



Manual S Compliance Report

Entire House

E-Calcs Plus, Inc

Job: Cruz - XXX TBD
Date: Sep 19, 2024
By: E-Calcs Plus, Inc

Serving all of Florida Phone: 833.322.5271 Email: eric@ecalcsplus.com Web: www.ecalcsplus.com License: HERS Rater ID# 0757810

Project Information

For: Cruz - XXX TBD
XXX TBD, Columbia County, FL

Cooling Equipment

Design Conditions

Outdoor design DB:	91.9°F	Sensible gain:	18072	Btuh	Entering coil DB:	77.2°F
Outdoor design WB:	76.2°F	Latent gain:	2985	Btuh	Entering coil WB:	63.6°F
Indoor design DB:	75.0°F	Total gain:	21057	Btuh		
Indoor RH:	50%	Estimated airflow:	780	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Trane	Model:	4TWR4024N1+TEM4B0B24M21++TDR
Actual airflow:	780	cfm	
Sensible capacity:	19300	Btuh	107% of load
Latent capacity:	3634	Btuh	122% of load
Total capacity:	22935	Btuh	109% of load SHR: 84%

Heating Equipment

Design Conditions

Outdoor design DB:	33.0°F	Heat loss:	20798	Btuh	Entering coil DB:	70.0°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Trane	Model:	4TWR4024N1+TEM4B0B24M21++TDR
Actual airflow:	0	cfm	
Output capacity:	22600	Btuh	109% of load
Supplemental heat required:	0	Btuh	
			Capacity balance: 31 °F
			Economic balance: -59 °F

Backup equipment type:	Elec strip		
Manufacturer:	Trane	Model:	AFUE 100
Actual airflow:	0	cfm	
Output capacity:	5.0	kW	82% of load Temp. rise: 20 °F

Meets all requirements of ACCA Manual S.





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Notes:

Design Information

Weather: Gainesville Rgnl, FL, US

Winter Design Conditions

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

Ventilation Method ASHRAE 62.2-2010

Heating Summary

Structure 18107 Btuh
Ducts (R-6.0) 2691 Btuh
Central vent (0 cfm) 0 Btuh

Humidification 0 Btuh
Piping 0 Btuh
Equipment load 20798 Btuh

Infiltration

Method Simplified
Construction quality Semi-tight
Fireplaces 0

	Heating	Cooling
Area (ft ²)	1269	1269
Volume (ft ³)	10741	10741
Air changes/hour	0.31	0.16
Equiv. AVF (cfm)	55	29

Heating Equipment Summary

Make Trane
Trade TRANE
Model 4TWR4024N1
AHRI ref 209842212

Efficiency 7.5 HSPF2
Heating input
Heating output 22600 Btuh @ 47°F
Temperature rise 0 °F
Actual air flow 0 cfm
Air flow factor 0 cfm/Btuh
Static pressure 0.50 in H2O
Space thermostat
Capacity balance point = 31 °F

Backup: Trane AFUE 100
Input = 5 kW, Output = 17061 Btuh, 100 AFUE

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

Sensible Cooling Equipment Load Sizing

Structure 12855 Btuh
Ducts (R-6.0) 5217 Btuh
Central vent (0 cfm) 0 Btuh

Blower 0 Btuh

Use manufacturer's data y
Rate/swing multiplier 1.00
Equipment sensible load 18072 Btuh

Latent Cooling Equipment Load Sizing

Structure 1708 Btuh
Ducts 1277 Btuh
Central vent (0 cfm) 0 Btuh

Equipment latent load 2985 Btuh

Equipment Total Load (Sen+Lat) 21057 Btuh
Req. total capacity at 0.75 SHR 2.0 ton

Cooling Equipment Summary

Make Trane
Trade TRANE
Cond 4TWR4024N1
Coil TEM4B0B24M21++TDR
AHRI ref 209842212
Efficiency 11.7 EER2, 14.3 SEER2
Sensible cooling 17550 Btuh
Latent cooling 5850 Btuh
Total cooling 23400 Btuh
Actual air flow 780 cfm
Air flow factor 0.043 cfm/Btuh
Static pressure 0.50 in H2O
Load sensible heat ratio 0.86

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



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...Air/Cruz - XXX TBD/Cruz - XXX TBD 9.20.2024.rup Calc = MJ8 Front Door faces: S

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Load Short Form

Entire House

E-Calcs Plus, Inc

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Date: Sep 19, 2024
By: E-Calcs Plus, Inc

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Project Information

For: Cruz - XXX TBD
XXX TBD, Columbia County, FL

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 (%)	50	50		
Moisture difference (gr/lb)	33	47		

HEATING EQUIPMENT

Make Trane
Trade TRANE
Model 4TWR4024N1
AHRI ref 209842212
Efficiency 7.5 HSPF2
Heating input
Heating output 22600 Btuh @ 47°F
Temperature rise 0 °F
Actual air flow 0 cfm
Air flow factor 0 cfm/Btuh
Static pressure 0.50 in H2O
Space thermostat
Capacity balance point = 31 °F

Backup: Trane AFUE 100
Input = 5 kW, Output = 17061 Btuh, 100 AFUE

COOLING EQUIPMENT

Make Trane
Trade TRANE
Cond 4TWR4024N1
Coil TEM4B0B24M21++TDR
AHRI ref 209842212
Efficiency 11.7 EER2, 14.3 SEER2
Sensible cooling 17550 Btuh
Latent cooling 5850 Btuh
Total cooling 23400 Btuh
Actual air flow 780 cfm
Air flow factor 0.043 cfm/Btuh
Static pressure 0.50 in H2O
Load sensible heat ratio 0.86

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
BR3	150	3175	2245	0	97
BA2	48	650	293	0	13
BR2	132	3443	2336	0	101
MBR	210	4475	3829	0	165
MBA	90	1096	512	0	22
Laundry	72	1754	1379	0	60
MWIC	54	73	128	0	6
Kit Liv Din	513	6131	7350	0	317

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



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Entire House	p	1269	20798	18072	0	780
Other equip loads			0	0		
Equip. @ 1.00 RSM				18072		
Latent cooling				2985		
TOTALS		1269	20798	21057	0	780

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



Building Analysis

Entire House

E-Calcs Plus, Inc

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Project Information

For: Cruz - XXX TBD
XXX TBD, Columbia County, FL

Design Conditions

Location:

Gainesville Rgnl, FL, US
Elevation: 164 ft
Latitude: 30°N

Outdoor:

Drybulb (°F)
Daily range (°F)
Wet bulb (°F)
Wind speed (mph)

Heating

33
-
-
15.0

Cooling

92
18 (M)
76
7.5

Indoor:

Indoor temperature (°F)
Design TD (°F)
Relative humidity (%)
Moisture difference (gr/lb)

Heating

70
37
50
32.8

Cooling

75
17
50
46.9

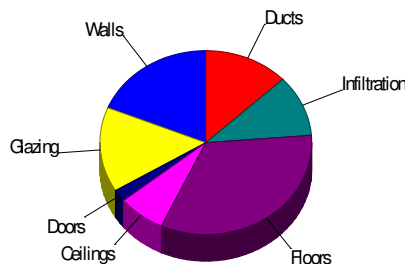
Infiltration:

Method
Construction quality
Fireplaces

Simplified
Semi-tight
0

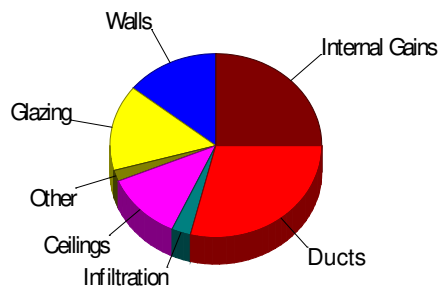
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.4	3912	18.8
Glazing	23.8	3103	14.9
Doors	22.2	446	2.1
Ceilings	1.2	1502	7.2
Floors	5.4	6898	33.2
Infiltration	1.7	2245	10.8
Ducts		2691	12.9
Piping		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	0
Total		20798	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.2	2575	14.2
Glazing	21.0	2731	15.1
Doors	17.6	354	2.0
Ceilings	1.7	2146	11.9
Floors	0	0	0
Infiltration	0.4	529	2.9
Ducts		5217	28.9
Ventilation		0	0
Internal gains		4520	25.0
Blower		0	0
Adjustments		0	0
Total		18072	100.0



Latent Cooling Load = 2985 Btuh

Overall U-value = 0.111 Btuh/ft²-°F, Window / Floor Area = 10.3 %

Data entries checked.



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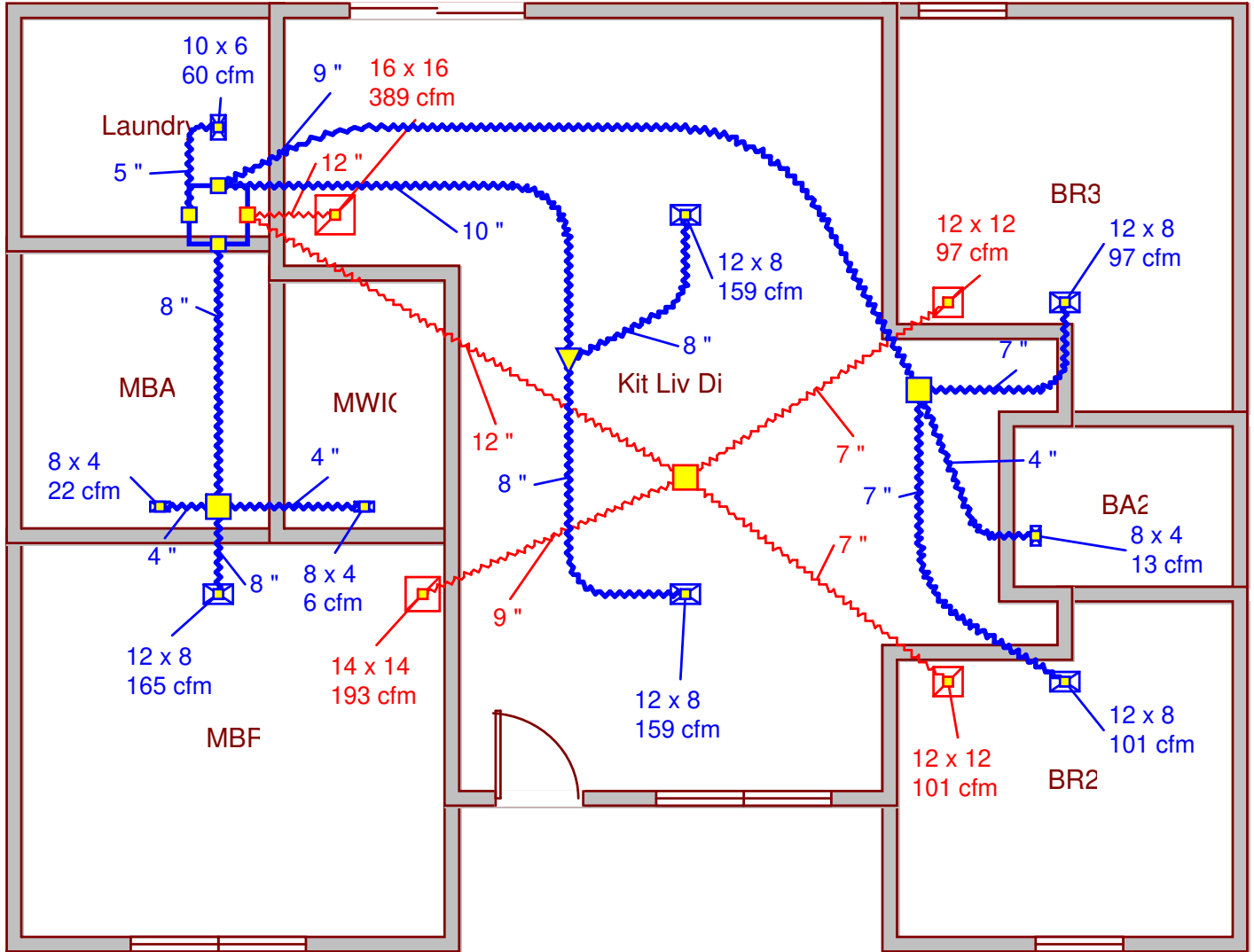
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First Floor



Job #: Cruz - XXX TBD
Performed by E-Calcs Plus, Inc for:
 Cruz - XXX TBD
 XXX TBD
 Columbia County, FL

E-Calcs Plus, Inc
 Serving all of Florida
 Phone: 833.322.5271 License: HERS Rater ID# 0757810
 www.ecalcsplus.com eric@ecalcsplus.com

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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	0.16 in H ₂ O	0.16 in H ₂ O
Available static pressure	0.34 in H ₂ O	0.34 in H ₂ O
Supply / return available pressure	0.208 / 0.132 in H ₂ O	0.208 / 0.132 in H ₂ O
Lowest friction rate	0.121 in/100ft	0.121 in/100ft
Actual air flow	0 cfm	780 cfm
Total effective length (TEL)	281 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
BA2	c 293	0	13	0.125	4.0	0x0	VIFx	37.2	130.0	st1
BR2	c 2336	0	101	0.121	7.0	0x0	VIFx	42.6	130.0	st1
BR3	c 2245	0	97	0.124	7.0	0x0	VIFx	37.8	130.0	st1
Kit Liv Din	c 3675	0	159	0.134	8.0	0x0	VIFx	30.0	125.0	st2
Kit Liv Din-A	c 3675	0	159	0.139	8.0	0x0	VIFx	25.5	125.0	st2
Laundry	c 1379	0	60	0.200	5.0	0x0	VIFx	4.0	100.0	
MBA	c 512	0	22	0.159	4.0	0x0	VIFx	11.0	120.0	st3
MBR	c 3829	0	165	0.158	8.0	0x0	VIFx	12.0	120.0	st3
MWIC	c 128	0	6	0.156	4.0	0x0	VIFx	14.0	120.0	st3

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	0	210	0.121	476	9.0	0 x 0	VinIFlx	
st2	Peak AVF	0	317	0.134	582	10.0	0 x 0	VinIFlx	
st3	Peak AVF	0	193	0.156	553	8.0	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
rb4	0x 0	0	101	108.9	0.121	377	7.0	0x 0		VIFx	rt1
rb3	0x 0	0	97	108.3	0.121	363	7.0	0x 0		VIFx	rt1
rb2	0x 0	0	193	107.3	0.123	437	9.0	0x 0		VIFx	rt1
rb1	0x 0	0	389	63.0	0.209	496	12.0	0x 0		VIFx	

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	0	391	0.121	497	12.0	0 x 0	VinIFlx	



Static Pressure and Friction Rate

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Available Static Pressure

	Heating (in H2O)	Cooling (in H2O)
External static pressure	0.50	0.50
Pressure losses		
Coil	0	0
Heat exchanger	0	0
Supply diffusers	0.03	0.03
Return grilles	0.03	0.03
Filter	0.10	0.10
Humidifier	0	0
Balancing damper	0	0
Other device	0	0
Available static pressure	0.34	0.34

Total Effective Length

	Supply (ft)	Return (ft)
Measured length of run-out	13	11
Measured length of trunk	30	17
Equivalent length of fittings	130	80
Total length	173	109
Total effective length		281

Friction Rate

	Heating (in/100ft)		Cooling (in/100ft)	
Supply Ducts	0.121	OK	0.121	OK
Return Ducts	0.121	OK	0.121	OK

Fitting Equivalent Length Details

Supply 4AD=60, 11A=20, 11G=5, 1A=35, 11G=5, 11G=5: TotalEL=130

Return 11A=20, 6M=20, 5D=40: TotalEL=80