

2K1983 HVAC LOAD ANALYSIS

for

CASTAGNA CONSTRUCTION
1459 GRANDVIEW ST SUITE 107
LAKE CITY FL 32025



Prepared By:

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Project Summary

Project:	2K1983	Company:	DAVID HALL'S INC.
Client:	CASTAGNA CONSTRUCTION	Representative:	DAVID HALL
Address:	1459 GRANDVIEW ST SUITE 107	Address:	PO BOX 244
City:	LAKE CITY FL 32025	City:	LAKE CITY, FL 32056
Phone:	386-755-6867	Phone:	386-755-9792
Fax:		Fax:	386-755-9100
		Comment:	

Design Data

Project Name:	2K1983
Reference City:	Jacksonville, Florida
Daily Temperature Range:	Medium
Latitude:	30 Degrees
Elevation:	26 Feet
Elevation Sensible Adj. Factor:	1.000
Elevation Total Adj. Factor:	1.000

	<u>Outdoor Dry Bulb</u>	<u>Outdoor Wet Bulb</u>	<u>Indoor Rel.Hum.</u>	<u>Indoor Dry Bulb</u>	<u>Grains Difference</u>
Winter:	27	N/A	N/A	72	N/A
Summer:	97	78	50%	75	50

Check Figures

Total Building Supply CFM:	1000	CFM per square foot:	0.512
Square feet of room area:	1,953	Square feet per ton:	600.503

Building Loads

Total heating required with outside air:	39,335 Btuh	39.335 MBH
Total sensible gain:	30,051 Btuh	81 %
Total latent gain:	7,140 Btuh	19 %
Total cooling required with outside air:	37,191 Btuh	3.099 Tons (based on sensible + latent)
		3.252 Tons (based on 77% sensible capacity)

Notes

Calculations are based on 7th 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 Project Data

Project File Name: CASTAGNA, 2K1983

System Input Data

—System 1—	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum.	Indoor Dry Bulb	Grains Difference
Winter:	27	N/A	N/A	72	N/A
Summer:	97	78	50%	75	50

External Overhangs

No.	Projection	Offset	No.	Projection	Offset
1	3	1	6	0	0
2	5	0	7	0	0
3	4	0.5	8	0	0
4	0	0	9	0	0
5	0	0	10	0	0

Duct Sizing Inputs

	Runouts	Main Trunk
Duct Material:	Flexible Duct	Galvanized Steel
Roughness Factor:	0.010000	0.000300
Pressure Drop:	0.1000 In.wg/100 Ft.	0.1000 In.wg/100 Ft.
Minimum Velocity:	450.0 Ft./Minute	650.0 Ft./Minute
Maximum Velocity:	750.0 Ft./Minute	900.0 Ft./Minute
Minimum Height:	0 Inches	0 Inches
Maximum Height:	0 Inches	0 Inches

Outside Air Data

	Winter	Summer
Infiltration:	0.900 AC/Hr	0.400 AC/Hr
Volume of Conditioned Space:	X 20088 Cu.Ft.	X 20088 Cu.Ft.
	18,079 Cu.Ft./Hr	8,035 Cu.Ft./Hr
	X 0.0167	X 0.0167
Total Building Infiltration:	301.32 CFM	133.92 CFM
Total Building Ventilation:	0 CFM	0 CFM
—System 1—		
Infiltration & Ventilation Sensible Gain Multiplier:	24.20 = (1.10 X 22.00 Summer Temp. Difference)	
Infiltration & Ventilation Latent Gain Multiplier:	33.75 = (0.68 X 49.64 Grains Difference)	
Infiltration & Ventilation Sensible Loss Multiplier:	49.50 = (1.10 X 45.00 Winter Temp. Difference)	

Total Building Summary Loads

Component Description	Area Quan	Sen. Loss	Lat. Gain	Sen. Gain	Total Gain
3B Window Double Pane Clear Glass TIM Frame	239	6,550	0	8,626	8,626
8O Glass Door Double Clear Glass Metal Frame	42	1,370	0	1,000	1,000
10D Door Wood Solid Core	21	435	0	247	247
12G Wall R-13 + 3/4" ExtPoly Board(R-3.8)	1,530	4,475	0	2,545	2,545
16G Ceiling R-30 Insulation	1,953	2,899	0	2,965	2,965
22A Slab on Grade No Edge Insulation	187	6,817	0	0	0
Subtotals for structure:	3,972	22,546	0	15,383	15,383
Active People:	4	0	920	1,200	2,120
Inactive People:	0	0	0	0	0
Appliances:	0	0	1,700	1,700	3,400
Lighting:	0	0		5,797	
Ductwork:	0	1,874	0	2,732	2,732
Infiltration: Winter CFM: 301.3, Summer CFM: 133.9	302	14,915	4,520	3,239	7,759
Ventilation: Winter CFM: 0.0, Summer CFM: 0.0	0	0	0	0	0
Sensible Gain Total:				30,051	
Temperature Swing Multiplier:				X1.00	
Building Load Totals:		39,335	7,140	30,051	37,191

Check Figures

Total Building Supply CFM:	1000	CFM per square foot:	0.512
Square feet of room area:	1,953	Square feet per ton:	600.503

Building Loads

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		3.252 Tons (based on 77% sensible capacity)

Notes

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Be sure to select a unit that meets both sensible and latent loads.

System #1 Summary Loads

Component Description	Area Quan	Sen. Loss	Lat. Gain	Sen. Gain	Total Gain
3B Window Double Pane Clear Glass TIM Frame	239	6,550	0	8,626	8,626
8O Glass Door Double Clear Glass Metal Frame	42	1,370	0	1,000	1,000
10D Door Wood Solid Core	21	435	0	247	247
12G Wall R-13 + 3/4" ExtPoly Board(R-3.8)	1,530	4,475	0	2,545	2,545
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22A Slab on Grade No Edge Insulation	187	6,817	0	0	0
Subtotals for structure:	3,972	22,546	0	15,383	15,383
Active People:	4	0	920	1,200	2,120
Inactive People:	0	0	0	0	0
Appliances:	0	0	1,700	1,700	3,400
Lighting:	0	0		5,797	
Ductwork:	0	1,874	0	2,732	2,732
Infiltration: Winter CFM: 301.3, Summer CFM: 133.9	302	14,915	4,520	3,239	7,759
Ventilation: Winter CFM: 0.0, Summer CFM: 0.0	0	0	0	0	0
Sensible Gain Total:				30,051	
Temperature Swing Multiplier:				X1.00	
System Load Totals:		39,335	7,140	30,051	37,191

Check Figures

Supply CFM:	1,000	CFM per square foot:	0.512
Square feet of room area:	1,953	Square feet per ton:	600.503

System Loads

Total heating required with outside air:	39,335 Btuh	39.335 MBH
Total sensible gain:	30,051 Btuh	81 %
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Be sure to select a unit that meets both sensible and latent loads.

Room Load Summary Reports

System #1 Room Load Summary

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	Zone Adj Fact	Clg Adj CFM	Air Sys CFM
---Zone 1---												
1	Master Closet	141	1,807	46	1-3	684	1,009	0	34	1.00	46	34
2	Master Bath	137	3,650	93	2-4	550	2,886	359	96	1.00	131	96
3	Master Bedroom	314	4,203	107	2-4	661	3,466	999	115	1.00	158	115
4	Laundry Room	120	2,669	68	1-5	545	2,235	814	74	1.00	102	74
5	Great Room	456	7,324	186	2-6	477	5,633	1,158	187	1.17	298	187
6	Kitchen	379	7,978	203	2-6	545	6,428	2,463	214	1.00	292	214
7	Bedroom #2	140	5,979	152	1-8	466	4,890	808	163	1.35	300	163
8	Bath	98	957	24	1-3	504	744	0	25	1.00	34	25
9	Bedroom #3	168	4,768	121	1-6	468	2,760	539	92	1.00	125	92
System 1 Totals		1953	39,335	1,000			30,051	7,140	1,000		1,486	1,000
Main Trunk Size: 16x12 in.												

System #1 Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	3.099	81%/19%	30,051	7,140	37,191
Recommended:	3.252	77%/23%	30,051	8,976	39,027