



Manual S Compliance Report

Entire House

Bounds Heating and Air

Job:
Date: Sep 03, 2020
By:

Email: jlegler@boundshvac.com

Project Information

For: Rendek, RRCH

Cooling Equipment

Design Conditions

Outdoor design DB:	92.0°F	Sensible gain:	28313 Btuh	Entering coil DB:	77.2°F
Outdoor design WB:	76.3°F	Latent gain:	4403 Btuh	Entering coil WB:	63.6°F
Indoor design DB:	75.0°F	Total gain:	32716 Btuh		
Indoor RH:	50%	Estimated airflow:	1333 cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Carrier	Model:	CH14NB04200G0A0+FB4CNF042L++TXV
Actual airflow:	1333 cfm		
Sensible capacity:	31531 Btuh	111% of load	
Latent capacity:	6660 Btuh	151% of load	
Total capacity:	38191 Btuh	117% of load	SHR: 83%

Heating Equipment

Design Conditions

Outdoor design DB:	33.4°F	Heat loss:	35082 Btuh	Entering coil DB:	67.0°F
Indoor design DB:	68.0°F				

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Carrier	Model:	CH14NB04200G0A0+FB4CNF042L++TXV
Actual airflow:	1333 cfm		
Output capacity:	41000 Btuh	117% of load	Capacity balance: 30 °F
Supplemental heat required:	0 Btuh		Economic balance: -99 °F

Backup equipment type:	Elec strip		
Manufacturer:		Model:	
Actual airflow:	1333 cfm		
Output capacity:	2.4 kW	24% of load	Temp. rise: 50 °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 (Average)
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	29	47		

HEATING EQUIPMENT

Make Carrier
Trade
Model CH14NB04200G0A0
AHRI ref 9162729

Efficiency 8.2 HSPF
Heating input
Heating output 41000 Btuh @ 47°F
Temperature rise 28 °F
Actual air flow 1333 cfm
Air flow factor 0.038 cfm/Btuh
Static pressure 0.50 in H2O
Space thermostat
Capacity balance point = 30 °F

Backup:
Input = 2 kW, Output = 8253 Btuh, 100 AFUE

COOLING EQUIPMENT

Make Carrier
Trade
Cond CH14NB04200G0A0
Coil FB4CNF042L++TXV
AHRI ref 9162729

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 0.047 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)
bedroom 3	148	3417	2415	130	114
bath a	40	846	546	32	26
bath b	34	54	93	2	4
bedroom 2	148	1883	1716	72	81
wic 2	32	619	244	24	11
powder	30	58	77	2	4
laundry	145	4339	2400	165	113
hall 2	43	0	0	0	0
hall 1	71	0	0	0	0
wic 3	22	507	206	19	10
kitchen/living	627	6014	7230	229	340
dining/foyer	219	3776	2744	143	129
study	136	2480	2398	94	113
wic a	23	0	0	0	0

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



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hall		37	0	0	0	0
wic		99	3182	1918	121	90
master bath		164	2747	2188	104	103
master bedroom		243	4645	3682	176	173
toilet		21	516	457	20	22
Entire House	d	2281	35082	28313	1333	1333
Other equip loads			0	0		
Equip. @ 0.97 RSM				27463		
Latent cooling				4403		
TOTALS		2281	35082	31867	1333	1333

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Project Summary

Entire House

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Job:
Date: Sep 03, 2020
By:

Email: jlegler@boundshvac.com

Project Information

For: Rendek, RRCH

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	27043 Btuh
Ducts	8039 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	35082 Btuh

Sensible Cooling Equipment Load Sizing

Structure	18309 Btuh
Ducts	10004 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.97
Equipment sensible load	27463 Btuh

Infiltration

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

Latent Cooling Equipment Load Sizing

Structure	2206 Btuh
Ducts	2197 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Equipment latent load	4403 Btuh

	Heating	Cooling
Area (ft ²)	2281	2281
Volume (ft ³)	20528	20528
Air changes/hour	0.28	0.11
Equiv. AVF (cfm)	95	38

Equipment Total Load (Sen+Lat)	31867 Btuh
Req. total capacity at 0.70 SHR	3.3 ton

Heating Equipment Summary

Make	Carrier
Trade	
Model	CH14NB04200G0A0
AHRI ref	9162729
Efficiency	8.2 HSPF
Heating input	
Heating output	41000 Btuh @ 47°F
Temperature rise	28 °F
Actual air flow	1333 cfm
Air flow factor	0.038 cfm/Btuh
Static pressure	0.50 in H2O
Space thermostat	
Capacity balance point = 30 °F	
Backup:	
Input = 2 kW, Output = 8253 Btuh, 100 AFUE	

Cooling Equipment Summary

Make	Carrier
Trade	
Cond	CH14NB04200G0A0
Coil	FB4CNF042L++TXV
AHRI ref	9162729
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	0.047 cfm/Btuh
Static pressure	0.50 in H2O
Load sensible heat ratio	0.87

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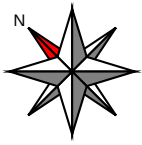


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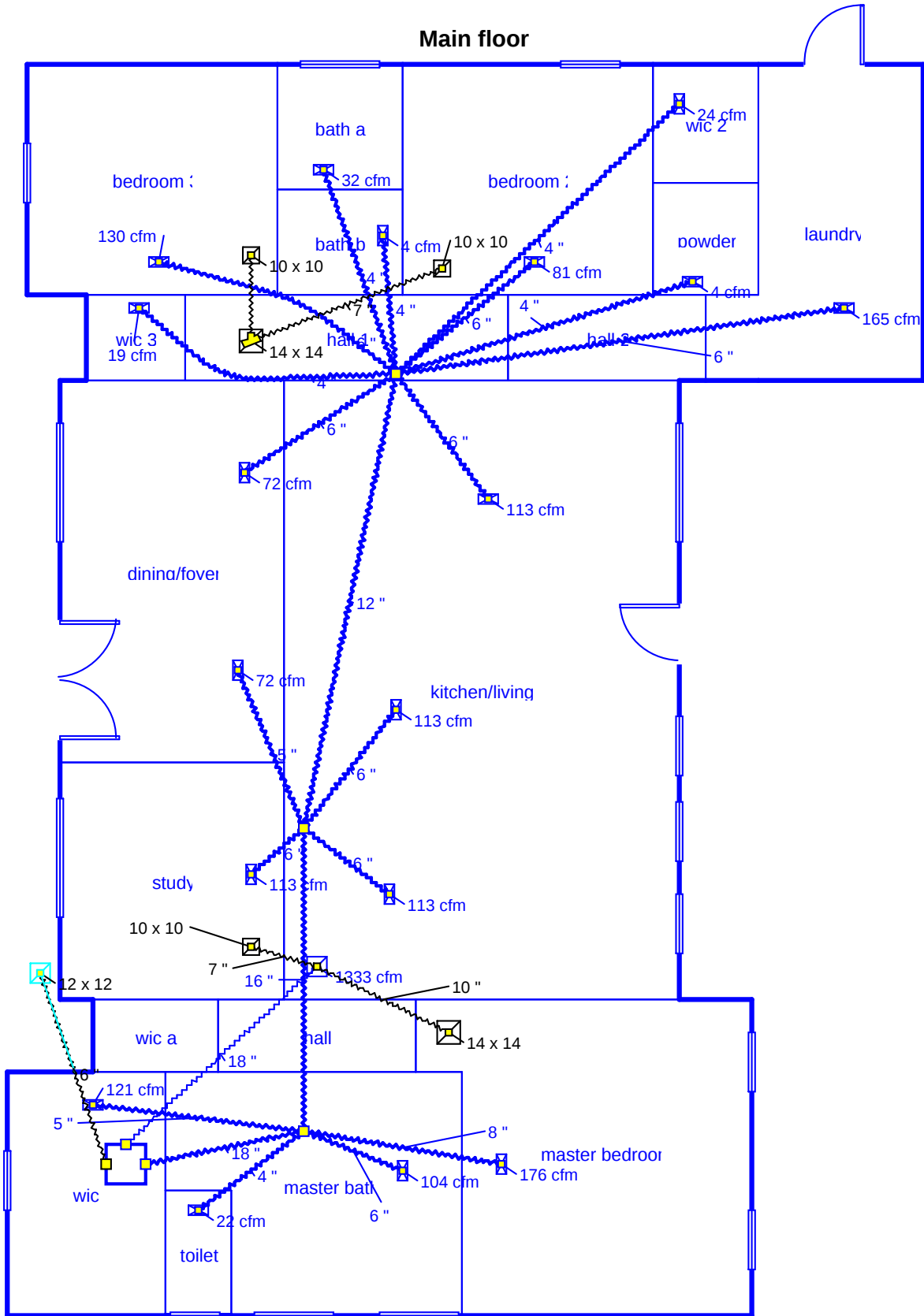
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Main floor



Job #:
Performed for:
Rendek

Bounds Heating and Air

jlegler@boundshvac.com

Scale: 1 : 92

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Duct System Summary

Entire House

Bounds Heating and Air

Job:
Date: Sep 03, 2020
By:

Email: jlegler@boundshvac.com

Project Information

For: Rendek, RRCH

	Heating	Cooling
External static pressure	0.50 in H ₂ O	0.50 in H ₂ O
Pressure losses	0 in H ₂ O	0 in H ₂ O
Available static pressure	0.50 in H ₂ O	0.50 in H ₂ O
Supply / return available pressure	0.395 / 0.105 in H ₂ O	0.395 / 0.105 in H ₂ O
Lowest friction rate	0.198 in/100ft	0.198 in/100ft
Actual air flow	1333 cfm	1333 cfm
Total effective length (TEL)	253 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 a	h 846	32	26	0.210	4.0	0x0	VIFx	57.9	130.0	st3
bath b	c 93	2	4	0.215	4.0	0x0	VIFx	54.0	130.0	st3
bedroom 2	c 1716	72	81	0.212	6.0	0x0	VIFx	56.0	130.0	st3
bedroom 3	h 3417	130	114	0.202	6.0	0x0	VIFx	60.5	135.0	st3
dining/foyer	h 1888	72	65	0.212	6.0	0x0	VIFx	56.1	130.0	st3
dining/foyer-A	h 1888	72	65	0.278	5.0	0x0	VIFx	32.2	110.0	st2
kitchen/living	c 2410	76	113	0.214	6.0	0x0	VIFx	54.8	130.0	st3
kitchen/living-A	c 2410	76	113	0.280	6.0	0x0	VIFx	31.1	110.0	st2
kitchen/living-B	c 2410	76	113	0.284	6.0	0x0	VIFx	29.0	110.0	st2
laundry	h 4339	165	113	0.198	6.0	0x0	VIFx	69.9	130.0	st3
master bath	h 2747	104	103	0.381	6.0	0x0	VIFx	13.6	90.0	st1
master bedroom	h 4645	176	173	0.365	8.0	0x0	VIFx	18.3	90.0	st1
powder	c 77	2	4	0.205	4.0	0x0	VIFx	62.7	130.0	st3
study	c 2398	94	113	0.288	6.0	0x0	VIFx	27.0	110.0	st2
toilet-A	c 457	20	22	0.377	4.0	0x0	VIFx	14.8	90.0	st1
wic	h 3182	121	90	0.363	5.0	0x0	VIFx	18.9	90.0	st1
wic 2	h 619	24	11	0.201	4.0	0x0	VIFx	66.8	130.0	st3
wic 3	h 507	19	10	0.201	4.0	0x0	VIFx	61.3	135.0	st3

Bold/italic values have been manually overridden

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	593	540	0.198	755	12.0	0 x 0	VinIFlx	st2
st2	Peak AVF	912	945	0.198	677	16.0	0 x 0	VinIFlx	st1
st1	Peak AVF	1333	1333	0.198	754	18.0	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	53.2	0.198	505	22.0	0x 0		VIFx	rst3

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rst3	Peak AVF	1333	1333	0.198	754	18.0	0 x 0	VinIFlx	

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