

*Showcase Home Builder
HVAC Load Calculations*

for

Sage Homebuilders
32 Beacon Hill Ln
St Louis, MO 63141



Prepared By:

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MaxHome
476 Smizer Mill Rd, #122
Fenton, MO 63026
636-326-5991
Wednesday, April 18, 2007



Project Report

General Project Information

Project Title: Showcase Home Builder
 Designed By: Edward Fieser
 Project Date: Monday, Dec 10, 2006
 Project Comment: With Foam Board on Attic Walls
 Client Name: Sage Homebuilders
 Client Address: 32 Beacon Hill Ln
 Client City: St Louis, MO 63141
 Client Phone: (314) 265-6143
 Client Fax: (314) 480-4898
 Client E-Mail Address: info@sagestl.com
 Client Website: http://www.sagestl.com/
 Company Name: MaxHome
 Company Representative: Edward Fieser
 Company Address: 476 Smizer Mill Rd, #122
 Company City: Fenton, MO 63026
 Company Phone: 636-326-5991
 Company Fax: 636-343-6410
 Company E-Mail Address: info@fle-enterprises.com
 Company Website: www.fle-enterprises.com

Design Data

Reference City: St. Louis, Missouri
 Daily Temperature Range: Medium
 Latitude: 38 Degrees
 Elevation: 535 ft.
 Altitude Factor: 0.981
 Elevation Sensible Adj. Factor: 1.000
 Elevation Total Adj. Factor: 1.000
 Elevation Heating Adj. Factor: 1.000
 Elevation Heating Adj. Factor: 1.000

	Outdoor <u>Dry Bulb</u>	Outdoor <u>Wet Bulb</u>	Indoor <u>Rel.Hum</u>	Indoor <u>Dry Bulb</u>	Grains <u>Difference</u>
Winter:	8	0	45	70	43
Summer:	94	75	50	75	37

Check Figures

Total Building Supply CFM:	3,300	CFM Per Square ft.:	0.646 *
Square ft. of Room Area:	5,110	Square ft. Per Ton:	631
Volume (ft³) of Cond. Space: (clg.)	46,035	Air Turnover Rate (per hour):	4.3

* Based on area of rooms being heated or cooled (whichever governs system) rather than entire floor area.

Building Loads

Total Heating Required With Outside Air:	107,180 Btuh	107.180 MBH
Total Sensible Gain:	72,930 Btuh	83 %
Total Latent Gain:	15,098 Btuh	17 %
Total Cooling Required With Outside Air:	88,029 Btuh	7.34 Tons (Based On Sensible + Latent)
		8.10 Tons (Based On 75% Sensible Capacity)

Notes

Calculations are based on 8th edition of ACCA Manual J.
 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.



Miscellaneous Report

System 1 Main Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	8	0	45	70	43.18
Summer:	94	75	50	75	36.85

System 2 2nd Floor Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	8	0	30	72	28.76
Summer:	94	75	50	75	36.85

Duct Sizing Inputs

	Main Trunk	Runouts
Calculate:	Yes	Yes
Use Schedule:	Yes	Yes
Roughness Factor:	0.00300	0.01000
Pressure Drop:	0.1000 in.wg./100 ft.	0.1000 in.wg./100 ft.
Minimum Velocity:	650 ft./min	450 ft./min
Maximum Velocity:	900 ft./min	750 ft./min
Minimum Height:	8 in.	4 in.
Maximum Height:	8 in.	10 in.

Outside Air Data

	Winter	Summer
Infiltration:	0.354 AC/hr	0.192 AC/hr
Above Grade Volume:	X 33.620 Cu.ft. 11,916 Cu.ft./hr	X 37.257 Cu.ft. 7,141 Cu.ft./hr
	X 0.0167	X 0.0167
Total Building Infiltration:	199 CFM	119 CFM
Total Building Ventilation:	211 CFM	211 CFM

---System 1---

Infiltration & Ventilation Sensible Gain Multiplier:	20.50 = (1.10 X 0.981 X 19.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	24.58 = (0.68 X 0.981 X 36.85 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	66.89 = (1.10 X 0.981 X 62.00 Winter Temp. Difference)

---System 2---

Infiltration & Ventilation Sensible Gain Multiplier:	20.50 = (1.10 X 0.981 X 19.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	24.58 = (0.68 X 0.981 X 36.85 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	69.05 = (1.10 X 0.981 X 64.00 Winter Temp. Difference)

Duct Load Factor Scenarios for System 1

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	Main	Cond. Space	-	0.12	0	275	No
1	Return	Main	Cond. Space	-	0.24	0	255	No
2	Supply	Conditioned Space	Cond. Space	-	0.12	4	472	No
2	Return	Conditioned Space	Cond. Space	-	0.24	2	438	No
3	Supply	Attic	Attic	16B	0.12	4	1381	No
3	Return	Attic	Attic	16B	0.24	6	1278	No

Duct Load Factor Scenarios for System 2

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	2nd Floor Attic	Basement	-	0.06	4	514	No
1	Return	2nd Floor Attic	Basement	-	0.06	4	476	No



Load Preview Report

Scope	Area	Sens Gain	Lat Gain	Net Gain	Sens Loss	Win CFM	Sum CFM	Sys CFM	Duct Size
Building: 7.34 Net Tons, 8.10 Recommended Tons, 631 ft.²/Ton, 107.18 MBH Heating									
Building	5,110	72,930	15,098	88,029	107,180	724	3,300	3,300	
System 1: 5.40 Net Tons, 5.88 Recommended Tons, 563 ft.²/Ton, 78.79 MBH Heating									
System 1	3,310	52,951	11,823	64,775	78,787	448	2,404	2,404	40x8
Ventilation		1,074	3,220	4,294	3,505				
Blower		2,542		2,542					
Duct Latent Humidification			5,473	5,473	7,017				
Zone 1	3,310	49,335	3,131	52,466	68,265	448	2,404	2,404	
1-Bath 0	107	1,208	106	1,314	3,285	22	59	59	1-4
2-BR 0	254	1,623	26	1,649	3,191	21	79	79	1-6
3-Basement	736	5,221	71	5,292	9,169	60	254	254	2-7
4-Mech Room	50	3,086	0	3,086	0	0	150	150	1-7
5-UnFinished Basement	452	8,765	381	9,146	0	0	427	427	4-6
6-BR 1	242	4,702	236	4,938	7,745	51	229	229	2-6
7-BR 1 WIC	68	1,007	128	1,135	2,927	19	49	49	1-4
8-PWDR	54	515	43	558	1,307	9	25	25	1-4
9-Foyer	190	7,065	387	7,452	10,390	68	344	344	3-6
10-Living	516	8,172	1,038	9,210	9,042	59	398	398	4-6
11-Kitchen	220	843	95	938	2,469	16	41	41	1-4
12-Dining	211	2,995	171	3,166	7,300	48	146	146	1-7
13-Pantry	90	1,549	164	1,713	4,313	28	76	76	1-6
14-Mud Room	120	2,584	285	2,869	7,125	47	126	126	1-7
System 2: 1.94 Net Tons, 2.22 Recommended Tons, 811 ft.²/Ton, 28.39 MBH Heating									
System 2	1,800	19,979	3,275	23,254	28,393	276	895	895	22x8
Ventilation		656	1,966	2,622	2,210				
Blower		2,542		2,542					
Duct Latent Humidification			714	714	3,181				
Zone 1	1,800	16,781	595	17,376	23,003	276	895	895	
15-MSBR	437	2,835	134	2,969	5,628	68	151	151	1-7
16-MS Bath	173	1,898	42	1,940	1,593	19	101	101	1-6
17-MS WIC	114	278	0	278	221	3	15	15	1-4
18-Laundry	48	896	46	942	1,400	17	48	48	1-4
19-Hall 2	194	1,237	0	1,237	611	7	66	66	1-6
20-BR 2	241	2,126	119	2,245	3,812	46	113	113	1-6
21-BR 2 WIC	24	309	27	336	610	7	17	17	1-4
22-Bath 2	77	1,028	56	1,084	1,640	20	55	55	1-4
23-BR 3	205	2,858	67	2,925	3,165	38	153	153	1-7
24-Bath 3	88	1,046	39	1,085	1,554	19	56	56	1-4
25-BR 4	199	2,269	65	2,334	2,770	33	121	121	1-7



Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
C350230: Glazing-	46	1,006	0	1,053	1,053
C350230: Glazing-	420.5	9,213	0	4,420	4,420
C320220: Glazing-	4.5	89	0	73	73
Vulux 14" Ridged: Glazing-	1.7	54	0	286	286
Vellux VSE N: Glazing-Skylight, Vellux VSE N, horizontal, u-value 0.52	8	266	0	598	598
11N: Door-Metal - Polystyrene Core	97	2,207	0	1,589	1,589
15D13-2: Wall-Basement, , foam-concrete matrix ASTM certified R-12 to R-14, no framing, no blanket or board insulation, 2' floor depth	126	469	0	89	89
15D19-6: Wall-Basement, , foam-concrete matrix ASTM certified R-18 to R-20, no framing, no blanket or board insulation, 6' floor depth	173.7	383	0	25	25
15D19-8: Wall-Basement, , foam-concrete matrix ASTM certified R-18 to R-20, no framing, no blanket or board insulation, 8' floor depth	775	1,275	0	46	46
c12A-0sw-U: Part-Frame, , c12A-0sw-U	272.1	907	0	3,919	3,919
C15D19-8-U-A: Wall-	430.5	0	0	283	283
14D-21b: Wall-insulated concrete form (ICF), ASTM R-Value R-20 to R-22 foam matrix form filled with site-poured concrete, brick finish, plus interior finish	1700	5,166	0	1,218	1,218
FBG 5.5 Bt F 16 SWA2: Part-	1536.3	638	0	9,713	9,713
12E-0sw: Wall-Frame, R-19 insulation in 2 x 6 stud cavity, no board insulation, siding finish, wood studs	613.7	2,672	0	893	893
Interior: Part-Frame, , Interior	107.2	8	0	8	8
FBG 5.5 Bt F 16 SWA2: Wall-	12.8	42	0	14	14
16CR-44: Roof/Ceiling-Under attic or knee wall, Vented Attic with Radiant Barrier, Dark Asphalt Shingles or Dark Metal, Tar and Gravel or Membrane, R-44 insulation	2113.9	2,960	0	2,046	2,046
16B-25: Roof/Ceiling-Under attic or knee wall, Vented Attic, No Radiant Barrier, Dark Asphalt Shingles or Dark Metal, Tar and Gravel or Membrane, R-25 insulation	147.8	359	0	303	303
16B-30: Roof/Ceiling-Under attic or knee wall, Vented Attic, No Radiant Barrier, Dark Asphalt Shingles or Dark Metal, Tar and Gravel or Membrane, R-30 insulation	56.6	116	0	99	99
21B-20: Floor-Basement, Concrete slab, any thickness, 2 or more feet below grade, R-3 or higher insulation installed below floor, any floor cover, shortest side of floor slab is 20' wide	361.1	426	0	0	0
21A-32: 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 32' wide	735.7	912	0	0	0
19D-0sp: Floor-Over enclosed unconditioned crawl space, R-19 insulation on exposed walls, sealed crawl space, passive, no floor insulation, carpet or hardwood	520.5	561	0	173	173
21B-32: Floor-Basement, Concrete slab, any thickness, 2 or more feet below grade, R-3 or higher insulation installed below floor, any floor cover, shortest side of floor slab is 32' wide	119.7	104	0	0	0
20P-30-c: Floor-Over open crawl space or garage, Passive, R-30 blanket insulation, carpet covering	506.9	1,135	0	248	248



Total Building Summary Loads (cont'd)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
20P-19: Floor-Over open crawl space or garage, Passive, R-19 blanket insulation, any cover	21.8	70	0	15	15
Subtotals for structure:		31,038	0	27,111	27,111
People:	4		800	920	1,720
Equipment:			0	0	0
Lighting:	0			0	0
Ductwork:		46,759	6,186	35,645	41,831
Infiltration: Winter CFM: 199, Summer CFM: 119		13,470	2,926	2,440	5,366
Ventilation: Winter CFM: 211, Summer CFM: 211		5,715	5,186	1,730	6,916
Blower Heat Gain, 1,490 watts:		0	0	5,084	5,084
Humidification (Winter) 27.81 gal/day :		10,198	0	0	0
Total Building Load Totals:		107,180	15,098	72,930	88,029

Check Figures

Total Building Supply CFM:	3,300	CFM Per Square ft.:	0.646 *
Square ft. of Room Area:	5,110	Square ft. Per Ton:	631
Volume (ft³) of Cond. Space: (clg.)	46,035	Air Turnover Rate (per hour):	4.3

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Building Loads

Total Heating Required With Outside Air:	107,180 Btuh	107.180 MBH
Total Sensible Gain:	72,930 Btuh	83 %
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Total Cooling Required With Outside Air:	88,029 Btuh	7.34 Tons (Based On Sensible + Latent)
		8.10 Tons (Based On 75% Sensible Capacity)

Notes

Calculations are based on 8th edition of ACCA Manual J.
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.



Detailed Room Loads - Room 1 - Bath 0 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	106.7 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	107.0 sq.ft.	Supply Air:	59 CFM
Ceiling Height:	8.1 ft.	Supply Air Changes:	4.1 AC/hr
Volume:	863.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	6 CFM
Runout Air:	59 CFM	Percent of Supply.:	11 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	3 CFM
Runout Air Velocity:	675 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	675 ft./min.	Actual Winter Infil.:	6 CFM
Actual Loss:	0.502 in.wg./100 ft.	Actual Summer Infil.:	4 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-15D13-2 14 X 9	126	0.053	3.7	469	0.7	0	89
E -Wall-15D19-6 8.5 X 9	70.5	0.033	2.2	159	0.2	0	13
E -Gls-C350230 shgc-0.23 0%S	6	0.350	21.7	130	28.5	0	171
Floor-21B-20 1 X 106.7	106.7	0.019	1.2	126	0.0	0	0
Subtotals for Structure:				884		0	273
Infil.: Win.: 6.1, Sum.: 4.3	124		3.303	408	0.712	106	88
Ductwork:				1,993			847
Room Totals:				3,285		106	1,208



Detailed Room Loads - Room 2 - BR 0 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	254.4 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	254.0 sq.ft.	Supply Air:	79 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	2.1 AC/hr
Volume:	2,289.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	6 CFM
Runout Air:	79 CFM	Percent of Supply.:	8 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	4 CFM
Runout Air Velocity:	403 ft./min.	Percent of Supply.:	5 %
Runout Air Velocity:	403 ft./min.	Actual Winter Infil.:	1 CFM
Actual Loss:	0.103 in.wg./100 ft.	Actual Summer Infil.:	1 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-15D19-8 14 X 9	126	0.031	2.0	254	0.1	0	9
E -Wall-15D19-8 16.4 X 9	131.8	0.031	1.9	254	0.0	0	0
E -Gls-C350230 shgc-0.23 0%S	16	0.350	21.7	347	28.4	0	455
Floor-21B-20 1 X 254.4	254.4	0.019	1.2	300	0.0	0	0
Subtotals for Structure:				1,155		0	464
Infil.: Win.: 1.5, Sum.: 1.0	30		3.321	100	0.697	26	21
Ductwork:				1,936			1,138
Room Totals:				3,191		26	1,623



Detailed Room Loads - Room 3 - Basement (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	735.7 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	736.0 sq.ft.	Supply Air:	254 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	2.3 AC/hr
Volume:	6,621.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	2	Actual Winter Vent.:	18 CFM
Runout Air:	127 CFM	Percent of Supply.:	7 %
Runout Duct Size:	7 in.	Actual Summer Vent.:	14 CFM
Runout Air Velocity:	476 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	476 ft./min.	Actual Winter Infil.:	4 CFM
Actual Loss:	0.116 in.wg./100 ft.	Actual Summer Infil.:	3 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-15D19-8 0.8 X 9	6.8	0.031	2.0	14	0.1	0	0
SE-Wall-15D19-6 7.1 X 9	52	0.033	2.2	113	0.1	0	6
S -Wall-15D19-8 7.6 X 9	68	0.031	2.0	137	0.1	0	5
SW-Wall-15D19-6 7 X 9	51.2	0.033	2.2	111	0.1	0	6
S -Wall-15D19-8 1.4 X 9	13	0.031	2.0	26	0.1	0	1
N -Part-60°/55°-c12A-0sw-U 0.8 X 8.1	6.1	0.240	13.2	80	14.4	0	87
W -Part-60°/55°-c12A-0sw-U 7.8 X 8.1	62.6	0.240	13.2	827	14.4	0	902
S -Wall-15D19-8 0.2 X 8.1	2	0.031	1.9	4	0.0	0	0
W -Wall-15D19-8 2.9 X 9	26.3	0.031	2.0	53	0.1	0	2
N -Wall-15D19-8 19 X 9	171	0.031	2.0	345	0.1	0	12
E -Wall-15D19-8 2.6 X 9	23.2	0.031	2.0	47	0.1	0	2
E -Wall-15D19-8 7.8 X 9	69.8	0.031	2.0	141	0.1	0	5
SE-Gls-C350230 shgc-0.23 0%S	12	0.350	21.7	260	24.4	0	293
SW-Gls-C350230 shgc-0.23 0%S	12	0.350	21.7	260	14.9	0	179
Floor-21A-32 1 X 735.7	735.7	0.020	1.2	912	0.0	0	0
Subtotals for Structure:				3,330		0	1,500
Infil.: Win.: 4.1, Sum.: 2.9	84		3.303	276	0.718	71	60
Ductwork:				5,563			3,661
Room Totals:				9,169		71	5,221



Detailed Room Loads - Room 4 - Mech Room (Average Load Procedure)

General

Calculation Mode:	Clg. only	Occurrences:	1
Room Length:	6.3 ft.	System Number:	1
Room Width:	7.9 ft.	Zone Number:	1
Area:	50.0 sq.ft.	Supply Air:	150 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	20.2 AC/hr
Volume:	446.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	0 CFM
Runout Air:	150 CFM	Percent of Supply.:	0 %
Runout Duct Size:	7 in.	Actual Summer Vent.:	8 CFM
Runout Air Velocity:	563 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	563 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.161 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
E -Part-60°/55°-c12A-0sw-U 7.9 X 8.1	64	0.240	0.0	0	14.4	0	922
Subtotals for Structure:				0		0	922
Infil.: Win.: 0.0, Sum.: 0.0	0		0	0	0	0	0
Ductwork:				0			2,164
Room Totals:				0		0	3,086



Detailed Room Loads - Room 5 - UnFinished Basement (Average Load Procedure)

General

Calculation Mode:	Clg. only	Occurrences:	1
Room Length:	451.7 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	452.0 sq.ft.	Supply Air:	427 CFM
Ceiling Height:	9.0 ft.	Supply Air Changes:	6.3 AC/hr
Volume:	4,065.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	4	Actual Winter Vent.:	0 CFM
Runout Air:	107 CFM	Percent of Supply.:	0 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	23 CFM
Runout Air Velocity:	544 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	544 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.186 in.wg./100 ft.	Actual Summer Infil.:	15 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-15D19-8 15.2 X 9	137.2	0.031	0.0	0	0.1	0	10
W -Wall-C15D19-8-U-A 32.2 X 9	290.2	0.031	0.0	0	0.7	0	191
N -Wall-C15D19-8-U-A 15.6 X 9	140.2	0.031	0.0	0	0.7	0	92
S -Part-60°/55°-c12A-0sw-U 0.6 X 8.1	4.8	0.240	0.0	0	14.4	0	69
E -Part-60°/55°-c12A-0sw-U 3.9 X 8.1	31.7	0.240	0.0	0	14.4	0	456
E -Part-60°/5°-c12A-0sw-U 12.8 X 8.1	103	0.240	0.0	0	14.4	0	1,483
Subtotals for Structure:				0		0	2,301
Infil.: Win.: 0.0, Sum.: 15.5	446		0.000	0	0.714	381	318
Ductwork:				0			6,146
Room Totals:				0		381	8,765



Detailed Room Loads - Room 6 - BR 1 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	242.0 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	242.0 sq.ft.	Supply Air:	229 CFM
Ceiling Height:	9.1 ft.	Supply Air Changes:	6.3 AC/hr
Volume:	2,198.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	2	Actual Winter Vent.:	15 CFM
Runout Air:	115 CFM	Percent of Supply.:	6 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	12 CFM
Runout Air Velocity:	583 ft./min.	Percent of Supply.:	5 %
Runout Air Velocity:	583 ft./min.	Actual Winter Infil.:	14 CFM
Actual Loss:	0.213 in.wg./100 ft.	Actual Summer Infil.:	10 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-14D-21b 13.9 X 9.1	106.6	0.049	3.0	324	0.7	0	76
E -Wall-14D-21b 16.5 X 9.1	100.3	0.049	3.0	305	0.7	0	72
S -Door-11N 2.8 X 7	19.8	0.350	21.7	430	10.5	0	208
E -Gls-C350230 shgc-0.23 0%S	16.5	0.350	21.7	358	17.2	0	284
E -Gls-C350230 shgc-0.23 0%S	16.5	0.350	21.7	358	17.2	0	284
E -Gls-C350230 shgc-0.23 0%S	16.5	0.350	21.7	358	17.2	0	284
Subtotals for Structure:				2,133		0	1,208
Infil.: Win.: 13.6, Sum.: 9.6	276		3.305	913	0.713	236	197
Ductwork:				4,699			3,297
Room Totals:				7,745		236	4,702



Detailed Room Loads - Room 7 - BR 1 WIC (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	8.2 ft.	System Number:	1
Room Width:	8.3 ft.	Zone Number:	1
Area:	68.0 sq.ft.	Supply Air:	49 CFM
Ceiling Height:	9.1 ft.	Supply Air Changes:	4.8 AC/hr
Volume:	618.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	6 CFM
Runout Air:	49 CFM	Percent of Supply.:	11 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	3 CFM
Runout Air Velocity:	563 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	563 ft./min.	Actual Winter Infil.:	7 CFM
Actual Loss:	0.350 in.wg./100 ft.	Actual Summer Infil.:	5 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-14D-21b 8.2 X 9.1	66.2	0.049	3.0	201	0.7	0	47
E -Wall-14D-21b 8.3 X 9.1	75.6	0.049	3.0	230	0.7	0	54
N -Gls-C350230 shgc-0.23 100%S	8	0.350	21.7	174	7.1	0	57
UP-Ceil-16CR-44 31.7 X 1	31.7	0.022	1.4	43	1.0	0	31
UP-Ceil-16CR-44 5.6 X 1	5.6	0.022	1.4	8	1.0	0	5
Subtotals for Structure:				656		0	194
Infil.: Win.: 7.4, Sum.: 5.2	150		3.304	495	0.714	128	107
Ductwork:				1,776			706
Room Totals:				2,927		128	1,007



Detailed Room Loads - Room 8 - PWDR (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	54.2 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	54.0 sq.ft.	Supply Air:	25 CFM
Ceiling Height:	9.1 ft.	Supply Air Changes:	3.1 AC/hr
Volume:	492.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	3 CFM
Runout Air:	25 CFM	Percent of Supply.:	10 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	1 CFM
Runout Air Velocity:	288 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	288 ft./min.	Actual Winter Infil.:	3 CFM
Actual Loss:	0.094 in.wg./100 ft.	Actual Summer Infil.:	2 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-14D-21b 5.6 X 9.1	42.7	0.049	3.0	130	0.7	0	31
N -Gls-C350230 shgc-0.23 100%S	8	0.350	21.7	174	7.1	0	57
UP-Ceil-16CR-44 26.8 X 1	26.8	0.022	1.4	37	1.0	0	26
UP-Ceil-16CR-44 4.1 X 1	4.1	0.022	1.4	6	1.0	0	4
Subtotals for Structure:				347		0	118
Infil.: Win.: 2.5, Sum.: 1.8	51		3.296	167	0.711	43	36
Ductwork:				793			361
Room Totals:				1,307		43	515



Detailed Room Loads - Room 9 - Foyer (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	190.0 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	190.0 sq.ft.	Supply Air:	344 CFM
Ceiling Height:	18.2 ft.	Supply Air Changes:	6.0 AC/hr
Volume:	3,451.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	3	Actual Winter Vent.:	20 CFM
Runout Air:	115 CFM	Percent of Supply.:	6 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	19 CFM
Runout Air Velocity:	584 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	584 ft./min.	Actual Winter Infil.:	22 CFM
Actual Loss:	0.214 in.wg./100 ft.	Actual Summer Infil.:	16 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Part-140°/8°-FBG 5.5 Bt F 16 SWA2 7.6 X 8.1	61.2	0.052	0.4	25	7.3	0	446
W -Wall-14D-21b 2.9 X 18.2	53.1	0.049	3.0	161	0.7	0	38
N -Wall-14D-21b 19.2 X 18.2	301.3	0.049	3.0	915	0.7	0	216
E -Wall-14D-21b 2.8 X 18.2	50	0.049	3.0	152	0.7	0	36
E -Part-140°/8°-FBG 5.5 Bt F 16 SWA2 7.8 X 8.1	62.6	0.052	0.4	26	7.3	0	456
N -Door-11N 3 X 6.7	20	0.350	21.7	434	10.5	0	210
N -Gls-C350230 shgc-0.23 100%S	12	0.350	21.7	260	7.1	0	85
N -Gls-C350230 shgc-0.23 100%S	16.5	0.350	21.7	358	7.1	0	117
UP-Ceil-16CR-44 190 X 1	190	0.022	1.4	259	1.0	0	184
Subtotals for Structure:				2,590		0	1,788
Infil.: Win.: 22.4, Sum.: 15.8	453		3.304	1,496	0.713	387	323
Ductwork:				6,304			4,954
Room Totals:				10,390		387	7,065



Detailed Room Loads - Room 10 - Living (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	516.0 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	516.0 sq.ft.	Supply Air:	398 CFM
Ceiling Height:	9.1 ft.	Supply Air Changes:	5.1 AC/hr
Volume:	4,686.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	4	Actual Winter Vent.:	17 CFM
Runout Air:	100 CFM	Percent of Supply.:	4 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	22 CFM
Runout Air Velocity:	507 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	507 ft./min.	Actual Winter Infil.:	14 CFM
Actual Loss:	0.162 in.wg./100 ft.	Actual Summer Infil.:	10 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-14D-21b 0.7 X 9.1	6.1	0.049	3.0	18	0.7	0	4
SE-Wall-14D-21b 7.4 X 9.1	43.4	0.049	3.0	132	0.7	0	31
S -Wall-14D-21b 7.3 X 9.1	30.6	0.049	3.0	93	0.7	0	22
SW-Wall-14D-21b 7.2 X 9.1	41.3	0.049	3.0	125	0.7	0	30
S -Wall-14D-21b 0.5 X 9.1	4.5	0.049	3.0	14	0.7	0	3
E -Wall-14D-21b 7.6 X 9.1	56.8	0.049	3.0	173	0.7	0	41
SE-Gls-C350230 shgc-0.23 0%S	12	0.350	21.7	260	14.9	0	179
SE-Gls-C350230 shgc-0.23 0%S	12	0.350	21.7	260	14.9	0	179
S -Gls-C350230 shgc-0.23 0%S	12	0.350	21.7	260	9.7	0	116
S -Gls-C350230 shgc-0.23 0%S	12	0.350	21.7	260	9.7	0	116
S -Gls-C350230 shgc-0.23 0%S	12	0.350	21.7	260	9.7	0	116
SW-Gls-C350230 shgc-0.23 0%S	12	0.350	21.7	260	14.9	0	179
SW-Gls-C350230 shgc-0.23 0%S	12	0.350	21.7	260	14.9	0	179
E -Gls-C350230 shgc-0.23 64%S	12	0.350	21.7	260	10.7	0	128
Subtotals for Structure:				2,635		0	1,323
Infil.: Win.: 13.8, Sum.: 9.7	279		3.305	921	0.714	238	199
Ductwork:				5,486			5,730
People: 200 lat/per, 230 sen/per:	4					800	920
Room Totals:				9,042		1,038	8,172



Detailed Room Loads - Room 11 - Kitchen (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	219.6 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	220.0 sq.ft.	Supply Air:	41 CFM
Ceiling Height:	9.1 ft.	Supply Air Changes:	1.2 AC/hr
Volume:	1,995.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	5 CFM
Runout Air:	41 CFM	Percent of Supply.:	12 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	2 CFM
Runout Air Velocity:	471 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	471 ft./min.	Actual Winter Infil.:	5 CFM
Actual Loss:	0.247 in.wg./100 ft.	Actual Summer Infil.:	4 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Wall-14D-21b 12.2 X 9.1	111.2	0.049	3.0	338	0.7	0	80
UP-Ceil-16CR-44 7.3 X 1	7.3	0.022	1.4	10	1.0	0	7
UP-Ceil-16CR-44 12.9 X 1	12.9	0.022	1.4	18	1.0	0	13
Floor-19D-0sp 1 X 219.6	219.6	0.368	1.1	237	0.3	0	73
Subtotals for Structure:				603		0	173
Infil.: Win.: 5.5, Sum.: 3.9	111		3.308	368	0.710	95	79
Ductwork:				1,498			591
Room Totals:				2,469		95	843



Detailed Room Loads - Room 12 - Dining (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	210.7 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	211.0 sq.ft.	Supply Air:	146 CFM
Ceiling Height:	9.1 ft.	Supply Air Changes:	4.6 AC/hr
Volume:	1,914.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	14 CFM
Runout Air:	146 CFM	Percent of Supply.:	10 %
Runout Duct Size:	7 in.	Actual Summer Vent.:	8 CFM
Runout Air Velocity:	546 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	546 ft./min.	Actual Winter Infil.:	10 CFM
Actual Loss:	0.152 in.wg./100 ft.	Actual Summer Infil.:	7 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-14D-21b 16 X 9.1	79.2	0.049	3.0	241	0.7	0	57
W -Wall-14D-21b 6 X 9.1	50	0.049	3.0	152	0.7	0	36
S -Gls-C350230 shgc-0.23 100%S	66	0.350	21.7	1,433	7.1	0	468
W -Gls-C320220 shgc-0.22 0%S	4.5	0.320	19.8	89	16.2	0	73
UP-Ceil-16CR-44 22.9 X 1	22.9	0.022	1.4	31	1.0	0	22
UP-Ceil-16CR-44 22.5 X 1	22.5	0.022	1.4	31	1.0	0	22
UP-Ceil-16CR-44 5 X 1	5	0.022	1.4	7	1.0	0	5
Floor-19D-0sp 1 X 210.7	210.7	0.368	1.1	227	0.3	0	70
Subtotals for Structure:				2,211		0	753
Infil.: Win.: 9.9, Sum.: 6.9	200		3.304	660	0.711	171	142
Ductwork:				4,429			2,100
Room Totals:				7,300		171	2,995



Detailed Room Loads - Room 13 - Pantry (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	90.3 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	90.0 sq.ft.	Supply Air:	76 CFM
Ceiling Height:	9.1 ft.	Supply Air Changes:	5.5 AC/hr
Volume:	820.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	8 CFM
Runout Air:	76 CFM	Percent of Supply.:	11 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	4 CFM
Runout Air Velocity:	385 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	385 ft./min.	Actual Winter Infil.:	9 CFM
Actual Loss:	0.094 in.wg./100 ft.	Actual Summer Infil.:	7 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Wall-14D-21b 5.5 X 9.1	49.9	0.049	3.0	152	0.7	0	36
N -Wall-14D-21b 2.3 X 9.1	21.1	0.049	3.0	64	0.7	0	15
N -Wall-14D-21b 13.4 X 9.1	105.2	0.049	3.0	320	0.7	0	75
N -Gls-C350230 shgc-0.23 100%S	8	0.350	21.7	174	7.1	0	57
N -Gls-C350230 shgc-0.23 100%S	8	0.350	21.7	174	7.1	0	57
UP-Ceil-16CR-44 32.1 X 1	32.1	0.022	1.4	44	1.0	0	31
UP-Ceil-16CR-44 8.7 X 1	8.7	0.022	1.4	12	1.0	0	8
UP-Ceil-16CR-44 17.9 X 1	17.9	0.022	1.4	24	1.0	0	17
Floor-19D-0sp 1 X 90.3	90.3	0.368	1.1	97	0.3	0	30
Subtotals for Structure:				1,061		0	326
Infil.: Win.: 9.5, Sum.: 6.7	192		3.303	635	0.713	164	137
Ductwork:				2,617			1,086
Room Totals:				4,313		164	1,549



Detailed Room Loads - Room 14 - Mud Room (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	119.7 ft.	System Number:	1
Room Width:	1.0 ft.	Zone Number:	1
Area:	120.0 sq.ft.	Supply Air:	126 CFM
Ceiling Height:	9.1 ft.	Supply Air Changes:	6.9 AC/hr
Volume:	1,087.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	14 CFM
Runout Air:	126 CFM	Percent of Supply.:	11 %
Runout Duct Size:	7 in.	Actual Summer Vent.:	7 CFM
Runout Air Velocity:	471 ft./min.	Percent of Supply:	5 %
Runout Air Velocity:	471 ft./min.	Actual Winter Infil.:	16 CFM
Actual Loss:	0.113 in.wg./100 ft.	Actual Summer Infil.:	12 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-14D-21b 14.1 X 9.1	120.8	0.049	3.0	367	0.7	0	86
W -Wall-14D-21b 8.5 X 9.1	77.2	0.049	3.0	234	0.7	0	55
N -Wall-14D-21b 2 X 9.1	18.1	0.049	3.0	55	0.7	0	13
N -Wall-14D-21b 12.1 X 9.1	88.9	0.049	3.0	270	0.7	0	64
N -Door-11N 3 X 7	21	0.350	21.7	456	10.5	0	221
S -Gls-C350230 shgc-0.23 100%S	7	0.350	21.7	152	7.1	0	50
UP-Ceil-16CR-44 43.9 X 1	43.9	0.022	1.4	60	1.0	0	43
UP-Ceil-16CR-44 3.1 X 1	3.1	0.022	1.4	4	1.0	0	3
Floor-21B-32 1 X 119.7	119.7	0.014	0.9	104	0.0	0	0
Subtotals for Structure:				1,702		0	535
Infil.: Win.: 16.4, Sum.: 11.6	333		3.304	1,100	0.712	285	237
Ductwork:				4,323			1,812
Room Totals:				7,125		285	2,584



Detailed Room Loads - Room 15 - MSBR (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	436.9 ft.	System Number:	2
Room Width:	1.0 ft.	Zone Number:	1
Area:	437.0 sq.ft.	Supply Air:	151 CFM
Ceiling Height:	8.1 ft.	Supply Air Changes:	2.6 AC/hr
Volume:	3,531.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	20 CFM
Runout Air:	151 CFM	Percent of Supply.:	13 %
Runout Duct Size:	7 in.	Actual Summer Vent.:	14 CFM
Runout Air Velocity:	566 ft./min.	Percent of Supply:	9 %
Runout Air Velocity:	566 ft./min.	Actual Winter Infil.:	19 CFM
Actual Loss:	0.163 in.wg./100 ft.	Actual Summer Infil.:	5 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12E-0sw 0.7 X 7.5	5	0.068	4.4	22	1.5	0	7
SE-Wall-12E-0sw 7.4 X 7.5	44.3	0.068	4.4	193	1.5	0	64
S -Wall-12E-0sw 7.3 X 7.8	46	0.068	4.4	200	1.5	0	67
SW-Wall-12E-0sw 7.4 X 7.5	40.6	0.068	4.4	177	1.5	0	59
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 4.7 X 8.1	37.7	0.052	0.4	16	6.2	0	235
N -Part-75°/70°-Interior 17.8 X 8.1	107.2	0.001	0.1	8	0.1	0	8
E -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 7.5 X 8.1	60.6	0.052	0.4	25	6.2	0	378
N -Door-11N 5.2 X 7	36.2	0.350	24.5	887	26.3	0	950
SE-Gls-C350230 shgc-0.23 0%S	11.4	0.350	22.4	255	14.9	0	169
S -Gls-C350230 shgc-0.23 100%S	11.4	0.350	22.4	255	7.1	0	81
SW-Gls-C350230 shgc-0.23 100%S	14.7	0.350	22.4	329	7.1	0	104
UP-Ceil-16CR-44 436.9 X 1	436.9	0.022	1.4	615	1.0	0	423
Subtotals for Structure:				2,982		0	2,545
Infil.: Win.: 19.4, Sum.: 5.5	173		7.725	1,339	0.646	134	112
Ductwork:				1,307			178
Room Totals:				5,628		134	2,835



Detailed Room Loads - Room 16 - MS Bath (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	172.8 ft.	System Number:	2
Room Width:	1.0 ft.	Zone Number:	1
Area:	173.0 sq.ft.	Supply Air:	101 CFM
Ceiling Height:	8.1 ft.	Supply Air Changes:	4.4 AC/hr
Volume:	1,397.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	6 CFM
Runout Air:	101 CFM	Percent of Supply.:	5 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	9 CFM
Runout Air Velocity:	516 ft./min.	Percent of Supply:	9 %
Runout Air Velocity:	516 ft./min.	Actual Winter Infil.:	6 CFM
Actual Loss:	0.167 in.wg./100 ft.	Actual Summer Infil.:	2 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 4.7 X 8.1	37.7	0.052	0.4	16	6.2	0	235
E -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 3.9 X 6.3	24.8	0.052	0.4	10	6.2	0	155
S -Wall-12E-0sw 6.7 X 8.1	41.9	0.068	4.4	182	1.5	0	61
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 3.8 X 8.1	30.9	0.052	0.4	13	6.2	0	193
S -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 4.9 X 8.1	39.8	0.052	0.4	17	6.2	0	248
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 9.1 X 8.1	73.4	0.052	0.4	31	6.2	0	458
S -Gls-C350230 shgc-0.23 100%S	12	0.350	22.4	269	7.1	0	85
UP-Sky-Vulux 14" Ridged shgc-0.78	0.8	0.498	31.9	27	170.2	0	143
UP-Ceil-16CR-44 172.8 X 1	171.9	0.022	1.4	242	1.0	0	166
Subtotals for Structure:				807		0	1,744
Infil.: Win.: 6.0, Sum.: 1.7	54		7.719	416	0.649	42	35
Ductwork:				370			119
Room Totals:				1,593		42	1,898



Detailed Room Loads - Room 17 - MS WIC (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	113.8 ft.	System Number:	2
Room Width:	1.0 ft.	Zone Number:	1
Area:	114.0 sq.ft.	Supply Air:	15 CFM
Ceiling Height:	8.1 ft.	Supply Air Changes:	1.0 AC/hr
Volume:	919.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	1 CFM
Runout Air:	15 CFM	Percent of Supply.:	5 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	1 CFM
Runout Air Velocity:	170 ft./min.	Percent of Supply:	9 %
Runout Air Velocity:	170 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.034 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
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 3 X 8.1	24.2	0.052	0.4	10	6.2	0	151
UP-Ceil-16CR-44 113.8 X 1	113.8	0.022	1.4	160	1.0	0	110
Subtotals for Structure:				170		0	261
Infil.: Win.: 0.0, Sum.: 0.0	0		0	0	0	0	0
Ductwork:				51			17
Room Totals:				221		0	278



Detailed Room Loads - Room 18 - Laundry (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	7.3 ft.	System Number:	2
Room Width:	6.5 ft.	Zone Number:	1
Area:	48.0 sq.ft.	Supply Air:	48 CFM
Ceiling Height:	7.9 ft.	Supply Air Changes:	7.6 AC/hr
Volume:	377.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	5 CFM
Runout Air:	48 CFM	Percent of Supply.:	10 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	4 CFM
Runout Air Velocity:	548 ft./min.	Percent of Supply:	9 %
Runout Air Velocity:	548 ft./min.	Actual Winter Infil.:	7 CFM
Actual Loss:	0.333 in.wg./100 ft.	Actual Summer Infil.:	2 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 6.5 X 7	45.5	0.052	0.4	19	6.2	0	284
N -Wall-12E-0sw 7.3 X 8.1	47.2	0.068	4.4	206	1.5	0	69
E -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 6.5 X 7	45.5	0.052	0.4	19	6.2	0	284
N -Gls-C350230 shgc-0.23 100%S	12	0.350	22.4	269	7.1	0	85
UP-Ceil-16B-25 10.6 X 1	10.6	0.038	2.4	26	2.1	0	22
UP-Ceil-16B-25 11.1 X 1	11.1	0.038	2.4	27	2.1	0	23
UP-Ceil-16CR-44 36.7 X 1	36.7	0.022	1.4	52	1.0	0	35
Subtotals for Structure:				618		0	802
Infil.: Win.: 6.6, Sum.: 1.9	59		7.716	457	0.642	46	38
Ductwork:				325			56
Room Totals:				1,400		46	896



Detailed Room Loads - Room 19 - Hall 2 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	193.8 ft.	System Number:	2
Room Width:	1.0 ft.	Zone Number:	1
Area:	194.0 sq.ft.	Supply Air:	66 CFM
Ceiling Height:	8.1 ft.	Supply Air Changes:	2.5 AC/hr
Volume:	1,567.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	2 CFM
Runout Air:	66 CFM	Percent of Supply.:	3 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	6 CFM
Runout Air Velocity:	336 ft./min.	Percent of Supply:	9 %
Runout Air Velocity:	336 ft./min.	Actual Winter Infil.:	0 CFM
Actual Loss:	0.072 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
S -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 4.8 X 8.1	39	0.052	0.4	16	6.2	0	244
N -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 10.9 X 8.1	88.2	0.052	0.4	37	6.2	0	551
N -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 2.9 X 8.1	23.6	0.052	0.4	10	6.2	0	147
UP-Ceil-16CR-44 193.8 X 1	193.8	0.022	1.4	273	1.0	0	188
Floor-20P-30 1 X 19.3	19.3	0.035	2.2	43	0.5	0	9
Floor-20P-30 1 X 40.3	40.3	0.035	2.2	90	0.5	0	20
Subtotals for Structure:				469		0	1,159
Infil.: Win.: 0.0, Sum.: 0.0	0		0	0	0	0	0
Ductwork:				142			78
Room Totals:				611		0	1,237



Detailed Room Loads - Room 20 - BR 2 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	241.3 ft.	System Number:	2
Room Width:	1.0 ft.	Zone Number:	1
Area:	241.0 sq.ft.	Supply Air:	113 CFM
Ceiling Height:	8.0 ft.	Supply Air Changes:	3.5 AC/hr
Volume:	1,931.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	13 CFM
Runout Air:	113 CFM	Percent of Supply.:	12 %
Runout Duct Size:	6 in.	Actual Summer Vent.:	10 CFM
Runout Air Velocity:	578 ft./min.	Percent of Supply:	9 %
Runout Air Velocity:	578 ft./min.	Actual Winter Infil.:	17 CFM
Actual Loss:	0.209 in.wg./100 ft.	Actual Summer Infil.:	5 CFM

Item Description	Area Quantity	-U-Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 2.9 X 8.1	23.6	0.052	0.4	10	6.2	0	147
E -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 6.8 X 6.5	44.4	0.052	0.4	18	6.2	0	277
S -Wall-12E-0sw 6.8 X 8.1	39.2	0.068	4.4	171	1.5	0	57
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 6.8 X 6.5	44.4	0.052	0.4	18	6.2	0	277
S -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 4.2 X 8.1	33.7	0.052	0.4	14	6.2	0	210
N -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 3.5 X 8.1	28.3	0.052	0.4	12	6.2	0	176
E -Wall-12E-0sw 12.2 X 8.1	86.3	0.068	4.4	376	1.5	0	126
S -Gls-C350230 shgc-0.23 100%S	16	0.350	22.4	358	7.1	0	113
E -Gls-C350230 shgc-0.23 0%S	12	0.350	22.4	269	17.3	0	207
UP-Ceil-16B-30 17.1 X 1	17.1	0.032	2.0	35	1.7	0	30
UP-Ceil-16B-30 17.1 X 1	17.1	0.032	2.0	35	1.7	0	30
UP-Ceil-16CR-44 29.6 X 1	29.6	0.022	1.4	42	1.0	0	29
UP-Ceil-16CR-44 184 X 1	184	0.022	1.4	259	1.0	0	178
UP-Ceil-16CR-44 15.8 X 1	15.8	0.022	1.4	22	1.0	0	15
Floor-20P-30 1 X 45.6	45.6	0.035	2.2	102	0.5	0	22
Subtotals for Structure:				1,741		0	1,894
Infil.: Win.: 17.2, Sum.: 4.8	154		7.725	1,186	0.645	119	99
Ductwork:				885			133
Room Totals:				3,812		119	2,126



Detailed Room Loads - Room 21 - BR 2 WIC (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	23.6 ft.	System Number:	2
Room Width:	1.0 ft.	Zone Number:	1
Area:	24.0 sq.ft.	Supply Air:	17 CFM
Ceiling Height:	8.1 ft.	Supply Air Changes:	5.2 AC/hr
Volume:	191.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	2 CFM
Runout Air:	17 CFM	Percent of Supply.:	13 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	1 CFM
Runout Air Velocity:	189 ft./min.	Percent of Supply.:	9 %
Runout Air Velocity:	189 ft./min.	Actual Winter Infil.:	4 CFM
Actual Loss:	0.042 in.wg./100 ft.	Actual Summer Infil.:	1 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 3.8 X 8.1	30.9	0.052	0.4	13	6.2	0	193
E -Wall-12E-0sw 4.3 X 8.1	35	0.068	4.4	152	1.5	0	51
UP-Ceil-16CR-44 23.6 X 1	23.6	0.022	1.4	33	1.0	0	23
Subtotals for Structure:				198		0	267
Infil.: Win.: 3.9, Sum.: 1.1	35		7.717	270	0.657	27	23
Ductwork:				142			19
Room Totals:				610		27	309



Detailed Room Loads - Room 22 - Bath 2 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	77.2 ft.	System Number:	2
Room Width:	1.0 ft.	Zone Number:	1
Area:	77.0 sq.ft.	Supply Air:	55 CFM
Ceiling Height:	7.9 ft.	Supply Air Changes:	5.4 AC/hr
Volume:	611.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	6 CFM
Runout Air:	55 CFM	Percent of Supply.:	10 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	5 CFM
Runout Air Velocity:	629 ft./min.	Percent of Supply:	9 %
Runout Air Velocity:	629 ft./min.	Actual Winter Infil.:	8 CFM
Actual Loss:	0.437 in.wg./100 ft.	Actual Summer Infil.:	2 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 6.7 X 7	46.7	0.052	0.4	19	6.2	0	291
N -Wall-12E-0sw 7.4 X 8.1	48	0.068	4.4	209	1.5	0	70
E -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 7 X 7	49	0.052	0.4	20	6.2	0	306
S -Wall-FBG 5.5 Bt F 16 SWA2 1.6 X 8.1	12.8	0.052	3.3	42	1.1	0	14
N -Gls-C350230 shgc-0.23 100%S	12	0.350	22.4	269	11.2	0	134
UP-Ceil-16CR-44 26.2 X 1	26.2	0.022	1.4	37	1.0	0	25
UP-Ceil-16B-30 11.3 X 1	11.3	0.032	2.0	23	1.7	0	20
UP-Ceil-16B-30 11.1 X 1	11.1	0.032	2.0	23	1.7	0	19
UP-Ceil-16CR-44 39.1 X 1	39.1	0.022	1.4	55	1.0	0	38
Subtotals for Structure:				697		0	917
Infil.: Win.: 8.1, Sum.: 2.3	73		7.728	562	0.646	56	47
Ductwork:				381			64
Room Totals:				1,640		56	1,028



Detailed Room Loads - Room 23 - BR 3 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	205.4 ft.	System Number:	2
Room Width:	1.0 ft.	Zone Number:	1
Area:	205.0 sq.ft.	Supply Air:	153 CFM
Ceiling Height:	8.1 ft.	Supply Air Changes:	5.5 AC/hr
Volume:	1,660.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	11 CFM
Runout Air:	153 CFM	Percent of Supply.:	7 %
Runout Duct Size:	7 in.	Actual Summer Vent.:	14 CFM
Runout Air Velocity:	571 ft./min.	Percent of Supply:	9 %
Runout Air Velocity:	571 ft./min.	Actual Winter Infil.:	10 CFM
Actual Loss:	0.165 in.wg./100 ft.	Actual Summer Infil.:	3 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 11.7 X 8.1	94.3	0.052	0.4	39	6.2	0	588
N -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 2.9 X 8.1	23.6	0.052	0.4	10	6.2	0	147
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 2.8 X 8.1	22.9	0.052	0.4	10	6.2	0	143
N -Wall-12E-Osw 10.8 X 8.1	70.9	0.068	4.4	308	1.5	0	103
E -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 2.7 X 8.1	21.6	0.052	0.4	9	6.2	0	135
N -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 1 X 8.1	8.1	0.052	0.4	3	6.2	0	50
E -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 13 X 8.1	105	0.052	0.4	44	6.2	0	655
N -Gls-C350230 shgc-0.23 100%S	16	0.350	22.4	358	7.1	0	113
UP-Sky-Vellux VSE N shgc-0.29	4	0.520	33.3	133	74.8	0	299
UP-Ceil-16B-25 8.5 X 1	4.5	0.038	2.4	11	2.1	0	9
UP-Ceil-16B-25 9.1 X 1	9.1	0.038	2.4	22	2.1	0	19
UP-Ceil-16CR-44 16 X 1	16	0.022	1.4	23	1.0	0	16
UP-Ceil-16CR-44 141 X 1	141	0.022	1.4	199	1.0	0	137
UP-Ceil-16CR-44 5.3 X 1	5.3	0.022	1.4	8	1.0	0	5
UP-Ceil-16B-25 50.3 X 1	50.3	0.038	2.4	122	2.1	0	103
Floor-20P-30 1 X 205.4	205.4	0.035	2.2	460	0.5	0	101
Subtotals for Structure:				1,759		0	2,623
Infil.: Win.: 9.7, Sum.: 2.7	87		7.725	671	0.645	67	56
Ductwork:				735			179
Room Totals:				3,165		67	2,858



Detailed Room Loads - Room 24 - Bath 3 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	87.9 ft.	System Number:	2
Room Width:	1.0 ft.	Zone Number:	1
Area:	88.0 sq.ft.	Supply Air:	56 CFM
Ceiling Height:	8.1 ft.	Supply Air Changes:	4.7 AC/hr
Volume:	710.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	5 CFM
Runout Air:	56 CFM	Percent of Supply.:	10 %
Runout Duct Size:	4 in.	Actual Summer Vent.:	5 CFM
Runout Air Velocity:	639 ft./min.	Percent of Supply:	9 %
Runout Air Velocity:	639 ft./min.	Actual Winter Infil.:	6 CFM
Actual Loss:	0.451 in.wg./100 ft.	Actual Summer Infil.:	2 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 4.2 X 8.1	34.3	0.052	0.4	14	6.2	0	214
W -Wall-12E-0sw 6.2 X 8.1	37.9	0.068	4.4	165	1.5	0	55
N -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 4 X 8.1	32.3	0.052	0.4	13	6.2	0	202
W -Gls-C350230 shgc-0.23 0%S	12	0.350	22.4	269	17.3	0	207
UP-Sky-Vulux 14" Ridged shgc-0.78	0.8	0.498	31.9	27	170.2	0	143
UP-Ceil-16CR-44 87.9 X 1	87	0.022	1.4	123	1.0	0	84
Floor-20P-30 1 X 87.9	87.9	0.035	2.2	197	0.5	0	43
Subtotals for Structure:				808		0	948
Infil.: Win.: 5.6, Sum.: 1.6	50		7.723	385	0.642	39	32
Ductwork:				361			66
Room Totals:				1,554		39	1,046



Detailed Room Loads - Room 25 - BR 4 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.	Occurrences:	1
Room Length:	199.5 ft.	System Number:	2
Room Width:	1.0 ft.	Zone Number:	1
Area:	199.0 sq.ft.	Supply Air:	121 CFM
Ceiling Height:	8.0 ft.	Supply Air Changes:	4.6 AC/hr
Volume:	1,596.0 cu.ft.	Required Vent.:	0 CFM
Number of Registers:	1	Actual Winter Vent.:	10 CFM
Runout Air:	121 CFM	Percent of Supply.:	8 %
Runout Duct Size:	7 in.	Actual Summer Vent.:	11 CFM
Runout Air Velocity:	453 ft./min.	Percent of Supply:	9 %
Runout Air Velocity:	453 ft./min.	Actual Winter Infil.:	9 CFM
Actual Loss:	0.105 in.wg./100 ft.	Actual Summer Infil.:	3 CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12E-0sw 10.3 X 8.1	71.5	0.068	4.4	311	1.5	0	104
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 2.2 X 8.1	17.5	0.052	0.4	7	6.2	0	109
S -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 3 X 8.1	24.2	0.052	0.4	10	6.2	0	151
W -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 11.7 X 5.3	62.2	0.052	0.4	26	6.2	0	388
E -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 8.6 X 8.1	69.2	0.052	0.4	29	6.2	0	432
S -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 1.5 X 8.1	12.1	0.052	0.4	5	6.2	0	76
E -Part-120°/8°-FBG 5.5 Bt F 16 SWA2 2.2 X 6	13	0.052	0.4	5	6.2	0	81
S -Gls-C350230 shgc-0.23 100%S	12	0.350	22.4	269	7.1	0	85
UP-Sky-Vellux VSE N shgc-0.29	4	0.520	33.3	133	74.8	0	299
UP-Ceil-16CR-44 12.6 X 1	8.6	0.022	1.4	12	1.0	0	8
UP-Ceil-16CR-44 145.9 X 1	145.9	0.022	1.4	205	1.0	0	141
UP-Ceil-16CR-44 4.2 X 1	4.2	0.022	1.4	6	1.0	0	4
UP-Ceil-16B-25 7.4 X 1	7.4	0.038	2.4	18	2.1	0	15
UP-Ceil-16B-25 7.4 X 1	7.4	0.038	2.4	18	2.1	0	15
UP-Ceil-16B-25 47.3 X 1	47.3	0.038	2.4	115	2.1	0	97
Floor-20P-30 1 X 72	72	0.035	2.2	161	0.5	0	35
Floor-20P-30 1 X 6.7	6.7	0.035	2.2	15	0.5	0	3
Floor-20P-30 1 X 29.8	29.8	0.035	2.2	67	0.5	0	15
Floor-20P-19 1 X 21.8	21.8	0.050	3.2	70	0.7	0	15
Subtotals for Structure:				1,482		0	2,073
Infil.: Win.: 9.3, Sum.: 2.6	83		7.728	645	0.647	65	54
Ductwork:				643			142
Room Totals:				2,770		65	2,269



System 1 Room Load Summary

Room No	Room Name	Area SF	Htg Sens Btuh	Htg Nom CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Clg Nom CFM	Air Sys CFM
---Zone 1---										
1	Bath 0	107	3,285	22	1-4	675	1,208	106	59	59
2	BR 0	254	3,191	21	1-6	403	1,623	26	79	79
3	Basement	736	9,169	60	2-7	476	5,221	71	254	254
4	Mech Room	50	0	0	1-7	563	3,086	0	150	150
5	UnFinished Basement	452	0	0	4-6	544	8,765	381	427	427
6	BR 1	242	7,745	51	2-6	583	4,702	236	229	229
7	BR 1 WIC	68	2,927	19	1-4	563	1,007	128	49	49
8	PWDR	54	1,307	9	1-4	288	515	43	25	25
9	Foyer	190	10,390	68	3-6	584	7,065	387	344	344
10	Living	516	9,042	59	4-6	507	8,172	1,038	398	398
11	Kitchen	220	2,469	16	1-4	471	843	95	41	41
12	Dining	211	7,300	48	1-7	546	2,995	171	146	146
13	Pantry	90	4,313	28	1-6	385	1,549	164	76	76
14	Mud Room	120	7,125	47	1-7	471	2,584	285	126	126
Ventilation			3,505				1,074	3,220		
Blower Power							2,542			
Humidification			7,017							
Duct Latent								5,473		
System 1 total		3,310	78,787	448			52,951	11,823	2,404	2,404

System 1 Main Trunk Size: 40x8 in.
 Velocity: 1,082 ft./min
 Loss per 100 ft.: 0.176 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	5.40	82% / 18%	52,951	11,823	64,775
Recommended:	5.88	75% / 25%	52,951	17,650	70,602

Equipment Data

	Heating System	Cooling System
Type:	Ground Source Heat Pump	Ground Source Heat Pump
Model:	ND*038A1*	ND*038A1*
Brand:	Envision Series Dual Capacity	Envision Series Dual Capacity
Description:	Two Stage Ground Source Heat P	Two Stage Ground Source Heat P
Efficiency:	0 HSPF	0 EER
Sound:	0 bels	0 bels
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh



System 2 Room Load Summary

Room No	Room Name	Area SF	Htg Sens Btuh	Htg Nom CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Clg Nom CFM	Air Sys CFM
---Zone 1---										
15	MSBR	437	5,628	68	1-7	566	2,835	134	151	151
16	MS Bath	173	1,593	19	1-6	516	1,898	42	101	101
17	MS WIC	114	221	3	1-4	170	278	0	15	15
18	Laundry	48	1,400	17	1-4	548	896	46	48	48
19	Hall 2	194	611	7	1-6	336	1,237	0	66	66
20	BR 2	241	3,812	46	1-6	578	2,126	119	113	113
21	BR 2 WIC	24	610	7	1-4	189	309	27	17	17
22	Bath 2	77	1,640	20	1-4	629	1,028	56	55	55
23	BR 3	205	3,165	38	1-7	571	2,858	67	153	153
24	Bath 3	88	1,554	19	1-4	639	1,046	39	56	56
25	BR 4	199	2,770	33	1-7	453	2,269	65	121	121
	Ventilation		2,210				656	1,966		
	Blower Power						2,542			
	Humidification		3,181							
	Duct Latent							714		
System 2 total		1,800	28,393	276			19,979	3,275	895	895

System 2 Main Trunk Size: 22x8 in.
 Velocity: 733 ft./min
 Loss per 100 ft.: 0.097 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	1.94	86% / 14%	19,979	3,275	23,254
Recommended:	2.22	75% / 25%	19,979	6,660	26,638

Equipment Data

	Heating System	Cooling System
Type:	Ground Source Heat Pump	Ground Source Heat Pump
Model:	EZ036*1+EAH36	EZ036*1+EAH36
Brand:	Premier EZ Series Dual Capacity	Premier EZ Series Dual Capacity
Description:	Two Stage Ground Source Heat P	Two Stage Ground Source Heat P
Efficiency:	0 HSPF	0 EER
Sound:	0 bels	0 bels
Capacity:	0 Btuh	0 Btuh
Sensible Capacity:	n/a	0 Btuh
Latent Capacity:	n/a	0 Btuh