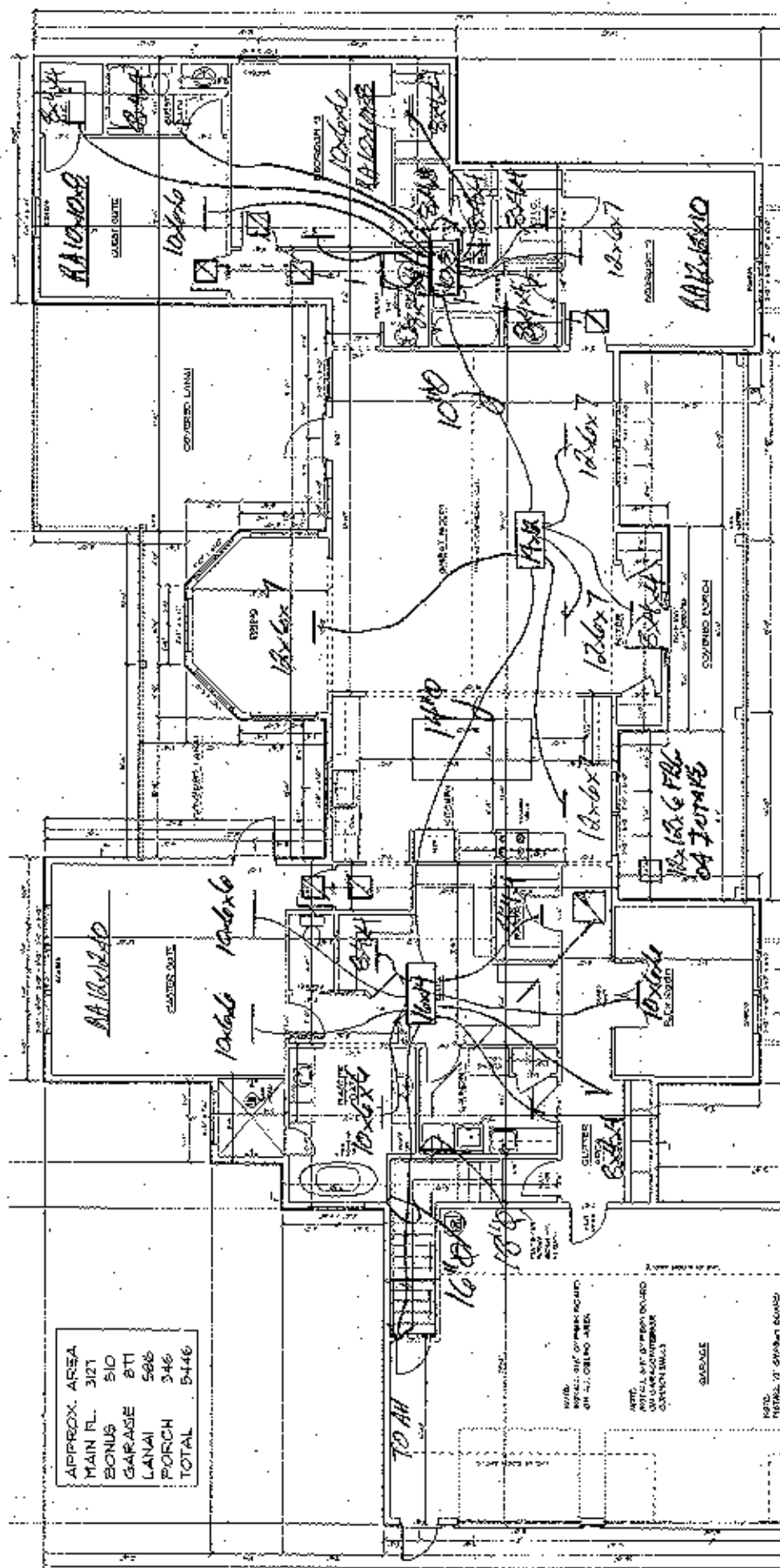


CP-AB-Bozzard



7/23/2020

RP

CP-AB-Buzzerd
HVAC Load Calculations

for

Cory Amira
14901 N Main St
Alachua, FL 32615

Prepared By:

Ken Fonorow
Florida H.E.R.O., Inc.
15220 NW 5th Ave
Newberry, FL 32669
(352) 472-5661
Thursday, July 23, 2020

Project Report

General Project Information

Project Title: CP-AB-Buzzerd
Designed By: Ken Fonorow
Project Date: 7/22/2020
Project Comment: Custom Home
Client Name: Cory Amira
Client Address: 14901 N Main St
Client City: Alachua, FL 32615
Client Phone: 386 462-9071
Client E-Mail Address: amirabuilders@aol.com
Company Name: Florida H.E.R.O., Inc.
Company Representative: Ken Fonorow
Company Address: 15220 NW 5th Ave
Company City: Newberry, FL 32669
Company Phone: (352) 472-5661
Company E-Mail Address: ken@floridahero.com
Company Website: www.floridahero.com

Design Data

Reference City: Gainesville, Florida
Building Orientation: Front door faces East
Daily Temperature Range: Medium
Latitude: 29 Degrees
Elevation: 152 ft.
Altitude Factor: 0.995

	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	33	30.8	n/a	n/a	72	n/a
Summer:	92	77	51%	50%	75	52

Check Figures

Total Building Supply CFM:	1,600	CFM Per Square ft.:	0.512
Square ft. of Room Area:	3,127	Square ft. Per Ton:	852
Volume (ft³):	31,270		

Building Loads

Total Heating Required Including Ventilation Air:	45,272 Btuh	45.272 MBH
Total Sensible Gain:	36,024 Btuh	82 %
Total Latent Gain:	8,022 Btuh	18 %
Total Cooling Required Including Ventilation Air:	44,047 Btuh	3.67 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S 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.

Miscellaneous Report

System 1 Whole House Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	33	30.8	80%	n/a	72	n/a
Summer:	92	77	51%	50%	75	51.69

Duct Sizing Inputs

	Main Trunk	Runouts
Calculate:	Yes	Yes
Use Schedule:	Yes	Yes
Roughness Factor:	0.15000	0.15000
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:	0 in.	0 in.
Maximum Height:	0 in.	0 in.

Outside Air Data

	Winter	Summer
Infiltration Specified:	0.190 AC/hr 99 CFM	0.100 AC/hr 52 CFM
Infiltration Actual:	0.213 AC/hr	0.028 AC/hr
Above Grade Volume:	X 31,270 Cu.ft. 6,656 Cu.ft./hr X 0.0167	X 31,270 Cu.ft. 882 Cu.ft./hr X 0.0167
Total Building Infiltration:	111 CFM	15 CFM
Total Building Ventilation:	25 CFM	75 CFM

---System 1---

Infiltration & Ventilation Sensible Gain Multiplier:	18.60	= (1.10 X 0.995 X 17.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	34.96	= (0.68 X 0.995 X 51.69 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	42.66	= (1.10 X 0.995 X 39.00 Winter Temp. Difference)
Winter Infiltration Specified:	0.190 AC/hr (99 CFM), Construction: Semi-Tight	
Summer Infiltration Specified:	0.100 AC/hr (52 CFM), Construction: Semi-Tight	

Duct Load Factor Scenarios for System 1

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From [T]MDD
1	Supply	Main	Attic	16A	0.06	6	722	No
1	Return	Main	Attic	16A	0.06	6	268	No

Tabular Manual D Ductsize Grid

Ducts	Room	Feeds Zones	Flow	Diam	Wid	Hei	Vel
☐ CP-AB-Buzzerd							
☐ CP-AB-Buzzerd							
☐ System 2							
Supply							
Return							
☐ System 4							
Supply							
Return							
☐ System 6							
Supply							
Return							
☐ System 8							
Supply							
Return							
☐ System 10							
Supply							
Return							
☐ System 12							
Supply							
Return							
☐ System 14							
Supply							
Return							

Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
VYN 34 23: Glazing-Dbl Pn Vyn Fr U .34 SHGC .23, ground reflectance = 0.23, outdoor insect screen with 50% coverage, medium color blinds at 45° with 25% coverage, U-value 0.34, SHGC 0.23	90	1,195	0	1,990	1,990
VYN 34 23: Glazing-Dbl Pn Vyn Fr U .34 SHGC .23, ground reflectance = 0.23, U-value 0.34, SHGC 0.23	26	345	0	275	275
VYN 34 23: Glazing-Dbl Pn Vyn Fr U .34 SHGC .23, ground reflectance = 0.32, U-value 0.34, SHGC 0.23	16	212	0	169	169
VYN 34 23: Glazing-Dbl Pn Vyn Fr U .34 SHGC .23, ground reflectance = 0.32, outdoor insect screen with 50% coverage, medium color blinds at 45° with 25% coverage, U-value 0.34, SHGC 0.23	138	1,830	0	1,482	1,482
VYN 34 23: Glazing-Dbl Pn Vyn Fr U .34 SHGC .23, ground reflectance = 0.32, medium color blinds at 45° with 25% coverage, U-value 0.34, SHGC 0.23	24	318	0	203	203
VYN 34 23: Glazing-Dbl Pn Vyn Fr U .34 SHGC .23, ground reflectance = 0.23, outdoor insect screen with 50% coverage, medium color blinds at 45° with 50% coverage, U-value 0.34, SHGC 0.23	52	690	0	696	696
VYN 34 23: Glazing-Dbl Pn Vyn Fr U .34 SHGC .23, ground reflectance = 0.32, outdoor insect screen with 50% coverage, medium color blinds at 45° with 50% coverage, U-value 0.34, SHGC 0.23	36	478	0	1,028	1,028
11P: Door-Metal - Polyurethane Core, U-value 0.29	45.4	513	0	368	368
12E-Osw: Wall-Frame, R-19 insulation in 2 x 6 stud cavity, no board insulation, siding finish, wood studs, U-value 0.068	2814.4	7,464	0	3,709	3,709
R19 UNV-ml: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Custom, R-19 open cell foam, light metal, U-value 0.047	3126.9	5,731	0	7,642	7,642
22A-pl: Floor-Slab on grade, No edge insulation, no insulation below floor, any floor cover, passive, light dry soil, U-value 0.989	327	12,613	0	0	0
Subtotals for structure:		31,389	0	17,562	17,562
People:	6		1,200	1,380	2,580
Equipment:			2,500	2,000	4,500
Lighting:	0			0	0
Ductwork:		8,084	1,185	10,573	11,759
Infiltration: Winter CFM: 111, Summer CFM: 15		4,733	515	272	787
Ventilation: Winter CFM: 25, Summer CFM: 75		1,067	2,622	1,395	4,017
Exhaust: Winter CFM: 75, Summer CFM: 25					
AED Excursion:		0	0	2,842	2,842
Total Building Load Totals:		45,272	8,022	36,024	44,047

Check Figures

Total Building Supply CFM:	1,600	CFM Per Square ft.:	0.512
Square ft. of Room Area:	3,127	Square ft. Per Ton:	852
Volume (ft³):	31,270		

Building Loads

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Total Cooling Required Including Ventilation Air:	44,047 Btuh	3.67 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Total Building Summary Loads (cont'd)

Notes

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 Room Load Summary

Room 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	Master Suite	317	5,187	95	2-7	460	4,871	463	223	246
2	Master Bath	156	2,844	52	1-6	456	1,772	386	81	90
3	MBR WIC	178	391	7	1-4	375	648	0	30	33
4	Laundry	88	193	4	1-4	402	694	350	32	35
5	Cluter Area	116	2,933	54	1-4	678	1,170	40	53	59
6	Flex Room	150	3,653	67	1-6	591	2,296	48	105	116
7	Kitchen	308	1,905	35	1-7	459	2,430	1,467	111	123
8	Pantry	37	80	1	1-4	78	134	0	6	7
9	Great Room	597	4,174	76	2-7	467	4,935	635	226	249
10	Dining	133	4,548	83	1-7	517	2,735	49	125	138
11	Foyer	56	2,753	50	1-4	677	1,169	36	53	59
12	Bedroom 2	210	4,722	86	1-7	579	3,060	63	140	155
13	BR 2 WIC	35	555	10	1-4	135	233	8	11	12
14	J&J Bath	238	809	15	3-4	179	930	255	43	47
15	Powder Room	28	60	1	1-4	58	100	50	5	5
16	Bedroom 3	173	1,769	32	1-6	405	1,575	20	72	80
17	BR 3 WIC	38	1,308	24	1-4	235	406	20	19	21
18	Guest Suite	184	3,219	59	1-6	454	1,764	43	81	89
19	Guest Bath	57	1,055	19	1-4	235	406	265	19	21
20	Guest WIC	30	1,117	20	1-4	196	339	17	15	17
Ventilation			1,067				1,395	2,622		
Duct Latent								732		
Return Duct			932				2,961	453		
System 1 total		3,127	45,272	791			36,024	8,022	1,447	1,600

System 1 Main Trunk Size: 18x18 in.
 Velocity: 711 ft./min
 Loss per 100 ft.: 0.219 in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	3.67	82% / 18%	36,024	8,022	44,047
Actual:	3.92	77% / 23%	36,190	10,810	47,000

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Air Source Heat Pump
Model:	CH17NA048***B*	CH17NA048***B*
Indoor Model:		FV4CN(B,F)005L
Brand:	PERFORMANCE 17 HP 2-STAGE	PERFORMANCE 17 HP 2-STAGE
Description:	Air Source Heat Pump	Air Source Heat Pump
Efficiency:	9 HSPF	16 SEER
Sound:	0	0
Capacity:	46,500 Btuh	47,000 Btuh
Sensible Capacity:	n/a	36,190 Btuh
Latent Capacity:	n/a	10,810 Btuh
AHRI Reference No.:	n/a	10474456

This system's equipment was selected in accordance with ACCA Manual S.
 Manual S equipment sizing data: SODB: 92F, SOWB: 77F, WODB: 33F, SIDB: 75F, SIRH: 50%, WIDB: 72F, Sen. gain: 36,024 Btuh, Lat. gain: 8,022 Btuh, Sen. loss: 45,272 Btuh, Entering clg. coil DB: 77.5F, Entering clg. coil WB: 63.8F, Entering htg. coil DB: 70.9F, Clg. coil TD: 20F, Htg. coil TD: 50F, Req. clg. airflow: 1447 CFM, Req. htg. airflow: 791 CFM