



Manual S Compliance Report

Entire House

Bounds Heating and Air

Job:
Date: September 21 2021
By: Josh Legler

25645 West Newberry Road, Newberry, FL 32669 Phone: 352-472-2761 Fax: 352-472-1809 Email: jlegler@boundshvac.com Web: www.boundshvac.com

Project Information

For: Kibler - Graziani, Harvey Construction

Cooling Equipment

Design Conditions

Outdoor design DB:	92.0°F	Sensible gain:	27087 Btuh	Entering coil DB:	76.8°F
Outdoor design WB:	76.0°F	Latent gain:	4022 Btuh	Entering coil WB:	63.3°F
Indoor design DB:	75.0°F	Total gain:	31110 Btuh		
Indoor RH:	50%	Estimated airflow:	1333 cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Carrier	Model:	CH14NB04200G0A0+FB4CNP042L
Actual airflow:	1333 cfm		
Sensible capacity:	31538 Btuh	116% of load	
Latent capacity:	6439 Btuh	160% of load	
Total capacity:	37978 Btuh	122% of load	SHR: 83%

Heating Equipment

Design Conditions

Outdoor design DB:	33.0°F	Heat loss:	43605 Btuh	Entering coil DB:	69.1°F
Indoor design DB:	70.0°F				

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Carrier	Model:	CH14NB04200G0A0+FB4CNP042L
Actual airflow:	1333 cfm		
Output capacity:	33335 Btuh	76% of load	Capacity balance: 35 °F
Supplemental heat required:	10269 Btuh		Economic balance: -99 °F

Backup equipment type:	Elec strip		
Manufacturer:		Model:	
Actual airflow:	1333 cfm		
Output capacity:	0 kW	0% of load	Temp. rise: 0 °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)	70	75	Construction quality	Semi-tight
Design TD (°F)	37	17	Fireplaces	0
Daily range	-	M		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	11	45		

HEATING EQUIPMENT

Make	Carrier
Trade	
Model	CH14NB04200G0A0
AHRI ref	9162578
Efficiency	8.2 HSPF
Heating input	
Heating output	41000 Btuh @ 47°F
Temperature rise	28 °F
Actual air flow	1333 cfm
Air flow factor	0.031 cfm/Btuh
Static pressure	0.50 in H2O
Space thermostat	
Capacity balance point = 35 °F	

Backup:

Input = 0 kW, Output = 0 Btuh, 100 AFUE

COOLING EQUIPMENT

Make	Carrier
Trade	
Cond	CH14NB04200G0A0
Coil	FB4CNP042L
AHRI ref	9162578
Efficiency	11.5 EER, 14 SEER
Sensible cooling	28000 Btuh
Latent cooling	12000 Btuh
Total cooling	40000 Btuh
Actual air flow	1333 cfm
Air flow factor	0.049 cfm/Btuh
Static pressure	0.50 in H2O
Load sensible heat ratio	0.87

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Master bedroom	208	6867	5087	210	250
Master bath	188	1983	1152	61	57
toilet	23	724	764	22	38
Master closet	147	4272	1654	131	81
Cove	63	1631	740	50	36
Piano	61	1579	721	48	35
Entry	56	1512	612	46	30
Pantry	61	1300	478	40	24
Bedroom 4	198	3860	1875	118	92
Bath 2	53	664	215	20	11
Hall	104	919	469	28	23
Bedroom 2	186	4325	2058	132	101
Bath 3	76	1036	463	32	23
Bedroom 3	151	2160	1762	66	87

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

Laundry		120	3008	2229	92	110
Living/Kitchen		912	7763	6809	237	335
Entire House	d	2604	43605	27087	1333	1333
Other equip loads			0	0		
Equip. @ 0.97 RSM				26275		
Latent cooling				4022		
TOTALS		2604	43605	30297	1333	1333

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Notes:

Design Information

Weather: Gainesville Regional AP, FL, US

Winter Design Conditions

Outside db	33 °F
Inside db	70 °F
Design TD	37 °F

Summer Design Conditions

Outside db	92 °F
Inside db	75 °F
Design TD	17 °F
Daily range	M
Relative humidity	50 %
Moisture difference	45 gr/lb

Heating Summary

Structure	36045 Btuh
Ducts	7559 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	43605 Btuh

Sensible Cooling Equipment Load Sizing

Structure	17807 Btuh
Ducts	9280 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.97
Equipment sensible load	26275 Btuh

Infiltration

Method	Simplified
Construction quality	Semi-tight
Fireplaces	0

Latent Cooling Equipment Load Sizing

Structure	2466 Btuh
Ducts	1556 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Equipment latent load	4022 Btuh

	Heating	Cooling
Area (ft ²)	2604	2604
Volume (ft ³)	26042	26042
Air changes/hour	0.22	0.11
Equiv. AVF (cfm)	95	48

Equipment Total Load (Sen+Lat)	30297 Btuh
Req. total capacity at 0.70 SHR	3.1 ton

Heating Equipment Summary

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Heating input	
Heating output	41000 Btuh @ 47°F
Temperature rise	28 °F
Actual air flow	1333 cfm
Air flow factor	0.031 cfm/Btuh
Static pressure	0.50 in H2O
Space thermostat	
Capacity balance point = 35 °F	
Backup:	
Input = 0 kW, Output = 0 Btuh, 100 AFUE	

Cooling Equipment Summary

Make	Carrier
Trade	
Cond	CH14NB04200G0A0
Coil	FB4CNP042L
AHRI ref	9162578
Efficiency	11.5 EER, 14 SEER
Sensible cooling	28000 Btuh
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Static pressure	0.50 in H2O
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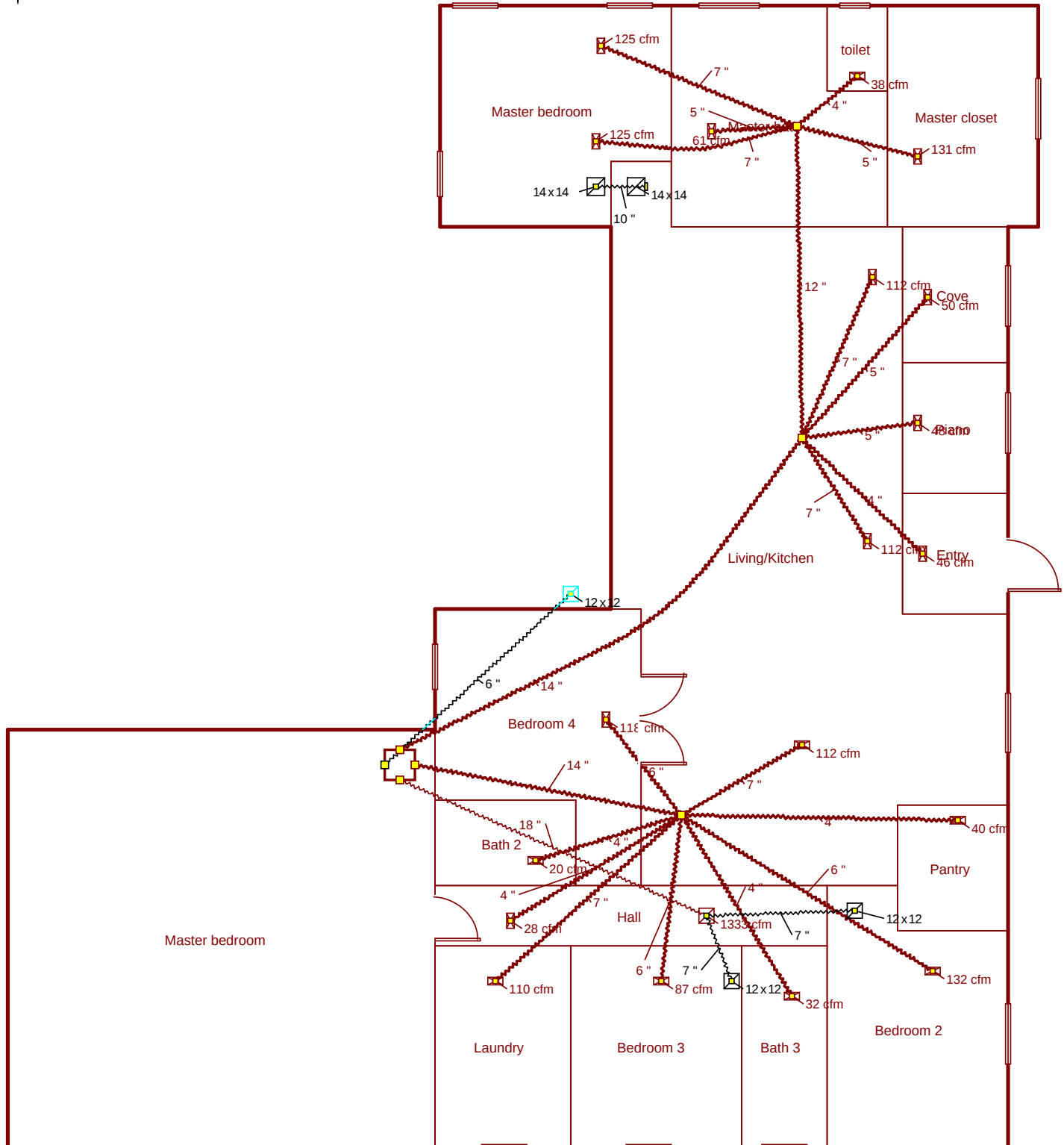
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Job #:
Performed by Josh Legler for:
Kibler - Graziani

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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	0.209 / 0.061 in H ₂ O	0.209 / 0.061 in H ₂ O
Lowest friction rate	0.098 in/100ft	0.098 in/100ft
Actual air flow	1333 cfm	1333 cfm
Total effective length (TEL)	276 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 664	20	11	0.146	4.0	0x0	VIFx	28.1	115.0	st2
Bath 3	h 1036	32	23	0.142	4.0	0x0	VIFx	32.0	115.0	st2
Bedroom 2	h 4325	132	101	0.137	6.0	0x0	VIFx	37.6	115.0	st2
Bedroom 3	c 1762	66	87	0.145	6.0	0x0	VIFx	29.1	115.0	st2
Bedroom 4	h 3860	118	92	0.148	6.0	0x0	VIFx	26.0	115.0	st2
Cove	h 1631	50	36	0.125	5.0	0x0	VIFx	47.2	120.0	st1
Entry	h 1512	46	30	0.126	4.0	0x0	VIFx	45.7	120.0	st1
Hall	h 919	28	23	0.143	4.0	0x0	VIFx	31.3	115.0	st2
Laundry	c 2229	92	110	0.140	7.0	0x0	VIFx	34.5	115.0	st2
Living/Kitchen	c 2270	79	112	0.126	7.0	0x0	VIFx	46.3	120.0	st1
Living/Kitchen-A	c 2270	79	112	0.147	7.0	0x0	VIFx	27.2	115.0	st2
Living/Kitchen-B	c 2270	79	112	0.129	7.0	0x0	VIFx	42.7	120.0	st1
Master bath	h 1983	61	57	0.104	5.0	0x0	VIFx	61.0	140.0	st3
Master bedroom	c 2543	105	125	0.098	7.0	0x0	VIFx	68.9	145.0	st3
Master bedroom-A	c 2543	105	125	0.100	7.0	0x0	VIFx	69.4	140.0	st3
Master closet	h 4272	131	81	0.103	5.0	0x0	VIFx	63.6	140.0	st3
Pantry	h 1300	40	24	0.138	4.0	0x0	VIFx	36.3	115.0	st2
Piano	h 1579	48	35	0.129	5.0	0x0	VIFx	42.4	120.0	st1
toilet	c 764	22	38	0.104	4.0	0x0	VIFx	60.5	140.0	st3



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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	423	426	0.098	543	12.0	0 x 0	VinIFlx	st1
st1	Peak AVF	726	752	0.098	703	14.0	0 x 0	VinIFlx	
st2	Peak AVF	607	582	0.137	568	14.0	0 x 0	VinIFlx	

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
rb1	0x 0	1333	1333	62.2	0.098	505	22.0	0x 0		VIFx	rst2

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rst2	Peak AVF	1333	1333	0.098	755	18.0	0 x 0	VinIFlx	