



Load Short Form

Entire House

Bounds Heating and Air

Job:
Date: Oct 02, 2024
By:

Email: jlegler@boundshvac.com

Project Information

For: Kline, Corey Amira



Review for Code Compliance
Universal Engineering Science

Lawrence Parnell
Examiner License No.

PX2707

10/24/2024

Design Information

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

HEATING EQUIPMENT

Make Carrier
Trade 15 SEER2 HP
Model GH5SAN44200AA0
AHRI ref 210998696

Efficiency 7.5 HSPF2
Heating input
Heating output 42000 Btuh @ 47°F
Temperature rise 29 °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: n/a n/a

Input = 10 kW, Output = 35274 Btuh, 100 AFUE

COOLING EQUIPMENT

Make Carrier
Trade 15 SEER2 HP
Cond GH5SAN44200AA0
Coil FJ4DNXC42L
AHRI ref 210998696

Efficiency 12.0 EER2, 14.3 SEER2
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 0.85

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
wic a	79	2197	745	83	35
wc	29	957	444	36	21
master bath	150	1549	815	59	38
wic b	79	1559	419	59	20
master suite	239	3795	4193	143	197
laundry	77	322	1116	12	52
powder	42	765	180	29	8
hall 1	78	0	0	0	0
ah	14	0	0	0	0
kitchen/dining	348	4116	5782	156	272
pantry	64	1771	522	67	25
study	132	2536	1328	96	62
foyer	113	2024	1034	77	49
great room	397	4592	5973	174	281

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



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bedroom 3	128	1912	2353	72	111
wic 3	46	1651	534	62	25
bath b	56	1301	588	49	28
bath a	61	81	150	3	7
wic 2	42	1569	504	59	24
bedroom 2	128	2575	1708	97	80
hall 2	19	0	0	0	0
garage	517	0	0	0	0
Entire House	2840	35274	28389	1333	1333
Other equip loads		0	0		
Equip. @ 0.97 RSM			27594		
Latent cooling			4968		
TOTALS	2840	35274	32562	1333	1333



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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	26369 Btuh
Ducts (R-6.0)	8905 Btuh
Central vent (0 cfm) (none)	0 Btuh
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	35274 Btuh

Sensible Cooling Equipment Load Sizing

Structure	17363 Btuh
Ducts (R-6.0)	11026 Btuh
Central vent (0 cfm) (none)	0 Btuh
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.97
Equipment sensible load	27594 Btuh

Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	0

Latent Cooling Equipment Load Sizing

Structure	2762 Btuh
Ducts	2206 Btuh
Central vent (0 cfm) (none)	0 Btuh
Equipment latent load	4968 Btuh

	Heating	Cooling
Area (ft ²)	2323	2323
Volume (ft ³)	24817	24817
Air changes/hour	0.32	0.16
Equiv. AVF (cfm)	132	66

Equipment Total Load (Sen+Lat)	32562 Btuh
Req. total capacity at 0.70 SHR	3.3 ton

Heating Equipment Summary

Make	Carrier
Trade	15 SEER2 HP
Model	GH5SAN44200AA0
AHRI ref	210998696
Efficiency	7.5 HSPF2
Heating input	
Heating output	42000 Btuh @ 47°F
Temperature rise	29 °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: n/a n/a	
Input = 10 kW, Output = 35274 Btuh, 100 AFUE	

Cooling Equipment Summary

Make	Carrier
Trade	15 SEER2 HP
Cond	GH5SAN44200AA0
Coil	FJ4DNXC42L
AHRI ref	210998696
Efficiency	12.0 EER2, 14.3 SEER2
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	0.85

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Duct System Summary

Entire House

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	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	0.405 / 0.095 in H ₂ O	0.405 / 0.095 in H ₂ O
Lowest friction rate	0.206 in/100ft	0.206 in/100ft
Actual air flow	1333 cfm	1333 cfm
Total effective length (TEL)	243 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	c 150	3	7	0.221	4.0	0x 0	VIFx	52.7	130.0	st4
bath b	h 1301	49	28	0.218	4.0	0x 0	VIFx	55.2	130.0	st4
bedroom 2	h 2575	97	80	0.227	6.0	0x 0	VIFx	48.1	130.0	st4
bedroom 3	c 2353	72	111	0.219	6.0	0x 0	VIFx	54.8	130.0	st4
foyer	h 2024	77	49	0.277	5.0	0x 0	VIFx	36.2	110.0	st3
great room	c 2987	87	140	0.276	7.0	0x 0	VIFx	36.4	110.0	st3
great room-A	c 2987	87	140	0.290	7.0	0x 0	VIFx	29.4	110.0	st3
kitchen/dining	c 2891	78	136	0.367	7.0	0x 0	VIFx	20.2	90.0	st2
kitchen/dining-A	c 2891	78	136	0.388	7.0	0x 0	VIFx	14.4	90.0	st2
laundry	c 1116	12	52	0.398	4.0	0x 0	VIFx	11.5	90.0	st1
master bath	h 1549	59	38	0.366	4.0	0x 0	VIFx	20.6	90.0	st1
master suite	c 2096	72	98	0.355	6.0	0x 0	VIFx	18.9	95.0	st1
master suite-A	c 2096	72	98	0.373	6.0	0x 0	VIFx	18.6	90.0	st1
pantry	h 1771	67	25	0.371	4.0	0x 0	VIFx	19.0	90.0	st2
powder	h 765	29	8	0.401	4.0	0x 0	VIFx	10.9	90.0	st1
study	h 2536	96	62	0.294	6.0	0x 0	VIFx	27.4	110.0	st3
wc	h 957	36	21	0.322	4.0	0x 0	VIFx	30.6	95.0	st1
wic 2	h 1569	59	24	0.220	4.0	0x 0	VIFx	54.1	130.0	st4
wic 3	h 1651	62	25	0.206	4.0	0x 0	VIFx	61.6	135.0	st4
wic a	h 2197	83	35	0.340	4.0	0x 0	VIFx	28.9	90.0	st1
wic b	h 1559	59	20	0.380	4.0	0x 0	VIFx	16.4	90.0	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	344	274	0.206	630	10.0	0 x 0	VinIFlx	st3
st3	Peak AVF	690	666	0.206	645	14.0	0 x 0	VinIFlx	st2
st2	Peak AVF	912	962	0.206	689	16.0	0 x 0	VinIFlx	
st1	Peak AVF	421	372	0.322	772	10.0	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	46.4	0.206	611	20.0	0x 0		VIFx	rst5

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rst5	Peak AVF	1333	1333	0.206	755	18.0	0 x 0	VinIFlx	



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Manual S Compliance Report

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Cooling Equipment

Design Conditions

Outdoor design DB:	92.2°F	Sensible gain:	28389	Btuh	Entering coil DB:	77.5°F
Outdoor design WB:	75.8°F	Latent gain:	4968	Btuh	Entering coil WB:	63.7°F
Indoor design DB:	75.0°F	Total gain:	33357	Btuh		
Indoor RH:	50%	Estimated airflow:	1333	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Carrier	Model:	GH5SAN44200AA0+FJ4DNXC42L
Actual airflow:	1333	cfm	
Sensible capacity:	32110	Btuh	113% of load
Latent capacity:	6205	Btuh	125% of load
Total capacity:	38315	Btuh	115% of load SHR: 84%

Heating Equipment

Design Conditions

Outdoor design DB:	33.2°F	Heat loss:	35274	Btuh	Entering coil DB:	66.9°F
Indoor design DB:	68.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Carrier	Model:	GH5SAN44200AA0+FJ4DNXC42L
Actual airflow:	1333	cfm	
Output capacity:	42000	Btuh	119% of load
Supplemental heat required:	0	Btuh	
Capacity balance:	30	°F	
Economic balance:	-99	°F	

Backup equipment type:	Elec strip		
Manufacturer:	n/a	Model:	n/a+n/a
Actual airflow:	1333	cfm	
Output capacity:	10.3	kW	100% of load Temp. rise: 40 °F

Meets all requirements of ACCA Manual S.



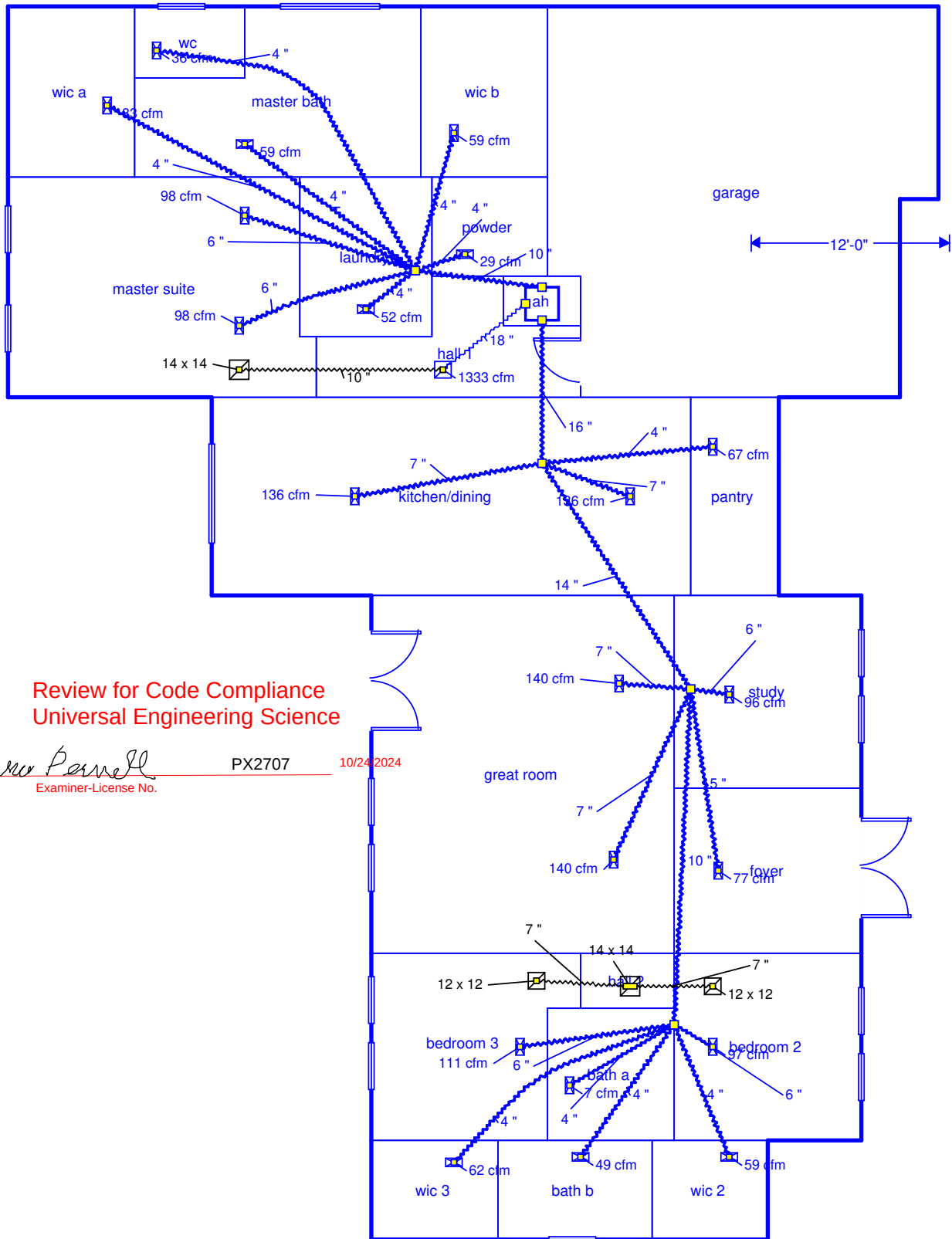
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