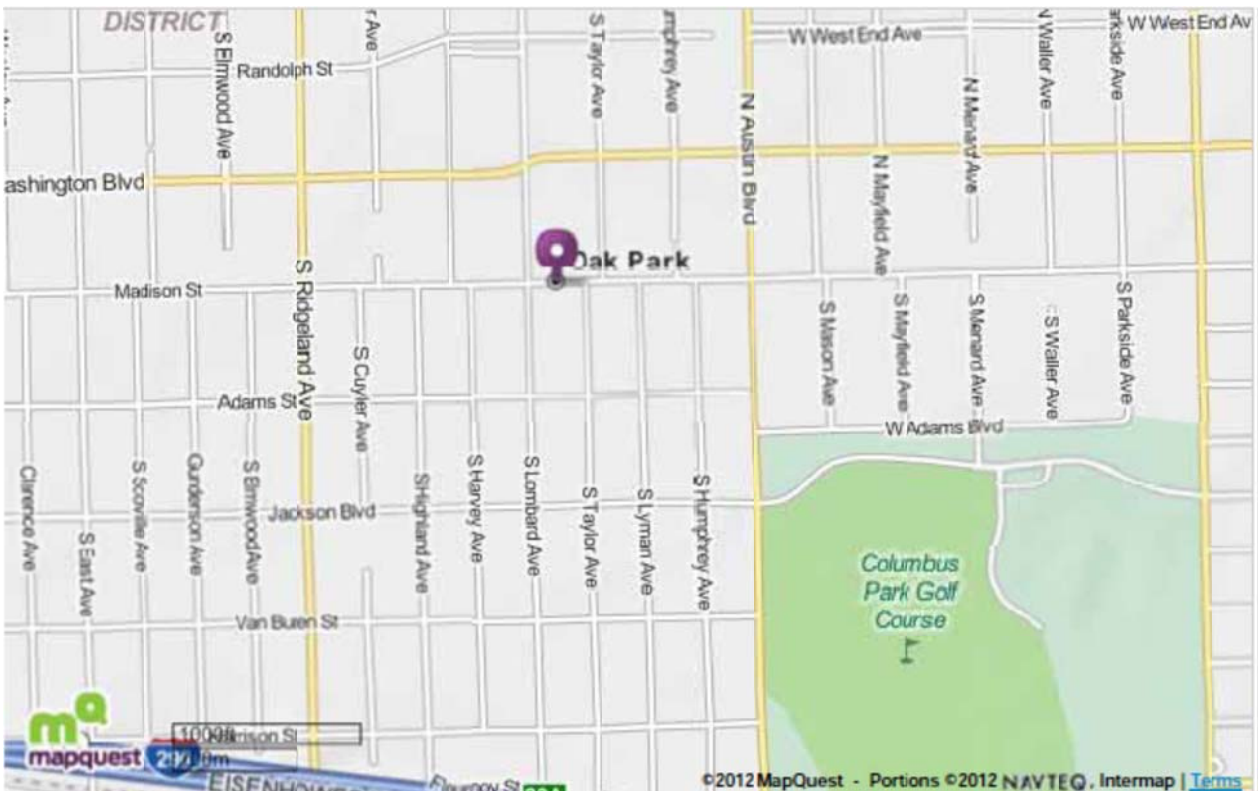
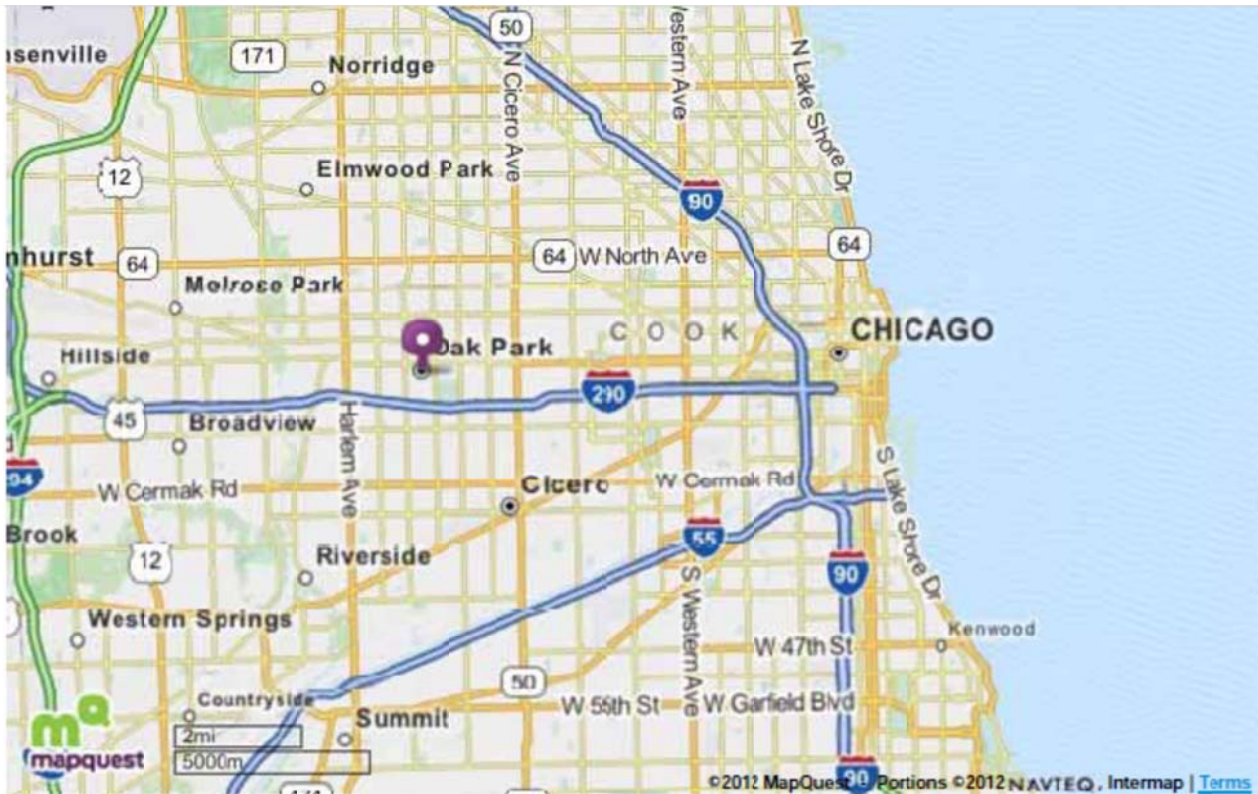


Right-Sized Residence

Manual J Street, Oak Park, IL 60301

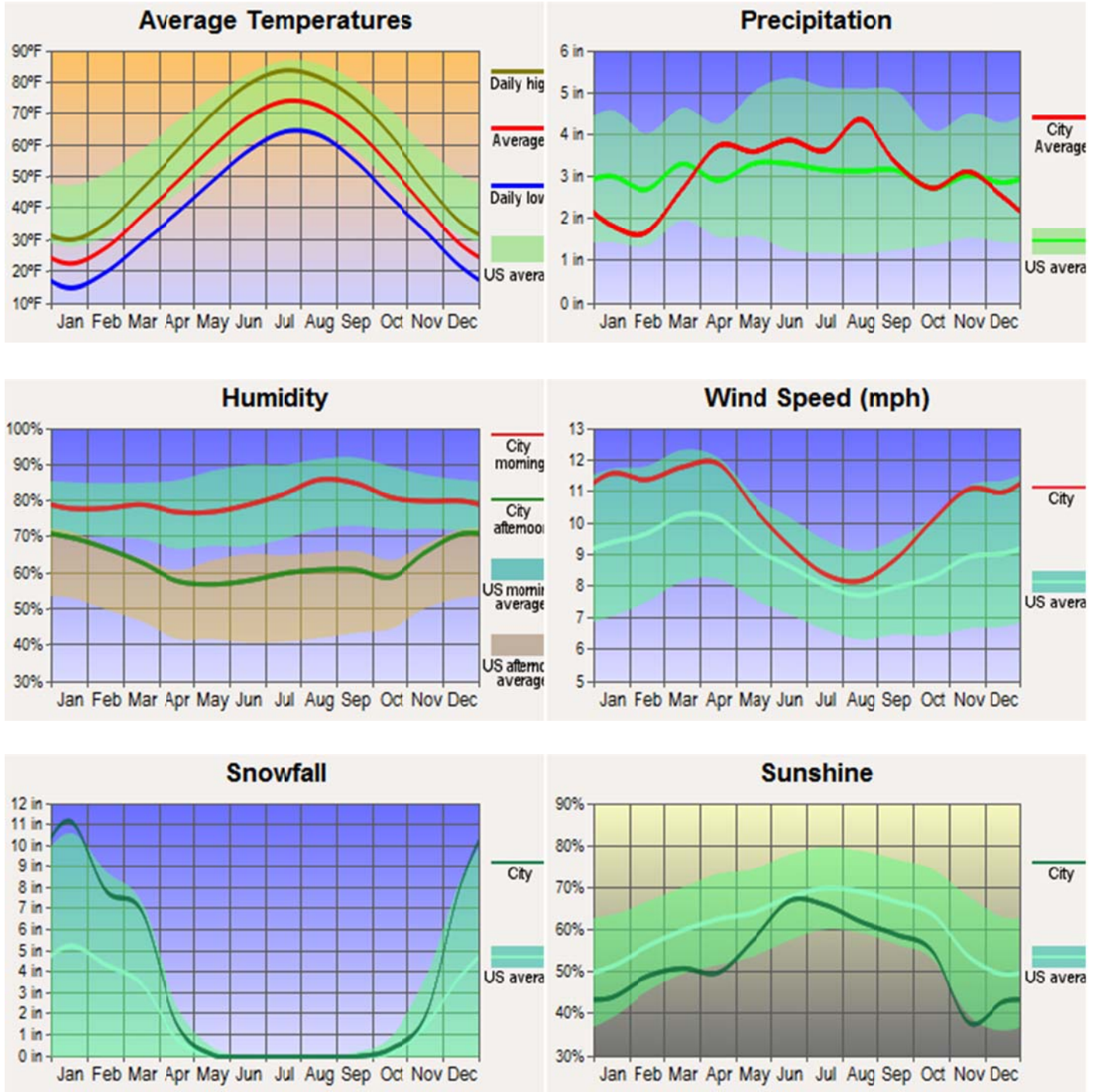
Prepared by: Tracy Savoy

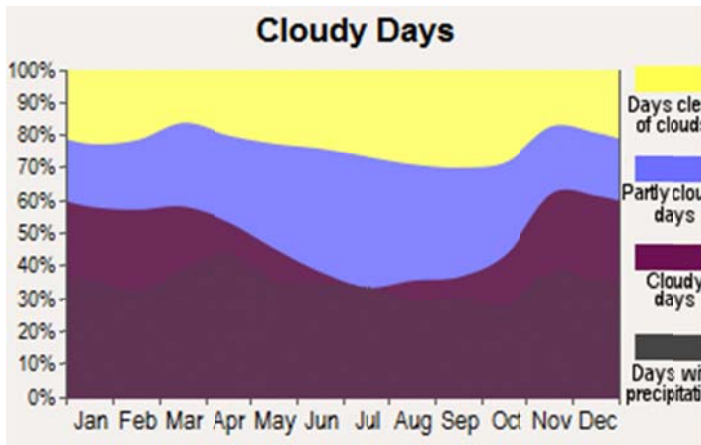


Elevation: 620 feet

Average climate in Oak Park, Illinois

Based on data reported by over 4,000 weather stations





<http://www.city-data.com/city/Oak-Park-Illinois.html>

SUMMARY

ACCA Certified Manual J Load Calculation – Design Data Summary

Mode	Total Load BTUh	Sensible Load BTUh	Latent Load BTUh	A/C Cooling Tons	Design Outdoor Conditions	Indoor Conditions
Entire House						
Heating	42,397	N/A	N/A	N/A	4 °F	70 °F
Cooling	21,064	16,454	4,609	1.8	90 °F	75 °F, 50% RH

The ACCA Certified Load Analysis includes:

- SHR of 0.78 (Sensible/Total)
- The Load Analysis includes people 4 (# of Bedrooms + 1) and a 1,200 BTUh appliance load
- The Load Analysis includes a duct loss:
 - OPEN UNCONDITIONED CRAWLSPACE duct location

Project Information

For: Right-Sized Residence
ACCA Manual J Street, Oak Park, IL 60301

Design Conditions

Location:

Chicago Midway AP, IL, US
Elevation: 617 ft
Latitude: 42°N

Outdoor:

	Heating	Cooling
Dry bulb (°F)	4	90
Daily range (°F)	-	16 (L)
Wet bulb (°F)	-	73
Wind speed (mph)	15.0	7.5

Indoor:

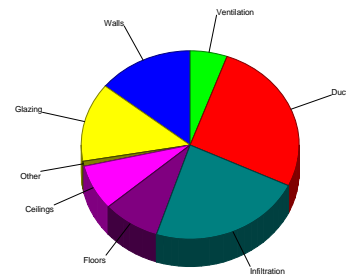
	Heating	Cooling
Indoor temperature (°F)	70	75
Design TD (°F)	66	15
Relative humidity (%)	30	50
Moisture difference (gr/lb)	27.8	34.1

Infiltration:

Method: Simplified
Construction quality: Average
Fireplaces: 2 (Average)

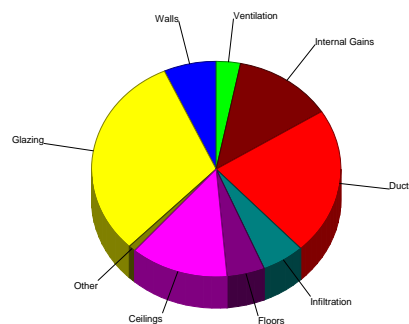
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	4.3	6033	14.2
Glazing	23.0	5735	13.5
Doors	17.1	359	0.8
Ceilings	1.7	3310	7.8
Floors	1.9	3632	8.6
Infiltration	5.8	9719	22.9
Ducts		11276	26.6
Piping		0	0
Humidification		0	0
Ventilation		2335	5.5
Adjustments		0	0
Total		42397	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.8	1125	6.8
Glazing	20.4	5080	30.9
Doors	7.3	154	0.9
Ceilings	1.1	2098	12.8
Floors	0.4	807	4.9
Infiltration	0.5	914	5.6
Ducts		3638	22.1
Ventilation		519	3.2
Internal gains		2120	12.9
Blower		0	0
Adjustments		0	0
Total		16454	100.0



Latent Cooling Load = 4609 Btuh
Overall U-value = 0.054 Btuh/ft²·°F

Data entries checked.

Project Information

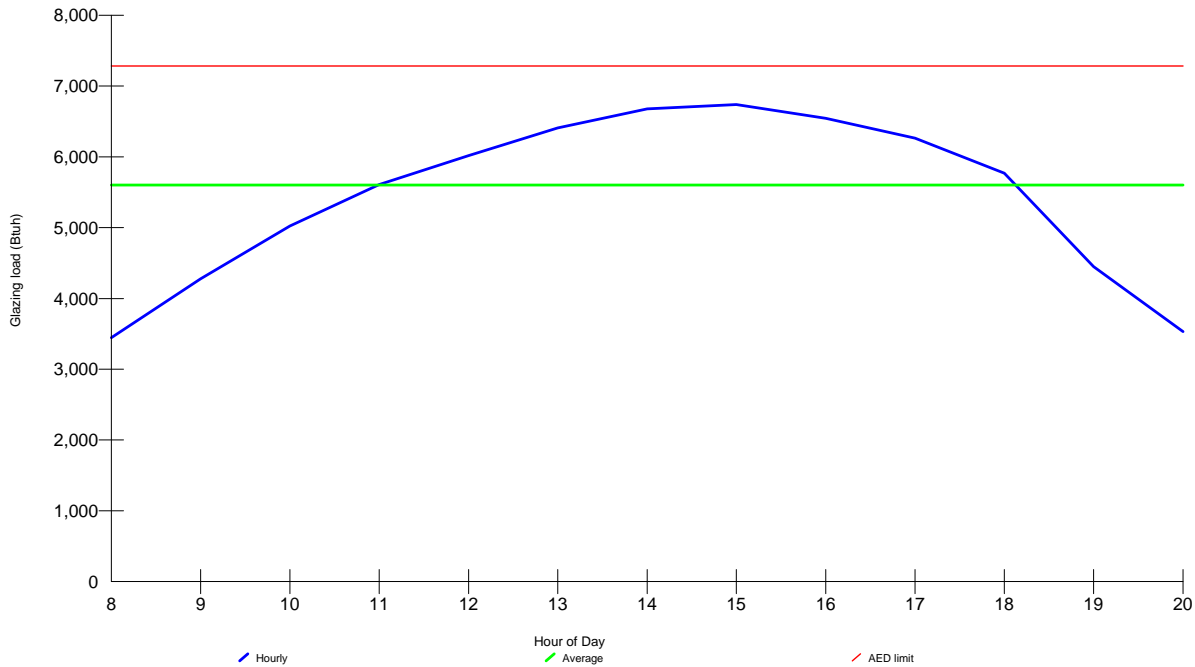
For: Right-Sized Residence
ACCA Manual J Street, Oak Park, IL 60301

Design Conditions

Location:		Indoor:		Heating	Cooling
Chicago Midway AP, IL, US		Indoor temperature (°F)		70	75
Elevation: 617 ft		Design TD (°F)		66	15
Latitude: 42°N		Relative humidity (%)		30	50
Outdoor:		Moisture difference (gr/lb)		27.8	34.1
	Heating	Cooling	Infiltration:		
Dry bulb (°F)	4	90			
Daily range (°F)	-	16 (L)			
Wet bulb (°F)	-	73			
Wind speed (mph)	15.0	7.5			

Test for Adequate Exposure Diversity

Hourly Glazing Load



Maximum hourly glazing load exceeds average by 20.3%.

House has adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 0 Btuh



Component Constructions
Entire House
Savoy Engineering Group

Job: SEG 0314-077W
 Date: Mar 17, 2014
 By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

Project Information

For: Right-Sized Residence
 ACCA Manual J Street, Oak Park, IL 60301

Design Conditions

Location:		Indoor:		Heating	Cooling
Chicago Midway AP, IL, US		Indoor temperature (°F)		70	75
Elevation: 617 ft		Design TD (°F)		66	15
Latitude: 42°N		Relative humidity (%)		30	50
		Moisture difference (gr/lb)		27.8	34.1
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	4	90	Method	Simplified	
Daily range (°F)	-	16 (L)	Construction quality	Average	
Wet bulb (°F)	-	73	Fireplaces	2 (Average)	
Wind speed (mph)	15.0	7.5			

Construction descriptions

	Or	Area ft²	U-value Btu/h/ft²-°F	Insul R ft²-°F/Btu/h	Htg HTM Btu/h/ft²	Loss Btu/h	Clg HTM Btu/h/ft²	Gain Btu/h
Walls								
12F-0bw: Frm wall, brk 4" ext, 1/2" wood shth, r-21 cav ins, 1/2" gypsum board int fnsh, 2"x6" wood frm								
	n	472	0.065	21.0	4.27	2014	0.80	376
	e	234	0.065	21.0	4.27	999	0.80	186
	s	467	0.065	21.0	4.27	1996	0.80	372
	w	240	0.065	21.0	4.27	1023	0.80	191
	all	1413	0.065	21.0	4.27	6033	0.80	1125
Partitions								
(none)								
Windows								
10D-c: 2 glazing, clr low-e outr, air gas, clad wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.31)								
	n	54	0.350	0	23.0	1251	7.73	421
	n	37	0.350	0	23.0	839	11.0	403
	e	45	0.350	0	23.0	1035	34.2	1541
	s	74	0.350	0	23.0	1705	18.5	1369
	w	39	0.350	0	23.0	904	34.2	1347
	all	249	0.350	0	23.0	5735	20.4	5080
Doors								
11E0: Door, wd sc type, wd strm								
	s	21	0.260	0	17.1	359	7.32	154
Ceilings								
16C-38aw: Attic ceiling, asphalt shingles roof mat, r-38 ceil ins, 1/2" gypsum board int fnsh								
		1938	0.026	38.0	1.71	3310	1.08	2098
Floors								
19A-30bstp: Flr floor, frm flr, 10" thkns, r-30 cav ins, tight bsmt ovr								
		1938	0.034	30.0	1.87	3632	0.42	807



Load Short Form

Entire House

Savoy Engineering Group

Job: SEG 0314-077W
 Date: Mar 17, 2014
 By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

Project Information

For: Right-Sized Residence
 ACCA Manual J Street, Oak Park, IL 60301

Design Information

	Htg	Clg	Method	Infiltration
Outside db (°F)	4	90		Simplified
Inside db (°F)	70	75	Construction quality	Average
Design TD (°F)	66	15	Fireplaces	2 (Average)
Daily range	-	L		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	28	34		

HEATING EQUIPMENT

Make	Goodman Mfg.
Trade	GOODMAN
Model	GCH950453BX**
AHRI ref	3653909
Efficiency	95 AFUE
Heating input	46000 Btuh
Heating output	44000 Btuh
Temperature rise	51 °F
Actual air flow	800 cfm
Air flow factor	0.020 cfm/Btuh
Static pressure	0.60 in H2O
Space thermostat	

COOLING EQUIPMENT

Make	Goodman Mfg.
Trade	GOODMAN
Cond	SSX160241B*
Coil	CA*F3636*6D*
AHRI ref	4652177
Efficiency	13.2 EER, 16 SEER
Sensible cooling	18720 Btuh
Latent cooling	5280 Btuh
Total cooling	24000 Btuh
Actual air flow	800 cfm
Air flow factor	0.050 cfm/Btuh
Static pressure	0.60 in H2O
Load sensible heat ratio	0.78

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Master Bedroom	240	7575	2618	151	131
Master Bath	112	2734	590	55	30
Master Wic	98	0	0	0	0
Den	150	2507	644	50	32
Dining	129	2095	506	42	25
Kitchen	176	4861	3265	97	164
Living Room	394	9296	4527	186	227
CL 2	34	0	0	0	0
Bedroom 2	192	5733	2242	114	113
Hall	126	0	0	0	0
Bath 2	90	1481	312	30	16
Bedroom 3	198	3780	1232	75	62

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

Entire House	d	1939	40063	15935	800	800
Other equip loads			2335	519		
Equip. @ 1.00 RSM				16454		
Latent cooling				4609		
TOTALS		1939	42397	21064	800	800

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



Right-J® Worksheet Entire House Savoy Engineering Group

Job: SEG 0314-077W
Date: Mar 17, 2014
By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

1 Room name		Entire House							Master Bedroom					
2 Exposed wall		187.0 ft							31.0 ft					
3 Room height		9.0 ft							9.0 ft					
4 Room dimensions		d							16.0 x 15.0 ft					
5 Room area		1938.9 ft²							240.0 ft²					
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0bw	0.065	n	4.27	0.80	563	472	2014	376	144	90	383	71
.	G	10D-c	0.350	n	22.99	7.73	54	0	1251	421	54	0	1251	421
.	G	4A5-2oc	0.350	n	22.99	11.05	37	0	839	403	0	0	0	0
11	W	12F-0bw	0.065	e	4.27	0.80	279	234	999	186	0	0	0	0
.	G	4A5-2oc	0.350	e	22.99	34.24	45	0	1035	1541	0	0	0	0
.	W	12F-0bw	0.065	s	4.27	0.80	563	467	1996	372	0	0	0	0
.	G	4A5-2oc	0.350	s	22.99	18.46	74	0	1705	1369	0	0	0	0
.	D	11E0	0.260	s	17.08	7.32	21	21	359	154	0	0	0	0
.	W	12F-0bw	0.065	w	4.27	0.80	279	240	1023	191	135	115	493	92
.	G	4A5-2oc	0.350	w	22.99	34.24	39	0	904	1347	20	0	452	673
.	C	16C-38aw	0.026	-	1.71	1.08	1938	1938	3310	2098	240	240	410	260
.	F	19A-30bstp	0.034	-	1.87	0.42	1938	1938	3632	807	240	240	450	100
6	c) AED excursion									0				144
	Envelope loss/gain								19068	9264			3438	1761
12	a) Infiltration								9719	914			1611	151
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			4			920	0			0
			Appliances/other							1200				0
	Subtotal (lines 6 to 13)								28787	12298			5049	1912
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			393	108
14	Subtotal								28787	12298			5443	2020
15	Duct loads						39%	30%	11276	3638	39%	30%	2132	598
	Total room load								40063	15935			7575	2618
	Air required (cfm)								800	800			151	131

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



Right-J® Worksheet Entire House Savoy Engineering Group

Job: SEG 0314-077W
Date: Mar 17, 2014
By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

1 Room name		Master Bath						Master Wic						
2 Exposed wall		14.0 ft						0 ft						
3 Room height		9.0 ft heat/cool						9.0 ft heat/cool						
4 Room dimensions		112.0 ft ² 14.0 x 8.0 ft						98.0 ft ² 14.0 x 7.0 ft						
5 Room area														
	Ty	Construction number	U-value (Btuh/ft ² ·°F)	Or	HTM (Btuh/ft ²)		Area (ft ²) or perimeter (ft)		Load (Btuh)		Area (ft ²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0bw	0.065	n	4.27	0.80	126	120	510	95	0	0	0	0
.	G	10D-c	0.350	n	22.99	7.73	0	0	0	0	0	0	0	0
.	G	4A5-2oc	0.350	n	22.99	11.05	7	0	149	72	0	0	0	0
11	W	12F-0bw	0.065	e	4.27	0.80	0	0	0	0	0	0	0	0
.	G	4A5-2oc	0.350	e	22.99	34.24	0	0	0	0	0	0	0	0
.	W	12F-0bw	0.065	s	4.27	0.80	0	0	0	0	0	0	0	0
.	G	4A5-2oc	0.350	s	22.99	18.46	0	0	0	0	0	0	0	0
.	D	11E0	0.260	s	17.08	7.32	0	0	0	0	0	0	0	0
.	W	12F-0bw	0.065	w	4.27	0.80	0	0	0	0	0	0	0	0
.	G	4A5-2oc	0.350	w	22.99	34.24	0	0	0	0	0	0	0	0
.	C	16C-38aw	0.026	-	1.71	1.08	112	112	191	121	98	98	167	106
.	F	19A-30bstp	0.034	-	1.87	0.42	112	112	210	47	98	98	184	41
6	c) AED excursion									-18				-7
	Envelope loss/gain								1061	317			351	140
12	a) Infiltration								728	68			0	0
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			0			0	0			0
			Appliances/other							0				0
	Subtotal (lines 6 to 13)								1789	385			351	140
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								176	70			-351	-140
14	Subtotal								1964	455			0	0
15	Duct loads						39%	30%	769	135	39%	30%	0	0
	Total room load								2734	590			0	0
	Air required (cfm)								55	30			0	0

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



Right-J® Worksheet Entire House Savoy Engineering Group

Job: SEG 0314-077W
Date: Mar 17, 2014
By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

1 Room name				Den 10.0 ft 9.0 ft heat/cool 150.0 ft ² x 15.0 ft				Dining 9.5 ft 9.0 ft heat/cool 128.8 ft ² x 13.6 ft						
	Ty	Construction number	U-value (Btuh/ft ² ·°F)	Or	HTM (Btuh/ft ²)		Area (ft ²) or perimeter (ft)		Load (Btuh)		Area (ft ²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0bw	0.065	n	4.27	0.80	90	80	342	64	86	76	322	60
	G	10D-c	0.350	n	22.99	7.73	0	0	0	0	0	0	0	0
	G	4A5-2oc	0.350	n	22.99	11.05	10	0	230	110	10	0	230	110
	W	12F-0bw	0.065	e	4.27	0.80	0	0	0	0	0	0	0	0
11	G	4A5-2oc	0.350	e	22.99	34.24	0	0	0	0	0	0	0	0
	W	12F-0bw	0.065	s	4.27	0.80	0	0	0	0	0	0	0	0
	G	4A5-2oc	0.350	s	22.99	18.46	0	0	0	0	0	0	0	0
	D	11E0	0.260	s	17.08	7.32	0	0	0	0	0	0	0	0
	W	12F-0bw	0.065	w	4.27	0.80	0	0	0	0	0	0	0	0
	G	4A5-2oc	0.350	w	22.99	34.24	0	0	0	0	0	0	0	0
	C	16C-38aw	0.026	-	1.71	1.08	150	150	256	162	128	128	219	139
	F	19A-30bstp	0.034	-	1.87	0.42	150	150	281	62	128	128	240	53
6	c) AED excursion									-20				-19
	Envelope loss/gain								1109	379			1012	344
12	a) Infiltration								520	49			494	46
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			0			0	0			0
			Appliances/other							0				0
	Subtotal (lines 6 to 13)								1629	428			1506	391
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								173	69			0	0
14	Subtotal								1802	497			1506	391
15	Duct loads						39%	30%	706	147	39%	30%	590	116
	Total room load								2507	644			2095	506
	Air required (cfm)								50	32			42	25

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



Right-J® Worksheet Entire House Savoy Engineering Group

Job: SEG 0314-077W
Date: Mar 17, 2014
By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

1 Room name		Kitchen 26.5 ft							Living Room 40.0 ft						
2 Exposed wall		9.0 ft heat/cool							9.0 ft heat/cool						
3 Room height		13.0 x 13.6 ft							22.5 x 17.5 ft						
4 Room dimensions		176.3 ft²							393.8 ft²						
5 Room area															
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)		
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	
6	W	12F-0bw	0.065	n	4.27	0.80	117	107	457	85	0	0	0	0	
.	G	10D-c	0.350	n	22.99	7.73	0	0	0	0	0	0	0	0	
.	G	4A5-2oc	0.350	n	22.99	11.05	10	0	230	110	0	0	0	0	
11	W	12F-0bw	0.065	e	4.27	0.80	122	107	455	85	158	128	544	102	
.	G	4A5-2oc	0.350	e	22.99	34.24	15	0	345	514	30	0	690	1027	
.	W	12F-0bw	0.065	s	4.27	0.80	0	0	0	0	203	139	595	111	
.	G	4A5-2oc	0.350	s	22.99	18.46	0	0	0	0	42	0	968	777	
.	D	11E0	0.260	s	17.08	7.32	0	0	0	0	21	21	359	154	
.	W	12F-0bw	0.065	w	4.27	0.80	0	0	0	0	0	0	0	0	
.	G	4A5-2oc	0.350	w	22.99	34.24	0	0	0	0	0	0	0	0	
.	C	16C-38aw	0.026	-	1.71	1.08	176	176	300	190	394	394	673	426	
.	F	19A-30bstp	0.034	-	1.87	0.42	176	176	329	73	394	394	738	164	
6	c) AED excursion													-166	
	Envelope loss/gain								2115	961			4567	2595	
12	a) Infiltration								1377	129			2079	195	
	b) Room ventilation								0	0			0	0	
13	Internal gains:		Occupants @	230			1		230	3			690	0	
			Appliances/other						1200				0		
	Subtotal (lines 6 to 13)								3493	2520			6646	3480	
	Less external load								0	0			0	0	
	Less transfer								0	0			0	0	
	Redistribution								0	0			34	14	
14	Subtotal								3493	2520			6680	3494	
15	Duct loads						39%	30%	1368	745	39%	30%	2617	1033	
	Total room load								4861	3265			9296	4527	
	Air required (cfm)								97	164			186	227	

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



Right-J® Worksheet Entire House Savoy Engineering Group

Job: SEG 0314-077W
Date: Mar 17, 2014
By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

1 Room name				CL 2				Bedroom 2						
2 Exposed wall				4.0 ft				28.0 ft						
3 Room height				9.0 ft		heat/cool		9.0 ft						
4 Room dimensions				8.5 x 4.0 ft				16.0 x 12.0 ft						
5 Room area				34.0 ft²				192.0 ft²						
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0bw	0.065	n	4.27	0.80	0	0	0	0	0	0	0	0
	G	10D-c	0.350	n	22.99	7.73	0	0	0	0	0	0	0	0
	G	4A5-2oc	0.350	n	22.99	11.05	0	0	0	0	0	0	0	0
	W	12F-0bw	0.065	e	4.27	0.80	0	0	0	0	0	0	0	0
11	G	4A5-2oc	0.350	e	22.99	34.24	0	0	0	0	0	0	0	0
	W	12F-0bw	0.065	s	4.27	0.80	0	0	0	0	144	132	563	105
	G	4A5-2oc	0.350	s	22.99	18.46	0	0	0	0	12	0	278	223
	D	11E0	0.260	s	17.08	7.32	0	0	0	0	0	0	0	0
	W	12F-0bw	0.065	w	4.27	0.80	36	36	154	29	108	88	377	70
	G	4A5-2oc	0.350	w	22.99	34.24	0	0	0	0	20	0	452	673
	C	16C-38aw	0.026	-	1.71	1.08	34	34	58	37	192	192	328	208
	F	19A-30bstp	0.034	-	1.87	0.42	34	34	64	14	192	192	360	80
6	c) AED excursion													161
	Envelope loss/gain								276	75			2359	1521
12	a) Infiltration								208	20			1455	137
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			0			0	0			0
			Appliances/other							0				0
	Subtotal (lines 6 to 13)								483	95			3814	1657
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								-483	-95			306	73
14	Subtotal								0	0			4119	1730
15	Duct loads						39%	30%	0	0	39%	30%	1614	512
	Total room load								0	0			5733	2242
	Air required (cfm)								0	0			114	113

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



Right-J® Worksheet Entire House Savoy Engineering Group

Job: SEG 0314-077W
Date: Mar 17, 2014
By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

1 Room name				Hall		Bath 2								
2 Exposed wall				9.0 ft		7.5 ft								
3 Room height				0 ft		heat/cool								
4 Room dimensions				9.0 ft		7.5 ft								
5 Room area				126.0 ft ²		90.0 ft ²								
6	Ty	Construction number	U-value (Btuh/ft ² ·°F)	Or	HTM (Btuh/ft ²)		Area (ft ²) or perimeter (ft)		Load (Btuh)		Area (ft ²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0bw	0.065	n	4.27	0.80	0	0	0	0	0	0	0	0
.	G	10D-c	0.350	n	22.99	7.73	0	0	0	0	0	0	0	0
.	G	4A5-2oc	0.350	n	22.99	11.05	0	0	0	0	0	0	0	0
11	W	12F-0bw	0.065	e	4.27	0.80	0	0	0	0	0	0	0	0
.	G	4A5-2oc	0.350	e	22.99	34.24	0	0	0	0	0	0	0	0
.	W	12F-0bw	0.065	s	4.27	0.80	0	0	0	0	68	68	288	54
.	G	4A5-2oc	0.350	s	22.99	18.46	0	0	0	0	0	0	0	0
.	D	11E0	0.260	s	17.08	7.32	0	0	0	0	0	0	0	0
.	W	12F-0bw	0.065	w	4.27	0.80	0	0	0	0	0	0	0	0
.	G	4A5-2oc	0.350	w	22.99	34.24	0	0	0	0	0	0	0	0
.	C	16C-38aw	0.026	-	1.71	1.08	126	126	215	136	90	90	154	97
.	F	19A-30bstp	0.034	-	1.87	0.42	126	126	236	52	90	90	169	37
6	c) AED excursion													-10
	Envelope loss/gain							451	180				611	178
12	a) Infiltration							0	0				390	37
	b) Room ventilation							0	0				0	0
13	Internal gains:		Occupants @	230			0				0			0
			Appliances/other											0
	Subtotal (lines 6 to 13)							451	180				1001	215
	Less external load							0	0				0	0
	Less transfer							0	0				0	0
	Redistribution							-451	-180				64	26
14	Subtotal							0	0				1064	241
15	Duct loads						39%	30%	0	0	39%	30%	417	71
	Total room load							0	0				1481	312
	Air required (cfm)							0	0				30	16

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



Right-J® Worksheet Entire House Savoy Engineering Group

Job: SEG 0314-077W
Date: Mar 17, 2014
By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

1 Room name				Bedroom 3										
2 Exposed wall				16.5 ft										
3 Room height				9.0 ft				heat/cool						
4 Room dimensions				16.5 x 12.0 ft										
5 Room area				198.0 ft ²										
	Ty	Construction number	U-value (Btuh/ft ² ·°F)	Or	HTM (Btuh/ft ²)		Area (ft ²) or perimeter (ft)		Load (Btuh)		Area or perimeter		Load	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0bw	0.065	n	4.27	0.80	0	0	0	0				
.	G	10D-c	0.350	n	22.99	7.73	0	0	0	0				
.	G	4A5-2oc	0.350	n	22.99	11.05	0	0	0	0				
11	W	12F-0bw	0.065	e	4.27	0.80	0	0	0	0				
.	G	4A5-2oc	0.350	e	22.99	34.24	0	0	0	0				
.	W	12F-0bw	0.065	s	4.27	0.80	149	129	549	102				
.	G	4A5-2oc	0.350	s	22.99	18.46	20	0	460	369				
.	D	11E0	0.260	s	17.08	7.32	0	0	0	0				
.	W	12F-0bw	0.065	w	4.27	0.80	0	0	0	0				
.	G	4A5-2oc	0.350	w	22.99	34.24	0	0	0	0				
.	C	16C-38aw	0.026	-	1.71	1.08	198	198	338	214				
.	F	19A-30bstp	0.034	-	1.87	0.42	198	198	371	82				
6	c) AED excursion									45				
	Envelope loss/gain								1718	814				
12	a) Infiltration								858	81				
	b) Room ventilation								0	0				
13	Internal gains:		Occupants @	230			0			0				
			Appliances/other							0				
	Subtotal (lines 6 to 13)								2576	895				
	Less external load								0	0				
	Less transfer								0	0				
	Redistribution								141	56				
14	Subtotal								2716	951				
15	Duct loads						39%	30%	1064	281				
	Total room load								3780	1232				
	Air required (cfm)								75	62				

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

Project Information

For: Right-Sized Residence
ACCA Manual J Street, Oak Park, IL 60301

Notes: Joe Contractor
Superior HVAC

Design Information

Weather: Chicago Midway AP, IL, US

Winter Design Conditions

Outside db 4 °F
Inside db 70 °F
Design TD 66 °F

Summer Design Conditions

Outside db 90 °F
Inside db 75 °F
Design TD 15 °F
Daily range L
Relative humidity 50 %
Moisture difference 34 gr/lb

Heating Summary

Structure 28787 Btuh
Ducts 11276 Btuh
Central vent (33 cfm) 2335 Btuh
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 42397 Btuh

Sensible Cooling Equipment Load Sizing

Structure 12298 Btuh
Ducts 3638 Btuh
Central vent (33 cfm) 519 Btuh
Blower 0 Btuh
Use manufacturer's data y
Rate/swing multiplier 1.00
Equipment sensible load 16454 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 2 (Average)

	Heating	Cooling
Area (ft ²)	1939	1939
Volume (ft ³)	17450	17450
Air changes/hour	0.47	0.20
Equiv. AVF (cfm)	138	58

Latent Cooling Equipment Load Sizing

Structure 2120 Btuh
Ducts 1740 Btuh
Central vent (33 cfm) 750 Btuh
Equipment latent load 4609 Btuh
Equipment total load 21064 Btuh
Req. total capacity at 0.78 SHR 1.8 ton

Heating Equipment Summary

Make Goodman Mfg.
Trade GOODMAN
Model GCH950453BX**
AHRI ref 3653909

Efficiency 95 AFUE
Heating input 46000 Btuh
Heating output 44000 Btuh
Temperature rise 51 °F
Actual air flow 800 cfm
Air flow factor 0.020 cfm/Btuh
Static pressure 0.60 in H2O
Space thermostat

Cooling Equipment Summary

Make Goodman Mfg.
Trade GOODMAN
Cond SSX160241B*
Coil CA*F3636*6D*
AHRI ref 4652177
Efficiency 13.2 EER, 16 SEER
Sensible cooling 18720 Btuh
Latent cooling 5280 Btuh
Total cooling 24000 Btuh
Actual air flow 800 cfm
Air flow factor 0.050 cfm/Btuh
Static pressure 0.60 in H2O
Load sensible heat ratio 0.78

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



Manual S Compliance Report

Entire House

Savoy Engineering Group

Job: SEG 0314-077W
Date: Mar 17, 2014
By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

Project Information

For: Right-Sized Residence
ACCA Manual J Street, Oak Park, IL 60301

Cooling Equipment

Design Conditions

Outdoor design DB: 89.6°F	Sensible gain: 16454 Btuh	Entering coil DB: 77.0°F
Outdoor design WB: 73.3°F	Latent gain: 4609 Btuh	Entering coil WB: 64.1°F
Indoor design DB: 75.0°F	Total gain: 21064 Btuh	
Indoor RH: 50%	Estimated airflow: 800 cfm	

Manufacturer's Performance Data at Actual Design Conditions

Equipment type: Split AC		
Manufacturer: Goodman Mfg.	Model: SSX160241B*+CA*F3636*6D*	
Actual airflow: 800 cfm		
Sensible capacity: 18121 Btuh	110% of load	
Latent capacity: 4900 Btuh	106% of load	
Total capacity: 23021 Btuh	109% of load SHR: 79%	

Heating Equipment

Design Conditions

Outdoor design DB: 4.3°F	Heat loss: 42397 Btuh	Entering coil DB: 60.8°F
Indoor design DB: 70.0°F		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type: Gas furnace		
Manufacturer: Goodman Mfg.	Model: GCH950453BX**	
Actual airflow: 800 cfm		
Output capacity: 44000 Btuh	104% of load	Temp. rise: 50 °F

The above equipment was selected in accordance with ACCA Manual S.



Duct System Summary

Entire House

Savoy Engineering Group

Job: SEG 0314-077W
 Date: Mar 17, 2014
 By: Tracy Savoy

Phone: (801) 949-5337 Web: www.load-calculations.com

Project Information

For: Right-Sized Residence
 ACCA Manual J Street, Oak Park, IL 60301

	Heating	Cooling
External static pressure	0.60 in H2O	0.60 in H2O
Pressure losses	0.27 in H2O	0.27 in H2O
Available static pressure	0.33 in H2O	0.33 in H2O
Supply / return available pressure	0.178 / 0.152 in H2O	0.178 / 0.152 in H2O
Lowest friction rate	0.077 in/100ft	0.077 in/100ft
Actual air flow	800 cfm	800 cfm
Total effective length (TEL)		429 ft

Supply Branch Detail Table

Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
Bath 2	h 1481	30	16	0.084	4.0	0x0	VIFx	21.3	190.0	st5
Bedroom 2	h 5733	114	113	0.115	7.0	0x0	VIFx	29.5	125.0	st4
Bedroom 3	h 3780	75	62	0.081	5.0	0x0	VIFx	29.5	190.0	st5
Den	h 2507	50	32	0.082	4.0	0x0	VIFx	33.5	185.0	st6
Dining	h 2095	42	25	0.080	6.0	0x0	VIFx	44.0	180.0	st7
Kitchen	c 1633	49	82	0.078	6.0	0x0	VIFx	54.5	175.0	st10
Kitchen-A	c 1633	49	82	0.077	6.0	0x0	VIFx	56.5	175.0	st10
Living Room	c 2264	93	114	0.087	7.0	0x0	VIFx	54.3	150.0	st11
Living Room-A	c 2264	93	114	0.088	7.0	0x0	VIFx	53.2	150.0	st11
Master Bath	h 2734	55	30	0.084	5.0	0x0	VIFx	22.0	190.0	st5
Master Bedroom	h 3787	76	66	0.107	5.0	0x0	VIFx	31.7	135.0	st2
Master Bedroom-A	h 3787	76	66	0.107	5.0	0x0	VIFx	32.3	135.0	st2

Supply Trunk Detail Table

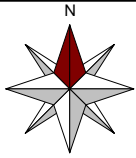
Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st10	Peak AVF	97	164	0.077	470	8.0	0 x 0	ShtMetl	st7
st7	Peak AVF	325	417	0.077	764	10.0	0 x 0	ShtMetl	st6
st6	Peak AVF	375	449	0.077	572	12.0	0 x 0	ShtMetl	st5
st5	Peak AVF	534	556	0.077	708	12.0	0 x 0	ShtMetl	st1
st2	Peak AVF	151	131	0.107	566	7.0	0 x 0	ShtMetl	st4
st4	Peak AVF	266	244	0.107	761	8.0	0 x 0	ShtMetl	st1
st11	Peak AVF	186	227	0.087	850	7.0	0 x 0	ShtMetl	st7
st1	Peak AVF	800	800	0.077	453	18.0	0 x 0	ShtMetl	

Return Branch Detail Table

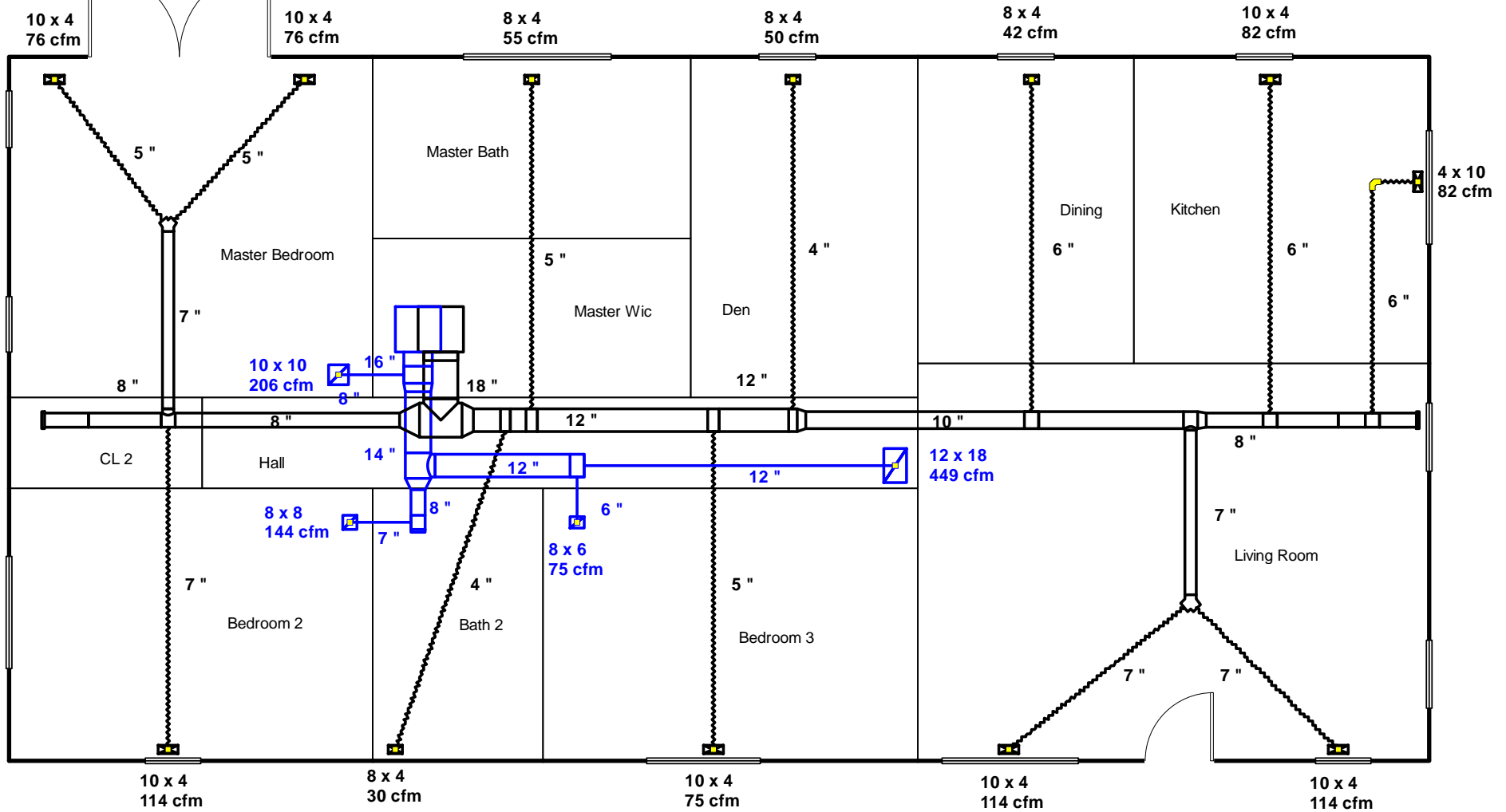
Name	Grill Size (in)	Htg (cfm)	Clg (cfm)	TEL (ft)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Stud/Joist Opening (in)	Duct Matl	Trunk
rb2	20x11	375	449	197.0	0.077	572	12.0	0x 0		ShMt	rt3
rb5	10x10	206	161	130.5	0.116	590	8.0	0x 0		ShMt	rt1
rb3	10x10	144	128	126.5	0.120	539	7.0	0x 0		ShMt	rt4
rb4	6x10	75	62	185.5	0.082	384	6.0	0x 0		ShMt	rt3

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt3	Peak AVF	450	511	0.077	650	12.0	0 x 0	ShtMetl	rt2
rt1	Peak AVF	800	800	0.077	573	16.0	0 x 0	ShtMetl	
rt2	Peak AVF	594	639	0.077	598	14.0	0 x 0	ShtMetl	rt1
rt4	Peak AVF	144	128	0.120	413	8.0	0 x 0	ShtMetl	rt2



Main Level



Job #: SEG 0314-077W
Performed by Tracy Savoy for:
Right-Sized Residence
ACCA Manual J Street
Oak Park, IL 60301

Savoy Engineering Group

Phone: (801) 949-5337
www.load-calculations.com

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