

CP-MRD-FC-2 **HVAC Load Calculations** for Maronda Homes Prepared By: Ken Fonorow Florida H.E.R.O., Inc. 15220 NW 5th Ave Newberry, FI 32669 (352) 472-5661 Thursday, August 1, 2024 Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2.50, and ACCA Manual D.

Rhvac - Residential & Light Commercial HVAC Loads

Elite Software Development, Inc. Florida H.E.R.O. CP-MRD-FC-2 Newberry, FL 32669 Page 2

Project Report

General Project Information

Project Title: CP-MRD-FC-2 Designed By: Ken Fonorow Project Date: 7/30/2024

Project Comment: Maple Model Lot 2 Forest Cove

Client Name: Maronda Homes Florida H.E.R.O., Inc. Company Name: Company Representative: Ken Fonorow Company Address: 15220 NW 5th Ave Company City: Newberry, FI 32669 Company Phone: (352) 472-5661 Company E-Mail Address: ken@floridahero.com Company Website: www.floridahero.com

Design Data

Reference City: Gainesville, Florida **Building Orientation:** Front door faces South

Daily Temperature Range: Medium Latitude: 29 Degrees Elevation: 152 ft. Altitude Factor: 0.995

	Outdoor	Outdoor	Outdoor	Indoor	Indoor	Grains
	<u>Dry Bulb</u>	Wet Bulb	Rel.Hum	Rel.Hum	Dry Bulb	Difference
Winter:	33	30.8	n/a	n/a	72	n/a
Summer:	92	77	51%	50%	75	52

Check Figures

Total Building Supply CFM: 1,000 CFM Per Square ft.: 0.533 Square ft. of Room Area: Square ft. Per Ton: 822 1,876 Volume (ft3): 16,263

Building Loads

Total Heating Required Including Ventilation Air: 30.700 MBH 30,700 Btuh Total Sensible Gain: 73 % 19,953 Btuh Total Latent Gain: 27 % 7,428 Btuh

Total Cooling Required Including Ventilation Air: 27,381 Btuh 2.28 Tons (Based On Sensible + Latent)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.

Calculations are performed per ACCA Manual J 8th Edition, Version 2.50, and ACCA Manual D.

All computed results are estimates as building use and weather may vary.

Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.

Rhvac - Residential & Light C Florida H.E.R.O. Newberry, FL 32669	ommercial F	IVAC Load	ls				Elite	Software Devel C	opment, Inc. P-MRD-FC-2 Page 3
Miscellaneous Rep	oort								
System 1 Whole House			Outdoor	Outdoor	Oı	utdoor	Indoor	Indoor	Grains
Input Data			Dry Bulb	Wet Bulb	Re	I.Hum	Rel.Hum	Dry Bulb	Difference
Winter:			33	30.8		80%	n/a	72	n/a
Summer:			92	77		51%	50%	75	51.69
Duct Sizing Inputs									
Δ.	<u> Iain Trunk</u>			Runouts					
Calculate:	Yes			Yes					
Use Schedule:	Yes			Yes					
Roughness Factor:	0.15000			0.15000					
Pressure Drop:		in.wg./10	00 ft.	0.1000					
Minimum Velocity:		ft./min			ft./min				
Maximum Velocity:		ft./min			ft./min				
Minimum Height:		in.			in.				
Maximum Height:	0	in.		0	in.				
Outside Air Data									
		<u>Winter</u>			<u>nmer</u>				
Infiltration Specified:			AC/hr	C	0.200 /				
		103	CFM		54 (CFM			
Infiltration Actual:			AC/hr		0.167 /				
Above Grade Volume:	X	16,263			6,263 (
		,	Cu.ft./hr		•	Cu.ft./hr			
	Σ	<u> 0.0167</u>		X 0.	<u>0167</u>				
Total Building Infiltration:			CFM		45 (
Total Building Ventilation:		35	CFM		65 (CFM			
0 1 1									
System 1	مند ۲۰ ماده	N / 4 i 1 i	. 40.00	(4.40.V	0.005	V 47 00	C	D:#	1
Infiltration & Ventilation Ser Infiltration & Ventilation Lat			: 18.60 34.96				Grains Diffe	emp. Differenc	;e)
Infiltration & Ventilation Ser								np. Difference	١
Winter Infiltration Specified			03 CFM), Co				vviillei Teli	ip. Dillerence,)
Summer Infiltration Specific			64 CFM), Con			•			
· · · · · · · · · · · · · · · · · · ·		`	71 01 101), 0011	otraotion. 7 tv	orago				
Duct Load Factor Scenario	s ioi Systei	III I							
			Attic		. Du		Duct	Surface	From
No. Type Description		_ocation	Ceilin	g	Leakag	geIn	sulation	Area	[T]MDD

				Attic	Duct	Duct	Surface	From
No.	Type	Description	Location	Ceiling	Leakage	Insulation	Area	[T]MDD
1	Supply	Main	Attic	16B	0.12	6	506	No
1	Return	Main	Cond. Space	-	0.24	6	188	No

Rhvac - Residential & Light Commercial HVAC Loads

Florida H.E.R.O.

Newberry, FL 32669

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CP-MRD-FC-2 Page 4

Duct	Size	Prev	<i>iew</i>
	$\cup_{i} \succeq \cup$		

Room or Duct Name	Source	Minimum Velocity	Maximum Velocity	Rough. Factor	Design L/100	SP Loss	Duct Velocity	Duct Length	Htg Flow	Clg Flow	Act. Flow	Duct Size	Reg Size
System 1													
Supply Runouts													
Zone 1													
1-Master Bedroom	Built-In	450	750	0.15	0.1		504.6		94	135	135	17	
2-M Bath	Built-In	450	750	0.15	0.1		376.3		107	74	74	16	
3-Master WIC	Built-In	450	750	0.15	0.1		238.4		45	21	21	14	
4-Bedroom 4	Built-In	450	750	0.15	0.1		354.7		63	70	70	16	
5-Flex	Built-In	450	750	0.15	0.1		507.3		196	136	136	17	
6-Great Room	Built-In	450	750	0.15	0.1		539		53	144	144	17	
7-Kitchen	Built-In	450	750	0.15	0.1		533.3		68	143	143	17	
8-Foyer	Built-In	450	750	0.15	0.1		425.8		73	37	37	14	
9-Bedroom 3	Built-In	450	750	0.15	0.1		608.3		218	119	119	16	
10-Bath 2	Built-In	450	750	0.15	0.1		42.7		2	4	4	14	
11-Bedroom 2	Built-In	450	750	0.15	0.1		602.7		80	118	118	16	
Other Ducts in System 1													
Supply Main Trunk	Built-In	650	900	0.15	0.1		734.7		1,000	1,000	1,000	14x14	

ım		

System 1

Heating Flow: 1000 Cooling Flow: 1000

Rhvac - Residential & Light Commercial HVAC Loads Florida H.E.R.O. Newberry, FL 32669				Elite So	oftware Deve	opment, Inc. P-MRD-FC-2 Page 5
Total Building Summary Loads						
Component		Area	Sen	Lat	Sen	Total
Description		Quan	Loss	Gain	Gain	Gain
VYN 34 23: Glazing-Dbl Pn Vyn Fr U .34 SHGC .23, ground reflectance = 0.23, outdoor insect screen with 50% coverage, medium color blinds at 45° with 25% coverage, U-value 0.34, SHGC 0.23		80	1,061	0	910	910
SGD U 34 SHGC 23: Glazing-SGD DbPnVyFr U 34 SHGC 23, ground reflectance = 0.32, medium color blinds at 45° with 25% coverage, U-value 0.34, SHGC 0.23		40	530	0	338	338
VYN 34 23: Glazing-Dbl Pn Vyn Fr U .34 SHGC .23, ground reflectance = 0.32, outdoor insect screen with 50% coverage, medium color blinds at 45° with 25% coverage, U-value 0.34, SHGC 0.23		30	398	0	922	922
11P: Door-Metal - Polyurethane Core, U-value 0.29		20	226	0	162	162
13A-4ocs: Wall-Block, board insulation only, R-4 board	•	1013.4	5,652	0	2,505	2,505
insulation, open core, siding finish, U-value 0.143				_		
12C-0sw: Wall-Frame, R-13 insulation in 2 x 4 stud cavity, no board insulation, siding finish, wood studs, U-value 0.091		312.1	1,107	0	667	667
16C-38: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Vented Attic, No Radiant Barrier, White or Light Color Shingles, Any Wood Shake, Light Metal, Tar and Gravel or Membrane, R-38 insulation, U- value 0.026	•	1875.8	1,902	0	2,049	2,049
22A-pl: Floor-Slab on grade, No edge insulation, no insulation below floor, any floor cover, passive, light dry soil, U-value 0.989		173	6,674	0	0	0
Subtotals for structure:			17,550	0	7,553	7,553
People:		6	,	1,200	1,380	2,580
Equipment:				1,000	3,925	4,925
Lighting:		0			0	0
Ductwork:			7,081	1,378	5,047	6,425
Infiltration: Winter CFM: 107, Summer CFM: 45			4,575	1,578	839	2,417
Ventilation: Winter CFM: 35, Summer CFM: 65 Exhaust: Winter CFM: 65, Summer CFM: 35			1,493	2,272	1,209	3,481
Total Building Load Totals:			30,700	7,428	19,953	27,381
Check Figures						
Total Building Supply CFM: 1,000		CFM P	er Square ft.			0.533
Square ft. of Room Area: 1,876			eft. Per Ton:			822
Volume (ft³): 16,263		1				
Building Loads						
Total Heating Required Including Ventilation Air:	30,700	Btuh	30.700	MBH		
Total Sensible Gain:	19,953	Btuh	73	%		
Total Latent Gain:	7,428	Btuh	27	%		
Total Cooling Required Including Ventilation Air:	27,381	Btuh	2.28	Tons (Based C	On Sensible	+ Latent)
Notes						

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Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.

System 1 Main Trunk Size: 14x14 in. Velocity: 735 ft./min Loss per 100 ft.: 0.347 in.wg Cooling System Summary Cooling Tons Sensible/Latent Sensible Stuh Latent Btuh Net Required: 2.28 73% / 27% 19,953 7,428 2	Rhvac - Residential & Light Con Florida H.E.R.O. Newberry, FL 32669	mmercial H\	/AC Loads	S				Elite Software		ment, Inc. MRD-FC-2 Page 6
Room Area Sen's Htg Duct Duct Sen's Lat Clg	System 1 Room Lo	ad Sun	nmary							
No Name	-	,	Htg	Min	Run	Run	Clg	Clg	Min	Act
Zone 1 1 Master Bedroom 2 18						Duct		Lat		Sys
1 Master Bedroom 218 2,742 50 1-7 505 2,528 537 116 2 M Bath 136 3,127 57 1-6 376 1,385 428 63 3 Master WIC 60 1,311 24 1-4 238 390 76 18 4 Bedroom 4 150 1,851 34 1-6 355 1,306 92 60 5 Flex 300 5,736 105 1-7 507 2,541 320 116 6 Great Room 408 1,559 29 1-7 539 2,700 823 123 7 Kitchen 144 1,989 36 1-7 533 2,671 660 122 8 Foyer 48 2,127 39 1-4 426 697 128 32 9 Bedroom 3 198 6,377 117 1-6 603 2,218 110 101 Ventilation 1,493 1,493 1,209 2,218 110 101 Ventilation 1,876 30,700<		SF	Btuh	CFM	Size	Vel	Btuh	Btuh	CFM	CFM
2 M Bath										
3 Master WIC 60 1,311 24 1-4 238 390 76 18 4 Bedroom 4 150 1,851 34 1-6 355 1,306 92 60 5 Flex 300 5,736 105 1-7 507 2,541 320 116 6 Great Room 408 1,559 29 1-7 539 2,700 823 123 7 Kitchen 144 1,989 36 1-7 533 2,671 660 122 8 Foyer 48 2,127 39 1-4 426 697 128 32 9 Bedroom 3 198 6,377 117 1-6 608 2,239 354 102 10 Bath 2 47 62 1 1-4 43 70 250 3 11 Bedroom 2 168 2,326 43 1-6 603 2,218 110 101 Ventilation 1,493 1,493 1,9953 7,428 857 System 1 Main Trunk Size: 14x14 in. 1,493										135
4 Bedroom 4 150 1,851 34 1-6 355 1,306 92 60 5 Flex 300 5,736 105 1-7 507 2,541 320 116 6 Great Room 408 1,559 29 1-7 533 2,671 660 122 8 Foyer 48 2,127 39 1-4 426 697 128 32 9 Bedroom 3 198 6,377 117 1-6 608 2,239 354 102 10 Bath 2 47 62 1 1-4 43 70 250 3 11 Bedroom 2 168 2,326 43 1-6 603 2,218 110 101 Ventilation 1,493 1,493 1,209 2,272 1378 1378 857 System 1 total 1,876 30,700 534 19,953 7,428 857 System 1 total 1,876 30,700 534 19,953 7,428	*									74
5 Flex 300 5,736 105 1-7 507 2,541 320 116 6 Great Room 408 1,559 29 1-7 539 2,700 823 123 7 Kitchen 144 1,989 36 1-7 533 2,671 660 122 8 Foyer 48 2,127 39 1-4 426 697 128 32 9 Bedroom 3 198 6,377 117 1-6 608 2,239 354 102 10 Bath 2 47 62 1 1-4 43 70 250 3 11 Bedroom 2 168 2,326 43 1-6 603 2,218 110 101 Ventilation 1,493 1-6 603 2,218 110 101 Ventilation 1,876 30,700 534 19,953 7,428 857 System 1 Main Trunk Size: 14x14 in. 14x14 in. <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>21</td>										21
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7 Kitchen 144 1,989 36 1-7 533 2,671 660 122 8 Foyer 48 2,127 39 1-4 426 697 128 32 9 Bedroom 3 198 6,377 117 1-6 608 2,239 354 102 10 Bath 2 47 62 1 1-4 43 70 250 3 11 Bedroom 2 168 2,326 43 1-6 603 2,218 110 101 Ventilation 1,493 1-6 603 2,218 110 101 Ventilation 1,493 1-6 603 2,218 110 101 Ventilation 1,493 1-6 603 2,218 110 101 Ventilation 1,484 in. 19,953 7,428 857 System 1 Main Trunk Size: 14x14 in. 11,493 19,953 7,428 12 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>136</td></t<>										136
8 Foyer 48 2,127 39 1-4 426 697 128 32 9 Bedroom 3 198 6,377 117 1-6 608 2,239 354 102 10 Bath 2 47 62 1 1-4 43 70 250 3 11 Bedroom 2 168 2,326 43 1-6 603 2,218 110 101 Ventilation 1,493 1,209 2,272 1,378 1,378 5 System 1 total 1,876 30,700 534 19,953 7,428 857 System 1 Main Trunk Size: 14x14 in. 14x14 in. 19,953 7,428 857 System 1 Main Trunk Size: 14x14 in. 1,378 19,953 7,428 857 Split Sensible Latent Latent 1,209 1,272 1,209 1,274 1,209 1,274 1,209 1,274 1,209 1,274									_	144
9 Bedroom 3										143
10 Bath 2						_				37
11 Bedroom 2 168 2,326 43 1-6 603 2,218 110 101 Ventilation					_		,			119
Ventilation Duct Latent 1,493 1,209 2,272				· ·						4
Duct Latent		100	,	43	1-0	603	,		101	118
System 1 Main Trunk Size: 14x14 in. Velocity: 735 ft./min Loss per 100 ft.: 0.347 in.wg Cooling System Summary Cooling Sensible/Latent Split Btuh Btuh Net Required: 2.28 73% / 27% 19,953 7,428 2 Actual: 2.43 75% / 25% 21,900 7,300 2 Equipment Data Heating System Type: Air Source Heat Pump Air Source Heat Pump Air Source Heat Pump ATWR6030N1 TEM6A0B30H21+TDR Indoor Model: TRANE TRANE TRANE Air Source Heat Pump Air Source Heat Pump Air Source Heat Pump Air Source Heat Pump Efficiency: Sound: 0 0 Capacity: 27,400 Btuh 29,200 Btuh			1,493				1,209			
Velocity: 735 ft./min Loss per 100 ft.: 0.347 in.wg Cooling System Summary Sensible Latent Split Btuh Btuh Btuh Net Required: 2.28 73% / 27% 19,953 7,428 2 2 2,43 75% / 25% 21,900 7,300 2 2 2 2,300 7,300 2 2 2 2,43 75% / 25% 21,900 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 8,200	System 1 total	1,876	30,700	534			19,953	7,428	857	1,000
Velocity: 735 ft./min Loss per 100 ft.: 0.347 in.wg Cooling System Summary Sensible Latent Split Btuh Btuh Btuh Net Required: 2.28 73% / 27% 19,953 7,428 2 2 2,43 75% / 25% 21,900 7,300 2 2 2 2,300 7,300 2 2 2 2,43 75% / 25% 21,900 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 7,300 2 2 2 2,200 8,200	System 1 Main Trunk Size:		14x14	in.						
Loss per 100 ft.: 0.347 in.wg Cooling System Summary Sensible Summary Latent Btuh Latent Btuh Bt			735	ft./min						
Cooling System Summary Cooling Tons Sensible Split Btuh Btuh Net Required: 2.28 73% / 27% 19,953 7,428 2 Actual: 2.43 75% / 25% 21,900 7,300 2 Equipment Data Heating System Type: Air Source Heat Pump Air Source Heat Pump Model: TEM6A0B30H21+TDR 4TWR6030N1 Indoor Model: TRANE TRANE Brand: TRANE TRANE Description: Air Source Heat Pump Air Source Heat Pump Efficiency: 8.1 HSPF2 15.2 SEER2 Sound: 0 Capacity: 27,400 Btuh										
Cooling Tons Sensible/Latent Split Sensible Btuh Latent Btuh Net Required: 2.28 73% / 27% 19,953 7,428 2 Actual: 2.43 75% / 25% 21,900 7,300 2 Equipment Data Heating System Cooling System Type: Air Source Heat Pump Air Source Heat Pump Model: TEM6A0B30H21+TDR 4TWR6030N1 Indoor Model: TRANE TRANE Brand: TRANE TRANE Description: Air Source Heat Pump Air Source Heat Pump Efficiency: 8.1 HSPF2 15.2 SEER2 Sound: 0 0 Capacity: 27,400 Btuh 29,200 Btuh										
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Actual: 2.43 75% / 25% 21,900 7,300 2 Equipment Data Heating System Cooling System Type: Air Source Heat Pump Air Source Heat Pump Model: TEM6A0B30H21+TDR 4TWR6030N1 Indoor Model: TEM6A0B30H21+TDR Brand: TRANE TRANE Description: Air Source Heat Pump Efficiency: 8.1 HSPF2 15.2 SEER2 Sound: 0 Capacity: 27,400 Btuh				Split		Btuh		Btuh		Btuh
Equipment Data Heating System Cooling System Type: Air Source Heat Pump Air Source Heat Pump Model: TEM6A0B30H21+TDR 4TWR6030N1 Indoor Model: TEM6A0B30H21+TDR Brand: TRANE TRANE Description: Air Source Heat Pump Air Source Heat Pump Efficiency: 8.1 HSPF2 15.2 SEER2 Sound: 0 0 Capacity: 27,400 Btuh 29,200 Btuh	Net Required:	2.28		73% / 27%		19,953		7,428		27,381
Heating SystemCooling SystemType:Air Source Heat PumpAir Source Heat PumpModel:TEM6A0B30H21+TDR4TWR6030N1Indoor Model:TEM6A0B30H21+TDRBrand:TRANETRANEDescription:Air Source Heat PumpAir Source Heat PumpEfficiency:8.1 HSPF215.2 SEER2Sound:00Capacity:27,400 Btuh29,200 Btuh	Actual:	2.43		75% / 25%		21,900		7,300		29,200
Heating SystemCooling SystemType:Air Source Heat PumpAir Source Heat PumpModel:TEM6A0B30H21+TDR4TWR6030N1Indoor Model:TEM6A0B30H21+TDRBrand:TRANETRANEDescription:Air Source Heat PumpAir Source Heat PumpEfficiency:8.1 HSPF215.2 SEER2Sound:00Capacity:27,400 Btuh29,200 Btuh	Equipment Data									
Type: Air Source Heat Pump Model: TEM6A0B30H21+TDR 4TWR6030N1 Indoor Model: TEM6A0B30H21+TDR Brand: TRANE Description: Air Source Heat Pump Efficiency: 8.1 HSPF2 15.2 SEER2 Sound: 0 0 Capacity: 27,400 Btuh 29,200 Btuh			Heatin	a Svstem			Coolina S	Svstem		
Model: TEM6A0B30H21+TDR 4TWR6030N1 Indoor Model: TEM6A0B30H21+TDR Brand: TRANE TRANE Description: Air Source Heat Pump Air Source Heat Pump Efficiency: 8.1 HSPF2 15.2 SEER2 Sound: 0 0 Capacity: 27,400 Btuh 29,200 Btuh	Type:		Air So	urce Heat Pum	р		Air Sourc	e Heat Pump		
Brand: TRANE TRANE Description: Air Source Heat Pump Air Source Heat Pump Efficiency: 8.1 HSPF2 15.2 SEER2 Sound: 0 0 Capacity: 27,400 Btuh 29,200 Btuh	Model:									
Description: Air Source Heat Pump Efficiency: 8.1 HSPF2 5ound: 0 Capacity: Air Source Heat Pump 15.2 SEER2 0 0 27,400 Btuh 29,200 Btuh	Indoor Model:						TEM6A0	B30H21+TDR		
Efficiency: 8.1 HSPF2 15.2 SEER2 Sound: 0 0 Capacity: 27,400 Btuh 29,200 Btuh			,	_						
Sound: 0 0 Capacity: 27,400 Btuh 29,200 Btuh					р					
Capacity: 27,400 Btuh 29,200 Btuh	•			SPF2				R2		
			-				-			
Sensible Capacity: n/a 21,900 Btuh) Btuh						
	Sensible Capacity:		n/a				21,900 B	tuh		

This system's equipment was selected in accordance with ACCA Manual S.

n/a

Latent Capacity:

AHRI Reference No.:

Manual S equipment sizing data: SODB: 92F, SOWB: 77F, WODB: 33F, SIDB: 75F, SIRH: 50%, WIDB: 72F, Sen. gain: 19,953 Btuh, Lat. gain: 7,428 Btuh, Sen. loss: 30,700 Btuh, Entering clg. coil DB: 76.1F, Entering clg. coil WB: 63.6F, Entering htg. coil DB: 70.6F, Clg. coil TD: 20F, Htg. coil TD: 50F, Req. clg. airflow: 857 CFM, Req. htg. airflow: 534 CFM

7,300 Btuh

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