

Air System Sizing Summary for HVAC

Project Name: GUEST HOUSE
Prepared by: Mega Marketplace

09/05/2023
12:00PM

Air System Information

Air System Name HVAC
Equipment Class UNDEF
Air System Type SZCAV

Number of zones 1
Floor Area 653.5 ft²
Location Carpinteria, California

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 18.4 Tons
Total coil load 221.3 MBH
Sensible coil load 217.9 MBH
Coil CFM at Aug 1000 10209 CFM
Max block CFM 10209 CFM
Sum of peak zone CFM 10209 CFM
Sensible heat ratio 0.985
CFM/Ton 553.7
ft²/Ton 35.4
BTU/(hr-ft²) 338.6
Water flow @ 10.0 °F rise 44.28 gpm

Load occurs at Aug 1000
OA DB / WB 78.9 / 61.9 °F
Entering DB / WB 75.6 / 61.9 °F
Leaving DB / WB 55.8 / 54.2 °F
Coil ADP 53.1 °F
Bypass Factor 0.120
Resulting RH 46 %
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 6.6 MBH
Coil CFM at Des Htg 10209 CFM
Max coil CFM 10209 CFM
Water flow @ 20.0 °F drop 0.66 gpm

Load occurs at Des Htg
BTU/(hr-ft²) 10.1
Ent. DB / Lvg DB 69.5 / 70.1 °F

Supply Fan Sizing Data

Actual max CFM 10209 CFM
Standard CFM 10170 CFM
Actual max CFM/ft² 15.62 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 22 CFM
CFM/ft² 0.03 CFM/ft²

CFM/person 2.03 CFM/person

Zone Sizing Summary for HVAC

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Number of zones 1
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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	10209	10209	15.62	0.0	0.00	0.0	0.00	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	217.4	Sep 1000	6.4	653.5

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							
Bedroom	1	21.9	Jun 1000	1020	1.9	205.6	4.96
Bath	1	83.7	Jul 1400	3889	0.5	42.1	92.37
Emty	1	82.5	Jul 1400	3834	0.5	41.5	92.39
WIC	1	2.6	Jul 2200	120	0.4	26.6	4.51
Living Room	1	29.0	Oct 1300	1346	3.1	337.7	3.99

Ventilation Sizing Summary for HVAC

Project Name: GUEST HOUSE
Prepared by: Mega Marketplace

09/05/2023
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1. Summary

Ventilation Sizing Method **Sum of Space OA Airflows**
Design Ventilation Airflow Rate **22** 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									
Bedroom	1	205.6	2.0	1019.9	5.00	0.06	0.0	0.0	22.3
Bath	1	42.1	1.0	388.6	0.00	0.00	0.0	0.0	0.0
Emty	1	41.5	2.0	3834.3	0.00	0.00	0.0	0.0	0.0
WIC	1	26.6	1.0	119.9	0.00	0.00	0.0	0.0	0.0
Living Room	1	337.7	5.0	1346.0	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				10208.8					22.3

Air System Design Load Summary for HVAC

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1000 COOLING OA DB / WB 78.9 °F / 61.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 43.0 °F / 36.1 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	72 ft²	1773	-	72 ft²	-	-
Wall Transmission	2025 ft²	1602	-	2025 ft²	2724	-
Roof Transmission	654 ft²	1060	-	654 ft²	792	-
Window Transmission	72 ft²	146	-	72 ft²	1143	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	210 ft²	217	-	210 ft²	1701	-
Floor Transmission	654 ft²	0	-	654 ft²	0	-
Partitions	811 ft²	0	-	811 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	654 W	2163	-	0	0	-
Task Lighting	654 W	2163	-	0	0	-
Electric Equipment	52300 W	177176	-	0	0	-
People	11	2728	3295	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	28354	165	0%	0	0
>> Total Zone Loads	-	217381	3460	-	6360	0
Zone Conditioning	-	217775	3460	-	5946	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	10209 CFM	0	-	10209 CFM	0	-
Ventilation Load	22 CFM	79	-76	22 CFM	639	181
Supply Fan Load	10209 CFM	0	-	10209 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	217854	3384	-	6584	181
Central Cooling Coil	-	217854	3403	-	0	0
Central Heating Coil	-	0	-	-	6584	-
>> Total Conditioning	-	217854	3403	-	6584	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

Project Name: GUEST HOUSE
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Zone 1	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Sep 1000			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 76.9 °F / 60.9 °F			HEATING OA DB / WB 43.0 °F / 36.1 °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	72 ft²	2427	-	72 ft²	-	-
Wall Transmission	2025 ft²	1350	-	2025 ft²	2724	-
Roof Transmission	654 ft²	875	-	654 ft²	792	-
Window Transmission	72 ft²	61	-	72 ft²	1143	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	210 ft²	91	-	210 ft²	1701	-
Floor Transmission	654 ft²	0	-	654 ft²	0	-
Partitions	811 ft²	0	-	811 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	654 W	2163	-	0	0	-
Task Lighting	654 W	2163	-	0	0	-
Electric Equipment	52300 W	177176	-	0	0	-
People	11	2728	3295	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	28355	165	0%	0	0
>> Total Zone Loads	-	217388	3460	-	6360	0

Space Design Load Summary for HVAC

Project Name: GUEST HOUSE
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TABLE 1.1.A. Component Loads For Space "Bedroom" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1000 COOLING OA DB / WB 77.9 °F / 61.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 43.0 °F / 36.1 °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	35 ft²	732	-	35 ft²	-	-
Wall Transmission	463 ft²	335	-	463 ft²	623	-
Roof Transmission	206 ft²	366	-	206 ft²	249	-
Window Transmission	35 ft²	50	-	35 ft²	556	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	53 ft²	39	-	53 ft²	425	-
Floor Transmission	206 ft²	0	-	206 ft²	0	-
Partitions	260 ft²	0	-	260 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	206 W	642	-	0	0	-
Task Lighting	206 W	642	-	0	0	-
Electric Equipment	5000 W	15905	-	0	0	-
People	2	373	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	2863	12	0%	0	0
>> Total Zone Loads	-	21946	252	-	1854	0

TABLE 1.1.B. Envelope Loads For Space "Bedroom" 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)
E EXPOSURE						
WALL	66	0.050	-	59	-	89
DOOR	35	0.300	-	26	-	284
W EXPOSURE						
WALL	133	0.050	-	134	-	179
N EXPOSURE						
WALL	123	0.050	-	67	-	166
WINDOW 1	35	0.588	0.811	50	732	556
S EXPOSURE						
WALL	141	0.050	-	74	-	189
DOOR	18	0.300	-	13	-	142
H EXPOSURE						
ROOF	206	0.045	-	366	-	249

Space Design Load Summary for HVAC

Project Name: GUEST HOUSE
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TABLE 1.2.A. Component Loads For Space "Bath" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1400 COOLING OA DB / WB 84.7 °F / 63.9 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 43.0 °F / 36.1 °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	2 ft²	43	-	2 ft²	-	-
Wall Transmission	229 ft²	175	-	229 ft²	308	-
Roof Transmission	42 ft²	105	-	42 ft²	51	-
Window Transmission	2 ft²	9	-	2 ft²	32	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	18 ft²	40	-	18 ft²	142	-
Floor Transmission	42 ft²	0	-	42 ft²	0	-
Partitions	179 ft²	0	-	179 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	42 W	144	-	0	0	-
Task Lighting	42 W	144	-	0	0	-
Electric Equipment	21050 W	71822	-	0	0	-
People	1	280	270	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	10914	14	0%	0	0
>> Total Zone Loads	-	83676	284	-	533	0

TABLE 1.2.B. Envelope Loads For Space "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)
E EXPOSURE						
WALL	55	0.050	-	58	-	73
W EXPOSURE						
WALL	55	0.050	-	50	-	73
N EXPOSURE						
WALL	68	0.050	-	36	-	91
WINDOW 1	2	0.588	0.811	9	43	32
S EXPOSURE						
WALL	52	0.050	-	31	-	70
DOOR	18	0.300	-	40	-	142
H EXPOSURE						
ROOF	42	0.045	-	105	-	51

Space Design Load Summary for HVAC

Project Name: GUEST HOUSE
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TABLE 1.3.A. Component Loads For Space "Empty" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1400			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 84.7 °F / 63.9 °F			HEATING OA DB / WB 43.0 °F / 36.1 °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	0 ft²	0	-	0 ft²	-	-
Wall Transmission	229 ft²	174	-	229 ft²	309	-
Roof Transmission	42 ft²	104	-	42 ft²	50	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	18 ft²	40	-	18 ft²	142	-
Floor Transmission	42 ft²	0	-	42 ft²	0	-
Partitions	123 ft²	0	-	123 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	42 W	142	-	0	0	-
Task Lighting	42 W	142	-	0	0	-
Electric Equipment	20750 W	70799	-	0	0	-
People	2	344	194	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	10762	10	0%	0	0
>> Total Zone Loads	-	82506	204	-	501	0

TABLE 1.3.B. Envelope Loads For Space "Empty" 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)
E EXPOSURE						
WALL	54	0.050	-	57	-	72
W EXPOSURE						
WALL	54	0.050	-	49	-	72
N EXPOSURE						
WALL	70	0.050	-	37	-	94
S EXPOSURE						
WALL	52	0.050	-	31	-	70
DOOR	18	0.300	-	40	-	142
H EXPOSURE						
ROOF	42	0.045	-	104	-	50

Space Design Load Summary for HVAC

Project Name: GUEST HOUSE
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TABLE 1.4.A. Component Loads For Space "WIC" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2200			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 77.6 °F / 61.4 °F			HEATING OA DB / WB 43.0 °F / 36.1 °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	0 ft²	0	-	0 ft²	-	-
Wall Transmission	182 ft²	190	-	182 ft²	245	-
Roof Transmission	27 ft²	8	-	27 ft²	32	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	18 ft²	18	-	18 ft²	142	-
Floor Transmission	27 ft²	0	-	27 ft²	0	-
Partitions	52 ft²	0	-	52 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	27 W	85	-	0	0	-
Task Lighting	27 W	85	-	0	0	-
Electric Equipment	500 W	1618	-	0	0	-
People	1	240	270	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	337	14	0%	0	0
>> Total Zone Loads	-	2581	284	-	419	0

TABLE 1.4.B. Envelope Loads For Space "WIC" 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)
E EXPOSURE						
WALL	52	0.050	-	65	-	70
W EXPOSURE						
WALL	57	0.050	-	70	-	77
N EXPOSURE						
WALL	28	0.050	-	18	-	37
DOOR	18	0.300	-	18	-	142
S EXPOSURE						
WALL	45	0.050	-	37	-	61
H EXPOSURE						
ROOF	27	0.045	-	8	-	32

Space Design Load Summary for HVAC

Project Name: GUEST HOUSE
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TABLE 1.5.A. Component Loads For Space "Living Room" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1300			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 79.8 °F / 61.6 °F			HEATING OA DB / WB 43.0 °F / 36.1 °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	35 ft²	3162	-	35 ft²	-	-
Wall Transmission	921 ft²	470	-	921 ft²	1239	-
Roof Transmission	338 ft²	559	-	338 ft²	409	-
Window Transmission	35 ft²	61	-	35 ft²	556	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	105 ft²	94	-	105 ft²	851	-
Floor Transmission	338 ft²	0	-	338 ft²	0	-
Partitions	197 ft²	0	-	197 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	338 W	1152	-	0	0	-
Task Lighting	338 W	1152	-	0	0	-
Electric Equipment	5000 W	17060	-	0	0	-
People	5	1475	2275	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	3778	114	0%	0	0
>> Total Zone Loads	-	28964	2389	-	3055	0

TABLE 1.5.B. Envelope Loads For Space "Living Room" In Zone "Zone 1"

	Area (ft²)	U-Value (BTU/(hr-ft²-°F))	Shade Coeff.	COOLING	COOLING	HEATING
				TRANS (BTU/hr)	SOLAR (BTU/hr)	TRANS (BTU/hr)
E EXPOSURE						
WALL	323	0.050	-	173	-	434
DOOR	53	0.300	-	47	-	425
W EXPOSURE						
WALL	358	0.050	-	172	-	481
DOOR	18	0.300	-	16	-	142
N EXPOSURE						
WALL	120	0.050	-	11	-	162
DOOR	35	0.300	-	31	-	284
S EXPOSURE						
WALL	120	0.050	-	113	-	162
WINDOW 1	35	0.588	0.811	61	3162	556
H EXPOSURE						
ROOF	338	0.045	-	559	-	409

Hourly Air System Design Day Loads for HVAC

Project Name: GUEST HOUSE
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DESIGN MONTH: JULY										
Hour	OA TEMP (°F)	SUPPLY AIRFLOW (CFM)	CENTRAL COOLING SENSIBLE (MBH)	CENTRAL COOLING TOTAL (MBH)	CENTRAL HEATING COIL (MBH)	PRECOOL COIL (MBH)	PREHEAT COIL (MBH)	TERMINAL COOLING (MBH)	TERMINAL HEATING (MBH)	ZONE HEATING UNIT (MBH)
0000	76.1	10209	206.7	209.6	0.0	0.0	0.0	0.0	0.0	0.0
0100	75.5	10209	201.0	203.7	0.0	0.0	0.0	0.0	0.0	0.0
0200	75.0	10209	200.1	202.8	0.0	0.0	0.0	0.0	0.0	0.0
0300	74.5	10209	199.6	202.2	0.0	0.0	0.0	0.0	0.0	0.0
0400	74.2	10209	198.7	201.3	0.0	0.0	0.0	0.0	0.0	0.0
0500	74.1	10209	201.7	204.5	0.0	0.0	0.0	0.0	0.0	0.0
0600	74.3	10209	205.4	208.4	0.0	0.0	0.0	0.0	0.0	0.0
0700	74.9	10209	211.3	214.5	0.0	0.0	0.0	0.0	0.0	0.0
0800	75.8	10209	214.2	217.5	0.0	0.0	0.0	0.0	0.0	0.0
0900	77.3	10209	215.4	218.8	0.0	0.0	0.0	0.0	0.0	0.0
1000	78.9	10209	216.1	219.4	0.0	0.0	0.0	0.0	0.0	0.0
1100	80.7	10209	213.6	216.8	0.0	0.0	0.0	0.0	0.0	0.0
1200	82.5	10209	212.0	215.1	0.0	0.0	0.0	0.0	0.0	0.0
1300	83.8	10209	213.9	217.1	0.0	0.0	0.0	0.0	0.0	0.0
1400	84.7	10209	214.6	217.8	0.0	0.0	0.0	0.0	0.0	0.0
1500	85.0	10209	210.3	213.3	0.0	0.0	0.0	0.0	0.0	0.0
1600	84.7	10209	211.1	214.2	0.0	0.0	0.0	0.0	0.0	0.0
1700	83.9	10209	209.9	212.8	0.0	0.0	0.0	0.0	0.0	0.0
1800	82.7	10209	211.4	214.5	0.0	0.0	0.0	0.0	0.0	0.0
1900	81.3	10209	214.5	217.8	0.0	0.0	0.0	0.0	0.0	0.0
2000	79.9	10209	215.3	218.6	0.0	0.0	0.0	0.0	0.0	0.0
2100	78.7	10209	215.7	219.0	0.0	0.0	0.0	0.0	0.0	0.0
2200	77.6	10209	215.6	218.6	0.0	0.0	0.0	0.0	0.0	0.0
2300	76.7	10209	210.8	214.0	0.0	0.0	0.0	0.0	0.0	0.0

System Psychrometrics for HVAC

Project Name: GUEST HOUSE
Prepared by: Mega Marketplace

09/05/2023
12:00PM

August DESIGN COOLING DAY, 1000

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	78.9	0.00796	22	400	79	-76
Vent - Return Mixing	Outlet	75.6	0.00868	10209	1102	-	-
Central Cooling Coil	Outlet	55.8	0.00860	10209	1102	217854	3403
Central Heating Coil	Outlet	55.8	0.00860	10209	1102	0	-
Supply Fan	Outlet	55.8	0.00860	10209	1102	0	-
Cold Supply Duct	Outlet	55.8	0.00860	10209	1102	-	-
Zone Air	-	75.6	0.00868	10209	1103	217775	3460
Return Plenum	Outlet	75.6	0.00868	10209	1103	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	217381	Cooling	217775	75.6	10209	1103	0	0

System Psychrometrics for HVAC

Project Name: GUEST HOUSE
Prepared by: Mega Marketplace

09/05/2023
12:00PM

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	43.0	0.00291	22	400	-639	-181
Vent - Return Mixing	Outlet	69.5	0.00462	10209	799	-	-
Central Cooling Coil	Outlet	69.5	0.00462	10209	799	0	0
Central Heating Coil	Outlet	70.1	0.00462	10209	799	6584	-
Supply Fan	Outlet	70.1	0.00462	10209	799	0	-
Cold Supply Duct	Outlet	70.1	0.00462	10209	799	-	-
Zone Air	-	69.6	0.00462	10209	800	-5946	0
Return Plenum	Outlet	69.6	0.00462	10209	800	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

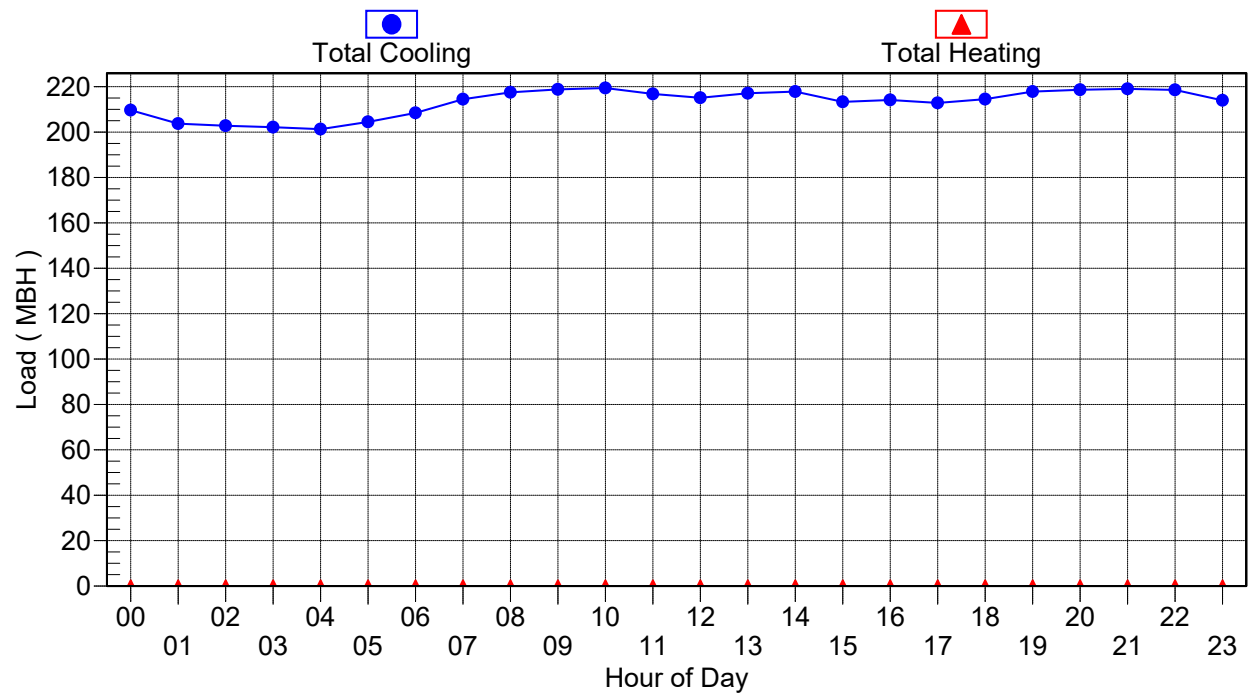
Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	-6360	Heating	-5946	69.6	10209	800	0	0

Hourly Air System Design Day Loads for HVAC

Project Name: GUEST HOUSE
Prepared by: Mega Marketplace

09/05/2023
12:00PM

Data for July



System Psychrometrics for HVAC

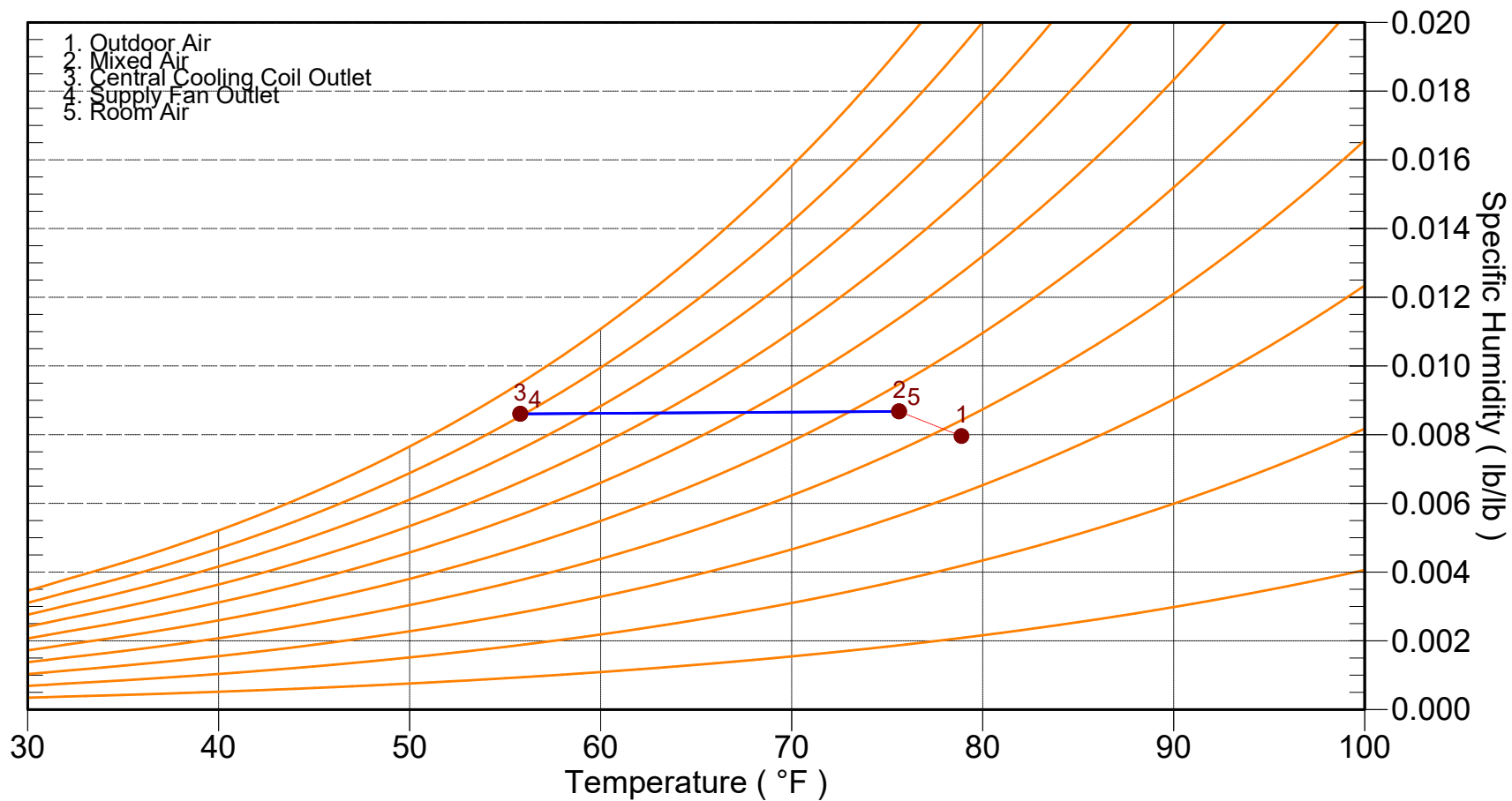
Project Name: GUEST HOUSE
Prepared by: Mega Marketplace

09/05/2023
12:00PM

Location: Carpinteria, California

Altitude: 105.0 ft.

Data for: August DESIGN COOLING DAY, 1000



System Psychrometrics for HVAC

Project Name: GUEST HOUSE
Prepared by: Mega Marketplace

09/05/2023
12:00PM

Location: Carpinteria, California
Altitude: 105.0 ft.
Data for: WINTER DESIGN HEATING

