THERMAL LOAD CALCULATIONS FOR

CUSTOM RESIDENCE

THE ENCLAVES LOT 20

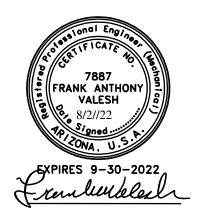
9796 EAST MIRAMONTE DRIVES

APN: 113-36-020

LAKE HAVASU, AZ 86406

USING SOFTWARE CARRIER HOURLY ANALYSIS VERSION 4.4 WHICH UTILIZES THE PROCEDURES DESCRIBED IN THE ASHRAE FUNDAMENTALS HANDBOOK

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Air System Sizing Summary for ZONE 1
Project Name: 22036-LAKE HAVASU RESIDENCE
Prepared by: 07/24/2022 05:28PM

Equipment Class	Air System Information Air System NameZONE 1	l	Number of zones1		
Sizing Calculation Information	Equipment Class SPLT AHL	J			ft ²
Zone and Space Sizing Method: Zone CFM	Air System Type	1			
Zone CFM	Sizing Calculation Information				
Central Cooling Coil Sizing Data					
Central Cooling Coil Sizing Data					
Total coil load	Space CFM Individual peak space loads	5	Sizing Data	User-Modified	
Total coil load	Central Cooling Coil Sizing Data				
Total coil load		Tons	Load occurs at	Jul 1700	
Sensible coil load					°F
Coil CFM at Jul 1700					°F
Max block CFM 1020 CFM Coil ADP 52.0 °F Sum of peak zone CFM 1020 CFM Bypass Factor 0.100 Sensible heat ratio 0.963 Resulting RH 45 % ft²/Ton 537.2 Design supply temp. 55.0 °F BTU/(hr-ft²) 22.3 Zone T-stat Check 0 of 1 OK Water flow @ 10.0 °F rise N/A Max zone temperature deviation 1.9 °F Central Heating Coil Sizing Data Max coil load 3.9 MBH Load occurs at Des Htg Coil CFM at Des Htg 1020 CFM BTU/(hr-ft²) 3.7 Max coil CFM 1020 CFM Ent. DB / Lvg DB 70.1 / 73.6 °F Water flow @ 20.0 °F drop N/A Ent. DB / Lvg DB 70.1 / 73.6 °F Supply Fan Sizing Data Actual max CFM 1020 CFM Fan motor BHP 0.12 BHP Standard CFM 104 CFM Fan static 0.40 in wg Outdoor Ventilation Air Data Design airflow CFM 0 CFM CFM/person 0.00 CFM/person					°F
Sum of peak zone CFM					۴
ft²/Ton 537.2 Design supply temp. 55.0 °F BTU/(hr-ft²) 22.3 Zone T-stat Check 0 of 1 OK Water flow @ 10.0 °F rise N/A Max zone temperature deviation 1.9 °F Central Heating Coil Sizing Data 3.9 MBH Load occurs at Des Htg Coil CFM at Des Htg 1020 CFM BTU/(hr-ft²) 3.7 Max coil CFM 1020 CFM BTU/(hr-ft²) 3.7 Water flow @ 20.0 °F drop N/A Ent. DB / Lvg DB 70.1 / 73.6 °F Supply Fan Sizing Data Actual max CFM 1020 CFM Fan motor BHP 0.12 BHP Standard CFM 1004 CFM Fan motor kW 0.09 kW Actual max CFM/ft² 0.98 CFM/ft² Fan static 0.40 in wg Outdoor Ventilation Air Data Design airflow CFM 0 CFM/person 0.00 CFM/person			Bypass Factor	0.100	
ft²/Ton 537.2 Design supply temp. 55.0 °F BTU/(hr-ft²) 22.3 Zone T-stat Check 0 of 1 OK Water flow @ 10.0 °F rise N/A Max zone temperature deviation 1.9 °F Central Heating Coil Sizing Data 3.9 MBH Load occurs at Des Htg Coil CFM at Des Htg 1020 CFM BTU/(hr-ft²) 3.7 Max coil CFM 1020 CFM BTU/(hr-ft²) 3.7 Water flow @ 20.0 °F drop N/A Ent. DB / Lvg DB 70.1 / 73.6 °F Supply Fan Sizing Data Actual max CFM 1020 CFM Fan motor BHP 0.12 BHP Standard CFM 1004 CFM Fan motor kW 0.09 kW Actual max CFM/ft² 0.98 CFM/ft² Fan static 0.40 in wg Outdoor Ventilation Air Data Design airflow CFM 0 CFM/person 0.00 CFM/person	Sensible heat ratio	3	Resulting RH	45	%
Water flow @ 10.0 °F rise	ft²/Ton537.2	2	Design supply temp.	55.0	°F
Water flow @ 10.0 °F rise	BTU/(hr-ft²)22.3	3	Zone T-stat Check	0 of 1	OK
Max coil load 3.9 MBH Load occurs at Des Htg Coil CFM at Des Htg 1020 CFM BTU/(hr-ft²) 3.7 Max coil CFM 1020 CFM Ent. DB / Lvg DB 70.1 / 73.6 °F Water flow @ 20.0 °F drop N/A Ent. DB / Lvg DB 70.1 / 73.6 °F Supply Fan Sizing Data Actual max CFM 1020 CFM Fan motor BHP 0.12 BHP Standard CFM 1004 CFM Fan motor kW 0.09 kW Actual max CFM/ft² 0.98 CFM/ft² Fan static 0.40 in wg Outdoor Ventilation Air Data Design airflow CFM 0 CFM CFM/person 0.00 CFM/perso	Water flow @ 10.0 °F rise	1			
Max coil load 3.9 MBH Load occurs at Des Htg Coil CFM at Des Htg 1020 CFM BTU/(hr-ft²) 3.7 Max coil CFM 1020 CFM Ent. DB / Lvg DB 70.1 / 73.6 °F Water flow @ 20.0 °F drop N/A Ent. DB / Lvg DB 70.1 / 73.6 °F Supply Fan Sizing Data Actual max CFM 1020 CFM Fan motor BHP 0.12 BHP Standard CFM 1004 CFM Fan motor kW 0.09 kW Actual max CFM/ft² 0.98 CFM/ft² Fan static 0.40 in wg Outdoor Ventilation Air Data Design airflow CFM 0 CFM CFM/person 0.00 CFM/perso	Central Heating Coil Sizing Data				
Coil CFM at Des Htg 1020 CFM BTU/(hr-ft²) 3.7 Max coil CFM 1020 CFM Ent. DB / Lvg DB 70.1 / 73.6 °F Water flow @ 20.0 °F drop N/A Ent. DB / Lvg DB 70.1 / 73.6 °F Supply Fan Sizing Data Actual max CFM 1020 CFM Fan motor BHP 0.12 BHP Standard CFM 1004 CFM Fan motor kW 0.09 kW Actual max CFM/ft² 0.98 CFM/ft² Fan static 0.40 in wg Outdoor Ventilation Air Data Design airflow CFM 0 CFM/person 0.00 CFM/perso		MRH	Load occurs at	Des Hta	
Max coil CFM 1020 CFM Ent. DB / Lvg DB 70.1 / 73.6 °F Water flow @ 20.0 °F drop N/A Ent. DB / Lvg DB 70.1 / 73.6 °F Supply Fan Sizing Data Actual max CFM 1020 CFM Fan motor BHP 0.12 BHP Standard CFM 1004 CFM Fan motor kW 0.09 kW Actual max CFM/ft² 0.98 CFM/ft² Fan static 0.40 in wg Outdoor Ventilation Air Data 0 CFM/person 0.00 CFM/perso					
Supply Fan Sizing Data N/A Actual max CFM 1020 CFM Fan motor BHP 0.12 BHP Standard CFM 1004 CFM Fan motor kW 0.09 kW Actual max CFM/ft² 0.98 CFM/ft² Fan static 0.40 in wg Outdoor Ventilation Air Data 0 CFM/person 0.00 CFM/perso					°F
Actual max CFM 1020 CFM Fan motor BHP 0.12 BHP Standard CFM 1004 CFM Fan motor kW 0.09 kW Actual max CFM/ft² 0.98 CFM/ft² Fan static 0.40 in wg Outdoor Ventilation Air Data Design airflow CFM 0 CFM/person 0.00 CFM/perso			/ g		
Actual max CFM 1020 CFM Fan motor BHP 0.12 BHP Standard CFM 1004 CFM Fan motor kW 0.09 kW Actual max CFM/ft² 0.98 CFM/ft² Fan static 0.40 in wg Outdoor Ventilation Air Data Design airflow CFM 0 CFM/person 0.00 CFM/perso	Supply Fan Sizing Data				
Standard CFM 1004 CFM Fan motor kW 0.09 kW Actual max CFM/ft² 0.98 CFM/ft² Fan static 0.40 in wg Outdoor Ventilation Air Data Design airflow CFM 0 CFM/person 0.00 CFM/perso	Actual max CFM 1020) CFM	Fan motor BHP	N 12	BHP
Actual max CFM/ft²					
Design airflow CFM					
Design airflow CFM	Outdoor Ventilation Air Data				
) CEM	CFM/person	0.00	CFM/perso
					- · · · · · · · · · · · · · · · · · · ·

Air Conditioning Contractors of America Manual S (Residential Equipment Selection) Project Information Cooling Design Information Name: THE ENCLAVES LOT 20 ZONE 1 Outdoor Design Temp: 125 °F db Summer City: LAKE HAVASU. AZ Winter Outdoor Design Temp: 32 °F db State: AZ Altitude: 1133 Altitude Adjustment: 0.98 Indoor Design Temp: 75 °F db 50 %RH 63 °F wb Airflow Calculations Manual J Load Calculations Total Load Sensible Latent SHR **Heat Loss** Design TD for Airflow 17 23.3 22.5 8.0 0.966 0.7 Design Sensible CFM **OEM Information** DAY AND NIGHT OR EQUAL Manufacturer: Furnace Model #: AFUE: Coil or Fan-Coil Model #: FEM4X30 Condenser Model #: N4H430GKG 14.0 HSPF: 8.20 SEER: (A) Manufacturer's Cooling Performance Data Lower 125 (F db) Return Air Outdoor Temperature = CFM Total BTUH SHR Entering Coil Temperature = 75 (F db) (F wb) Sensible BTUH Latent BTUH 18 0.7918 Rated CFM @ Rated RA Temperature 67 23 5 Rated CFM @ Design RA Temperature 875 63 22 21 0.956 Rated CFM @ Rated RA Temperature 21 21 62 (B) Manufacturer's Cooling Performance Data Higher 125 (F db) Return Air Outdoor Temperature = Entering Coil Temperature = 75 (F db) CFM (F wb) **Total BTUH** Sensible BTUH Latent BTUH SHR Rated CFM @ Rated RA Temperature 0.8783 67 23 21 Rated CFM @ Design RA Temperature 1125 63 23 22 0.975 Rated CFM @ Rated RA Temperature 62 23 23 1 Manufacturer's Cooling Performance Data (Interpolated) Design Return Air Outdoor Temperature = 95 (F db) **CFM** (F wb) **Total BTUH** Sensible BTUH Latent BTUH SHR 0.8694 15 **Excess Latent Capacity Calculation** 1 1 Capacity @ Design CFM / RA (F wb) 1.2032 63 18 0.912 16 2 70.96% 75.14% 192.95% Equipment Capacity as a % of Design Manufacturer's Heat Pump Data Supplemental Capacity Capacity Balance @ 47 °F db @ 17 °F db Point Heat Required 29 17 -22.9 -0.01 Manufacturer's Furnace Data

Input Output Desired Calculated
Capacity Capacity AFUE Temp. Rise Airflow

Air System Sizing Summary for ZONE 2
Project Name: 22036-LAKE HAVASU RESIDENCE
Prepared by: 07/24/2022 05:25PM

Air System Information					
Air System Name	ZONE 2		Number of zones	1	
Equipment Class	PKG VERT		Floor Area	1596.0	ft ²
Air System Type	SZCAV		Location LA	AKE HAVASU CITY, Arizona	
Sizing Calculation Info					
Zone and Space Sizing	Method:			_	
	Sum of space airflow rates			Jan to Dec	
Space CFM	Individual peak space loads		Sizing Data	User-Modified	
Central Cooling Coil S	izing Data				
Total coil load	3.6	Tons	Load occurs at	Jul 1700	
Total coil load	43.2	MBH	OA DB / WB	122.6 / 71.3	
Sensible coil load	41.1	MBH	Entering DB / WB	85.5 / 64.4	°F
Coil CFM at Jul 1700	1224	CFM		54.0 / 52.0	
Max block CFM	1224	CFM	Coil ADP	50.4	°F
Sum of peak zone CFM	1224	CFM	Bypass Factor	0.100	
Sensible heat ratio	0.950		Resulting RH	31	%
ft ² /Ton	443.1			55.0	
BTU/(hr-ft ²)	27.1		Zone T-stat Check	0 of 1	OK
Water flow @ 10.0 °F ris	se N/A		Max zone temperature devia	tion 12.7	°F
Central Heating Coil S	izing Data				
Max coil load	izing Data 7.8	MBH	Load occurs at	Des Htg	
Coil CFM at Des Htg	1224	CFM		4.9	
	1224		Ent. DB / Lva DB	69.7 / 75.7	°F
	rop		/g		·
Supply Fan Sizing Dat	а				
Actual max CFM	1224	CFM	Fan motor BHP	0.14	BHP
Standard CFM	1205	CFM		0.11	
	0.77			0.40	
Outdoor Ventilation Ai	r Data				
	0	CFM	CFM/person	0.00	CFM/person
			•		

Air Conditioning Contractors of America Manual S (Residential Equipment Selection) Project Information Cooling Design Information Name: THE ENCLAVES LOT 20 ZONE 2 Outdoor Design Temp: 125 °F db Summer City: LAKE HAVASU. AZ Winter Outdoor Design Temp: 32 °F db State: AZ Altitude: 1133 Altitude Adjustment: 0.98 Indoor Design Temp: 75 °F db 50 %RH 63 °F wb Airflow Calculations Manual J Load Calculations Total Load Sensible Latent SHR **Heat Loss** Design TD for Airflow 17 43.2 2.1 0.951 0.7 2 41.1 Design Sensible CFM **OEM Information** DAY AND NIGHT OR EQUAL Manufacturer: Furnace Model #: AFUE: Coil or Fan-Coil Model #: FEM4X61 Condenser Model #: N4H460GKG 14.0 HSPF: 8.20 SEER: (A) Manufacturer's Cooling Performance Data Lower 125 (F db) Return Air Outdoor Temperature = CFM Total BTUH SHR Entering Coil Temperature = 75 (F db) (F wb) Sensible BTUH Latent BTUH Rated CFM @ Rated RA Temperature 44 38 0.8717 67 6 Rated CFM @ Design RA Temperature 1750 63 42 41 0.9729 Rated CFM @ Rated RA Temperature 41 41 62 (B) Manufacturer's Cooling Performance Data Higher 125 (F db) Return Air Outdoor Temperature = Entering Coil Temperature = 75 (F db) CFM (F wb) **Total BTUH** Sensible BTUH Latent BTUH SHR Rated CFM @ Rated RA Temperature 0.9714 67 45 44 Rated CFM @ Design RA Temperature 2250 63 44 44 0.9941 Rated CFM @ Rated RA Temperature 62 44 44 1 Manufacturer's Cooling Performance Data (Interpolated) Design Return Air Outdoor Temperature = 95 (F db) **CFM** (F wb) **Total BTUH** Sensible BTUH Latent BTUH SHR 0.8779 30 4 **Excess Latent Capacity Calculation** 1 1 Capacity @ Design CFM / RA (F wb) 2.1979 63 34 0.908 31 3 75.80% 79.39% 149.69% Equipment Capacity as a % of Design Manufacturer's Heat Pump Data Supplemental Capacity Capacity Balance @ 47 °F db @ 17 °F db Point Heat Required 56 -25.0 -0.01

Output

Capacity

Input

Capacity

Calculated

Airflow

Desired

Temp. Rise

AFUE

Manufacturer's Furnace Data

Air System Sizing Summary for ZONE 3

Project Name: 22036-LAKE HAVASU RESIDENCE
Prepared by: 07/24/2022 05:23PM

Equipment Class SPLT AHU Air System Type SZCAV Sizing Calculation Information Zone and Space Sizing Method: Zone CFM Sum of space airflow rates Space CFM Individual peak space loads Central Cooling Coil Sizing Data Total coil load 35.9 MBH OA DB / WB 122.6 / 71.3 Sensible coil load 35.0 MBH Entering DB / WB 94.0 / 66.4 Coil CFM at Jul 1700 816 CFM Coil ADP 49.1 Sum of peak zone CFM 816 CFM Bypass Factor 0.100 Sensible heat ratio 0.976 ft²/Ton 393.1 Design supply temp. 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0.0 of 1 Water flow @ 10.0 °F rise N/A Central Heating Coil Sizing Data Max coil load 9.8 MBH Load occurs at Jul 176.0 Location Area 1.176.0 Location Months Sizing Data 1.176.0 Location Months Location Area 1.176.0 Location Months Location Area 1.176.0 Location Months Location Area 1.176.0 Location Mexicutes 1.176.0 Location Area 1.176.0 Location Mexicutes 1.176.0 Location Area 1.176.0 Location Mexicutes 1.176.0 Location Area 1.176.0 Loc	6.0
Zone and Space Sizing Method: Zone CFM Sum of space airflow rates Space CFM Individual peak space loads Central Cooling Coil Sizing Data Total coil load 3.0 Tons Total coil load 35.9 MBH OA DB / WB 122.6 / 71.3 Sensible coil load 35.0 MBH Entering DB / WB 94.0 / 66.4 Coil CFM at Jul 1700 816 CFM Leaving DB / WB 53.6 / 51.2 Max block CFM 816 CFM Coil ADP 49.1 Sum of peak zone CFM 816 CFM Bypass Factor 0.100 Sensible heat ratio 0.976 Resulting RH 22 ft²/Ton 393.1 Design supply temp. 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0 of 1 Water flow @ 10.0 °F rise N/A Central Heating Coil Sizing Data	π²
Zone CFM Sum of space airflow rates Space CFM Individual peak space loads Central Cooling Coil Sizing Data Total coil load 35.9 MBH OA DB / WB 122.6 / 71.3 Sensible coil load 35.0 MBH Entering DB / WB 94.0 / 66.4 Coil CFM at Jul 1700 816 CFM Leaving DB / WB 53.6 / 51.2 Max block CFM 816 CFM Coil ADP 49.1 Sum of peak zone CFM 816 CFM Bypass Factor 0.100 Sensible heat ratio 0.976 Resulting RH 22 ft²/Ton 393.1 Design supply temp. 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0 of 1 Wax zone temperature deviation 21.3 Central Heating Coil Sizing Data	
Central Cooling Coil Sizing Data 3.0 Tons Load occurs at Jul 1700 Total coil load 35.9 MBH OA DB / WB 122.6 / 71.3 Sensible coil load 35.0 MBH Entering DB / WB 94.0 / 66.4 Coil CFM at Jul 1700 816 CFM Leaving DB / WB 53.6 / 51.2 Max block CFM 816 CFM Coil ADP 49.1 Sum of peak zone CFM 816 CFM Bypass Factor 0.100 Sensible heat ratio 0.976 Resulting RH 22 ft²/Ton 393.1 Design supply temp 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0 of 1 Water flow @ 10.0 °F rise N/A Max zone temperature deviation 21.3	
Total coil load 3.0 Tons Load occurs at Jul 1700 Total coil load 35.9 MBH OA DB / WB 122.6 / 71.3 Sensible coil load 35.0 MBH Entering DB / WB 94.0 / 66.4 Coil CFM at Jul 1700 816 CFM Leaving DB / WB 53.6 / 51.2 Max block CFM 816 CFM Coil ADP 49.1 Sum of peak zone CFM 816 CFM Bypass Factor 0.100 Sensible heat ratio 0.976 Resulting RH 22 ft²/Ton 393.1 Design supply temp. 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0 of 1 Water flow @ 10.0 °F rise N/A Max zone temperature deviation 21.3	
Total coil load 3.0 Tons Load occurs at Jul 1700 Total coil load 35.9 MBH OA DB / WB 122.6 / 71.3 Sensible coil load 35.0 MBH Entering DB / WB 94.0 / 66.4 Coil CFM at Jul 1700 816 CFM Leaving DB / WB 53.6 / 51.2 Max block CFM 816 CFM Coil ADP 49.1 Sum of peak zone CFM 816 CFM Bypass Factor 0.100 Sensible heat ratio 0.976 Resulting RH 22 ft²/Ton 393.1 Design supply temp. 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0 of 1 Water flow @ 10.0 °F rise N/A Max zone temperature deviation 21.3	
Sensible coil load 35.0 MBH Entering DB / WB 94.0 / 66.4 Coil CFM at Jul 1700 816 CFM Leaving DB / WB 53.6 / 51.2 Max block CFM 816 CFM Coil ADP 49.1 Sum of peak zone CFM 816 CFM Bypass Factor 0.100 Sensible heat ratio 0.976 Resulting RH 22 ft²/Ton 393.1 Design supply temp 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0 of 1 Water flow @ 10.0 °F rise N/A Max zone temperature deviation 21.3	
Coil CFM at Jul 1700 816 CFM Leaving DB / WB 53.6 / 51.2 Max block CFM 816 CFM Coil ADP 49.1 Sum of peak zone CFM 816 CFM Bypass Factor 0.100 Sensible heat ratio 0.976 Resulting RH 22 ft²/Ton 393.1 Design supply temp. 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0 of 1 Water flow @ 10.0 °F rise N/A Max zone temperature deviation 21.3 Central Heating Coil Sizing Data	
Max block CFM 816 CFM Coil ADP 49.1 Sum of peak zone CFM 816 CFM Bypass Factor 0.100 Sensible heat ratio 0.976 Resulting RH 22 ft²/Ton 393.1 Design supply temp. 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0 of 1 Water flow @ 10.0 °F rise N/A Max zone temperature deviation 21.3	
Sum of peak zone CFM 816 CFM Bypass Factor 0.100 Sensible heat ratio 0.976 Resulting RH 22 ft²/Ton 393.1 Design supply temp 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0 of 1 Water flow @ 10.0 °F rise N/A Max zone temperature deviation 21.3	
Sensible heat ratio 0.976 Resulting RH 22 ft²/Ton 393.1 Design supply temp. 55.0 BTU/(hr-ft²) 30.5 Zone T-stat Check 0 of 1 Water flow @ 10.0 °F rise N/A Max zone temperature deviation 21.3 Central Heating Coil Sizing Data	°F
ft²/Ton	
BTU/(hr-ft²) 30.5 Zone T-stat Ćheck 0 of 1 Water flow @ 10.0 °F rise N/A Max zone temperature deviation 21.3 Central Heating Coil Sizing Data	
Water flow @ 10.0 °F rise	°F OK
Central Heating Coil Sizing Data	
	T
Max coil load 9.8 MBH Load occurs at Des Hto	
Coil CFM at Des Htg816	
Max coil CFM816 CFM Ent. DB / Lvg DB69.7 / 81.0	°F
Water flow @ 20.0 °F drop N/A	
Supply Fan Sizing Data	
Supply Fan Sizing Data Actual max CFM816 CFM Fan motor BHP0.10	BHP
Standard CFM Fan motor kW	
Actual max CFM/ft ²	in wg
Outdoor Ventilation Air Data	
Design airflow CFM0 CFM CFM/person0.00	CFM/perso
CFM/ft ² 0.00 CFM/ft ²	•

Air Conditioning Contractors of America Manual S (Residential Equipment Selection) Project Information Cooling Design Information Name: THE ENCLAVES LOT 20 ZONE 3 Outdoor Design Temp: 125 °F db Summer City: LAKE HAVASU. AZ Winter Outdoor Design Temp: 32 °F db State: AZ Altitude: 1133 Altitude Adjustment: 0.98 Indoor Design Temp: 75 °F db 50 %RH 63 °F wb Airflow Calculations Manual J Load Calculations Total Load Sensible Latent SHR **Heat Loss** Design TD for Airflow 17 35.9 35 0.9 0.975 0.7 2 Design Sensible CFM **OEM Information** DAY AND NIGHT OR EQUAL Manufacturer: Furnace Model #: AFUE: Coil or Fan-Coil Model #: FEM4X48 Condenser Model #: N4H448GKG 14.0 HSPF: 8.20 SEER: (A) Manufacturer's Cooling Performance Data Lower 125 (F db) Return Air Outdoor Temperature = CFM Total BTUH SHR Entering Coil Temperature = 75 (F db) (F wb) Sensible BTUH Latent BTUH Rated CFM @ Rated RA Temperature 29 0.8089 67 36 Rated CFM @ Design RA Temperature 1400 63 34 33 0.9606 Rated CFM @ Rated RA Temperature 34 34 62 (B) Manufacturer's Cooling Performance Data Higher 125 (F db) Return Air Outdoor Temperature = Entering Coil Temperature = 75 (F db) CFM (F wb) **Total BTUH** Sensible BTUH Latent BTUH SHR Rated CFM @ Rated RA Temperature 0.8587 67 37 32 Rated CFM @ Design RA Temperature 1800 63 36 35 0.971 Rated CFM @ Rated RA Temperature 62 36 36 1 Manufacturer's Cooling Performance Data (Interpolated) Design Return Air Outdoor Temperature = 95 (F db) **CFM** (F wb) **Total BTUH** Sensible BTUH Latent BTUH SHR 0.9127 25 **Excess Latent Capacity Calculation** 1 1 Capacity @ Design CFM / RA (F wb) 1.8717 63 28 0.940 26 2 77.39% 74.63% 184.74% Equipment Capacity as a % of Design Manufacturer's Heat Pump Data Supplemental Capacity Capacity Balance @ 47 °F db @ 17 °F db Point Heat Required 46 -22.1 -0.01

Output

Capacity

Input

Capacity

Calculated

Airflow

Desired

Temp. Rise

AFUE

Manufacturer's Furnace Data

Air System Sizing Summary for ZONE 4

Project Name: 22036-LAKE HAVASU RESIDENCE

Prepared by: 07/24/2022 05:31PM

Air System Information				
Air System NameZONE 4		Number of zones	1	
Equipment Class		Floor Area	451.0	ft ²
Air System Type		Location LAKE HAVASU CITY, Arizona		
Sizing Calculation Information Zone and Space Sizing Method:				
Zone CFM Sum of space airflow rates		Calculation Months	Jan to Dec	
Space CFM Individual peak space loads		Sizing Data		
Central Cooling Coil Sizing Data				
Total coil load	Tons	Load occurs at	Sep 1600	
Total coil load 21.8		OA DB / WB		°F
Sensible coil load 19.7		Entering DB / WB		
Coil CFM at Sep 1600		Leaving DB / WB		
Max block CFM 408		Coil ADP	48.4	°F
Sum of peak zone CFM408		Bypass Factor		
Sensible heat ratio		Resulting RH		%
ft²/Ton 248.0		Design supply temp		
BTU/(hr-ft²)48.4		Zone T-stat Check		
Water flow @ 10.0 °F rise		Max zone temperature deviation	26.2	°F
Central Heating Coil Sizing Data				
Max coil load	MBH	Load occurs at	Des Hta	
Coil CFM at Des Htg408	CFM	BTU/(hr-ft ²)		
Max coil CFM408		Ent. DB / Lvg DB		°F
Water flow @ 20.0 °F drop		S		
Supply Fan Sizing Data				
Actual max CFM408	CFM	Fan motor BHP	0.05	BHP
Standard CFM 402		Fan motor kW		
Actual max CFM/ft ² 0.91		Fan static		
Outdoor Ventilation Air Data				
Design airflow CFM0	CFM	CFM/person	0.00	CFM/person
CFM/ft² 0.00		·		•

Air Conditioning Contractors of America Manual S (Residential Equipment Selection) Project Information Cooling Design Information Name: THE ENCLAVES LOT 20 ZONE 4 Outdoor Design Temp: 125 °F db Summer City: LAKE HAVASU. AZ Winter Outdoor Design Temp: 32 °F db State: AZ Altitude: 1133 Altitude Adjustment: 0.98 Indoor Design Temp: 75 °F db 50 %RH 63 °F wb Airflow Calculations Manual J Load Calculations Total Load Sensible Latent SHR **Heat Loss** Design TD for Airflow 17 21.8 19.7 2.1 0.904 0.7 Design Sensible CFM **OEM Information** DAY AND NIGHT OR EQUAL Furnace Model #: Manufacturer: AFUE: Coil or Fan-Coil Model #: MLZ-KP24NA-U1 Condenser Model #: SUZ-KA24NA2.TH 14.0 HSPF: 8.20 SEER: (A) Manufacturer's Cooling Performance Data Lower 125 (F db) Return Air Outdoor Temperature = CFM Total BTUH SHR Entering Coil Temperature = 75 (F db) (F wb) Sensible BTUH Latent BTUH 18 0.7918 Rated CFM @ Rated RA Temperature 67 23 5 Rated CFM @ Design RA Temperature 700 63 22 21 0.956 Rated CFM @ Rated RA Temperature 21 21 62 (B) Manufacturer's Cooling Performance Data Higher 125 (F db) Return Air Outdoor Temperature = Entering Coil Temperature = 75 (F db) CFM (F wb) **Total BTUH** Sensible BTUH Latent BTUH SHR Rated CFM @ Rated RA Temperature 0.8783 67 23 21 Rated CFM @ Design RA Temperature 900 63 23 22 0.975 Rated CFM @ Rated RA Temperature 62 23 23 1 Manufacturer's Cooling Performance Data (Interpolated) Design Return Air Outdoor Temperature = 95 (F db) **CFM** (F wb) **Total BTUH** Sensible BTUH Latent BTUH SHR 0.8694 15 **Excess Latent Capacity Calculation** 0 0 Capacity @ Design CFM / RA (F wb) 1.0535 63 18 15 0.875 2 77.74% 80.32% 104.45% Equipment Capacity as a % of Design Manufacturer's Heat Pump Data Supplemental Capacity Capacity Balance @ 47 °F db @ 17 °F db Point Heat Required 22 13 -20.1 -0.01

Manufacturer's Furnace Data

Input Output Desired Calculated

Capacity Capacity AFUE Temp. Rise Airflow

Air System Sizing Summary for ZONE 5
Project Name: 22036-LAKE HAVASU RESIDENCE
Prepared by: 07/24/2022 05:55PM

Air System Information Air System NameZONE 5	.	Number of zones	1	
Equipment Class SPLT AHU	, I	Floor Area	3513.0	ft2
Air System Type SZCAV	•	Floor Area		
Sizing Calculation Information				
Zone and Space Sizing Method:				
Zone CFM Sum of space airflow rates	;		Jan to Dec	
Space CFMIndividual peak space loads	•	Sizing Data	Calculated	
Central Cooling Coil Sizing Data				
Total coil load	Tons	Load occurs at	Jul 1800	
Total coil load43.6		OA DB / WB	120.0 / 70.6	°F
Sensible coil load		Entering DB / WB	80.7 / 63.7	°F
Coil CFM at Jul 1800 1619		Leaving DB / WB	56.0 / 54.4	°F
Max block CFM 1619			53.2	°F
Sum of peak zone CFM			0.100	
Sensible heat ratio		Resulting RH	39	%
ft ² /Ton		Design supply temp	55.0	°F
BTU/(hr-ft²)			1 of 1	
Water flow @ 10.0 °F rise	l	Max zone temperature devi	ation 0.0	°F
Central Heating Coil Sizing Data				
Max coil load5.8	MBH	Load occurs at	Des Htg	
Coil CFM at Des Htg1619			1.7	
Max coil CFM1619	CFM	Ent. DB / Lvg DB	70.0 / 73.4	°F
Water flow @ 20.0 °F drop	1	-		
Supply Fan Sizing Data				
Actual max CFM1619	CFM	Fan motor BHP	0.19	BHP
Standard CFM1593			0.14	
Actual max CFM/ft²			0.40	
Outdoor Ventilation Air Data				
Design airflow CFM0	CFM	CFM/person	0.00	CFM/p
CFM/ft ² 0.00	CFM/ft ²			

Air Conditioning Contractors of America Manual S (Residential Equipment Selection) Project Information Cooling Design Information Name: THE ENCLAVES LOT 20 ZONE 5 Outdoor Design Temp: 125 °F db Summer City: LAKE HAVASU. AZ Winter Outdoor Design Temp: 32 °F db State: AZ Altitude: 1133 Altitude Adjustment: 0.98 Indoor Design Temp: 75 °F db 50 %RH 63 °F wb Airflow Calculations Manual J Load Calculations Total Load Sensible Latent SHR **Heat Loss** Design TD for Airflow 17 43.6 42.5 0.975 0.7 2 1.1 Design Sensible CFM **OEM Information** DAY AND NIGHT OR EQUAL Manufacturer: Furnace Model #: AFUE: Coil or Fan-Coil Model #: FEM4X61 Condenser Model #: N4H460GKG 14.0 HSPF: 8.20 SEER: (A) Manufacturer's Cooling Performance Data Lower 125 (F db) Return Air Outdoor Temperature = CFM Total BTUH SHR Entering Coil Temperature = 75 (F db) (F wb) Sensible BTUH Latent BTUH Rated CFM @ Rated RA Temperature 44 38 0.8717 67 6 Rated CFM @ Design RA Temperature 1750 63 42 41 0.9729 Rated CFM @ Rated RA Temperature 41 41 62 (B) Manufacturer's Cooling Performance Data Higher 125 (F db) Return Air Outdoor Temperature = Entering Coil Temperature = 75 (F db) CFM (F wb) **Total BTUH** Sensible BTUH Latent BTUH SHR Rated CFM @ Rated RA Temperature 0.9566 67 45 43 Rated CFM @ Design RA Temperature 2250 63 44 43 0.9808 Rated CFM @ Rated RA Temperature 62 44 43 0.987 Manufacturer's Cooling Performance Data (Interpolated) Design Return Air Outdoor Temperature = 95 (F db) **CFM** (F wb) **Total BTUH** Sensible BTUH Latent BTUH SHR 32 0.9377 **Excess Latent Capacity Calculation** 1 1 Capacity @ Design CFM / RA (F wb) 2.2727 63 34 0.953 33 2 76.90% 78.67% 147.09% Equipment Capacity as a % of Design Manufacturer's Heat Pump Data Supplemental Capacity Capacity Balance @ 47 °F db @ 17 °F db Point Heat Required 56 -25.0 -0.01

Manufacturer's Furnace Data

Input Output Desired Calculated

Capacity Capacity AFUE Temp. Rise Airflow