S/N RNW21131 **RIGHT-N COMMERCIAL / INDUSTRIAL LOAD CALCULATION** 08/09/2003

For: Ann Vela
Zone: All Zones Page: 1
Job #:
City: Chicago, O'Hare Int'l A, IL, US
By: Professional Heating and Cooling
LWH: 40.0 x 30.0 x 9.0
Units: U.S. customary (I-P)

1. DESIGN CONDITIONS - COOLING (3PM , August)

		Dry Blb	RH	Moisture	Range	Wet Blb
Outdoor Conditions	→	96	46		20	78
Indoor Conditions	→	75	50			62
TOD Correction	→	0				
Difference		21	54			

[Mult = 1.0]

2. GLAZING SOLAR HEAT GAIN (Lat = 41.98 °N, Const Wt = L)

Type		Dir	Shad	Tilt	%ovr	Area	Sfact	Shgf	Shad	Sens
GLAZ	1	S	BL	90	100.0	27	0.51	75	1.0	399
GLAZ	1	N	BL	90	100.0	39	0.51	29	1.0	577
GLAZ	1	N	BL	90	100.0	14	0.51	29	1.0	207
GLAZ	1	N	BL	90	100.0	28	0.51	29	1.0	414

3. TRANSMISSION GAINS

Type		Dir	GrArea	NtArea	Uval	Grp	CLTD	Shad	Clr	Sens
GLAZ	1	S	27	27	0.650		21.0	BL	-	369
GLAZ	1	N	39	39	0.650		21.0	BL	-	532
GLAZ	1	N	14	14	0.650		21.0	BL	-	191
GLAZ	1	N	28	28	0.650		21.0	BL	-	382
WALL	1	W	475	475	0.077	D	12.0	Y	L	439
WALL	1	N	209	128	0.077	D	12.0	N	L	118
WALL	1	E	120	120	0.077	D	25.6	N	L	237
WALL	1	N	400	319	0.077	D	12.0	N	L	295
DOOR	1	S	21	21	0.330		21.0	-	-	146
FLOR	1	-	285	285	0.330		21.0	-	-	1975
FLOR	2	-	44	44	0.810		0.0	-	-	0
ROOF	1	-	760	760	0.050	R-4	69.2	-	D	2630

4. INTERNAL HEAT GAIN

									Sens	Latent
People	3	x	Per person:	sensible	250	latent	250		750	750
	0	x	Per person:	sensible	0	latent	0		0	0
Lights	Incandescents in RA Ceiling				0	x 3.4	x	60%	0	
	Fluorescents in RA Ceiling				0	x 4.1	x	60%	0	
	Incandescents other				300	x 3.4	x	100%	1024	
	Fluorescents other				0	x 4.1	x	100%	0	

Motors	Nmbr	Power	Gain	Load Fact	Usage	
1	1	0.00	0	1.00	1.00	0
2	1	0.00	0	1.00	1.00	0
3	1	0.00	0	1.00	1.00	0

Appl.	Nmbr	Type	Sens	Latent	Usage		
1	1	Refrigerator	2000	0	1.00	2000	0
2	2	0	0	0	1.00	0	0
3	1	0	0	0	1.00	0	0
4	1		0	0	1.00	0	0
5	1		0	0	1.00	0	0
Other	1		0	0	1.00	0	0

5. INFILTRATION — Sens / Latent

72 cfm ——> x db Temp Diff 21.0 x 1.1 = 1623

——> x Moist. Diff 53.6 x 0.68 = 2626

6. SUBTOTAL COOLING LOAD FOR SPACE 14308 3376

7. SUPPLY DUCT HEAT GAIN

Gain factor 0.00 x Line 6 Sensible Gain 0

8. COOLING FAN SIZING

Sum of Duct Gain (7), Line (6) & Drawthru Fan = 14308

(L 8 Sens) / (1.1 x Supply TD) = cfm

Est Cooling cfm = (14308) / (1.1 x 20.0) = 666

Actual Cooling Fan ——————————> = 666

9. VENTILATION

0 cfm ——> x db Temp Diff 21.0 x 1.1 = 0

——> x Moist. Diff 53.6 x 0.68 = 0

10. RETURN AIR LOAD FROM LIGHTING AND ROOF

Incandescent Lights	0 Watts	x 3.4 x	40%	0
Fluorescent Lights	0	x 4.1 x	40%	0
RA Roof Load		from Line 3	(+)	0
RA Ceiling Load Credit		from Line 3	(-)	0

11. RETURN DUCT HEAT GAIN

Gain factor 0.00 x Line 6 Sensible Gain 0

12. TOTAL COOLING LOADS ON EQUIPMENT (Btuh) 14308 3376

SPACE HEATING LOAD CALCULATION

13. HEATING DESIGN TEMPERATURE

Heating TD = (Inside DB - Outside DB) = (70 - -12) = 82

[Mult = 1.0]

14. TRANSMISSION LOSSES

Type		Expos	GrArea	NetArea	Uval	HTD	Loss
GLAZ	1	S	27	27	0.620	82.0	1373
GLAZ	1	N	39	39	0.620	82.0	1983
GLAZ	1	N	14	14	0.620	82.0	712
GLAZ	1	N	28	28	0.620	82.0	1424
WALL	1	W	475	475	0.077	82.0	2999
WALL	1	N	209	128	0.077	82.0	808
WALL	1	E	120	120	0.077	82.0	758
WALL	1	N	400	319	0.077	82.0	2014
DOOR	1	S	21	21	0.330	82.0	568
FLOR	1	-	285	285	0.330	82.0	7712
FLOR	2	-	44	44	0.810	82.0	2922
ROOF	1	-	760	760	0.050	82.0	3116

15. INFILTRATION		Loss
108 cfm x db Temp Diff	82.0 x 1.1	9507
16. SUBTOTAL HEATING LOAD FOR SPACE		35896
17. SUPPLY DUCT HEAT LOSS		
Loss factor 0.00 x Line 16 Loss		0
18. VENTILATION		
0 cfm x db Temp Diff	82.0 x 1.1	0
19. HUMIDIFICATION		
Inside RH desired	: 25.2 (Max = 6.6 for 1 pane)	
# of Glazing panes	: 2.0 (Max = 25.2 for 2 pane)	
108 cfm x 4.98 g/100cfm/d	= 5.4 gpd	2007
20. RETURN DUCT HEAT LOSS		
Loss factor 0.00 x Line 16 Loss		0
21. TOTAL HEATING LOAD ON EQUPMENT (Btuh)		37903

S/N RNW21131
Units: U.S. customary (I-P)
Job #:

RIGHT-N SHORT FORM

08/09/2003

For: Ann Vela
Stratford Lane
Algonquin, IL 60102

By: Professional Heating and Cooling
2208 Magnolia Lane
Elgin, IL 60120
(847) 980-5635

	Htg	Clg
Outside db	-12	96
Inside db	70	75
Design TD	82	21
Daily Range	-	20
Inside Humid.	-	50
Moist. Diff.	-	54
Inside wb	-	62
Outside RH	-	46
Outside wb	-	78

HEATING EQUIPMENT

Make		
Model		
Type		
Efficiency / HSPF	0.0	
Heating Input	0.0	MBtuh
Heating Output	0.0	MBtuh
Humidifier	0.0	gpd
Leaving Air Temp	70.0	°F
Actual Heating Fan	666	cfm

COOLING EQUIPMENT

Make		
Model		
Type		
COP / EER / SEER	0.0	
Sensible Cooling	0.0	MBtuh
Latent Cooling	0.0	MBtuh
Total Cooling	0.0	MBtuh
Leaving Air Temp	55.0	°F
Actual Cooling Fan	666	cfm

Equipment Location	ZONE	
System Type	VAV	
Fan Motor Heat Type	PACKAGE	
Fan & Motor Combined Efficiency	0.0	%
Static Pressure Across Fan	0.0	in H2O

NAME	Area ft²	Heat Loss	Sensible Gain	Latent Gain	Htg cfm	Clg cfm	Time
All Zones	1200	37903	14308	3376	666	666	3PM
Totals	1200	37903	14308	3376	666	666	n/a

S/N: RNW21131

LOAD BREAKDOWNS

Units: U.S. customary (I-P) 08/09/2003

For: Ann Vela

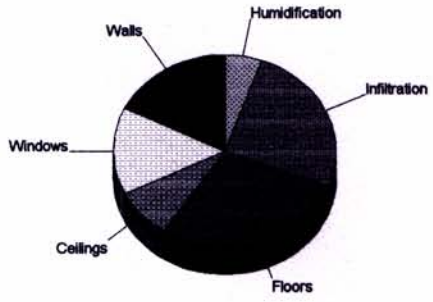
By: Professional Heating and Cooling

Job #: All Zones

Component	Btuh/ft²	Btuh	% of Btuh
Walls	6.3	6579	17.4
Windows	50.8	5491	14.5
Doors	27.1	568	1.5
Ceilings	4.1	3116	8.2
Floors	14.0	10635	28.1
Partitions	0.0	0	0.0
Infiltration	12.5*	9507	25.1
Ducts	0.0*	0	0.0
Humidification	2.6*	2007	5.3
Ventilation	0.0*	0	0.0
Totals	49.9*	37903	100

* Calculated per ft² of floor area

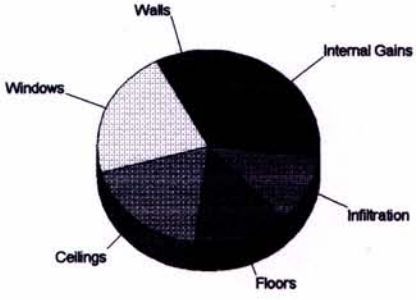
Heating



Component	Btuh/ft²	Sens. Btuh	% of Btuh
Walls	1.0	1089	7.6
Windows	28.4	3072	21.5
Doors	6.9	146	1.0
Ceilings	3.5	2630	18.4
Floors	2.6	1975	13.8
Partitions	0.0	0	0.0
Infiltration	2.1*	1623	11.3
Ducts	0.0*	0	0.0
Internal Gains	5.0*	3774	26.4
Ventilation	0.0*	0	0.0
Totals	18.8*	14308	100

* Calculated per ft² of floor area

Cooling



S/N RNW21131 **RIGHT-N TIME-OF-DAY SHORT FORM - LOADS** 08/09/2003
Units: U.S. customary (I-P)
Job #:

For: Ann Vela
Stratford Lane
Algonquin, IL 60102

By: Professional Heating and Cooling

Peak Time of Day: n/a Equipment located in ZONE

Name	Sensible Gain at 9AM	NOON	3PM	6PM	Latent Gain	Heating Btuh
All Zones	8230	12119	14308	13561	3376	37903
Totals	8230	12119	14308	13561	3376	37903