

*The Oxford- 8008 W 52nd Ln Unit C
HVAC Load Calculations*

for

Royal Oak



RHVAC RESIDENTIAL
HVAC LOADS

Prepared By:

Kyle Patee
Four Seasons Heating
4896 Marshall Street
Wheat Ridge Colorado 80033
(303) 423- 1982
Wednesday, January 27, 2021

Project Report

General Project Information

Project Title: The Oxford- 8008 W 52nd Ln Unit C
 Designed By: Kyle Patee
 Project Date: Wednesday, January 27, 2021
 Client Name: Royal Oak
 Company Name: Four Seasons Heating
 Company Representative: Kyle Patee
 Company Address: 4896 Marshall Street
 Company City: Wheat Ridge Colorado 80033
 Company Phone: (303) 423- 1982
 Company Fax: (303) 423-0120
 Company E-Mail Address: dmaul@fourseasonsheatinginc.com
 Company Website: fourseasonsheatinginc.com

Design Data

Reference City: Arvada, Colorado
 Building Orientation: Front door faces North
 Daily Temperature Range: High
 Latitude: 40 Degrees
 Elevation: 5453 ft.
 Altitude Factor: 0.818
 Elevation Total Adj. Factor: 0.960

	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	1	0.19	80%	30%	70	34.17
Summer:	91	60	17%	50%	75	-34

Check Figures

Total Building Supply CFM: 1,007 CFM Per Square ft.: 0.552
 Square ft. of Room Area: 1,825 Square ft. Per Ton: 907
 Volume (ft³) of Cond. Space: 18,404

Building Loads

Total Heating Required Including Ventilation Air: 45,956 Btuh 45.956 MBH
 Total Sensible Gain: 19,699 Btuh 100 %
 Total Latent Gain: -2,035 Btuh 0 %
 Total Cooling Required Including Ventilation Air: 19,699 Btuh 1.64 Tons (Based On Sensible + Latent)
 2.01 Tons (Based On 85% Sensible Capacity)
 (and 0.960 Total Derating)

Notes

Rhvac is an ACCA approved Manual J and Manual D computer program.
 Calculations are performed per ACCA Manual J 8th Edition, Version 2, 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.

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Miscellaneous Report

System 1 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	1	0.19	80%	30%	70	34.17
Summer:	91	60	17%	50%	75	-34.14

System 2 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	1	0.19	80%	30%	70	34.17
Summer:	91	60	17%	50%	75	-34.14

Duct Sizing Inputs

	Main Trunk	Runouts
Calculate:	Yes	Yes
Use Schedule:	Yes	Yes
Roughness Factor:	0.00030	0.00030
Pressure Drop:	0.0800 in.wg./100 ft.	0.0800 in.wg./100 ft.
Minimum Velocity:	650 ft./min	450 ft./min
Maximum Velocity:	900 ft./min	560 ft./min
Minimum Height:	8 in.	4 in.
Maximum Height:	10 in.	8 in.

Outside Air Data

	Winter	Summer
Infiltration Specified:	0.350 AC/hr 107 CFM	0.350 AC/hr 107 CFM
Infiltration Actual:	0.385 AC/hr	0.385 AC/hr
Above Grade Volume:	X 18,404 Cu.ft. 7,087 Cu.ft./hr X 0.0167	X 18,404 Cu.ft. 7,087 Cu.ft./hr X 0.0167
Total Building Infiltration:	118 CFM	118 CFM
Total Building Ventilation:	110 CFM	110 CFM

---System 1---

Infiltration & Ventilation Sensible Gain Multiplier:	14.40	= (1.10 X 0.818 X 16.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	-18.99	= (0.68 X 0.818 X -34.14 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	62.09	= (1.10 X 0.818 X 69.00 Winter Temp. Difference)
Winter Infiltration Specified:	0.350 AC/hr (69 CFM)	
Summer Infiltration Specified:	0.350 AC/hr (69 CFM)	

---System 2---

Infiltration & Ventilation Sensible Gain Multiplier:	14.40	= (1.10 X 0.818 X 16.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	-18.99	= (0.68 X 0.818 X -34.14 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	62.09	= (1.10 X 0.818 X 69.00 Winter Temp. Difference)
Winter Infiltration Specified:	0.350 AC/hr (38 CFM)	
Summer Infiltration Specified:	0.350 AC/hr (38 CFM)	

Duct Load Factor Scenarios for System 2

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	Main	Attic	16B	0.12	8	177	No
1	Return	Main	Attic	16B	0.24	8	99	No

Load Preview Report

Scope	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	Duct Size
Building	1.64	1,240	1,825	19,699	-2,035	19,699	45,956	621	1,007	621	1,007	1,007	
System 1	0.85	1,463	1,156	10,257	-778	10,257	26,172	381	542	381	542	542	10x10
Ventilation				504	-665	504	2,173						
Humidification							1,976						
Zone 1			1,156	9,753	-113	9,753	22,023	381	542	381	542	542	10x10
1-Bath 3			84	801	-220	801	3,086	53	44	53	44	53	1--5
2-Bed Room 3			156	1,300	5	1,305	2,936	51	72	51	72	72	1--5
3-Mud Room			81	393	-128	393	1,991	34	22	34	22	34	1--4
4-Mech			24	0	0	0	45	1	0	1	0	1	1--4
5-Foyer/ Stairs			149	1,000	-301	1,000	4,582	79	56	79	56	79	1--6
6-Kitchen			318	2,622	834	3,456	4,628	80	146	80	146	146	2--5
7-Great Room			306	3,370	-209	3,370	3,776	65	187	65	187	187	2--6
8-Pwdr			38	269	-94	269	979	17	15	17	15	17	1--4
System 2	0.79	981	669	9,442	-1,257	9,442	19,784	240	465	240	465	465	10x10
Ventilation				1,080	-1,424	1,080	4,657						
Duct Latent					-303	0							
Humidification							2,155						
Zone 1			669	8,362	470	8,832	12,973	240	465	240	465	465	10x10
9-Laundry			44	1,346	492	1,838	1,546	29	75	29	75	75	1--5
10-Master Bedroom			174	3,603	189	3,792	4,779	88	200	88	200	200	3--5
11-Master Bath			81	875	-85	875	1,408	26	49	26	49	49	1--4
12-Master Wic			39	307	-103	307	1,268	23	17	23	17	23	1--4
13-Bath 2			38	52	0	52	78	1	3	1	3	3	1--4
14-Upper Stairs/ Mech			129	201	0	201	310	6	11	6	11	11	1--4
15-Bedroom 2			164	1,978	-23	1,978	3,583	66	110	66	110	110	2--5

Sum of room airflows may be greater than system airflow because system room airflow option uses the greater of heating or cooling.

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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
System 1												
Supply Runouts												
Zone 1												
1-Bath 3	Built-In	450	560	0	0.1		391.5		53	44	53	1--5
2-Bed Room 3	Built-In	450	560	0	0.1		529.7		51	72	72	1--5
3-Mud Room	Built-In	450	560	0	0.1		394.7		34	22	34	1--4
4-Mech	Built-In	450	560	0	0.1		8.9		1	0	1	1--4
5-Foyer/ Stairs	Built-In	450	560	0	0.1		403.7		79	56	79	1--6
6-Kitchen	Built-In	450	560	0	0.1		534.2		80	146	146	2--5
7-Great Room	Built-In	450	560	0	0.1		476.8		65	187	187	2--6
8-Pwdr	Built-In	450	560	0	0.1		194.1		17	15	17	1--4
Other Ducts in System 1												
Supply Main Trunk	Built-In	650	900	0	0.1		780.4		381	542	542	10x10
System 2												
Supply Runouts												
Zone 1												
9-Laundry	Built-In	450	560	0	0.1		548.5		29	75	75	1--5
10-Master Bedroom	Built-In	450	560	0	0.1		489.4		88	200	200	3--5
11-Master Bath	Built-In	450	560	0	0.1		557.1		26	49	49	1--4
12-Master Wic	Built-In	450	560	0	0.1		269.1		23	17	23	1--4
13-Bath 2	Built-In	450	560	0	0.1		33.2		1	3	3	1--4
14-Upper Stairs/ Mech	Built-In	450	560	0	0.1		128.1		6	11	11	1--4
15-Bedroom 2	Built-In	450	560	0	0.1		403		66	110	110	2--5
Other Ducts in System 2												
Supply Main Trunk	Built-In	650	900	0	0.1		669		240	465	465	10x10

Summary

System 1	
Heating Flow:	381
Cooling Flow:	542
System 2	
Heating Flow:	240
Cooling Flow:	465



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Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
CST GLASS NWC.32 .35: Glazing-Custom Glass U=.32 SHGC=.35, u-value 0.32, SHGC 0.35	308.3	6,803	0	5,333	5,333
11D: Door-Wood - Solid Core	41.8	1,125	0	359	359
C12E20-OSW: Wall-Frame, Custom, R-20 INSULATION IN 2X6 WALL	2581.9	10,512	0	2,041	2,041
C12E20-OSW: Part-Frame, Custom, R-20 INSULATION IN 2X6 WALL	480.4	113	0	56	56
C16B-49: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Custom, R-49 ATTIC INSULATION	860.9	1,187	0	793	793
22B-10pm-c: Floor-Slab on grade, Vertical board insulation covers slab edge and extends straight down to 3' below grade, carpet covering, R-10 insulation, passive, heavy dry or light wet soil	122	2,988	0	0	0
21A-20: Floor-Basement, Concrete slab, any thickness, 2 or more feet below grade, no insulation below floor, any floor cover, shortest side of floor slab is 20' wide	24.3	45	0	0	0
20P-30: Floor-Over open crawl space or garage, Passive, R-30 blanket insulation, any cover	307.8	743	0	64	64
Subtotals for structure:		23,516	0	8,646	8,646
People:	4		800	920	1,720
Equipment:			1,800	3,700	5,500
Lighting:	0			0	0
Ductwork:		4,146	-303	2,500	2,197
Infiltration: Winter CFM: 118, Summer CFM: 118		7,334	-2,243	1,701	-542
Ventilation: Winter CFM: 110, Summer CFM: 110		6,830	-2,089	1,584	-505
Humidification (Winter) 11.26 gal/day :		4,131	0	0	0
AED Excursion:		0	0	648	648
Total Building Load Totals:		45,956	-2,035	19,699	17,664

Check Figures

Total Building Supply CFM:	1,007	CFM Per Square ft.:	0.552
Square ft. of Room Area:	1,825	Square ft. Per Ton:	907
Volume (ft³) of Cond. Space:	18,404		

Building Loads

Total Heating Required Including Ventilation Air:	45,956 Btuh	45.956 MBH
Total Sensible Gain:	19,699 Btuh	100 %
Total Latent Gain:	-2,035 Btuh	0 %
Total Cooling Required Including Ventilation Air:	19,699 Btuh	1.64 Tons (Based On Sensible + Latent)
		2.01 Tons (Based On 85% Sensible Capacity)
		(and 0.960 Total Derating)

Notes

Rhvac is an ACCA approved Manual J and Manual D computer program.
 Calculations are performed per ACCA Manual J 8th Edition, Version 2, 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.

System 1 Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
CST GLASS NWC.32 .35: Glazing-Custom Glass U=.32 SHGC=.35, u-value 0.32, SHGC 0.35	194.3	4,287	0	3,401	3,401
11D: Door-Wood - Solid Core	41.8	1,125	0	359	359
C12E20-OSW: Wall-Frame, Custom, R-20 INSULATION IN 2X6 WALL	1867.2	7,601	0	1,477	1,477
C12E20-OSW: Part-Frame, Custom, R-20 INSULATION IN 2X6 WALL	285.1	67	0	33	33
C16B-49: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Custom, R-49 ATTIC INSULATION	157.1	216	0	145	145
22B-10pm-c: Floor-Slab on grade, Vertical board insulation covers slab edge and extends straight down to 3' below grade, carpet covering, R-10 insulation, passive, heavy dry or light wet soil	122	2,988	0	0	0
21A-20: Floor-Basement, Concrete slab, any thickness, 2 or more feet below grade, no insulation below floor, any floor cover, shortest side of floor slab is 20' wide	24.3	45	0	0	0
20P-30: Floor-Over open crawl space or garage, Passive, R-30 blanket insulation, any cover	307.8	743	0	64	64
Subtotals for structure:		17,072	0	5,479	5,479
People:	1		200	230	430
Equipment:			1,200	2,500	3,700
Lighting:	0			0	0
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 80, Summer CFM: 80		4,951	-1,513	1,148	-365
Ventilation: Winter CFM: 35, Summer CFM: 35		2,173	-665	504	-161
Humidification (Winter) 5.39 gal/day :		1,976	0	0	0
AED Excursion:		0	0	396	396
System 1 Load Totals:		26,172	-778	10,257	9,480

Check Figures			
Supply CFM:	542	CFM Per Square ft.:	0.469
Square ft. of Room Area:	1,156	Square ft. Per Ton:	1,104
Volume (ft³) of Cond. Space:	11,822		

System Loads			
Total Heating Required Including Ventilation Air:	26,172 Btuh	26.172 MBH	
Total Sensible Gain:	10,257 Btuh	100 %	
Total Latent Gain:	-778 Btuh	0 %	
Total Cooling Required Including Ventilation Air:	10,257 Btuh	0.85 Tons (Based On Sensible + Latent)	
		1.05 Tons (Based On 85% Sensible Capacity)	
		(and Total Derating)	

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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 2 Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
CST GLASS NWC.32 .35: Glazing-Custom Glass U=.32 SHGC=.35, u-value 0.32, SHGC 0.35	114	2,516	0	1,932	1,932
C12E20-OSW: Part-Frame, Custom, R-20 INSULATION IN 2X6 WALL	195.3	46	0	23	23
C12E20-OSW: Wall-Frame, Custom, R-20 INSULATION IN 2X6 WALL	714.7	2,911	0	564	564
C16B-49: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Custom, R-49 ATTIC INSULATION	703.8	971	0	648	648
Subtotals for structure:		6,444	0	3,167	3,167
People:	3		600	690	1,290
Equipment:			600	1,200	1,800
Lighting:	0			0	0
Ductwork:		4,146	-303	2,500	2,197
Infiltration: Winter CFM: 38, Summer CFM: 38		2,383	-730	553	-177
Ventilation: Winter CFM: 75, Summer CFM: 75		4,657	-1,424	1,080	-344
Humidification (Winter) 5.88 gal/day :		2,155	0	0	0
AED Excursion:		0	0	252	252
System 2 Load Totals:		19,784	-1,257	9,442	8,184

Check Figures			
Supply CFM:	465	CFM Per Square ft.:	0.694
Square ft. of Room Area:	669	Square ft. Per Ton:	694
Volume (ft³) of Cond. Space:	6,582		

System Loads			
Total Heating Required Including Ventilation Air:	19,784 Btuh	19.784 MBH	
Total Sensible Gain:	9,442 Btuh	100 %	
Total Latent Gain:	-1,257 Btuh	0 %	
Total Cooling Required Including Ventilation Air:	9,442 Btuh	0.79 Tons (Based On Sensible + Latent)	
		0.96 Tons (Based On 85% Sensible Capacity)	
		(and Total Derating)	

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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.



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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	Bath 3	84	3,086	53	1-5	392	801	-220	44	53
2	Bed Room 3	156	2,936	51	1-5	530	1,300	5	72	72
3	Mud Room	81	1,991	34	1-4	395	393	-128	22	34
4	Mech	24	45	1	1-4	9	0	0	0	1
5	Foyer/ Stairs	149	4,582	79	1-6	404	1,000	-301	56	79
6	Kitchen	318	4,628	80	2-5	534	2,622	834	146	146
7	Great Room	306	3,776	65	2-6	477	3,370	-209	187	187
8	Pwdr	38	979	17	1-4	194	269	-94	15	17
	Ventilation		2,173				504	-665		
	Humidification		1,976							
	System 1 total	1,156	26,172	381			10,257	-778	542	542

System 1 Main Trunk Size: 10x10 in.
 Velocity: 780 ft./min
 Loss per 100 ft.: 0.083 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.85	108% / -8%	10,257	-778	10,257
Recommended:	1.05	85% / 15%	10,685	1,886	12,570
Actual:	1.46	85% / 15%	14,875	2,625	17,500

Equipment Data

	<u>Heating System</u>	<u>Cooling System</u>
Type:	Natural Gas Furnace	Standard Air Conditioner
Model:	ML193UH045XE36B-*	13ACXN018-230A21
Indoor Model:		CX35-24B+TDR
Brand:	MERIT 90	LENNOX
Description:	Natural Gas or Propane Furnace	
Efficiency:	95 AFUE	13 SEER
Sound:		
Capacity:	42000	17500
Sensible Capacity:	n/a	14,875 Btuh
Latent Capacity:	n/a	2,625 Btuh
AHRI Reference No.:	n/a	9153617

System 2 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---										
9	Laundry	44	1,546	29	1-5	548	1,346	492	75	75
10	Master Bedroom	174	4,779	88	3-5	489	3,603	189	200	200
11	Master Bath	81	1,408	26	1-4	557	875	-85	49	49
12	Master Wic	39	1,268	23	1-4	269	307	-103	17	23
13	Bath 2	38	78	1	1-4	33	52	0	3	3
14	Upper Stairs/ Mech	129	310	6	1-4	128	201	0	11	11
15	Bedroom 2	164	3,583	66	2-5	403	1,978	-23	110	110
	Ventilation		4,657				1,080	-1,424		
	Humidification		2,155							
	Duct Latent							-303		
	System 2 total	669	19,784	240			9,442	-1,257	465	465

System 2 Main Trunk Size: 10x10 in.
 Velocity: 669 ft./min
 Loss per 100 ft.: 0.063 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.79	115% / -15%	9,442	-1,257	9,442
Recommended:	0.96	85% / 15%	9,835	1,736	11,571
Actual:	1.46	85% / 15%	14,875	2,625	17,500

Equipment Data

	<u>Heating System</u>	<u>Cooling System</u>
Type:	Natural Gas Furnace	Standard Air Conditioner
Model:	ML193UH030XE36B-*	13ACXN018-230A21
Indoor Model:		CX35-24B+TDR
Brand:	MERIT 90	LENNOX
Description:	Natural Gas or Propane Furnace	
Efficiency:	93 AFUE	13 SEER
Sound:		
Capacity:	28000	17500
Sensible Capacity:	n/a	14,875 Btuh
Latent Capacity:	n/a	2,625 Btuh
AHRI Reference No.:	n/a	9153617

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	Bath 3	53	56	*59	53	53	53	58	54	1--5
2	Bed Room 3	72	84	*86	75	65	78	85	80	1--6
3	Mud Room	*34	34	34	34	34	34	34	34	1--4
4	Mech	*1	1	1	1	1	1	1	1	1--4
5	Foyer/ Stairs	79	79	*83	79	79	79	82	79	1--6
6	Kitchen	146	193	*223	202	168	208	218	185	3--5
7	Great Room	187	240	*247	205	154	207	237	225	3--6
8	Pwdr	17	21	*25	22	18	23	25	20	1--4

System 2:										
Zone 1:										
9	Laundry	75	77	84	81	77	86	*94	88	1--6
10	Master Bedroom	200	243	285	273	231	294	*326	283	4--6
11	Master Bath	*49	36	26	37	47	43	35	46	1--4
12	Master Wic	*23	23	23	23	23	23	23	23	1--4
13	Bath 2	3	3	3	3	3	3	3	*3	1--4
14	Upper Stairs/ Mech	11	10	10	10	11	11	12	*12	1--4
15	Bedroom 2	110	130	154	143	122	151	*171	148	2--6

* Indicates highest CFM of all rotations.

Whole Building

Rotation Degrees	Front door Faces	Supply CFM	Sensible Gain	Latent Gain	Net Tons	Recommended Tons
0°	North	1,007	19,699	*-2,035	1.64	2.01
45°	Northeast	1,204	23,244	-2,034	1.94	2.37
90°	East	1,321	25,364	-2,033	2.11	2.59
135°	Southeast	1,214	23,441	-2,032	1.95	2.39
180°	South	1,036	20,238	-2,035	1.69	2.07
225°	Southwest	1,270	24,442	-2,032	2.04	2.50
270°	West	*1,383	*26,476	-2,029	*2.21	*2.70
315°	Northwest	1,253	24,128	-2,032	2.01	2.46

* Indicates highest value of all rotations.

System 1

Rotation Degrees	Front door Faces	Supply CFM	Sensible Gain	Latent Gain	Net Tons	Recommended Tons
0°	North	542	10,257	*-778	0.85	1.05
45°	Northeast	689	12,911	-778	1.08	1.32
90°	East	*745	*13,904	-778	*1.16	*1.42
135°	Southeast	651	12,217	-778	1.02	1.25
180°	South	529	10,016	-778	0.83	1.02
225°	Southwest	666	12,495	-778	1.04	1.28
270°	West	725	13,554	-778	1.13	1.38
315°	Northwest	654	12,275	-778	1.02	1.25

* Indicates highest value of all rotations.

System 2

Rhvac - Residential & Light Commercial HVAC Loads

Four Seasons Heating, Inc
 Wheat Ridge, CO 80033



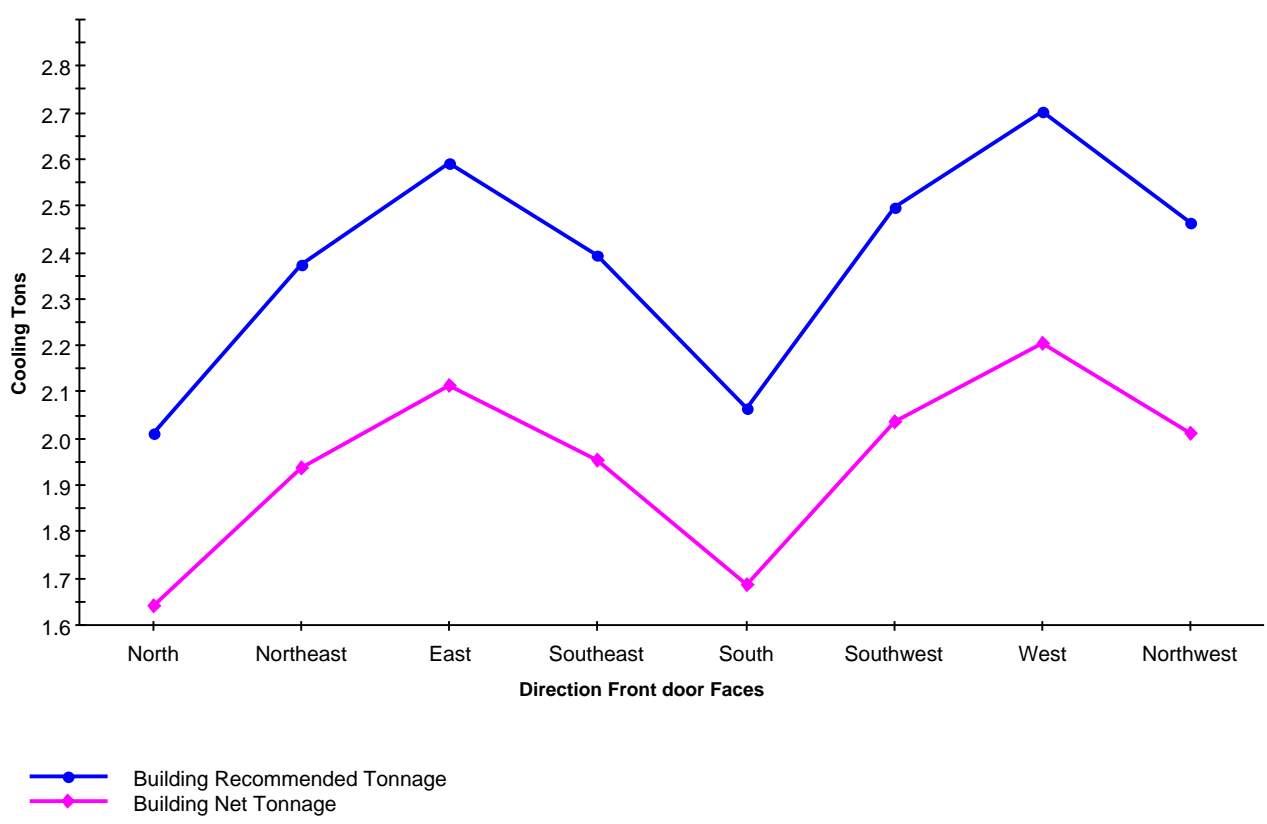
Elite Software Development, Inc.
 The Oxford- 8008 W 52nd Ln Unit C
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Building Rotation Report (cont'd)

Rotation Degrees	Front door Faces	Supply CFM	Sensible Gain	Latent Gain	Net Tons	Recommended Tons
0°	North	465	9,442	*-1,257	0.79	0.96
45°	Northeast	514	10,334	-1,257	0.86	1.06
90°	East	577	11,460	-1,255	0.95	1.17
135°	Southeast	564	11,224	-1,254	0.94	1.15
180°	South	508	10,222	-1,257	0.85	1.04
225°	Southwest	604	11,947	-1,254	1.00	1.22
270°	West	*658	*12,922	-1,251	*1.08	*1.32
315°	Northwest	599	11,853	-1,254	0.99	1.21

* Indicates highest value of all rotations.

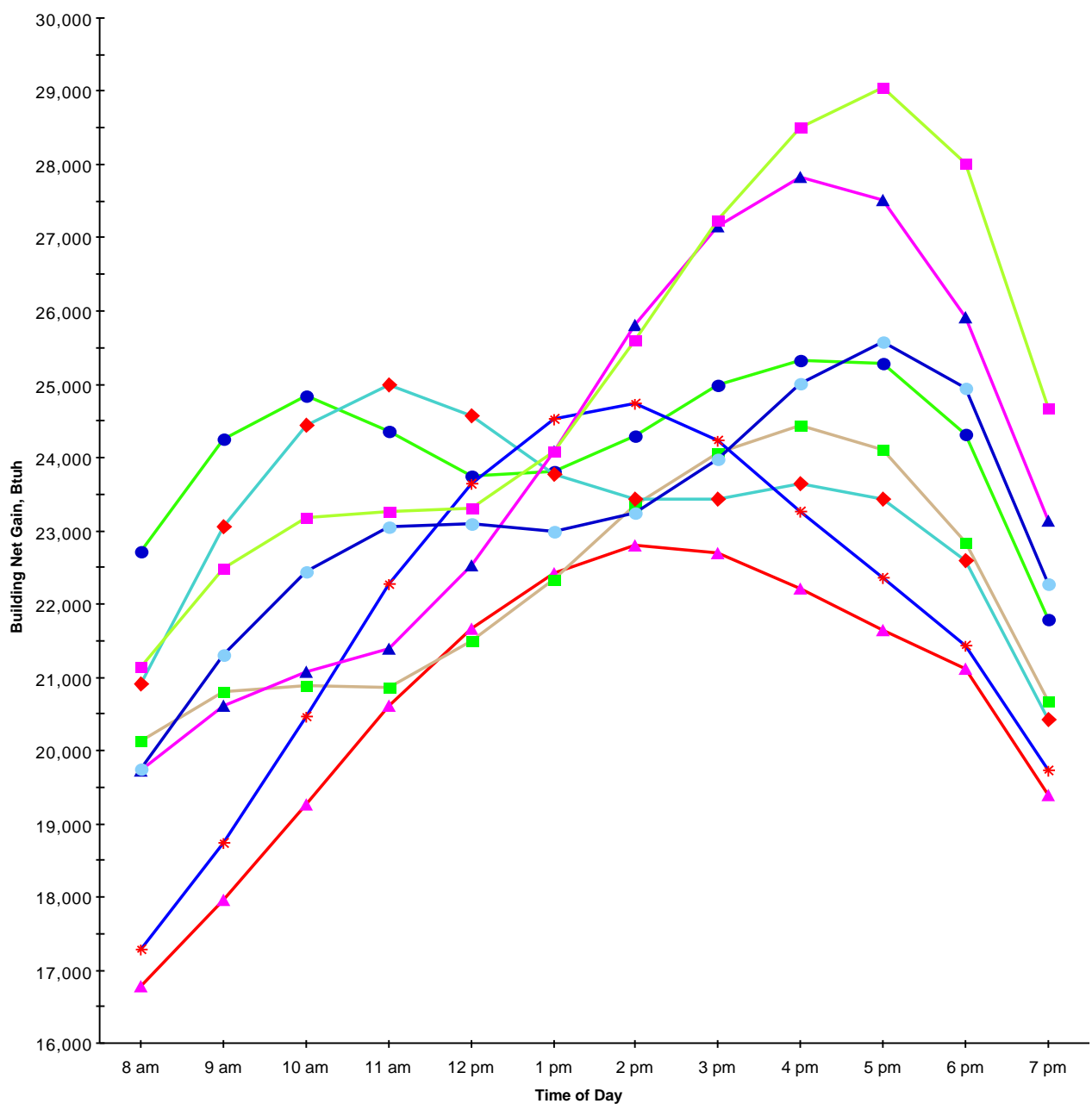
Building Rotation Tonnage





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