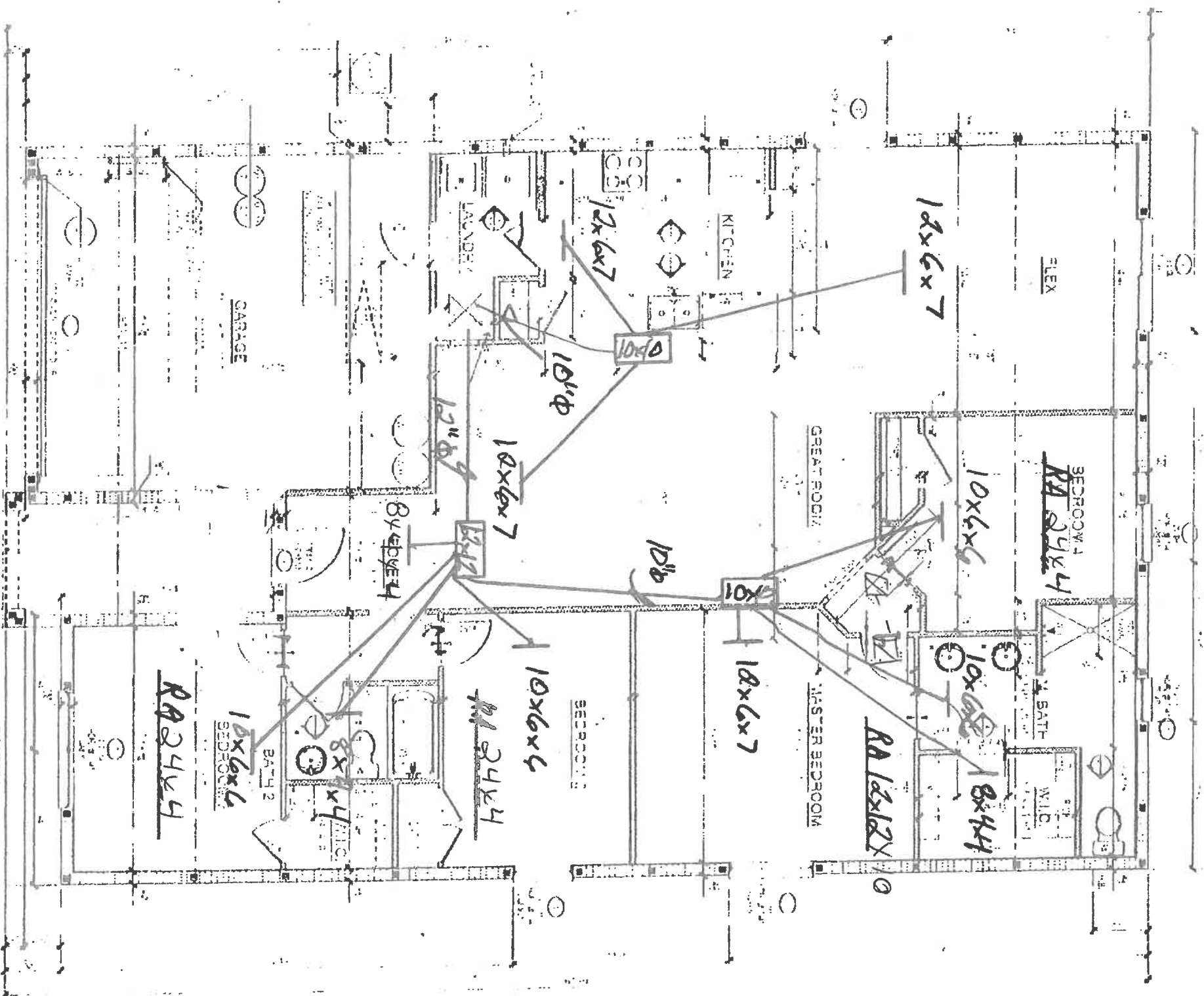


CP-MRD-FC-2



FLOOR

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, FL 32669
(352) 472-5661
Thursday, August 1, 2024

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
Company Name: Florida H.E.R.O., Inc.
Company Representative: Ken Fonorow
Company Address: 15220 NW 5th Ave
Company City: Newberry, FL 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 <u>Dry Bulb</u>	Outdoor <u>Wet Bulb</u>	Outdoor <u>Rel.Hum</u>	Indoor <u>Rel.Hum</u>	Indoor <u>Dry Bulb</u>	Grains <u>Difference</u>
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:	1,876	Square ft. Per Ton:	822
Volume (ft³):	16,263		

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 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.

Miscellaneous Report

System 1 Whole House Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	33	30.8	80%	n/a	72	n/a
Summer:	92	77	51%	50%	75	51.69

Duct Sizing Inputs

	Main Trunk	Runouts
Calculate:	Yes	Yes
Use Schedule:	Yes	Yes
Roughness Factor:	0.15000	0.15000
Pressure Drop:	0.1000 in.wg./100 ft.	0.1000 in.wg./100 ft.
Minimum Velocity:	650 ft./min	450 ft./min
Maximum Velocity:	900 ft./min	750 ft./min
Minimum Height:	0 in.	0 in.
Maximum Height:	0 in.	0 in.

Outside Air Data

	Winter	Summer
Infiltration Specified:	0.380 AC/hr 103 CFM	0.200 AC/hr 54 CFM
Infiltration Actual:	0.396 AC/hr	0.167 AC/hr
Above Grade Volume:	X 16,263 Cu.ft. 6,437 Cu.ft./hr X 0.0167	X 16,263 Cu.ft. 2,709 Cu.ft./hr X 0.0167
Total Building Infiltration:	107 CFM	45 CFM
Total Building Ventilation:	35 CFM	65 CFM

---System 1---

Infiltration & Ventilation Sensible Gain Multiplier:	18.60	= (1.10 X 0.995 X 17.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	34.96	= (0.68 X 0.995 X 51.69 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	42.66	= (1.10 X 0.995 X 39.00 Winter Temp. Difference)
Winter Infiltration Specified:	0.380 AC/hr (103 CFM), Construction: Average	
Summer Infiltration Specified:	0.200 AC/hr (54 CFM), Construction: Average	

Duct Load Factor Scenarios for System 1

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

Duct Size Preview

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	1--7	
2-M Bath	Built-In	450	750	0.15	0.1		376.3		107	74	74	1--6	
3-Master WIC	Built-In	450	750	0.15	0.1		238.4		45	21	21	1--4	
4-Bedroom 4	Built-In	450	750	0.15	0.1		354.7		63	70	70	1--6	
5-Flex	Built-In	450	750	0.15	0.1		507.3		196	136	136	1--7	
6-Great Room	Built-In	450	750	0.15	0.1		539		53	144	144	1--7	
7-Kitchen	Built-In	450	750	0.15	0.1		533.3		68	143	143	1--7	
8-Foyer	Built-In	450	750	0.15	0.1		425.8		73	37	37	1--4	
9-Bedroom 3	Built-In	450	750	0.15	0.1		608.3		218	119	119	1--6	
10-Bath 2	Built-In	450	750	0.15	0.1		42.7		2	4	4	1--4	
11-Bedroom 2	Built-In	450	750	0.15	0.1		602.7		80	118	118	1--6	
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	

Summary

System 1

Heating Flow: 1000

Cooling Flow: 1000

Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total 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 insulation, open core, siding finish, U-value 0.143	1013.4	5,652	0	2,505	2,505
12C-Osw: 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		1,493	2,272	1,209	3,481
Exhaust: Winter CFM: 65, Summer CFM: 35					
Total Building Load Totals:		30,700	7,428	19,953	27,381

Check Figures

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Square ft. of Room Area:	1,876	Square ft. Per Ton:	822
Volume (ft³):	16,263		

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

Notes

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System 1 Room Load Summary

Room No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
1	Master Bedroom	218	2,742	50	1-7	505	2,528	537	116	135
2	M Bath	136	3,127	57	1-6	376	1,385	428	63	74
3	Master WIC	60	1,311	24	1-4	238	390	76	18	21
4	Bedroom 4	150	1,851	34	1-6	355	1,306	92	60	70
5	Flex	300	5,736	105	1-7	507	2,541	320	116	136
6	Great Room	408	1,559	29	1-7	539	2,700	823	123	144
7	Kitchen	144	1,989	36	1-7	533	2,671	660	122	143
8	Foyer	48	2,127	39	1-4	426	697	128	32	37
9	Bedroom 3	198	6,377	117	1-6	608	2,239	354	102	119
10	Bath 2	47	62	1	1-4	43	70	250	3	4
11	Bedroom 2	168	2,326	43	1-6	603	2,218	110	101	118
Ventilation Duct Latent			1,493				1,209	2,272		
								1,378		
System 1 total		1,876	30,700	534			19,953	7,428	857	1,000

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 Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	2.28	73% / 27%	19,953	7,428	27,381
Actual:	2.43	75% / 25%	21,900	7,300	29,200

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
Sensible Capacity:	n/a	21,900 Btuh
Latent Capacity:	n/a	7,300 Btuh
AHRI Reference No.:	n/a	210798234

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