



Manual S Compliance Report

Entire House

Bounds Heating and Air

Job:
Date: Feb 22, 2022
By:

Email: jlegler@boundshvac.com

Project Information

For: Senter, Harvey Building & Construction

Cooling Equipment

Design Conditions

Outdoor design DB:	92.2°F	Sensible gain:	27733 Btuh	Entering coil DB:	77.2°F
Outdoor design WB:	75.8°F	Latent gain:	4223 Btuh	Entering coil WB:	63.5°F
Indoor design DB:	75.0°F	Total gain:	31957 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:	28000 Btuh	101% of load	
Latent capacity:	12000 Btuh	284% of load	
Total capacity:	40000 Btuh	125% of load	SHR: 70%

Heating Equipment

Design Conditions

Outdoor design DB:	33.2°F	Heat loss:	33520 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+FB4CNP042L
Actual airflow:	1333 cfm		
Output capacity:	41000 Btuh	122% of load	Capacity balance: 29 °F
Supplemental heat required:	0 Btuh		Economic balance: -99 °F

Backup equipment type:	Elec strip		
Manufacturer:		Model:	
Actual airflow:	1333 cfm		
Output capacity:	9.5 kW	97% of load	Temp. rise: 50 °F

Meets all requirements of ACCA Manual S.



Load Short Form Entire House Bounds Heating and Air

Job:
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Project Information

For: Senter, Harvey Building & Construction

Design Information

	Htg	Clg	Infiltration	Simplified
Outside db (°F)	33	92	Method	Semi-tight
Inside db (°F)	68	75	Construction quality	0
Design TD (°F)	35	17	Fireplaces	
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	29	44		

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 0.040 cfm/Btuh
Static pressure 0.50 in H2O
Space thermostat
Capacity balance point = 29 °F

Backup:

Input = 9 kW, Output = 32400 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 0.048 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 bath	90	2336	1175	93	57
wic	56	1229	351	49	17
master bedroom	251	4690	3920	187	188
laundry	27	610	810	24	39
hall 1	24	593	286	24	14
office	91	2235	1452	89	70
pantry	34	246	87	10	4
dining	124	1676	1051	67	51
foyer	93	1673	916	67	44
kitchen/living	597	6373	9071	254	436
hall 2	132	0	0	0	0
bedroom 3	152	3512	2565	140	123
bath	92	1081	606	43	29
bedroom 2	152	1959	1527	78	73

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



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Load Short Form Entire House Bounds Heating and Air

Job:
Date: Feb 22, 2022
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Email: jlegler@boundshvac.com

Project Information

For: Senter, Harvey Building & Construction

Design Information

	Htg	Clg	Infiltration	Simplified
Outside db (°F)	33	92	Method	Semi-tight
Inside db (°F)	68	75	Construction quality	0
Design TD (°F)	35	17	Fireplaces	
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	29	44		

HEATING EQUIPMENT

Make Carrier
Trade
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Heating input
Heating output 41000 Btuh @ 47°F
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COOLING EQUIPMENT

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Efficiency 11.5 EER, 14 SEER
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wic	56	1229	351	49	17
master bedroom	251	4690	3920	187	188
laundry	27	610	810	24	39
hall 1	24	593	286	24	14
office	91	2235	1452	89	70
pantry	34	246	87	10	4
dining	124	1676	1051	67	51
foyer	93	1673	916	67	44
kitchen/living	597	6373	9071	254	436
hall 2	132	0	0	0	0
bedroom 3	152	3512	2565	140	123
bath	92	1081	606	43	29
bedroom 2	152	1959	1527	78	73

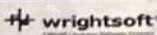
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game room	203	5307	3915	211	188
Entire House	2119	33520	27733	1333	1333
Other equip loads		0	0		
Equip. @ 0.97 RSM			26957		
Latent cooling			4223		
TOTALS	2119	33520	31180	1333	1333

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Project Summary

Entire House

Bounds Heating and Air

Job:
Date: Feb 22, 2022
By:

Email: jiegler@boundshvac.com

Project Information

For: Senter, Harvey Building & Construction

Notes:

Design Information

Weather: Gainesville Regional, 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	44 gr/lb

Heating Summary

Structure	25692 Btuh
Ducts	7828 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	33520 Btuh

Sensible Cooling Equipment Load Sizing

Structure	18032 Btuh
Ducts	9701 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.97
Equipment sensible load	26957 Btuh

Infiltration

Method	Simplified
Construction quality	Semi-tight
Fireplaces	0

Latent Cooling Equipment Load Sizing

Structure	2237 Btuh
Ducts	1987 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Equipment latent load	4223 Btuh
Equipment Total Load (Sen+Lat)	31180 Btuh
Req. total capacity at 0.70 SHR	3.2 ton

Area (ft²)	Heating	Cooling
Volume (ft³)	2119	2119
Air changes/hour	19068	19068
Equiv. AVF (cfm)	0.22	0.11
	70	35

Heating Equipment Summary

Make	Carrier
Trade	
Model	CH14NB04200G0A0
AHRI ref	9162578
Efficiency	8.2 HSPF
Heating input	41000 Btuh @ 47°F
Heating output	28 °F
Temperature rise	1333 cfm
Actual air flow	0.040 cfm/Btuh
Air flow factor	0.50 in H2O
Static pressure	
Space thermostat	
Capacity balance point = 29 °F	
Backup:	
Input = 9 kW, Output = 32400 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
Latent cooling	12000 Btuh
Total cooling	40000 Btuh
Actual air flow	1333 cfm
Air flow factor	0.048 cfm/Btuh
Static pressure	0.50 in H2O
Load sensible heat ratio	0.87

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



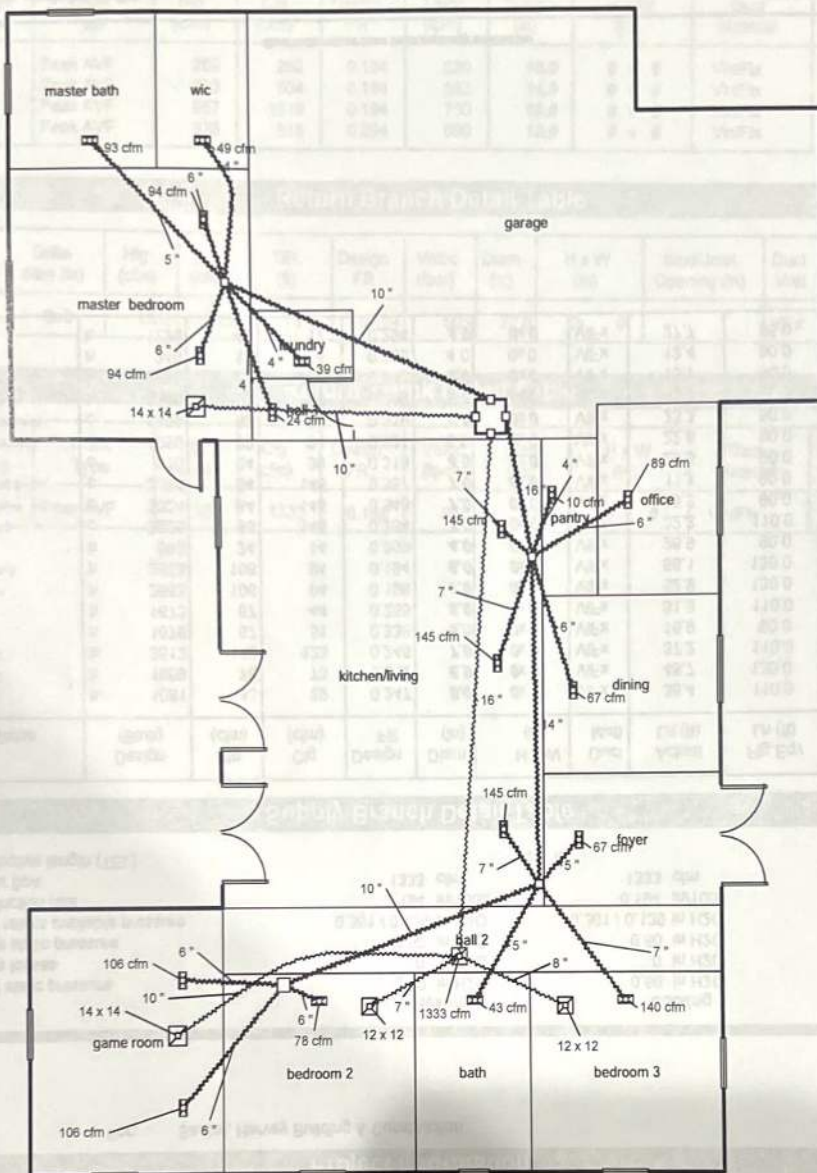
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Level 1



Job #:
Performed for:
Senter

Bounds Heating and Air

jlegler@boundshvac.com

Scale: 1 : 100

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Duct System Summary

Entire House

Bounds Heating and Air

Job:
Date: Feb 22, 2022
By:

Email: jlegler@boundshvac.com

Project Information

For: Senter, Harvey Building & Construction

	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	0.361 / 0.139 in H ₂ O	0.361 / 0.139 in H ₂ O
Lowest friction rate	0.194 in/100ft	0.194 in/100ft
Actual air flow	1333 cfm	1333 cfm
Total effective length (TEL)	258 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	h 1081	43	29	0.247	5.0	0x0	VIFx	36.4	110.0	st3
bedroom 2	h 1959	78	73	0.202	6.0	0x0	VIFx	48.7	130.0	st4
bedroom 3	h 3512	140	123	0.246	7.0	0x0	VIFx	37.2	110.0	st3
dining	h 1676	67	51	0.338	6.0	0x0	VIFx	16.9	90.0	st2
foyer	h 1673	67	44	0.255	5.0	0x0	VIFx	31.9	110.0	st3
game room	h 2653	106	94	0.198	6.0	0x0	VIFx	52.9	130.0	st4
game room-A	h 2653	106	94	0.194	6.0	0x0	VIFx	56.1	130.0	st4
hall 1	h 593	24	14	0.309	4.0	0x0	VIFx	26.9	90.0	st1
kitchen/living	c 3025	85	145	0.254	7.0	0x0	VIFx	32.2	110.0	st3
kitchen/living-A	c 3024	84	145	0.343	7.0	0x0	VIFx	15.2	90.0	st2
kitchen/living-B	c 3024	84	145	0.357	7.0	0x0	VIFx	11.1	90.0	st2
laundry	c 810	24	39	0.313	4.0	0x0	VIFx	25.5	90.0	st1
master bedroom	c 1960	93	94	0.321	6.0	0x0	VIFx	22.6	90.0	st1
master bedroom-A	c 1960	93	94	0.319	6.0	0x0	VIFx	23.3	90.0	st1
master bath	h 2336	93	57	0.299	5.0	0x0	VIFx	30.7	90.0	st1
office	h 2235	89	70	0.342	6.0	0x0	VIFx	15.7	90.0	st2
pantry	h 246	10	4	0.353	4.0	0x0	VIFx	12.4	90.0	st2
wic	h 1229	49	17	0.294	4.0	0x0	VIFx	27.7	95.0	st1

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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
st4	Peak AVF	289	262	0.194	530	10.0	0 x 0	VinIFix	st3
st3	Peak AVF	623	604	0.194	583	14.0	0 x 0	VinIFix	st2
st2	Peak AVF	957	1019	0.194	730	16.0	0 x 0	VinIFix	
st1	Peak AVF	376	315	0.294	690	10.0	0 x 0	VinIFix	

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	0x0	1333	1333	71.4	0.194	505	22.0	0x0		VIFx	rst4

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rst4	Peak AVF	1333	1333	0.194	955	16.0	0 x 0	VinIFix	

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