



Manual S Compliance Report

Entire House

Bounds Heating & Air

Job:
Date: May 6, 2022
By: Josh Legler

25645 West Newberry Road, Newberry, FL 32669 Phone: 352-472-2761 Email: jlegler@boundshvac.com

Project Information

For: Morse, Amira Builders

Cooling Equipment

Design Conditions

Outdoor design DB:	92.0°F	Sensible gain:	23147	Btuh	Entering coil DB:	77.3°F
Outdoor design WB:	76.3°F	Latent gain:	4529	Btuh	Entering coil WB:	64.0°F
Indoor design DB:	75.0°F	Total gain:	27677	Btuh		
Indoor RH:	50%	Estimated airflow:	1100	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Carrier	Model:	CH14NB03600G0B0+FB4CNP036L	
Actual airflow:	1100	cfm		
Sensible capacity:	25218	Btuh	109% of load	
Latent capacity:	6080	Btuh	134% of load	
Total capacity:	31298	Btuh	113% of load	SHR: 81%

Heating Equipment

Design Conditions

Outdoor design DB:	33.4°F	Heat loss:	27090	Btuh	Entering coil DB:	65.8°F
Indoor design DB:	68.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Carrier	Model:	CH14NB03600G0B0+FB4CNP036L	
Actual airflow:	1100	cfm		
Output capacity:	27532	Btuh	102% of load	Capacity balance: 29 °F
Supplemental heat required:	0	Btuh		Economic balance: -99 °F

Backup equipment type:	Elec strip			
Manufacturer:	Carrier	Model:	CE0901N08+n/a	
Actual airflow:	1100	cfm		
Output capacity:	8.0	kW	101% of load	Temp. rise: 23 °F

Meets all requirements of ACCA Manual S.



Load Short Form

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Design Information

	Htg	Clg	Infiltration	
Outside db (°F)	33	92	Method	Simplified
Inside db (°F)	68	75	Construction quality	Semi-tight
Design TD (°F)	35	17	Fireplaces	1 (Semi-tight)
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	29	47		

HEATING EQUIPMENT

Make Carrier
Trade
Model CH14NB03600G0B0
AHRI ref 9162429
Efficiency 8.2 HSPF
Heating input
Heating output 33800 Btuh @ 47°F
Temperature rise 28 °F
Actual air flow 1100 cfm
Air flow factor 0.044 cfm/Btuh
Static pressure 0.50 in H2O
Space thermostat
Capacity balance point = 29 °F

Backup: Carrier CE0901N08

Input = 8 kW, Output = 27297 Btuh, 100 AFUE

COOLING EQUIPMENT

Make Carrier
Trade
Cond CH14NB03600G0B0
Coil FB4CNP036L
AHRI ref 9162429
Efficiency 11.5 EER, 14 SEER
Sensible cooling 23430 Btuh
Latent cooling 9570 Btuh
Total cooling 33000 Btuh
Actual air flow 1100 cfm
Air flow factor 0.049 cfm/Btuh
Static pressure 0.50 in H2O
Load sensible heat ratio 0.84

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
master bedroom	263	4481	3932	195	194
master bath	86	2345	1107	102	55
bedroom 2	172	2404	1511	105	75
bath 2	70	1413	575	61	28
WIC 1	52	101	159	4	8
mech.	34	0	0	0	0
hall	44	0	0	0	0
laundry	61	1886	1349	82	67
clutter	50	671	255	29	13
kitchen/living	660	9444	11042	411	546
study	83	2534	2327	110	115

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

Entire House	d	1575	25278	22257	1100	1100
Other equip loads			1812	890		
Equip. @ 0.97 RSM				22453		
Latent cooling				4529		
TOTALS		1575	27090	26982	1100	1100

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2022-May-09 10:02:39

Page 2

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Project Summary

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Notes:

Design Information

Weather: Gainesville Regional AP, FL, US

Winter Design Conditions

Outside db	33 °F
Inside db	68 °F
Design TD	35 °F

Summer Design Conditions

Outside db	92 °F
Inside db	75 °F
Design TD	17 °F
Daily range	M
Relative humidity	50 %
Moisture difference	47 gr/lb

Heating Summary

Structure	20204 Btuh
Ducts	5074 Btuh
Central vent (48 cfm)	1812 Btuh
Outside air	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	27090 Btuh

Sensible Cooling Equipment Load Sizing

Structure	15867 Btuh
Ducts	6390 Btuh
Central vent (48 cfm)	890 Btuh
Outside air	
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.97
Equipment sensible load	22453 Btuh

Infiltration

Method	Simplified
Construction quality	Semi-tight
Fireplaces	1 (Semi-tight)

Latent Cooling Equipment Load Sizing

Structure	1909 Btuh
Ducts	1085 Btuh
Central vent (48 cfm)	1535 Btuh
Outside air	
Equipment latent load	4529 Btuh

	Heating	Cooling
Area (ft ²)	1575	1575
Volume (ft ³)	14835	14835
Air changes/hour	0.31	0.14
Equiv. AVF (cfm)	77	35

Equipment Total Load (Sen+Lat)	26982 Btuh
Req. total capacity at 0.71 SHR	2.6 ton

Heating Equipment Summary

Make	Carrier
Trade	
Model	CH14NB03600G0B0
AHRI ref	9162429
Efficiency	8.2 HSPF
Heating input	
Heating output	33800 Btuh @ 47°F
Temperature rise	28 °F
Actual air flow	1100 cfm
Air flow factor	0.044 cfm/Btuh
Static pressure	0.50 in H2O
Space thermostat	
Capacity balance point = 29 °F	
Backup: Carrier CE0901N08	
Input = 8 kW, Output = 27297 Btuh, 100 AFUE	

Cooling Equipment Summary

Make	Carrier
Trade	
Cond	CH14NB03600G0B0
Coil	FB4CNP036L
AHRI ref	9162429
Efficiency	11.5 EER, 14 SEER
Sensible cooling	23430 Btuh
Latent cooling	9570 Btuh
Total cooling	33000 Btuh
Actual air flow	1100 cfm
Air flow factor	0.049 cfm/Btuh
Static pressure	0.50 in H2O
Load sensible heat ratio	0.84

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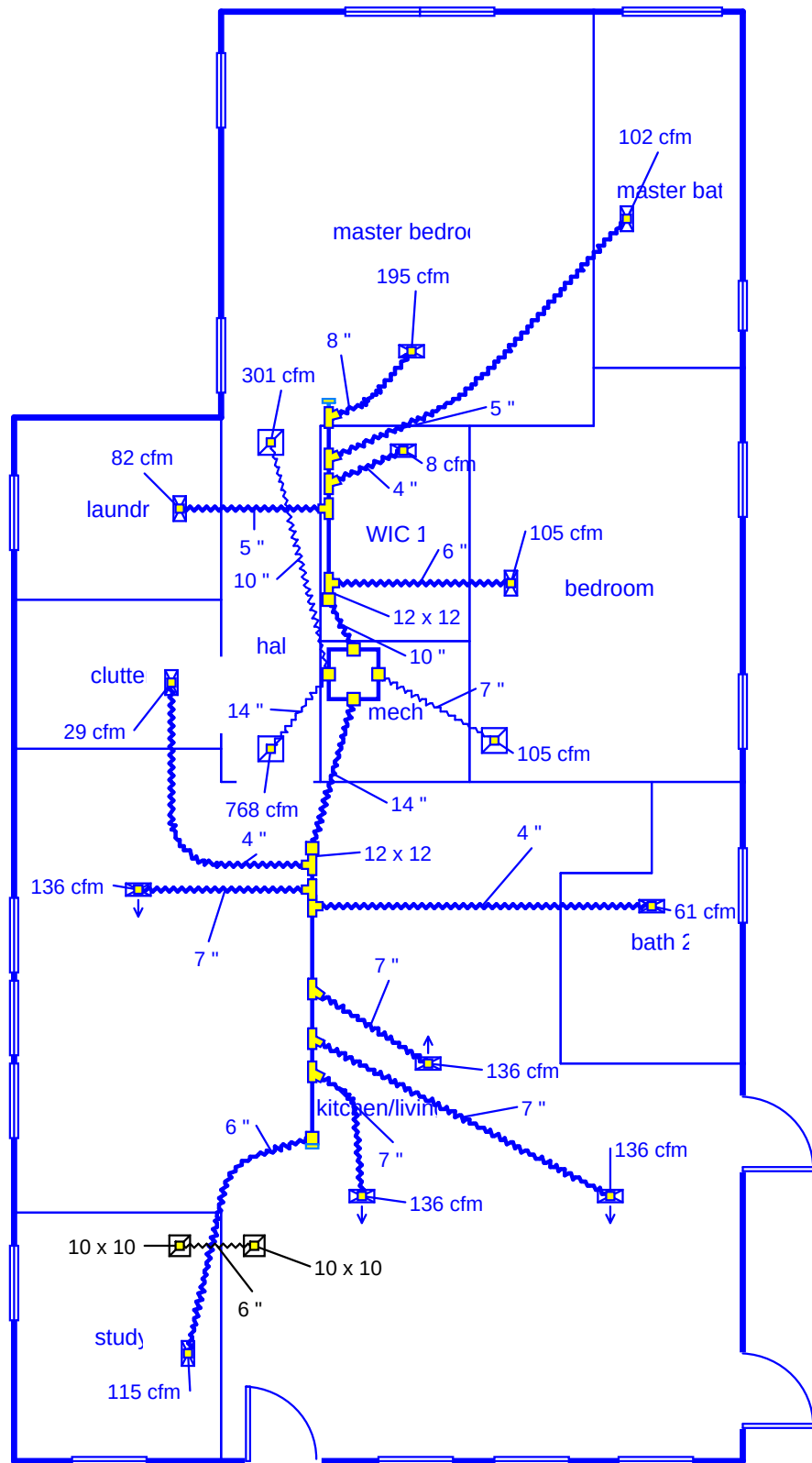
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2022-May-09 10:02:39

Page 1



Main floor



Job #:
Performed by Josh Legler for:
Morse

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Scale: 1 : 85

Page 1
Right-Suite® Universal 2021
21.0.08 RSU01870
2022-May-09 10:02:58
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Duct System Summary

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	Heating	Cooling
External static pressure	0.50 in H ₂ O	0.50 in H ₂ O
Pressure losses	0.23 in H ₂ O	0.23 in H ₂ O
Available static pressure	0.27 in H ₂ O	0.27 in H ₂ O
Supply / return available pressure	0.222 / 0.048 in H ₂ O	0.222 / 0.048 in H ₂ O
Lowest friction rate	0.120 in/100ft	0.120 in/100ft
Actual air flow	1100 cfm	1100 cfm
Total effective length (TEL)	225 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
WIC 1	c 159	4	8	0.153	4.0	0x0	VIFx	10.2	135.0	st3
bath 2	h 1413	61	28	0.129	4.0	0x0	VIFx	22.2	150.0	st4
bedroom 2	h 2404	105	75	0.139	6.0	0x0	VIFx	10.2	150.0	st3
clutter	h 671	29	13	0.120	4.0	0x0	VIFx	19.9	165.0	st4
kitchen/living	c 2760	103	136	0.127	7.0	0x0	VIFx	14.9	160.0	st4
kitchen/living-A	c 2760	103	136	0.137	7.0	0x0	VIFx	17.4	145.0	st4
kitchen/living-B	c 2760	103	136	0.147	7.0	0x0	VIFx	21.2	130.0	st4
kitchen/living-C	c 2760	103	136	0.137	7.0	0x0	VIFx	27.5	135.0	st4
laundry	h 1886	82	67	0.142	5.0	0x0	VIFx	11.9	145.0	st3
master bath	h 2345	102	55	0.145	5.0	0x0	VIFx	23.6	130.0	st3
master bedroom	h 4481	195	194	0.166	8.0	0x0	VIFx	14.0	120.0	st3
study	c 2327	110	115	0.149	6.0	0x0	VIFx	29.2	120.0	st4

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st3	Peak AVF	488	398	0.139	488	14.0	12 x 12	RectFbg	st1
st1	Peak AVF	488	398	0.139	895	10.0	0 x 0	VinIFlx	
st4	Peak AVF	612	702	0.120	702	14.0	12 x 12	RectFbg	st2
st2	Peak AVF	612	702	0.120	656	14.0	0 x 0	VinIFlx	



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2022-May-09 10:02:39

Page 1

Return Branch Detail Table

Name	Grille 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
rb3	0x 0	301	257	39.6	0.120	553	10.0	0x 0		VIFx	
rb1	0x 0	694	768	33.8	0.141	719	14.0	0x 0		VIFx	
rb2	0x 0	105	75	35.4	0.135	391	7.0	0x 0		VIFx	