



Load Short Form

Entire House

Nottingham Air Conditioning, Inc.

Job: Payne
Date: 4/26/2022
By: Steve

6512 NW 37 Drive, Gainesville,, FL 32653 Phone: 352-374-7786 License: CAC057027

Project Information

For: Payne, Schafer Construction

Design Information

	Htg	Clg	Infiltration	Simplified
Outside db (°F)	33	92	Method	Average
Inside db (°F)	70	75	Construction quality	
Design TD (°F)	37	17	Fireplaces	
Daily range	-	M		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	11	45		

HEATING EQUIPMENT

Make Trane
Trade TRANE
Model 4TWR4030G1
AHRI ref 10055853

Efficiency 8.5 HSPF

Heating input
Heating output 26600 Btuh @ 47°F
Temperature rise 27 °F
Actual air flow 907 cfm
Air flow factor 0.033 cfm/Btuh
Static pressure 0.30 in H2O
Space thermostat
Capacity balance point = 34 °F

Backup:
Input = 8 kW, Output = 26701 Btuh, 100 AFUE

COOLING EQUIPMENT

Make Trane
Trade TRANE
Cond 4TWR4030G1
Coil TEM4A0B24S21++TDR
AHRI ref 10055853

Efficiency 12.0 EER, 14.5 SEER

Sensible cooling 19040 Btuh
Latent cooling 8160 Btuh
Total cooling 27200 Btuh
Actual air flow 907 cfm
Air flow factor 0.047 cfm/Btuh
Static pressure 0.30 in H2O
Load sensible heat ratio 0.85

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
laundry	142	2842	1369	94	64
wic	108	1566	682	52	32
master bath	108	1672	1669	55	78
master bed	208	3749	3587	124	168
family	330	4147	2392	137	112
dining	176	3991	3255	132	153
kitchen	187	1562	820	52	38
bedroom 3	192	2968	2883	98	135
bath 2	72	911	781	30	37
bed 2	180	4009	1887	133	89

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



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...Wrightsoft HVAC\Schafer Construction Payne.rup Calc = MJ8 Front Door faces: N

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Entire House	d	1703	27417	19326	907	907
Other equip loads			0	0		
Equip. @ 0.97 RSM				18746		
Latent cooling				3535		
TOTALS		1703	27417	22281	907	907

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



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...Wrightsoft HVAC\Schafer Construction Payne.rup Calc = MJ8 Front Door faces: N



Duct System Summary

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	Heating	Cooling
External static pressure	0.30 in H2O	0.30 in H2O
Pressure losses	0.05 in H2O	0.05 in H2O
Available static pressure	0.25 in H2O	0.25 in H2O
Supply / return available pressure	0.125 / 0.125 in H2O	0.125 / 0.125 in H2O
Lowest friction rate	0.147 in/100ft	0.147 in/100ft
Actual air flow	907 cfm	907 cfm
Total effective length (TEL)	170 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
laundry	h 2842	94	64	0.147	7.0	0x0	VIFx	50.0	35.0	st2
wic	h 1566	52	32	0.147	5.0	0x0	VIFx	50.0	35.0	st2
master bath	c 1669	55	78	0.147	6.0	0x0	VIFx	50.0	35.0	st2
master bed	c 3587	124	168	0.147	8.0	0x0	VIFx	50.0	35.0	st2
family	h 4147	137	112	0.147	7.0	0x0	VIFx	50.0	35.0	st3
dining	c 3255	132	153	0.147	8.0	0x0	VIFx	50.0	35.0	st3
kitchen	h 1562	52	38	0.147	5.0	0x0	VIFx	50.0	35.0	st3
bedroom 3	c 2883	98	135	0.147	7.0	0x0	VIFx	50.0	35.0	st4
bath 2	c 781	30	37	0.147	5.0	0x0	VIFx	50.0	35.0	st4
bed 2	h 4009	133	89	0.147	7.0	0x0	VIFx	50.0	35.0	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
st2	Peak AVF	325	343	0.147	776	9.0	0 x 0	RectFbg	st1
st3	Peak AVF	582	564	0.147	881	11.0	0 x 0	RectFbg	st1
st4	Peak AVF	261	260	0.147	590	9.0	0 x 0	RectFbg	st3
st1	Peak AVF	907	907	0.147	848	14.0	0 x 0	RectFbg	



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
rb2	0x 0	163	125	85.0	0.147	466	8.0	0x 0		VIFx	rt1
rb3	0x 0	98	135	85.0	0.147	506	7.0	0x 0		VIFx	rt1
rb1	0x 0	415	368	85.0	0.147	628	11.0	0x 0		VIFx	rt1
rb4	0x 0	231	279	85.0	0.147	511	10.0	0x 0		VIFx	rt1

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt1	Peak AVF	907	907	0.147	649	16.0	0 x 0	RectFbg	





Manual S Compliance Report

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Cooling Equipment

Design Conditions

Outdoor design DB:	92.0°F	Sensible gain:	19326	Btuh	Entering coil DB:	77.0°F
Outdoor design WB:	76.0°F	Latent gain:	3535	Btuh	Entering coil WB:	63.5°F
Indoor design DB:	75.0°F	Total gain:	22861	Btuh		
Indoor RH:	50%	Estimated airflow:	907	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Trane	Model:	4TWR4030G1+TEM4A0B24S21++TDR	
Actual airflow:	907	cfm		
Sensible capacity:	21553	Btuh	112% of load	
Latent capacity:	4588	Btuh	130% of load	
Total capacity:	26141	Btuh	114% of load	SHR: 82%

Heating Equipment

Design Conditions

Outdoor design DB:	33.0°F	Heat loss:	27417	Btuh	Entering coil DB:	69.0°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Trane	Model:	4TWR4030G1+TEM4A0B24S21++TDR	
Actual airflow:	907	cfm		
Output capacity:	26600	Btuh	97% of load	Capacity balance: 34 °F
Supplemental heat required:	817	Btuh		Economic balance: -99 °F

Backup equipment type:	Elec strip			
Manufacturer:		Model:		
Actual airflow:	907	cfm		
Output capacity:	7.8	kW	97% of load	Temp. rise: 50 °F

Meets all requirements of ACCA Manual S.

