

Air System Sizing Summary for HVAC

Project Name: 61_andremartins966
Prepared by: D Lab

09/04/2024
01:59PM

Air System Information

Air System Name HVAC
Equipment Class PKG ROOF
Air System Type SZCAV

Number of zones 1
Floor Area 1567.2 ft²
Location Palm Bay, Florida

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated

Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load 4.7 Tons
Total coil load 57.0 MBH
Sensible coil load 45.1 MBH
Coil CFM at Jul 1600 1989 CFM
Max block CFM 1989 CFM
Sum of peak zone CFM 1989 CFM
Sensible heat ratio 0.792
CFM/Ton 419.0
ft²/Ton 330.2
BTU/(hr-ft²) 36.3
Water flow @ 10.0 °F rise N/A

Load occurs at Jul 1600
OA DB / WB 93.5 / 75.9 °F
Entering DB / WB 78.5 / 65.6 °F
Leaving DB / WB 57.5 / 56.0 °F
Coil ADP 54.6 °F
Bypass Factor 0.120
Resulting RH 51 %
Design supply temp. 55.0 °F
Zone T-stat Check 1 of 1 OK
Max zone temperature deviation 0.0 °F

Central Heating Coil Sizing Data

Max coil load 22.7 MBH
Coil CFM at Des Htg 1989 CFM
Max coil CFM 1989 CFM
Water flow @ 20.0 °F drop N/A

Load occurs at Des Htg
BTU/(hr-ft²) 14.5
Ent. DB / Lvg DB 64.8 / 75.5 °F

Supply Fan Sizing Data

Actual max CFM 1989 CFM
Standard CFM 1981 CFM
Actual max CFM/ft² 1.27 CFM/ft²

Fan motor BHP 0.00 BHP
Fan motor kW 0.00 kW
Fan static 0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM 288 CFM
CFM/ft² 0.18 CFM/ft²

CFM/person 14.39 CFM/person

Zone Sizing Summary for HVAC

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Calculation Months Jan to Dec
Sizing Data Calculated

Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	1989	1989	1.27	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
Zone 1	41.5	Jul 1600	13.9	1567.2

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
Bath	1	2.8	Jul 1900	128	1.3	120.0	1.07
Bedroom-2	1	3.5	Jul 1600	164	1.7	148.8	1.10
Bedroom-3	1	3.0	Jul 2200	141	1.4	148.8	0.95
Kitchen, Dining, Living	1	22.5	Jul 2000	1047	4.9	735.0	1.42
Master Bath	1	2.2	Jul 2000	105	0.9	93.1	1.12
Master BED	1	4.1	Jul 1600	192	1.8	156.0	1.23
PWDR ROOM	1	1.6	Jul 1900	75	0.7	55.0	1.37
Study	1	3.0	Oct 1500	137	1.3	110.5	1.24

Ventilation Sizing Summary for HVAC

Project Name: 61_andremartins966
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1. Summary

Ventilation Sizing Method **Sum of Space OA Airflows**
Design Ventilation Airflow Rate **288** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
Bath	1	120.0	1.0	128.4	0.00	0.00	0.0	0.0	0.0
Bedroom-2	1	148.8	2.0	163.5	5.00	0.06	0.0	0.0	18.9
Bedroom-3	1	148.8	2.0	140.9	5.00	0.06	0.0	0.0	18.9
Kitchen, Dining, Living	1	735.0	10.0	1047.1	7.50	0.18	0.0	0.0	207.3
Master Bath	1	93.1	1.0	104.5	0.00	0.00	0.0	0.0	0.0
Master BED	1	156.0	2.0	192.0	5.00	0.06	0.0	0.0	19.4
PWDR ROOM	1	55.0	1.0	75.2	0.00	0.00	0.0	0.0	0.0
Study	1	110.5	1.0	137.2	10.00	0.12	0.0	0.0	23.3
Totals (incl. Space Multipliers)				1988.8					287.8

Air System Design Load Summary for HVAC

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 93.5 °F / 75.9 °F			HEATING OA DB / WB 37.0 °F / 31.1 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	197 ft²	1258	-	197 ft²	-	-
Wall Transmission	3723 ft²	2761	-	3723 ft²	4237	-
Roof Transmission	1567 ft²	5985	-	1567 ft²	5516	-
Window Transmission	197 ft²	626	-	197 ft²	1300	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	434 ft²	2535	-	434 ft²	2864	-
Floor Transmission	1567 ft²	0	-	1567 ft²	0	-
Partitions	3078 ft²	0	-	3078 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	1567 W	5047	-	0	0	-
Task Lighting	1567 W	5180	-	0	0	-
Electric Equipment	2400 W	8130	-	0	0	-
People	20	4543	4100	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	5410	205	0%	0	0
>> Total Zone Loads	-	41473	4305	-	13918	0
Zone Conditioning	-	39712	4305	-	12630	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	1989 CFM	0	-	1989 CFM	0	-
Ventilation Load	288 CFM	5415	7526	288 CFM	10081	0
Supply Fan Load	1989 CFM	0	-	1989 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	45127	11831	-	22711	0
Central Cooling Coil	-	45127	11832	-	0	0
Central Heating Coil	-	0	-	-	22711	-
>> Total Conditioning	-	45127	11832	-	22711	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Zone Design Load Summary for HVAC

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Zone 1	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 93.5 °F / 75.9 °F			HEATING OA DB / WB 37.0 °F / 31.1 °F		
	OCCUPIED T-STAT 75.0 °F			OCCUPIED T-STAT 70.0 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	197 ft²	1258	-	197 ft²	-	-
Wall Transmission	3723 ft²	2761	-	3723 ft²	4237	-
Roof Transmission	1567 ft²	5985	-	1567 ft²	5516	-
Window Transmission	197 ft²	626	-	197 ft²	1300	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	434 ft²	2535	-	434 ft²	2864	-
Floor Transmission	1567 ft²	0	-	1567 ft²	0	-
Partitions	3078 ft²	0	-	3078 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	1567 W	5047	-	0	0	-
Task Lighting	1567 W	5180	-	0	0	-
Electric Equipment	2400 W	8130	-	0	0	-
People	20	4543	4100	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	5410	205	0%	0	0
>> Total Zone Loads	-	41473	4305	-	13918	0

Space Design Load Summary for HVAC

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TABLE 1.1.A. Component Loads For Space "Bath" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1900 COOLING OA DB / WB 88.4 °F / 74.5 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 37.0 °F / 31.1 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	4 ft²	16	-	4 ft²	-	-
Wall Transmission	373 ft²	334	-	373 ft²	424	-
Roof Transmission	120 ft²	594	-	120 ft²	422	-
Window Transmission	4 ft²	10	-	4 ft²	26	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	63 ft²	214	-	63 ft²	416	-
Floor Transmission	120 ft²	0	-	120 ft²	0	-
Partitions	340 ft²	0	-	340 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	120 W	409	-	0	0	-
Task Lighting	120 W	409	-	0	0	-
Electric Equipment	50 W	171	-	0	0	-
People	1	245	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	360	10	0%	0	0
>> Total Zone Loads	-	2763	215	-	1289	0

TABLE 1.1.B. Envelope Loads For Space "Bath" In Zone "Zone 1"

				COOLING	COOLING	HEATING
	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	TRANS (BTU/hr)	SOLAR (BTU/hr)	TRANS (BTU/hr)
N EXPOSURE						
WALL	96	0.034	-	67	-	109
WINDOW 1	4	0.200	0.210	10	16	26
S EXPOSURE						
WALL	79	0.034	-	56	-	90
DOOR	16	0.200	-	41	-	106
DOOR GLASS	5	0.200	0.210	13	16	33
E EXPOSURE						
WALL	99	0.034	-	100	-	113
DOOR	16	0.200	-	41	-	106
DOOR GLASS	5	0.200	0.210	13	17	33
W EXPOSURE						
WALL	99	0.034	-	111	-	113
DOOR	16	0.200	-	41	-	106
DOOR GLASS	5	0.200	0.210	13	19	33
H EXPOSURE						
ROOF	120	0.107	-	594	-	422

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TABLE 1.2.A. Component Loads For Space "Bedroom-2" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1600 COOLING OA DB / WB 93.5 °F / 75.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 37.0 °F / 31.1 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	30 ft²	153	-	30 ft²	-	-
Wall Transmission	374 ft²	279	-	374 ft²	426	-
Roof Transmission	149 ft²	568	-	149 ft²	524	-
Window Transmission	30 ft²	95	-	30 ft²	198	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	84 ft²	575	-	84 ft²	554	-
Floor Transmission	149 ft²	0	-	149 ft²	0	-
Partitions	366 ft²	0	-	366 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	149 W	409	-	0	0	-
Task Lighting	149 W	453	-	0	0	-
Electric Equipment	50 W	156	-	0	0	-
People	2	371	410	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	459	21	0%	0	0
>> Total Zone Loads	-	3518	431	-	1702	0

TABLE 1.2.B. Envelope Loads For Space "Bedroom-2" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr·ft²·°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	92	0.034	-	57	-	105
WINDOW 1	30	0.200	0.210	95	153	198
S EXPOSURE						
WALL	122	0.034	-	79	-	139
E EXPOSURE						
WALL	59	0.034	-	60	-	67
DOOR	3	0.200	-	10	-	20
DOOR GLASS	60	0.200	0.210	191	282	396
W EXPOSURE						
WALL	101	0.034	-	82	-	115
DOOR	16	0.200	-	51	-	106
DOOR GLASS	5	0.200	0.210	16	26	33
H EXPOSURE						
ROOF	149	0.107	-	568	-	524

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TABLE 1.3.A. Component Loads For Space "Bedroom-3" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2200 COOLING OA DB / WB 82.7 °F / 73.0 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 37.0 °F / 31.1 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	30 ft²	99	-	30 ft²	-	-
Wall Transmission	437 ft²	378	-	437 ft²	497	-
Roof Transmission	149 ft²	722	-	149 ft²	524	-
Window Transmission	30 ft²	53	-	30 ft²	198	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	52	-	21 ft²	139	-
Floor Transmission	149 ft²	0	-	149 ft²	0	-
Partitions	244 ft²	0	-	244 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	149 W	390	-	0	0	-
Task Lighting	149 W	442	-	0	0	-
Electric Equipment	50 W	153	-	0	0	-
People	2	348	410	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	395	21	0%	0	0
>> Total Zone Loads	-	3032	431	-	1358	0

TABLE 1.3.B. Envelope Loads For Space "Bedroom-3" In Zone "Zone 1"

				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(ft²)	(BTU/(hr-ft²-°F))	Coeff.	(BTU/hr)	(BTU/hr)	(BTU/hr)
N EXPOSURE						
WALL	92	0.034	-	64	-	105
WINDOW 1	30	0.200	0.210	53	99	198
S EXPOSURE						
WALL	122	0.034	-	83	-	139
E EXPOSURE						
WALL	101	0.034	-	94	-	115
DOOR	16	0.200	-	29	-	106
DOOR GLASS	5	0.200	0.210	9	14	33
W EXPOSURE						
WALL	122	0.034	-	136	-	139
H EXPOSURE						
ROOF	149	0.107	-	722	-	524

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TABLE 1.4.A. Component Loads For Space "Kitchen, Dining, Living" In Zone "Zone 1"						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2000 COOLING OA DB / WB 86.2 °F / 73.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 37.0 °F / 31.1 °F OCCUPIED T-STAT 70.0 °F		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(BTU/hr)	(BTU/hr)	Details	(BTU/hr)	(BTU/hr)
Window & Skylight Solar Loads	30 ft²	101	-	30 ft²	-	-
Wall Transmission	1131 ft²	908	-	1131 ft²	1287	-
Roof Transmission	735 ft²	3727	-	735 ft²	2587	-
Window Transmission	30 ft²	68	-	30 ft²	198	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	119 ft²	500	-	119 ft²	785	-
Floor Transmission	735 ft²	0	-	735 ft²	0	-
Partitions	1130 ft²	0	-	1130 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	735 W	2508	-	0	0	-
Task Lighting	735 W	2508	-	0	0	-
Electric Equipment	2000 W	6824	-	0	0	-
People	10	2450	2050	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	2939	103	0%	0	0
>> Total Zone Loads	-	22532	2153	-	4858	0

TABLE 1.4.B. Envelope Loads For Space "Kitchen, Dining, Living" In Zone "Zone 1"						
	Area	U-Value	Shade	COOLING	COOLING	HEATING
	(ft²)	(BTU/(hr-ft²-°F))	Coeff.	TRANS	SOLAR	TRANS
				(BTU/hr)	(BTU/hr)	(BTU/hr)
N EXPOSURE						
WALL	427	0.034	-	306	-	486
DOOR	3	0.200	-	7	-	20
DOOR GLASS	60	0.200	0.210	136	184	396
S EXPOSURE						
WALL	425	0.034	-	300	-	484
WINDOW 1	30	0.200	0.210	68	101	198
DOOR	25	0.200	-	57	-	165
DOOR GLASS	10	0.200	0.210	23	30	66
E EXPOSURE						
WALL	129	0.034	-	128	-	147
DOOR	16	0.200	-	36	-	106
DOOR GLASS	5	0.200	0.210	11	16	33
W EXPOSURE						
WALL	150	0.034	-	174	-	171
H EXPOSURE						
ROOF	735	0.107	-	3727	-	2587

Space Design Load Summary for HVAC

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TABLE 1.5.A. Component Loads For Space "Master Bath" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2000 COOLING OA DB / WB 86.2 °F / 73.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 37.0 °F / 31.1 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	4 ft²	30	-	4 ft²	-	-
Wall Transmission	364 ft²	329	-	364 ft²	414	-
Roof Transmission	93 ft²	472	-	93 ft²	328	-
Window Transmission	4 ft²	9	-	4 ft²	26	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	65	-	21 ft²	139	-
Floor Transmission	93 ft²	0	-	93 ft²	0	-
Partitions	279 ft²	0	-	279 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	93 W	318	-	0	0	-
Task Lighting	93 W	318	-	0	0	-
Electric Equipment	50 W	171	-	0	0	-
People	1	245	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	293	10	0%	0	0
>> Total Zone Loads	-	2249	215	-	907	0

TABLE 1.5.B. Envelope Loads For Space "Master Bath" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	85	0.034	-	61	-	96
S EXPOSURE						
WALL	85	0.034	-	60	-	96
E EXPOSURE						
WALL	106	0.034	-	105	-	121
WINDOW 1	4	0.200	0.210	9	30	26
W EXPOSURE						
WALL	89	0.034	-	103	-	101
DOOR	16	0.200	-	36	-	106
DOOR GLASS	5	0.200	0.210	11	18	33
H EXPOSURE						
ROOF	93	0.107	-	472	-	328

Space Design Load Summary for HVAC

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TABLE 1.6.A. Component Loads For Space "Master BED" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1600 COOLING OA DB / WB 93.5 °F / 75.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 37.0 °F / 31.1 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	45 ft²	381	-	45 ft²	-	-
Wall Transmission	371 ft²	280	-	371 ft²	422	-
Roof Transmission	156 ft²	596	-	156 ft²	549	-
Window Transmission	45 ft²	143	-	45 ft²	297	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	84 ft²	607	-	84 ft²	554	-
Floor Transmission	156 ft²	0	-	156 ft²	0	-
Partitions	250 ft²	0	-	250 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	156 W	429	-	0	0	-
Task Lighting	156 W	475	-	0	0	-
Electric Equipment	100 W	312	-	0	0	-
People	2	371	410	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	539	21	0%	0	0
>> Total Zone Loads	-	4132	431	-	1823	0

TABLE 1.6.B. Envelope Loads For Space "Master BED" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	115	0.034	-	71	-	131
WINDOW 1	15	0.200	0.210	48	76	99
S EXPOSURE						
WALL	109	0.034	-	71	-	124
DOOR	16	0.200	-	51	-	106
DOOR GLASS	5	0.200	0.210	16	22	33
E EXPOSURE						
WALL	90	0.034	-	92	-	102
WINDOW 1	30	0.200	0.210	95	305	198
W EXPOSURE						
WALL	57	0.034	-	46	-	65
DOOR	3	0.200	-	10	-	20
DOOR GLASS	60	0.200	0.210	191	317	396
H EXPOSURE						
ROOF	156	0.107	-	596	-	549

Space Design Load Summary for HVAC

Project Name: 61_andremartins966
Prepared by: D Lab

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TABLE 1.7.A. Component Loads For Space "PWDR ROOM" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1900 COOLING OA DB / WB 88.4 °F / 74.5 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 37.0 °F / 31.1 °F OCCUPIED T-STAT 70.0 °F		
		Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS	Details			Details		
Window & Skylight Solar Loads	4 ft²	32	-	4 ft²	-	-
Wall Transmission	274 ft²	230	-	274 ft²	312	-
Roof Transmission	55 ft²	272	-	55 ft²	194	-
Window Transmission	4 ft²	10	-	4 ft²	26	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	73	-	21 ft²	139	-
Floor Transmission	55 ft²	0	-	55 ft²	0	-
Partitions	234 ft²	0	-	234 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	55 W	188	-	0	0	-
Task Lighting	55 W	188	-	0	0	-
Electric Equipment	50 W	171	-	0	0	-
People	1	245	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	211	10	0%	0	0
>> Total Zone Loads	-	1619	215	-	671	0

TABLE 1.7.B. Envelope Loads For Space "PWDR ROOM" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING TRANS (BTU/hr)	COOLING SOLAR (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE						
WALL	85	0.034	-	59	-	96
S EXPOSURE						
WALL	85	0.034	-	60	-	96
E EXPOSURE						
WALL	61	0.034	-	62	-	69
WINDOW 1	4	0.200	0.210	10	32	26
W EXPOSURE						
WALL	44	0.034	-	49	-	50
DOOR	16	0.200	-	41	-	106
DOOR GLASS	5	0.200	0.210	13	19	33
H EXPOSURE						
ROOF	55	0.107	-	272	-	194

Space Design Load Summary for HVAC

Project Name: 61_andremartins966
Prepared by: D Lab

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TABLE 1.8.A. Component Loads For Space "Study" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 89.6 °F / 73.6 °F			HEATING OA DB / WB 37.0 °F / 31.1 °F		
	OCCUPIED T-STAT 75.0 °F			OCCUPIED T-STAT 70.0 °F		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(BTU/hr)	(BTU/hr)	Details	(BTU/hr)	(BTU/hr)
Window & Skylight Solar Loads	50 ft²	747	-	50 ft²	-	-
Wall Transmission	399 ft²	249	-	399 ft²	454	-
Roof Transmission	111 ft²	222	-	111 ft²	389	-
Window Transmission	50 ft²	116	-	50 ft²	330	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	62	-	21 ft²	139	-
Floor Transmission	111 ft²	0	-	111 ft²	0	-
Partitions	235 ft²	0	-	235 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	111 W	377	-	0	0	-
Task Lighting	111 W	377	-	0	0	-
Electric Equipment	50 W	171	-	0	0	-
People	1	245	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	385	10	0%	0	0
>> Total Zone Loads	-	2952	215	-	1312	0

TABLE 1.8.B. Envelope Loads For Space "Study" In Zone "Zone 1"

				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(ft²)	(BTU/(hr-ft²-°F))	Coeff.	(BTU/hr)	(BTU/hr)	(BTU/hr)
N EXPOSURE						
WALL	149	0.034	-	43	-	170
DOOR	16	0.200	-	37	-	106
DOOR GLASS	5	0.200	0.210	12	14	33
S EXPOSURE						
WALL	135	0.034	-	138	-	154
WINDOW 1	35	0.200	0.210	81	627	231
E EXPOSURE						
WALL	50	0.034	-	36	-	57
WINDOW 1	15	0.200	0.210	35	121	99
W EXPOSURE						
WALL	65	0.034	-	32	-	74
H EXPOSURE						
ROOF	111	0.107	-	222	-	389

System Psychrometrics for HVAC

Project Name: 61_andremartins966
Prepared by: D Lab

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July DESIGN COOLING DAY, 1600

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	93.5	0.01524	288	400	5415	7526
Vent - Return Mixing	Outlet	78.5	0.01051	1989	1057	-	-
Central Cooling Coil	Outlet	57.5	0.00925	1989	1057	45127	11832
Central Heating Coil	Outlet	57.5	0.00925	1989	1057	0	-
Supply Fan	Outlet	57.5	0.00925	1989	1057	0	-
Cold Supply Duct	Outlet	57.5	0.00925	1989	1057	-	-
Zone Air	-	76.0	0.00971	1989	1168	39712	4305
Return Plenum	Outlet	76.0	0.00971	1989	1168	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.076 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4728.6 BTU/(hr-CFM)

Site Altitude = 105.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	41473	Cooling	39712	76.0	1989	1168	0	0

System Psychrometrics for HVAC

Project Name: 61_andremartins966
Prepared by: D Lab

09/04/2024
01:59PM

WINTER DESIGN HEATING

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	37.0	0.00231	288	400	-10081	0
Vent - Return Mixing	Outlet	64.8	0.00231	1989	452	-	-
Central Cooling Coil	Outlet	64.8	0.00231	1989	452	0	0
Central Heating Coil	Outlet	75.5	0.00231	1989	452	22711	-
Supply Fan	Outlet	75.5	0.00231	1989	452	0	-
Cold Supply Duct	Outlet	75.5	0.00231	1989	452	-	-
Zone Air	-	69.6	0.00231	1989	461	-12630	0
Return Plenum	Outlet	69.6	0.00231	1989	461	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.076 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4728.6 BTU/(hr-CFM)

Site Altitude = 105.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	-13918	Heating	-12630	69.6	1989	461	0	0

System Psychrometrics for HVAC

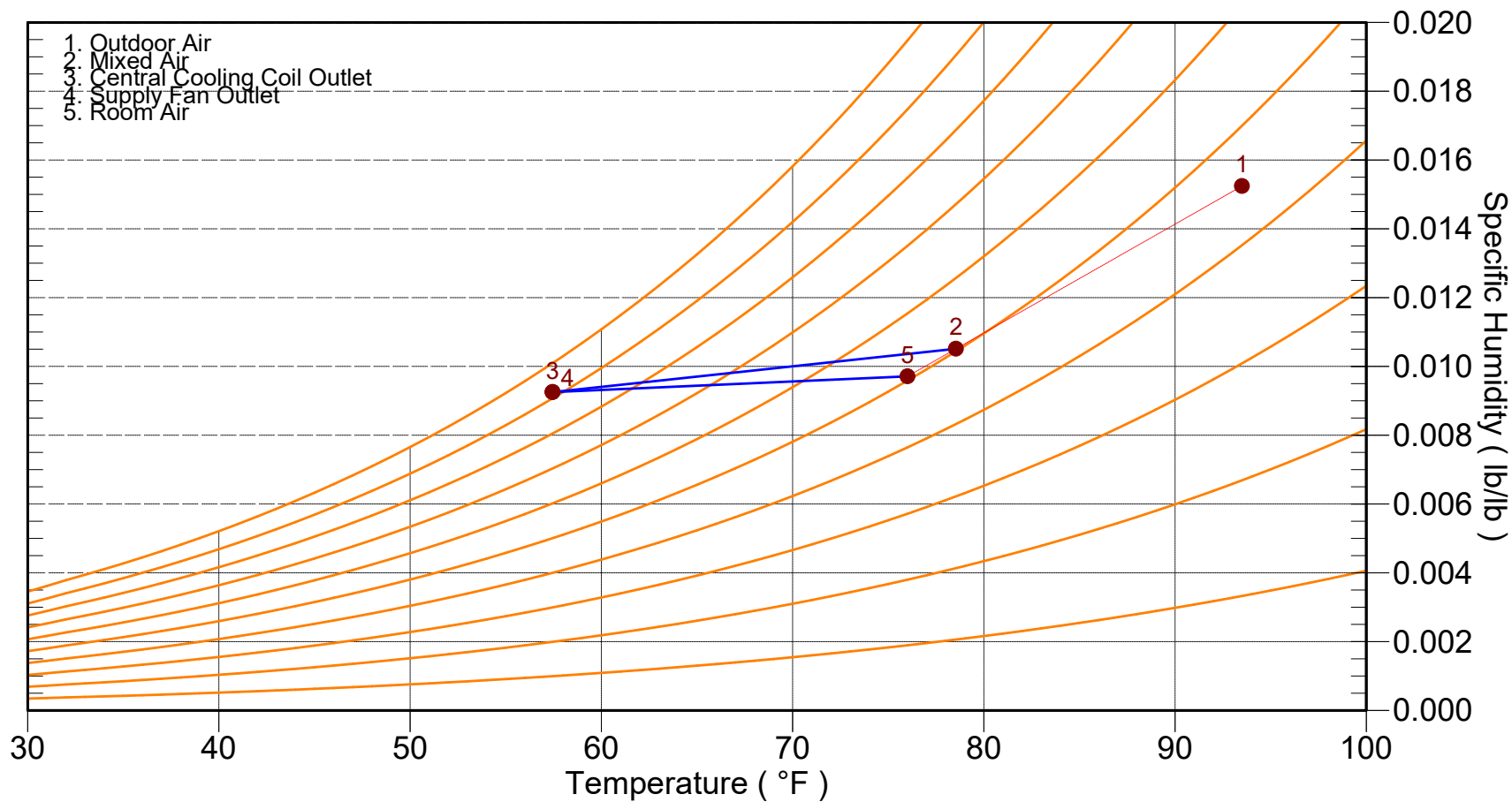
Project Name: 61_andremartins966
Prepared by: D Lab

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01:59PM

Location: Palm Bay, Florida

Altitude: 105.0 ft.

Data for: July DESIGN COOLING DAY, 1600



System Psychrometrics for HVAC

Project Name: 61_andremartins966
Prepared by: D Lab

09/04/2024
01:59PM

Location: Palm Bay, Florida
Altitude: 105.0 ft.
Data for: WINTER DESIGN HEATING

