

Air System Sizing Summary for HVAC

Project Name: 97_romeromartin98
Prepared by: D Lab

08/24/2024
06:28PM

Air System Information

Air System Name HVAC
Equipment Class SPLT AHU
Air System Type SZCAV

Number of zones 1
Floor Area 885.8 ft²
Location Morgan, Texas

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 3.4 Tons
Total coil load 40.3 MBH
Sensible coil load 38.1 MBH
Coil CFM at Jul 1800 1955 CFM
Max block CFM 1955 CFM
Sum of peak zone CFM 1955 CFM
Sensible heat ratio 0.944
CFM/Ton 582.2
ft²/Ton 263.7
BTU/(hr-ft²) 45.5
Water flow @ 10.0 °F rise N/A

Load occurs at Jul 1800
OA DB / WB 94.0 / 65.5 °F
Entering DB / WB 77.0 / 62.7 °F
Leaving DB / WB 56.9 / 55.3 °F
Coil ADP 54.2 °F
Bypass Factor 0.120
Resulting RH 49 %
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 27.6 MBH
Coil CFM at Des Htg 1955 CFM
Max coil CFM 1955 CFM
Water flow @ 20.0 °F drop N/A

Load occurs at Des Htg
BTU/(hr-ft²) 31.2
Ent. DB / Lvg DB 66.8 / 81.3 °F

Supply Fan Sizing Data

Actual max CFM 1955 CFM
Standard CFM 1762 CFM
Actual max CFM/ft² 2.21 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 107 CFM
CFM/ft² 0.12 CFM/ft²

CFM/person 6.28 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	1955	1955	2.21	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	37.7	Aug 1700	22.1	885.8

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	1	1.6	Jul 2100	82	1.6	48.0	1.70
Bath-2	1	1.8	Jul 1800	93	1.7	42.4	2.20
Bedroom-1	1	7.2	Sep 1600	368	4.3	156.4	2.35
Bedroom-2	1	5.5	Jul 1700	280	3.0	112.9	2.48
Bedroom-3	1	4.6	Jul 1000	236	3.0	93.3	2.53
Living & Kitchen Area	1	14.7	Aug 1800	757	5.5	332.8	2.28
Utility	1	2.7	Jul 1700	139	3.0	100.0	1.39

Ventilation Sizing Summary for HVAC

Project Name: 97_romeromartin98
Prepared by: D Lab

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1. Summary

Ventilation Sizing Method **Sum of Space OA Airflows**
Design Ventilation Airflow Rate **107** 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	1	48.0	1.0	81.7	0.00	0.00	0.0	0.0	0.0
Bath-2	1	42.4	1.0	93.4	0.00	0.00	0.0	0.0	0.0
Bedroom-1	1	156.4	2.0	367.6	5.00	0.06	0.0	0.0	19.4
Bedroom-2	1	112.9	2.0	280.4	5.00	0.06	0.0	0.0	16.8
Bedroom-3	1	93.3	2.0	236.4	5.00	0.06	0.0	0.0	15.6
Living & Kitchen Area	1	332.8	7.0	757.1	5.00	0.06	0.0	0.0	55.0
Utility	1	100.0	2.0	138.7	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				1955.4					106.7

Air System Design Load Summary for HVAC

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.0 °F / 65.5 °F			HEATING OA DB / WB 17.0 °F / 13.7 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	104 ft²	4777	-	104 ft²	-	-
Wall Transmission	2652 ft²	5596	-	2652 ft²	12805	-
Roof Transmission	886 ft²	1931	-	886 ft²	1471	-
Window Transmission	104 ft²	1045	-	104 ft²	3241	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	288 ft²	1476	-	288 ft²	4579	-
Floor Transmission	886 ft²	0	-	886 ft²	0	-
Partitions	1764 ft²	0	-	1764 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	886 W	2676	-	0	0	-
Task Lighting	886 W	2830	-	0	0	-
Electric Equipment	2750 W	8747	-	0	0	-
People	17	3421	2975	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	4875	149	0%	0	0
>> Total Zone Loads	-	37373	3124	-	22097	0
Zone Conditioning	-	36189	3124	-	22129	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	1955 CFM	0	-	1955 CFM	0	-
Ventilation Load	107 CFM	1875	-887	107 CFM	5467	0
Supply Fan Load	1955 CFM	0	-	1955 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	38063	2236	-	27597	0
Central Cooling Coil	-	38063	2239	-	0	0
Central Heating Coil	-	0	-	-	27597	-
>> Total Conditioning	-	38063	2239	-	27597	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 Aug 1700			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 96.6 °F / 66.3 °F			HEATING OA DB / WB 17.0 °F / 13.7 °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	104 ft²	5261	-	104 ft²	-	-
Wall Transmission	2652 ft²	5330	-	2652 ft²	12805	-
Roof Transmission	886 ft²	1931	-	886 ft²	1471	-
Window Transmission	104 ft²	1141	-	104 ft²	3241	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	288 ft²	1613	-	288 ft²	4579	-
Floor Transmission	886 ft²	0	-	886 ft²	0	-
Partitions	1764 ft²	0	-	1764 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	886 W	2651	-	0	0	-
Task Lighting	886 W	2816	-	0	0	-
Electric Equipment	2750 W	8703	-	0	0	-
People	17	3375	2975	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	4923	149	0%	0	0
>> Total Zone Loads	-	37744	3124	-	22097	0

Space Design Load Summary for HVAC

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

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2100 COOLING OA DB / WB 85.3 °F / 62.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 17.0 °F / 13.7 °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	0 ft²	0	-	0 ft²	-	-
Wall Transmission	262 ft²	613	-	262 ft²	1265	-
Roof Transmission	48 ft²	66	-	48 ft²	80	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	18 ft²	61	-	18 ft²	286	-
Floor Transmission	48 ft²	0	-	48 ft²	0	-
Partitions	220 ft²	0	-	220 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	48 W	138	-	0	0	-
Task Lighting	48 W	149	-	0	0	-
Electric Equipment	50 W	159	-	0	0	-
People	1	197	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	207	10	0%	0	0
>> Total Zone Loads	-	1589	215	-	1631	0

TABLE 1.1.B. Envelope Loads For Space "Bath-1" 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	80	0.091	-	147	-	386
S EXPOSURE						
WALL	62	0.091	-	127	-	299
DOOR	18	0.300	-	61	-	286
E EXPOSURE						
WALL	60	0.091	-	175	-	290
W EXPOSURE						
WALL	60	0.091	-	166	-	290
H EXPOSURE						
ROOF	48	0.031	-	66	-	80

Space Design Load Summary for HVAC

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

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.0 °F / 65.5 °F			HEATING OA DB / WB 17.0 °F / 13.7 °F		
	OCCUPIED T-STAT 75.0 °F			OCCUPIED T-STAT 70.0 °F		
SPACE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	4 ft²	287	-	4 ft²	-	-
Wall Transmission	244 ft²	482	-	244 ft²	1178	-
Roof Transmission	42 ft²	92	-	42 ft²	70	-
Window Transmission	4 ft²	40	-	4 ft²	125	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	18 ft²	92	-	18 ft²	286	-
Floor Transmission	42 ft²	0	-	42 ft²	0	-
Partitions	215 ft²	0	-	215 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	42 W	117	-	0	0	-
Task Lighting	42 W	129	-	0	0	-
Electric Equipment	50 W	156	-	0	0	-
People	1	186	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	237	10	0%	0	0
>> Total Zone Loads	-	1817	215	-	1659	0

TABLE 1.2.B. Envelope Loads For Space "Bath-2" 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	80	0.091	-	130	-	386
S EXPOSURE						
WALL	80	0.091	-	144	-	386
E EXPOSURE						
WALL	35	0.091	-	98	-	169
DOOR	18	0.300	-	92	-	286
W EXPOSURE						
WALL	49	0.091	-	109	-	237
WINDOW 1	4	0.588	0.811	40	287	125
H EXPOSURE						
ROOF	42	0.031	-	92	-	70

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

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Sep 1600 COOLING OA DB / WB 93.9 °F / 64.4 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 17.0 °F / 13.7 °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	40 ft²	2478	-	40 ft²	-	-
Wall Transmission	408 ft²	642	-	408 ft²	1970	-
Roof Transmission	156 ft²	289	-	156 ft²	260	-
Window Transmission	40 ft²	356	-	40 ft²	1247	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	54 ft²	245	-	54 ft²	859	-
Floor Transmission	156 ft²	0	-	156 ft²	0	-
Partitions	195 ft²	0	-	195 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	156 W	534	-	0	0	-
Task Lighting	156 W	534	-	0	0	-
Electric Equipment	200 W	682	-	0	0	-
People	2	460	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	933	12	0%	0	0
>> Total Zone Loads	-	7154	252	-	4335	0

TABLE 1.3.B. Envelope Loads For Space "Bedroom-1" 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	100	0.091	-	77	-	483
DOOR	36	0.300	-	164	-	572
S EXPOSURE						
WALL	116	0.091	-	237	-	560
WINDOW 1	20	0.588	0.811	178	1154	623
E EXPOSURE						
WALL	97	0.091	-	192	-	468
DOOR	18	0.300	-	82	-	286
W EXPOSURE						
WALL	95	0.091	-	135	-	459
WINDOW 1	20	0.588	0.811	178	1324	623
H EXPOSURE						
ROOF	156	0.031	-	289	-	260

Space Design Load Summary for HVAC

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TABLE 1.4.A. Component Loads For Space "Bedroom-2" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 96.6 °F / 66.3 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 17.0 °F / 13.7 °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	20 ft²	1477	-	20 ft²	-	-
Wall Transmission	400 ft²	776	-	400 ft²	1931	-
Roof Transmission	113 ft²	259	-	113 ft²	188	-
Window Transmission	20 ft²	220	-	20 ft²	623	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	18 ft²	101	-	18 ft²	286	-
Floor Transmission	113 ft²	0	-	113 ft²	0	-
Partitions	355 ft²	0	-	355 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	113 W	385	-	0	0	-
Task Lighting	113 W	385	-	0	0	-
Electric Equipment	200 W	682	-	0	0	-
People	2	460	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	712	12	0%	0	0
>> Total Zone Loads	-	5456	252	-	3028	0

TABLE 1.4.B. Envelope Loads For Space "Bedroom-2" 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	118	0.091	-	185	-	570
DOOR	18	0.300	-	101	-	286
S EXPOSURE						
WALL	136	0.091	-	232	-	657
E EXPOSURE						
WALL	83	0.091	-	226	-	401
W EXPOSURE						
WALL	63	0.091	-	133	-	304
WINDOW 1	20	0.588	0.811	220	1477	623
H EXPOSURE						
ROOF	113	0.031	-	259	-	188

Space Design Load Summary for HVAC

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TABLE 1.5.A. Component Loads For Space "Bedroom-3" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1000			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 85.7 °F / 62.9 °F			HEATING OA DB / WB 17.0 °F / 13.7 °F		
	OCCUPIED T-STAT 75.0 °F			OCCUPIED T-STAT 70.0 °F		
SPACE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	20 ft²	1326	-	20 ft²	-	-
Wall Transmission	332 ft²	609	-	332 ft²	1603	-
Roof Transmission	93 ft²	66	-	93 ft²	155	-
Window Transmission	20 ft²	115	-	20 ft²	623	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	36 ft²	105	-	36 ft²	572	-
Floor Transmission	93 ft²	0	-	93 ft²	0	-
Partitions	194 ft²	0	-	194 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	200 W	682	-	0	0	-
People	2	460	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	600	12	0%	0	0
>> Total Zone Loads	-	4600	252	-	2954	0

TABLE 1.5.B. Envelope Loads For Space "Bedroom-3" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING	COOLING	HEATING
				TRANS	SOLAR	TRANS
				(BTU/hr)	(BTU/hr)	(BTU/hr)
N EXPOSURE						
WALL	88	0.091	-	131	-	425
S EXPOSURE						
WALL	88	0.091	-	138	-	425
E EXPOSURE						
WALL	86	0.091	-	179	-	415
WINDOW 1	20	0.588	0.811	115	1326	623
W EXPOSURE						
WALL	70	0.091	-	162	-	338
DOOR	36	0.300	-	105	-	572
H EXPOSURE						
ROOF	93	0.031	-	66	-	155

Space Design Load Summary for HVAC

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TABLE 1.6.A. Component Loads For Space "Living & Kitchen Area" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.0 °F / 65.5 °F			HEATING OA DB / WB 17.0 °F / 13.7 °F		
	OCCUPIED T-STAT 75.0 °F			OCCUPIED T-STAT 70.0 °F		
SPACE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	20 ft²	568	-	20 ft²	-	-
Wall Transmission	718 ft²	1623	-	718 ft²	3467	-
Roof Transmission	333 ft²	683	-	333 ft²	553	-
Window Transmission	20 ft²	201	-	20 ft²	623	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	54 ft²	277	-	54 ft²	859	-
Floor Transmission	333 ft²	0	-	333 ft²	0	-
Partitions	396 ft²	0	-	396 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	333 W	915	-	0	0	-
Task Lighting	333 W	1013	-	0	0	-
Electric Equipment	2000 W	6233	-	0	0	-
People	7	1299	1435	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	1922	72	0%	0	0
>> Total Zone Loads	-	14733	1507	-	5502	0

TABLE 1.6.B. Envelope Loads For Space "Living & Kitchen Area" 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	103	0.091	-	146	-	497
DOOR	18	0.300	-	92	-	286
S EXPOSURE						
WALL	83	0.091	-	179	-	401
WINDOW 1	20	0.588	0.811	201	568	623
DOOR	18	0.300	-	92	-	286
E EXPOSURE						
WALL	275	0.091	-	738	-	1328
W EXPOSURE						
WALL	257	0.091	-	560	-	1241
DOOR	18	0.300	-	92	-	286
H EXPOSURE						
ROOF	333	0.031	-	683	-	553

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

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 96.6 °F / 66.3 °F			HEATING OA DB / WB 17.0 °F / 13.7 °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	0 ft²	0	-	0 ft²	-	-
Wall Transmission	288 ft²	525	-	288 ft²	1391	-
Roof Transmission	100 ft²	229	-	100 ft²	166	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	90 ft²	504	-	90 ft²	1431	-
Floor Transmission	100 ft²	0	-	100 ft²	0	-
Partitions	189 ft²	0	-	189 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	100 W	270	-	0	0	-
Task Lighting	100 W	302	-	0	0	-
Electric Equipment	50 W	155	-	0	0	-
People	2	363	410	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	352	21	0%	0	0
>> Total Zone Loads	-	2699	431	-	2988	0

TABLE 1.7.B. Envelope Loads For Space "Utility" 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	118	0.091	-	185	-	570
DOOR	18	0.300	-	101	-	286
S EXPOSURE						
WALL	100	0.091	-	170	-	483
DOOR	36	0.300	-	202	-	572
E EXPOSURE						
WALL	35	0.091	-	95	-	169
DOOR	18	0.300	-	101	-	286
W EXPOSURE						
WALL	35	0.091	-	74	-	169
DOOR	18	0.300	-	101	-	286
H EXPOSURE						
ROOF	100	0.031	-	229	-	166

System Psychrometrics for HVAC

Project Name: 97_romeromartin98
Prepared by: D Lab

08/24/2024
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July DESIGN COOLING DAY, 1800

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	94.0	0.00839	107	400	1875	-887
Vent - Return Mixing	Outlet	77.0	0.01023	1955	1653	-	-
Central Cooling Coil	Outlet	56.9	0.00996	1955	1653	38063	2239
Central Heating Coil	Outlet	56.9	0.00996	1955	1653	0	-
Supply Fan	Outlet	56.9	0.00996	1955	1653	0	-
Cold Supply Duct	Outlet	56.9	0.00996	1955	1653	-	-
Zone Air	-	76.0	0.01033	1955	1726	36189	3124
Return Plenum	Outlet	76.0	0.01033	1955	1726	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 0.973 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4276.0 BTU/(hr-CFM)

Site Altitude = 2861.0 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	37373	Cooling	36189	76.0	1955	1726	0	0

System Psychrometrics for HVAC

Project Name: 97_romeromartin98
Prepared by: D Lab

08/24/2024
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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	17.0	0.00102	107	400	-5467	0
Vent - Return Mixing	Outlet	66.8	0.00102	1955	572	-	-
Central Cooling Coil	Outlet	66.8	0.00102	1955	572	0	0
Central Heating Coil	Outlet	81.3	0.00102	1955	572	27597	-
Supply Fan	Outlet	81.3	0.00102	1955	572	0	-
Cold Supply Duct	Outlet	81.3	0.00102	1955	572	-	-
Zone Air	-	69.7	0.00102	1955	582	-22129	0
Return Plenum	Outlet	69.7	0.00102	1955	582	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 0.973 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4276.0 BTU/(hr-CFM)

Site Altitude = 2861.0 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	-22097	Heating	-22129	69.7	1955	582	0	0

System Psychrometrics for HVAC

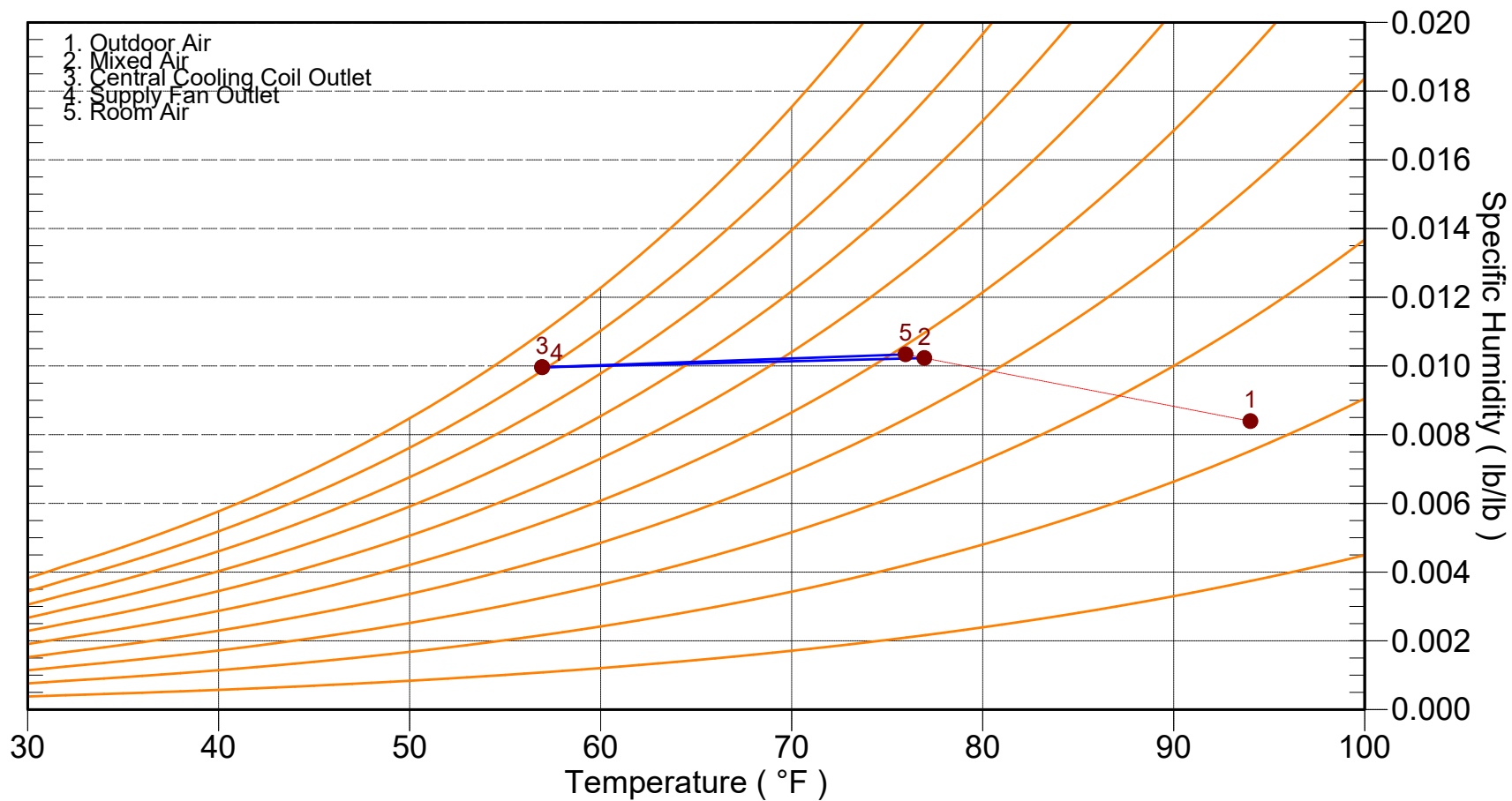
Project Name: 97_romeromartin98
Prepared by: D Lab

08/24/2024
06:28PM

Location: Morgan, Texas

Altitude: 2861.0 ft.

Data for: July DESIGN COOLING DAY, 1800



System Psychrometrics for HVAC

Project Name: 97_romeromartin98
Prepared by: D Lab

08/24/2024
06:28PM

Location: Morgan, Texas
Altitude: 2861.0 ft.
Data for: WINTER DESIGN HEATING

