btuh, Sen. loss: 27,275 Btuh, Entering clg. coil DB: 75F, Entering clg. coil WB: 62.4F, Entering htg. coil DB: 72F, Clg. coil TD: 20F, Htg. coil TD: 70F, Req. clg. airflow: 2461 CFM, Req. htg. airflow: 363 CFM

Manual S Performance Data - System 1 - Main Floor

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	100	Sensible Gain:	52.884
Outdoor Wet Bulb:	74	Latent Gain:	6.540
Indoor Dry Bulb:	75	Total Gain:	59.424
Indoor RH:	50	Load SHR:	0.89
Supply Airflow:	2,461	Entering Dry Bulb:	75
		Entering Wet Bulb:	62.4

Heating:

Outdoor Dry Bulb:	40	Sensible Loss:	27.275
Indoor Dry Bulb:	72	Entering Dry Bulb:	72.0
Indoor RH:	30	Supply Airflow:	363

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: Heat Pump:CHPE4860D4+.outdoor unit:GSX160611F
Nominal Capacity: 60.000, Manufacturer: GOODMAN

Entered Interpolation Data:

EWB °F	Air Flow CFM	ODB °F	Total Capacity MBtuh	Power Input kW	EDB 75 °F	
					S/T	Sensible Capacity MBtuh
62.40512	2461	100	60	0	1	60

Interpolation Results:

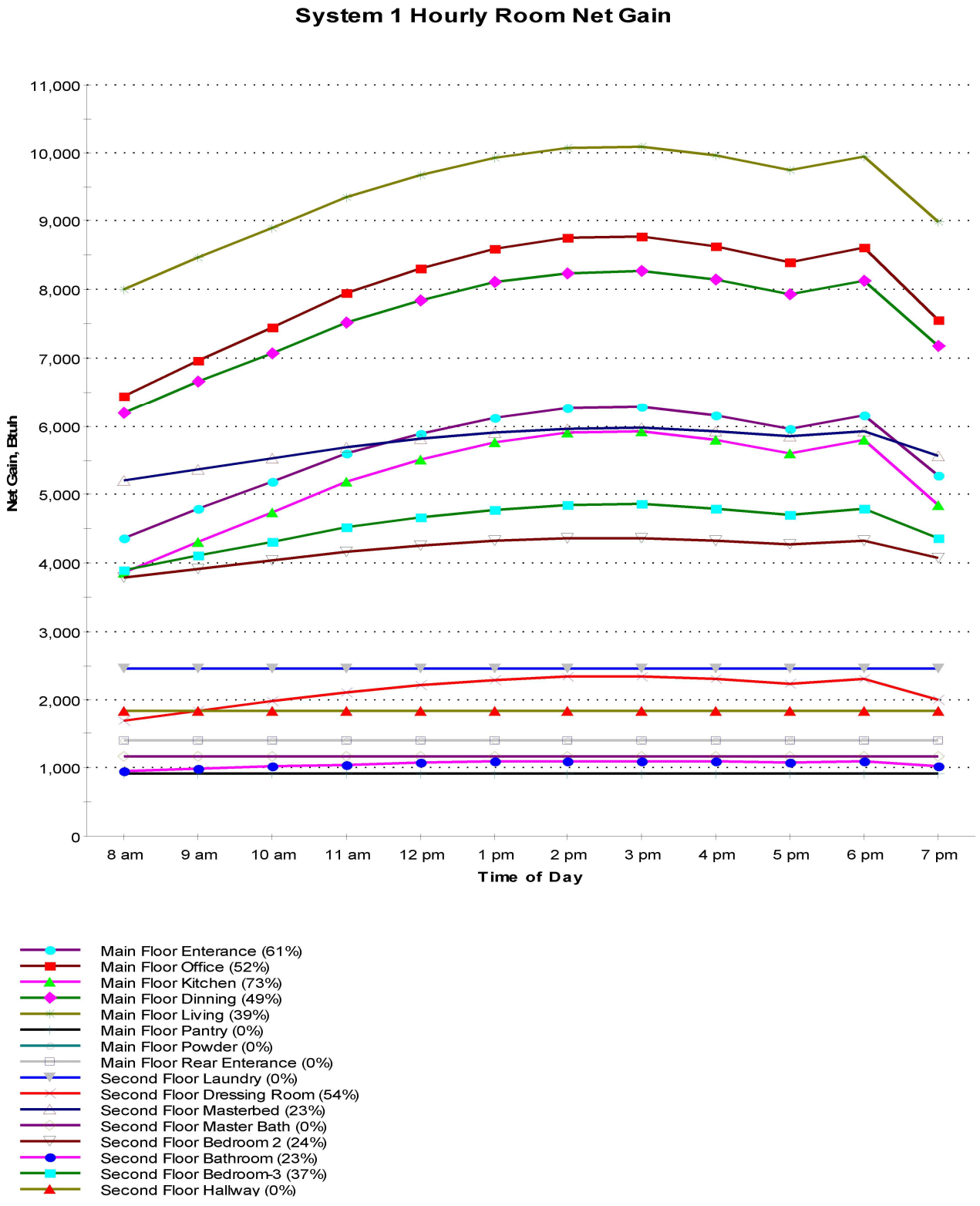
		Load	Percent of Load
Sensible Capacity:	60.000	52.884	113%
Latent Capacity:	0.000	6.540	0%
Total Capacity:	60.000	59.424	101%

Heating:
Model Type: Electric Resistance, Model: Heat Pump Indoor:CHPE4860D4+.outdoor unit:GSZH506010A, Nominal Capacity: 60.000, Manufacturer: GOODMAN

Results:

		Load	Percent of Load
Heating Capacity:	60.000	27.275	220%

System 1 - Hourly Room Net Gain



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	849	14,943	0	22,517	22,517
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Frame wall-R-23: Wall-Frame, Custom, R-23 insulation, U-value 0.043	3178	4,412	0	3,027	3,027
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Subtotals for structure:		27,275	0	36,075	36,075
People:	18		4,140	5,400	9,540
Equipment:			2,400	5,100	7,500
Lighting:	1850			6,309	6,309
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 0, Summer CFM: 0		0	0	0	0
System 1, Zone 1 Load Totals:		27,275	6,540	52,884	59,424

Check Figures

Supply CFM:	2,461	CFM Per Square ft.:	0.852
Square ft. of Room Area:	2,889	Square ft. Per Ton:	583
Volume (ft³) (Above Grade):	26,050		
Volume (ft³) (Total):	26,050		

Zone Loads

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Detailed Room Loads - Room 1 - Main Floor Enterance (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	34.0	ft.	Zone Number:	1	
Area:	340.0	sq.ft.	Supply Air:	241	CFM
Ceiling Height:	10.0	ft.	Supply Air Changes:	4.3	AC/hr
Volume:	3,400	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	241	CFM	Percent of Supply.:	0	%
Runout Duct Size:	9	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	547	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	547	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.107	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 34 X 10	196	0.043	1.4	272	1.0	0	187
E -Wall-Frame wall-R-23 10 X 10	100	0.043	1.4	139	1.0	0	95
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	120	0.550	17.6	2,112	26.5	0	3,182
UP-Ceil-16A-38 10 X 34	340	0.026	0.8	283	2.1	0	707
Floor-19A1-11op 34 X 10	340	0.072	1.6	557	1.3	0	435
Subtotals for Structure:				3,578		0	4,848
Infil.: Win.: 0.0, Sum.: 0.0	440		0.000	0	0.000	0	0
Lighting:	100						341
Room Totals:				3,578		0	5,189

Detailed Room Loads - Room 2 - Main Floor Office (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	14.0	ft.	Zone Number:	1	
Area:	140.0	sq.ft.	Supply Air:	307	CFM
Ceiling Height:	10.0	ft.	Supply Air Changes:	13.2	AC/hr
Volume:	1,400	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	307	CFM	Percent of Supply.:	0	%
Runout Duct Size:	10	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	563	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	563	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.099	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 24 X 10	94	0.043	1.4	131	1.0	0	90
E -Wall-Frame wall-R-23 10 X 10	100	0.043	1.4	139	1.0	0	95
N -Gls-1G-cm-s shgc-0.62 100%S	130	0.550	17.6	2,288	26.5	0	3,448
N -Gls-1G-cm-s shgc-0.62 100%S	16	0.550	17.6	282	26.5	0	424
UP-Ceil-16A-38 10 X 14	140	0.026	0.8	116	2.1	0	291
Floor-19A1-11op 24 X 10	240	0.072	1.6	393	1.3	0	307
Subtotals for Structure:				3,349		0	4,655
Infil.: Win.: 0.0, Sum.: 0.0	340		0.000	0	0.000	0	0
People: 230 lat/per, 300 sen/per:	2					460	600
Equipment:						400	1,000
Lighting:	100						341
Room Totals:				3,349		860	6,596

Detailed Room Loads - Room 3 - Main Floor Kitchen (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	23.0	ft.	Zone Number:	1	
Area:	230.0	sq.ft.	Supply Air:	221	CFM
Ceiling Height:	10.0	ft.	Supply Air Changes:	5.8	AC/hr
Volume:	2,300	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	221	CFM	Percent of Supply.:	0	%
Runout Duct Size:	9	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	501	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	501	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.090	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 23 X 10	100	0.043	1.4	139	1.0	0	95
E -Wall-Frame wall-R-23 10 X 10	100	0.043	1.4	139	1.0	0	95
N -Gls-1G-cm-s shgc-0.62 100%S	130	0.550	17.6	2,288	26.5	0	3,448
UP-Ceil-16A-38 10 X 23	230	0.026	0.8	191	2.1	0	478
Floor-19A1-11op 23 X 10	230	0.072	1.6	377	1.3	0	295
Subtotals for Structure:				3,134		0	4,411
Infil.: Win.: 0.0, Sum.: 0.0	330		0.000	0	0.000	0	0
Lighting:	100						341
Room Totals:				3,134		0	4,752

Detailed Room Loads - Room 4 - Main Floor Dinning (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	28.0	ft.	Zone Number:	1	
Area:	280.0	sq.ft.	Supply Air:	287	CFM
Ceiling Height:	10.0	ft.	Supply Air Changes:	6.2	AC/hr
Volume:	2,800	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	287	CFM	Percent of Supply.:	0	%
Runout Duct Size:	10	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	526	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	526	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.086	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 28 X 10	150	0.043	1.4	208	1.0	0	143
E -Wall-Frame wall-R-23 10 X 10	100	0.043	1.4	139	1.0	0	95
N -Gls-1G-cm-s shgc-0.62 100%S	130	0.550	17.6	2,288	26.5	0	3,448
UP-Ceil-16A-38 10 X 28	280	0.026	0.8	233	2.1	0	582
Floor-19A1-11op 28 X 10	280	0.072	1.6	459	1.3	0	359
Subtotals for Structure:				3,327		0	4,627
Infil.: Win.: 0.0, Sum.: 0.0	380		0.000	0	0.000	0	0
People: 230 lat/per, 300 sen/per:	4					920	1,200
Lighting:	100						341
Room Totals:				3,327		920	6,168

Detailed Room Loads - Room 5 - Main Floor Living (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	30.0	ft.	Zone Number:	1	
Area:	300.0	sq.ft.	Supply Air:	342	CFM
Ceiling Height:	10.0	ft.	Supply Air Changes:	6.8	AC/hr
Volume:	3,000	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	342	CFM	Percent of Supply.:	0	%
Runout Duct Size:	10	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	627	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	627	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.122	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 30 X 10	170	0.043	1.4	236	1.0	0	162
E -Wall-Frame wall-R-23 10 X 10	100	0.043	1.4	139	1.0	0	95
N -Gls-1G-cm-s shgc-0.62 100%S	130	0.550	17.6	2,288	26.5	0	3,448
UP-Ceil-16A-38 10 X 30	300	0.026	0.8	250	2.1	0	624
Floor-19A1-11op 30 X 10	300	0.072	1.6	492	1.3	0	384
Subtotals for Structure:				3,405		0	4,713
Infil.: Win.: 0.0, Sum.: 0.0	400		0.000	0	0.000	0	0
People: 230 lat/per, 300 sen/per:	5					1,150	1,500
Equipment:						400	800
Lighting:	100						341
Room Totals:				3,405		1,550	7,354

Detailed Room Loads - Room 6 - Main Floor Pantry (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	4.0	ft.	System Number:	1	
Room Width:	6.0	ft.	Zone Number:	1	
Area:	24.0	sq.ft.	Supply Air:	38	CFM
Ceiling Height:	10.0	ft.	Supply Air Changes:	9.5	AC/hr
Volume:	240	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	38	CFM	Percent of Supply.:	0	%
Runout Duct Size:	5	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	279	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	279	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.064	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 6 X 10	60	0.043	1.4	83	1.0	0	57
E -Wall-Frame wall-R-23 4 X 10	40	0.043	1.4	56	1.0	0	38
UP-Ceil-16A-38 4 X 6	24	0.026	0.8	20	2.1	0	50
Floor-19A1-11op 6 X 4	24	0.072	1.6	39	1.3	0	31
Subtotals for Structure:				198		0	176
Infil.: Win.: 0.0, Sum.: 0.0	100		0.000	0	0.000	0	0
Equipment:						100	300
Lighting:	100						341
Room Totals:				198		100	817

Detailed Room Loads - Room 7 - Main Floor Powder (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	5.0	ft.	System Number:	1	
Room Width:	5.0	ft.	Zone Number:	1	
Area:	25.0	sq.ft.	Supply Air:	54	CFM
Ceiling Height:	10.0	ft.	Supply Air Changes:	13.0	AC/hr
Volume:	250	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	54	CFM	Percent of Supply.:	0	%
Runout Duct Size:	5	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	397	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	397	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.128	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 5 X 10	50	0.043	1.4	69	1.0	0	48
E -Wall-Frame wall-R-23 5 X 10	50	0.043	1.4	69	1.0	0	48
UP-Ceil-16A-38 5 X 5	25	0.026	0.8	21	2.1	0	52
Floor-19A1-11op 5 X 5	25	0.072	1.6	41	1.3	0	32
Subtotals for Structure:				200		0	180
Infil.: Win.: 0.0, Sum.: 0.0	100		0.000	0	0.000	0	0
People: 230 lat/per, 300 sen/per:	1					230	300
Lighting:	200						682
Room Totals:				200		230	1,162

Detailed Room Loads - Room 8 - Main Floor Rear Enterance (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	13.0	ft.	System Number:	1	
Room Width:	10.0	ft.	Zone Number:	1	
Area:	130.0	sq.ft.	Supply Air:	65	CFM
Ceiling Height:	10.0	ft.	Supply Air Changes:	3.0	AC/hr
Volume:	1,300	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	65	CFM	Percent of Supply.:	0	%
Runout Duct Size:	6	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	333	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	333	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.071	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 13 X 10	85	0.043	1.4	118	1.0	0	81
E -Wall-Frame wall-R-23 10 X 10	100	0.043	1.4	139	1.0	0	95
N -Door-11F 3 X 8	24	0.280	9.0	215	10.1	0	242
N -Door-11F 3 X 7	21	0.280	9.0	188	10.1	0	212
UP-Ceil-16A-38 13 X 10	130	0.026	0.8	108	2.1	0	270
Floor-19A1-11op 10 X 13	130	0.072	1.6	213	1.3	0	166
Subtotals for Structure:				981		0	1,066
Infil.: Win.: 0.0, Sum.: 0.0	230		0.000	0	0.000	0	0
Lighting:	100						341
Room Totals:				981		0	1,407

Detailed Room Loads - Room 9 - Second Floor Laundry (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	13.0	ft.	Zone Number:	1	
Area:	130.0	sq.ft.	Supply Air:	91	CFM
Ceiling Height:	8.0	ft.	Supply Air Changes:	5.2	AC/hr
Volume:	1,040	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	91	CFM	Percent of Supply.:	0	%
Runout Duct Size:	6	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	463	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	463	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.135	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 13 X 8	104	0.043	1.4	144	1.0	0	99
E -Wall-Frame wall-R-23 10 X 8	80	0.043	1.4	111	1.0	0	76
UP-Ceil-16A-38 10 X 13	130	0.026	0.8	108	2.1	0	270
Floor-19A1-11op 13 X 10	130	0.072	1.6	213	1.3	0	166
Subtotals for Structure:				576		0	611
Infil.: Win.: 0.0, Sum.: 0.0	184		0.000	0	0.000	0	0
Equipment:						500	1,000
Lighting:	100						341
Room Totals:				576		500	1,952

Detailed Room Loads - Room 10 - Second Floor Dressing Room (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	17.0	ft.	Zone Number:	1	
Area:	170.0	sq.ft.	Supply Air:	92	CFM
Ceiling Height:	8.0	ft.	Supply Air Changes:	4.0	AC/hr
Volume:	1,360	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	92	CFM	Percent of Supply.:	0	%
Runout Duct Size:	6	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	467	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	467	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.137	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 17 X 8	96	0.043	1.4	133	1.0	0	92
E -Wall-Frame wall-R-23 10 X 8	80	0.043	1.4	111	1.0	0	76
N -Gls-1G-cm-s shgc-0.62 100%S	15	0.550	17.6	264	26.5	0	398
N -Gls-1G-cm-s shgc-0.62 100%S	25	0.550	17.6	440	26.5	0	663
UP-Ceil-16A-38 10 X 17	170	0.026	0.8	141	2.1	0	354
Floor-19A1-11op 17 X 10	170	0.072	1.6	279	1.3	0	218
Subtotals for Structure:				1,368		0	1,801
Infil.: Win.: 0.0, Sum.: 0.0	216		0.000	0	0.000	0	0
Lighting:	50						171
Room Totals:				1,368		0	1,972

Detailed Room Loads - Room 11 - Second Floor Masterbed (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	24.0	ft.	Zone Number:	1	
Area:	240.0	sq.ft.	Supply Air:	213	CFM
Ceiling Height:	8.0	ft.	Supply Air Changes:	6.7	AC/hr
Volume:	1,920	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	213	CFM	Percent of Supply.:	0	%
Runout Duct Size:	9	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	482	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	482	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.084	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 24 X 8	144	0.043	1.4	200	1.0	0	137
E -Wall-Frame wall-R-23 10 X 8	80	0.043	1.4	111	1.0	0	76
N -Gls-1G-cm-s shgc-0.62 100%S	48	0.550	17.6	845	26.5	0	1,273
UP-Ceil-16A-38 10 X 24	240	0.026	0.8	200	2.1	0	499
Floor-19A1-11op 24 X 10	240	0.072	1.6	393	1.3	0	307
Subtotals for Structure:				1,749		0	2,292
Infil.: Win.: 0.0, Sum.: 0.0	272		0.000	0	0.000	0	0
People: 230 lat/per, 300 sen/per:	2					460	600
Equipment:						500	1,000
Lighting:	200						682
Room Totals:				1,749		960	4,574

Detailed Room Loads - Room 12 - Second Floor Master Bath (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	18.0	ft.	Zone Number:	1	
Area:	180.0	sq.ft.	Supply Air:	54	CFM
Ceiling Height:	8.0	ft.	Supply Air Changes:	2.2	AC/hr
Volume:	1,440	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	54	CFM	Percent of Supply.:	0	%
Runout Duct Size:	5	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	396	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	396	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.127	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 18 X 8	144	0.043	1.4	200	1.0	0	137
E -Wall-Frame wall-R-23 10 X 8	80	0.043	1.4	111	1.0	0	76
UP-Ceil-16A-38 10 X 18	180	0.026	0.8	150	2.1	0	374
Floor-19A1-11op 18 X 10	180	0.072	1.6	295	1.3	0	231
Subtotals for Structure:				756		0	818
Infil.: Win.: 0.0, Sum.: 0.0	224		0.000	0	0.000	0	0
Lighting:	100						341
Room Totals:				756		0	1,159

Detailed Room Loads - Room 13 - Second Floor Bedroom 2 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	18.0	ft.	Zone Number:	1	
Area:	180.0	sq.ft.	Supply Air:	153	CFM
Ceiling Height:	8.0	ft.	Supply Air Changes:	6.4	AC/hr
Volume:	1,440	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	153	CFM	Percent of Supply.:	0	%
Runout Duct Size:	8	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	437	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	437	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.081	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 18 X 8	108	0.043	1.4	150	1.0	0	103
E -Wall-Frame wall-R-23 10 X 8	80	0.043	1.4	111	1.0	0	76
N -Gls-1G-cm-s shgc-0.62 100%S	36	0.550	17.6	634	26.5	0	955
UP-Ceil-16A-38 10 X 18	180	0.026	0.8	150	2.1	0	374
Floor-19A1-11op 18 X 10	180	0.072	1.6	295	1.3	0	231
Subtotals for Structure:				1,340		0	1,739
Infil.: Win.: 0.0, Sum.: 0.0	224		0.000	0	0.000	0	0
People: 230 lat/per, 300 sen/per:	2					460	600
Equipment:						300	600
Lighting:	100						341
Room Totals:				1,340		760	3,280

Detailed Room Loads - Room 14 - Second Floor Bathroom (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	9.0	ft.	System Number:	1	
Room Width:	10.0	ft.	Zone Number:	1	
Area:	90.0	sq.ft.	Supply Air:	47	CFM
Ceiling Height:	8.0	ft.	Supply Air Changes:	3.9	AC/hr
Volume:	720	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	47	CFM	Percent of Supply.:	0	%
Runout Duct Size:	5	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	347	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	347	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.099	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 9 X 8	63	0.043	1.4	87	1.0	0	60
E -Wall-Frame wall-R-23 10 X 8	80	0.043	1.4	111	1.0	0	76
N -Gls-1G-cm-s shgc-0.62 100%S	9	0.550	17.6	158	26.6	0	239
UP-Ceil-16A-38 9 X 10	90	0.026	0.8	75	2.1	0	187
Floor-19A1-11op 10 X 9	90	0.072	1.6	148	1.3	0	115
Subtotals for Structure:				579		0	677
Infil.: Win.: 0.0, Sum.: 0.0	152		0.000	0	0.000	0	0
Lighting:	100						341
Room Totals:				579		0	1,018

Detailed Room Loads - Room 15 - Second Floor Bedroom-3 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	17.0	ft.	Zone Number:	1	
Area:	170.0	sq.ft.	Supply Air:	170	CFM
Ceiling Height:	8.0	ft.	Supply Air Changes:	7.5	AC/hr
Volume:	1,360	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	170	CFM	Percent of Supply.:	0	%
Runout Duct Size:	8	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	487	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	487	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.100	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 17 X 8	76	0.043	1.4	106	1.0	0	73
E -Wall-Frame wall-R-23 10 X 8	80	0.043	1.4	111	1.0	0	76
N -Gls-1G-cm-s shgc-0.62 100%S	60	0.550	17.6	1,056	26.5	0	1,591
UP-Ceil-16A-38 10 X 17	170	0.026	0.8	141	2.1	0	354
Floor-19A1-11op 17 X 10	170	0.072	1.6	279	1.3	0	218
Subtotals for Structure:				1,693		0	2,312
Infil.: Win.: 0.0, Sum.: 0.0	216		0.000	0	0.000	0	0
People: 230 lat/per, 300 sen/per:	2					460	600
Equipment:						200	400
Lighting:	100						341
Room Totals:				1,693		660	3,653

Detailed Room Loads - Room 16 - Second Floor Hallway (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	10.0	ft.	System Number:	1	
Room Width:	26.0	ft.	Zone Number:	1	
Area:	260.0	sq.ft.	Supply Air:	85	CFM
Ceiling Height:	8.0	ft.	Supply Air Changes:	2.5	AC/hr
Volume:	2,080	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	1		Actual Winter Vent.:	0	CFM
Runout Air:	85	CFM	Percent of Supply.:	0	%
Runout Duct Size:	6	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	434	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	434	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.119	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-Frame wall-R-23 26 X 8	208	0.043	1.4	289	1.0	0	199
E -Wall-Frame wall-R-23 10 X 8	80	0.043	1.4	111	1.0	0	76
UP-Ceil-16A-38 10 X 26	260	0.026	0.8	216	2.1	0	541
Floor-19A1-11op 26 X 10	260	0.072	1.6	426	1.3	0	333
Subtotals for Structure:				1,042		0	1,149
Infil.: Win.: 0.0, Sum.: 0.0	288		0.000	0	0.000	0	0
Lighting:	200						682
Room Totals:				1,042		0	1,831

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	Main Floor Enterance	340	3,578	48	1-9	547	5,189	0	241	241
2	Main Floor Office	140	3,349	45	1-10	563	6,596	860	307	307
3	Main Floor Kitchen	230	3,134	42	1-9	501	4,752	0	221	221
4	Main Floor Dinning	280	3,327	44	1-10	526	6,168	920	287	287
5	Main Floor Living	300	3,405	45	1-10	627	7,354	1,550	342	342
6	Main Floor Pantry	24	198	3	1-5	279	817	100	38	38
7	Main Floor Powder	25	200	3	1-5	397	1,162	230	54	54
8	Main Floor Rear Enterance	130	981	13	1-6	333	1,407	0	65	65
9	Second Floor Laundry	130	576	8	1-6	463	1,952	500	91	91
10	Second Floor Dressing Room	170	1,368	18	1-6	467	1,972	0	92	92
11	Second Floor Masterbed	240	1,749	23	1-9	482	4,574	960	213	213
12	Second Floor Master Bath	180	756	10	1-5	396	1,159	0	54	54
13	Second Floor Bedroom 2	180	1,340	18	1-8	437	3,280	760	153	153
14	Second Floor Bathroom	90	579	8	1-5	347	1,018	0	47	47
15	Second Floor Bedroom-3	170	1,693	23	1-8	487	3,653	660	170	170
16	Second Floor Hallway	260	1,042	14	1-6	434	1,831	0	85	85
	System 1 total	2,889	27,275	363			52,884	6,540	2,461	2,461

System 1 Main Trunk Size:	17x24	in.
Velocity:	869	ft./min
Loss per 100 ft.:	0.068	in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	4.95	89% / 11%	52,884	6,540	59,424
Actual:	5.00				60,000

Equipment Data

	Heating System	Cooling System
Type:	Electric Resistance	Standard Air Conditioner
Model:	Heat Pump Indoor:CHPE4860D4+.outdoor unit:GSZH506010A	Heat Pump:CHPE4860D4+.outdoor unit:GSX160611F
Indoor Model:		
Brand:		
Description:	0	0
Efficiency:	0%	16 SEER
Sound:	0	0
Capacity:	60,000 Btuh	60,000 Btuh
Adjusted Capacity:	n/a	60,000 Btuh
Sensible Capacity:	n/a	0 Btuh
Adjusted Sensible Capacity:	n/a	60,000 Btuh
Latent Capacity:	n/a	0 Btuh

System 1 Room Load Summary (cont'd)

Equipment Data

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: 52,884 Btuh, Lat. gain: 6,540 Btuh, Sen. loss: 27,275 Btuh, Entering clg. coil DB: 75F, Entering clg. coil WB: 62.4F, Entering htg. coil DB: 72F, Clg. coil TD: 20F, Htg. coil TD: 70F, Req. clg. airflow: 2461 CFM, Req. htg. airflow: 363 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-Main Floor Enterance	48	241	48	405	48	457	48	323	48	259	48	419	48	592	48	500	1--13
2-Main Floor Office	45	307	45	506	45	579	45	430	45	329	45	557	45	750	45	625	1--14
3-Main Floor Kitchen	42	221	42	398	42	472	42	336	42	237	42	435	42	612	42	491	1--13
4-Main Floor Dinning	44	287	44	465	44	545	44	408	44	308	44	529	44	707	44	574	1--14
5-Main Floor Living	45	342	45	521	45	607	45	468	45	367	45	608	45	786	45	643	1--14
6-Main Floor Pantry	3	38	3	39	3	42	3	42	3	41	3	54	3	55	3	48	1--5
7-Main Floor Powder	3	54	3	55	3	60	3	59	3	58	3	77	3	78	3	68	1--6
8-Main Floor Rear Enterance	13	65	13	67	13	73	13	72	13	70	13	93	13	94	13	82	1--6
9-Second Floor Laundry	8	91	8	92	8	101	8	100	8	97	8	129	8	131	8	114	1--7
10-Second Floor Dressing Ro	18	92	18	146	18	144	18	101	18	98	18	131	18	187	18	181	1--8
11-Second Floor Masterbed	23	213	23	280	23	299	23	238	23	228	23	309	23	387	23	346	1--11
12-Second Floor Master Bath	10	54	10	55	10	60	10	59	10	58	10	77	10	78	10	68	1--6
13-Second Floor Bedroom 2	18	153	18	203	18	216	18	171	18	164	18	222	18	280	18	251	1--10
14-Second Floor Bathroom	8	47	8	60	8	54	8	52	8	51	8	67	8	70	8	74	1--6
15-Second Floor Bedroom-3	23	170	23	253	23	266	23	192	23	182	23	249	23	345	23	312	1--10
16-Second Floor Hallway	14	85	14	87	14	95	14	94	14	91	14	121	14	123	14	107	1--7
Other Ducts in System 1																	
Supply Main Trunk	363	2,461	363	3,632	363	4,070	363	3,143	363	2,641	363	4,077	363	5,275	363	4,483	25x34
Bldg. High Dir.: West																	
Sensible Gain: 113,360																	
Latent Gain: 6,540																	

Summary

System 1

Heating Flow:	363
Cooling Flow:	2461

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
System 1:										
Zone 1:										
1	Main Floor Enterance	241	405	457	323	259	419	*592	500	1--13
2	Main Floor Office	307	506	579	430	329	557	*750	625	1--14
3	Main Floor Kitchen	221	398	472	336	237	435	*612	491	1--13
4	Main Floor Dinning	287	465	545	408	308	529	*707	574	1--14
5	Main Floor Living	342	521	607	468	367	608	*786	643	1--14
6	Main Floor Pantry	38	39	42	42	41	54	*55	48	1--5
7	Main Floor Powder	54	55	60	59	58	77	*78	68	1--6
8	Main Floor Rear Enterance	65	67	73	72	70	93	*94	82	1--6
9	Second Floor Laundry	91	92	101	100	97	129	*131	114	1--7
10	Second Floor Dressing Room	92	146	144	101	98	131	*187	181	1--8
11	Second Floor Masterbed	213	280	299	238	228	309	*387	346	1--11
12	Second Floor Master Bath	54	55	60	59	58	77	*78	68	1--6
13	Second Floor Bedroom 2	153	203	216	171	164	222	*280	251	1--10
14	Second Floor Bathroom	47	60	54	52	51	67	70	*74	1--6
15	Second Floor Bedroom-3	170	253	266	192	182	249	*345	312	1--10
16	Second Floor Hallway	85	87	95	94	91	121	*123	107	1--7

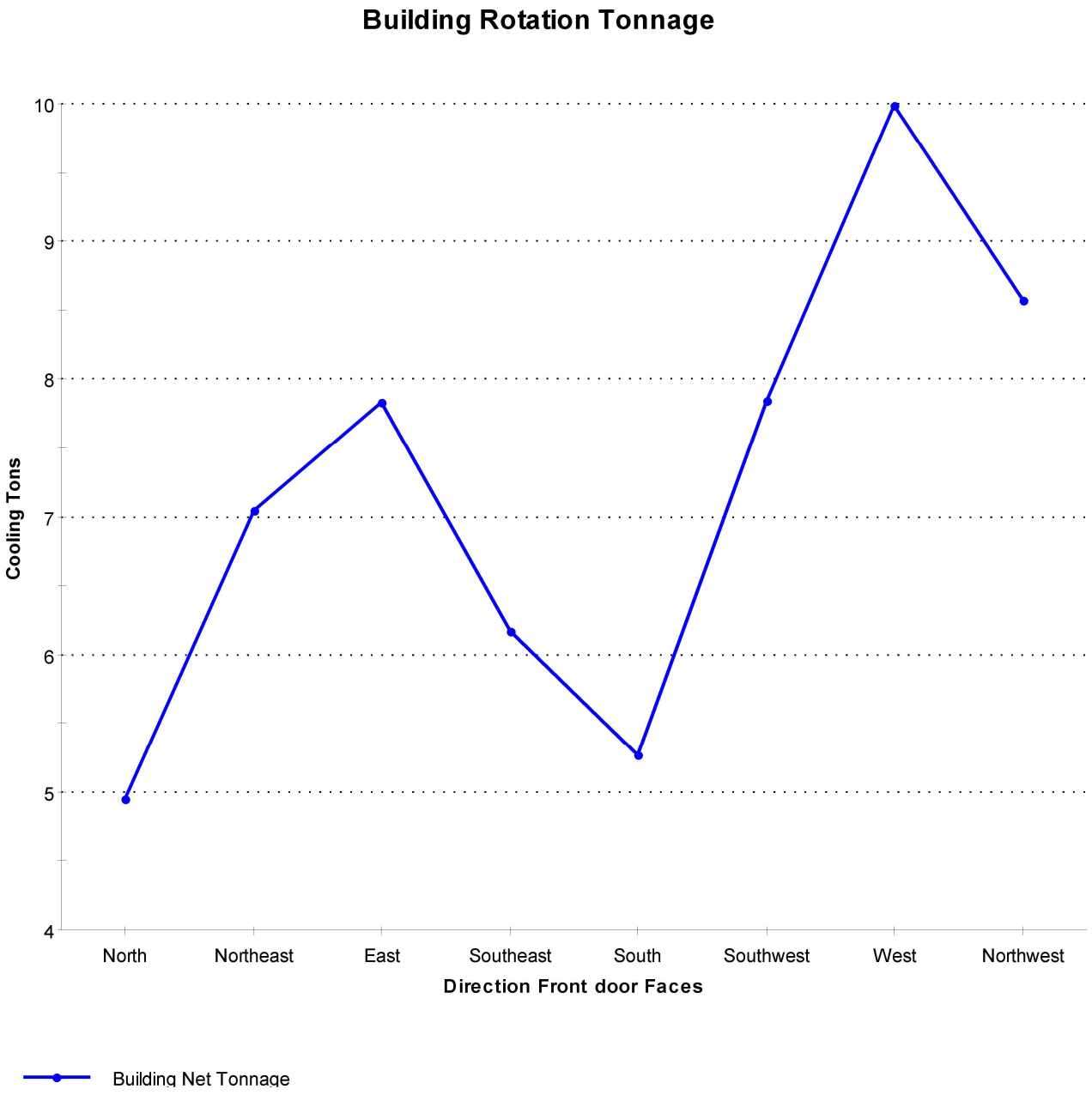
* Indicates highest CFM of all rotations.

Whole Building

Rotation Degrees	Front door Faces	Supply CFM	Sensible Gain	Latent Gain	Net Tons
0°	North	2,461	52,884	*6,540	4.95
45°	Northeast	3,632	78,050	6,540	7.05
90°	East	4,070	87,464	6,540	7.83
135°	Southeast	3,143	67,546	6,540	6.17
180°	South	2,641	56,758	6,540	5.27
225°	Southwest	4,077	87,598	6,540	7.84
270°	West	*5,275	*113,360	6,540	*9.99
315°	Northwest	4,483	96,339	6,540	8.57

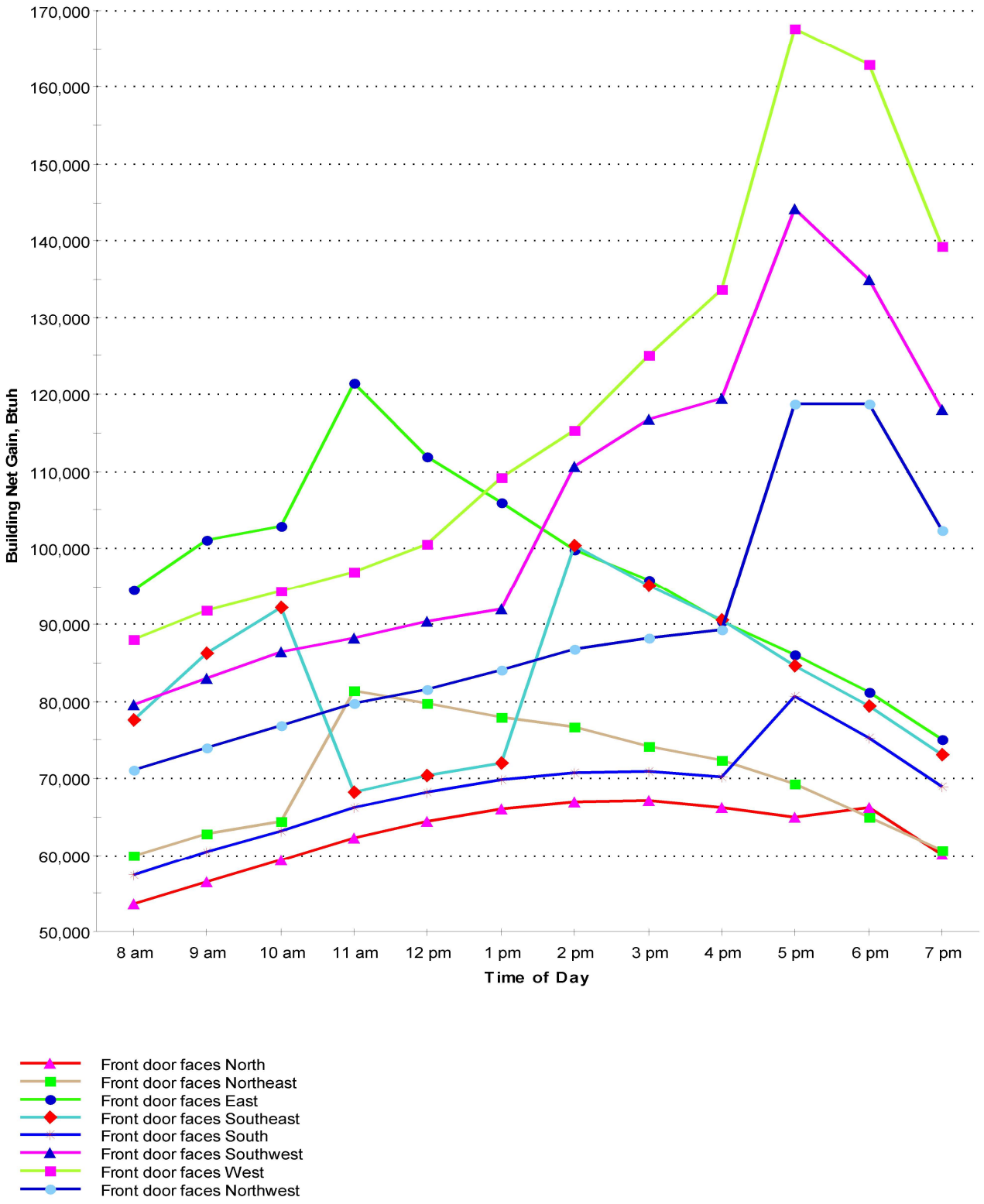
* Indicates highest value of all rotations.

Building Rotation Report (cont'd)



Building Rotation Report (cont'd)

Building Rotation Hourly Net Gain



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 ATTACHMENTS[1]	ATTACHED
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 ☒

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature	40	°F
Indoor temperature	72	°F
Total heat loss	27275	Btu/h

Summer Design Conditions

Outdoor temperature	100	°F
Indoor temperature	75	°F
Grains difference	21 △ Gr @ 50	% Rh
Sensible heat gain	52884	Btu/h
Latent heat gain	6540	Btu/h
Total heat gain	59424	Btu/h

Building Construction Information

Building

Orientation (Front door faces): North

North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms: 3

Conditioned floor area: 2889 Sq Ft

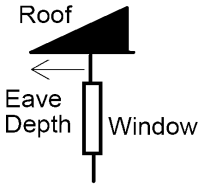
Number of occupants: 18

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.)

Model: Heat Pump Indoor:CHPE4860D4+.outdoor unit:GSZH506[illegible]

Heating output capacity: 60000 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)

Model: [illegible]CHPE4860D4+.outdoor unit:GSX160611F

Sensible cooling capacity: 60000 Btu/h

Latent cooling capacity: Btu/h

Total cooling capacity: 60000 Btu/h

Blower Data

Heating CFM: 2461 CFM

Cooling CFM: 2461 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow: CFM

External Static Pressure (ESP): IWC

Component Pressure Losses (CPL): IWC

Available Static Pressure (ASP): IWC

ASP = ESP - CPL

Longest supply duct: Ft

Longest return duct: Ft

Total Effective Length (TEL): Ft

Friction Rate: IWC

Friction Rate = (ASP × 100) ÷ TEL

Duct Materials Used (circle)

Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify)

Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify)

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 ATTACHMENTS[1]	ATTACHED	
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 ☐

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 _____ △ 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 _____

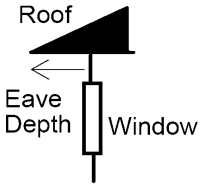
Windows

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

External Static Pressure (ESP) _____ IWC

Component Pressure Losses (CPL) _____ IWC

Available Static Pressure (ASP) _____ IWC

ASP = ESP - CPL

Longest supply duct: _____ Ft

Longest return duct: _____ Ft

Total Effective Length (TEL) _____ Ft

Friction Rate: _____ IWC

Friction Rate = (ASP × 100) ÷ TEL

Duct Materials Used (circle)

Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify)

_____

Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify)

_____

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.

Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

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 ATTACHMENTS[1]			ATTACHED
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 ☒	

HVAC LOAD CALCULATION (UMC 1106.1)

Design Conditions

Winter Design Conditions

Outdoor temperature	40	°F
Indoor temperature	72	°F
Total heat loss	27275	Btu/h

Summer Design Conditions

Outdoor temperature	100	°F
Indoor temperature	75	°F
Grains difference	21 △ Gr @ 50	% Rh
Sensible heat gain	52884	Btu/h
Latent heat gain	6540	Btu/h
Total heat gain	59424	Btu/h

Building Construction Information

Building

Orientation (Front door faces): North

North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms: 3

Conditioned floor area: 2889 Sq Ft

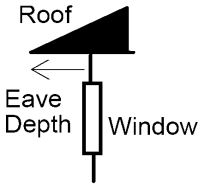
Number of occupants: 18

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.)

Model: Heat Pump Indoor:CHPE4860D4+.outdoor unit:GSZH506[illegible]

Heating output capacity: 60000 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)

Model: [illegible]CHPE4860D4+.outdoor unit:GSX160611F

Sensible cooling capacity: 60000 Btu/h

Latent cooling capacity: Btu/h

Total cooling capacity: 60000 Btu/h

Blower Data

Heating CFM: 2461 CFM

Cooling CFM: 2461 CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (UMC 601.2)

Design airflow: CFM

External Static Pressure (ESP): IWC

Component Pressure Losses (CPL): IWC

Available Static Pressure (ASP): IWC (ASP = ESP - CPL)

Longest supply duct: Ft

Longest return duct: Ft

Total Effective Length (TEL): Ft

Friction Rate: IWC (Friction Rate = (ASP × 100) ÷ TEL)

Duct Materials Used (circle)

Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify)

Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify)

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 ATTACHMENTS[1]	ATTACHED	
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 ☐

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 _____ △ 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 _____

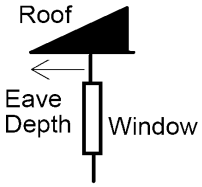
Windows

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

External Static Pressure (ESP) _____ IWC

Component Pressure Losses (CPL) _____ IWC

Available Static Pressure (ASP) _____ IWC

ASP = ESP - CPL

Longest supply duct: _____ Ft

Longest return duct: _____ Ft

Total Effective Length (TEL) _____ Ft

Friction Rate: _____ IWC

Friction Rate = (ASP × 100) ÷ TEL

Duct Materials Used (circle)

Trunk Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify)

_____

Branch Duct: Duct board, Flex, Sheet metal, Lined sheet metal, Other (specify)

_____

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 _____

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.

Form generated by ACCA-approved Manual J Eighth Edition Version 2 Elite Software Rhvac program.

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 74 CFM	-
2.3 Design for this system: Vent. airflow rate: 0 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: 100 °F Heating season: 40 °F

3.4 Number of occupants used in loads: [19] 18 -

3.5 Conditioned floor area used in loads: [20] 2889 Sq. Ft. -

3.6 Window area used in loads: [21] 849 Sq. Ft. -

3.7 Predominant window SHGC used in loads: [22] 0.62 -

3.8 Infiltration rate used in loads: [23] Summer: 0 Winter: 0 -

3.9 Mechanical ventilation rate used in loads: 0 CFM -

Loads At Design Conditions (kBtuh)		N	NE	E	SE	S	SW	W	NW	
Cooling	3.10 Sensible heat gain (By orientation [24])	52.9	78.1	87.5	67.5	56.8	87.6	113.4	96.3	-
	3.11 Latent heat gain (Not by orientation)	6.5								-
	3.12 Total heat gain (By orientation [24])	59.4	84.6	94	74.1	63.3	94.1	119.9	102.9	-
	3.13 Maximum - minimum total heat gain (Item 3.12) across orientations = 60.5 kBtuh						Variation is ≤ 6 kBtuh [24, 25]			☐
Heating	3.14 Total heat loss (Not by orientation)	27.3								-

ENERGY STAR Single-Family New Homes
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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: GOODMAN, Heat Pump:CHPE4860D4+.outdoor unit:GSX160611F	-
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): 50 %	
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) = 89 %	
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, Heat Pump Indoor:CHPE4860D4+.outdoor unit:GSZH506010A	-
4.18 Rated heating efficiency: 0 AFUE	-
4.19 Total capacity: [33] 60 kBtuh	-
4.20 Heating sizing % = Total capacity (Item 4.19) divided by total heat loss (Item 3.14): 220 %	-
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 2461 CFM Heating mode 363 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	Main Floor Enterance	241	12	Second Floor Master Bath	54	23		
2	Main Floor Office	307	13	Second Floor Bedroom 2	153	24		
3	Main Floor Kitchen	221	14	Second Floor Bathroom	47	25		
4	Main Floor Dinning	287	15	Second Floor Bedroom-3	170	26		
5	Main Floor Living	342	16	Second Floor Hallway	85	27		
6	Main Floor Pantry	38	17			28		
7	Main Floor Powder	54	18			29		
8	Main Floor Rear Enterance	65	19			30		
9	Second Floor Laundry	91	20			31		
10	Second Floor Dressing Room	92	21			32		
11	Second Floor Masterbed	213	22				Total for all rooms	2461

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- 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])									-
Cooling 3.11 Latent heat gain (Not by orientation)									-
Cooling 3.12 Total heat gain (By orientation [24])									-
Cooling 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	