

Air System Sizing Summary for HVAC 1

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

Air System Information

Air System Name HVAC 1
Equipment Class SPLT AHU
Air System Type SZCAV

Number of zones 1
Floor Area 2327.2 ft²
Location Cedar Hill, 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 3.5 Tons
Total coil load 41.6 MBH
Sensible coil load 37.6 MBH
Coil CFM at Aug 1400 1930 CFM
Max block CFM 1930 CFM
Sum of peak zone CFM 1930 CFM
Sensible heat ratio 0.903
CFM/Ton 556.2
ft²/Ton 670.8
BTU/(hr-ft²) 17.9
Water flow @ 10.0 °F rise N/A

Load occurs at Aug 1400
OA DB / WB 98.4 / 70.8 °F
Entering DB / WB 77.8 / 64.4 °F
Leaving DB / WB 58.5 / 57.0 °F
Coil ADP 55.9 °F
Bypass Factor 0.120
Resulting RH 52 %
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 30.4 MBH
Coil CFM at Des Htg 1930 CFM
Max coil CFM 1930 CFM
Water flow @ 20.0 °F drop N/A

Load occurs at Des Htg
BTU/(hr-ft²) 13.1
Ent. DB / Lvg DB 65.4 / 81.0 °F

Supply Fan Sizing Data

Actual max CFM 1930 CFM
Standard CFM 1808 CFM
Actual max CFM/ft² 0.83 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 148 CFM
CFM/ft² 0.06 CFM/ft²

CFM/person 8.22 CFM/person

Zone Sizing Summary for HVAC 1

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Number of zones 1
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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	1930	1930	0.83	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	39.0	Jul 1800	23.3	2327.2

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							
Bathroom	1	2.2	Jul 1800	109	1.1	154.0	0.71
Bedroom	1	5.8	Jul 1800	284	3.1	356.0	0.80
Half Bathroom	1	1.0	Jul 1800	51	0.6	40.0	1.28
Her WIC	1	1.2	Jul 1800	61	0.7	65.0	0.94
MultimediaRoom	1	6.5	Jul 1800	324	2.4	502.0	0.64
Open bar Area	1	4.0	Aug 1400	200	4.3	171.6	1.16
Sofa Area	1	9.9	Jul 1800	489	7.0	702.0	0.70
Stor. clst.	1	1.5	Jul 1400	74	0.5	22.2	3.32
Workout Room	1	6.9	Jul 1800	339	3.5	314.4	1.08

Ventilation Sizing Summary for HVAC 1

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1. Summary

Ventilation Sizing Method **Sum of Space OA Airflows**
Design Ventilation Airflow Rate **148** 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									
Bathroom	1	154.0	1.0	108.7	0.00	0.00	0.0	0.0	0.0
Bedroom	1	356.0	2.0	284.3	5.00	0.06	0.0	0.0	31.4
Half Bathroom	1	40.0	1.0	51.1	0.00	0.00	0.0	0.0	0.0
Her WIC	1	65.0	1.0	60.8	0.00	0.00	0.0	0.0	0.0
MultimediaRoom	1	502.0	3.0	323.6	0.00	0.00	0.0	0.0	0.0
Open bar Area	1	171.6	3.0	199.7	0.00	0.00	0.0	0.0	0.0
Sofa Area	1	702.0	3.0	488.7	0.00	0.00	0.0	0.0	0.0
Stor. clst.	1	22.2	1.0	73.7	0.00	0.00	0.0	0.0	0.0
Workout Room	1	314.4	3.0	339.2	20.00	0.18	0.0	0.0	116.6
Totals (incl. Space Multipliers)				1929.8					148.0

Air System Design Load Summary for HVAC 1

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1400 COOLING OA DB / WB 98.4 °F / 70.8 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	88 ft²	1402	-	88 ft²	-	-
Wall Transmission	4468 ft²	2146	-	4468 ft²	4797	-
Roof Transmission	2327 ft²	1971	-	2327 ft²	2579	-
Window Transmission	88 ft²	1012	-	88 ft²	2778	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	812 ft²	4790	-	812 ft²	13154	-
Floor Transmission	2327 ft²	0	-	2327 ft²	0	-
Partitions	2964 ft²	0	-	2964 ft²	0	-
Ceiling	2427 ft²	0	-	2427 ft²	0	-
Overhead Lighting	2527 W	7595	-	0	0	-
Task Lighting	2327 W	7415	-	0	0	-
Electric Equipment	920 W	2972	-	0	0	-
People	18	3754	3690	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	4958	185	0%	0	0
>> Total Zone Loads	-	38014	3875	-	23308	0
Zone Conditioning	-	34235	3875	-	22430	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	1930 CFM	0	-	1930 CFM	0	-
Ventilation Load	148 CFM	3343	177	148 CFM	8012	0
Supply Fan Load	1930 CFM	0	-	1930 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	37578	4051	-	30443	0
Central Cooling Coil	-	37578	4057	-	0	0
Central Heating Coil	-	0	-	-	30443	-
>> Total Conditioning	-	37578	4057	-	30443	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 1

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Zone 1	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.7 °F / 69.8 °F			HEATING OA DB / WB 16.0 °F / 12.9 °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	88 ft²	1881	-	88 ft²	-	-
Wall Transmission	4468 ft²	2545	-	4468 ft²	4797	-
Roof Transmission	2327 ft²	2539	-	2327 ft²	2579	-
Window Transmission	88 ft²	927	-	88 ft²	2778	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	812 ft²	4389	-	812 ft²	13154	-
Floor Transmission	2327 ft²	0	-	2327 ft²	0	-
Partitions	2964 ft²	0	-	2964 ft²	0	-
Ceiling	2427 ft²	0	-	2427 ft²	0	-
Overhead Lighting	2527 W	7550	-	0	0	-
Task Lighting	2327 W	7392	-	0	0	-
Electric Equipment	920 W	2965	-	0	0	-
People	18	3725	3690	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	5087	185	0%	0	0
>> Total Zone Loads	-	39000	3875	-	23308	0

Space Design Load Summary for HVAC 1

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

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.7 °F / 69.8 °F			HEATING OA DB / WB 16.0 °F / 12.9 °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	468 ft²	277	-	468 ft²	503	-
Roof Transmission	154 ft²	168	-	154 ft²	171	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	28 ft²	151	-	28 ft²	454	-
Floor Transmission	154 ft²	0	-	154 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	254 ft²	0	-	254 ft²	0	-
Overhead Lighting	154 W	460	-	0	0	-
Task Lighting	154 W	489	-	0	0	-
Electric Equipment	50 W	161	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	287	10	0%	0	0
>> Total Zone Loads	-	2201	215	-	1127	0

TABLE 1.1.B. Envelope Loads For Space "Bathroom" 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	0.020	-	36	-	86
DOOR	28	0.300	-	151	-	454
S EXPOSURE						
WALL	108	0.020	-	54	-	116
E EXPOSURE						
WALL	140	0.020	-	93	-	150
W EXPOSURE						
WALL	140	0.020	-	94	-	150
H EXPOSURE						
ROOF	154	0.021	-	168	-	171

Space Design Load Summary for HVAC 1

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

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	645	-	30 ft²	-	-
Wall Transmission	665 ft²	382	-	665 ft²	714	-
Roof Transmission	356 ft²	388	-	356 ft²	394	-
Window Transmission	30 ft²	318	-	30 ft²	953	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	63 ft²	341	-	63 ft²	1021	-
Floor Transmission	356 ft²	0	-	356 ft²	0	-
Partitions	379 ft²	0	-	379 ft²	0	-
Ceiling	356 ft²	0	-	356 ft²	0	-
Overhead Lighting	356 W	1064	-	0	0	-
Task Lighting	356 W	1131	-	0	0	-
Electric Equipment	100 W	322	-	0	0	-
People	2	414	410	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	751	21	0%	0	0
>> Total Zone Loads	-	5755	431	-	3082	0

TABLE 1.2.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)
N EXPOSURE						
WALL	139	0.020	-	62	-	149
WINDOW 1	30	0.588	0.811	318	645	953
DOOR	42	0.300	-	227	-	680
S EXPOSURE						
WALL	190	0.020	-	96	-	204
DOOR	21	0.300	-	114	-	340
E EXPOSURE						
WALL	168	0.020	-	112	-	180
W EXPOSURE						
WALL	168	0.020	-	113	-	180
H EXPOSURE						
ROOF	356	0.021	-	388	-	394

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TABLE 1.3.A. Component Loads For Space "Half Bathroom" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	231 ft²	127	-	231 ft²	248	-
Roof Transmission	40 ft²	44	-	40 ft²	44	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	40 ft²	0	-	40 ft²	0	-
Partitions	252 ft²	0	-	252 ft²	0	-
Ceiling	40 ft²	0	-	40 ft²	0	-
Overhead Lighting	40 W	120	-	0	0	-
Task Lighting	40 W	127	-	0	0	-
Electric Equipment	50 W	161	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	135	10	0%	0	0
>> Total Zone Loads	-	1034	215	-	633	0

TABLE 1.3.B. Envelope Loads For Space "Half Bathroom" 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	70	0.020	-	31	-	75
S EXPOSURE						
WALL	70	0.020	-	35	-	75
E EXPOSURE						
WALL	35	0.020	-	23	-	38
DOOR	21	0.300	-	114	-	340
W EXPOSURE						
WALL	56	0.020	-	38	-	60
H EXPOSURE						
ROOF	40	0.021	-	44	-	44

Space Design Load Summary for HVAC 1

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TABLE 1.4.A. Component Loads For Space "Her WIC" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	309 ft²	181	-	309 ft²	332	-
Roof Transmission	65 ft²	71	-	65 ft²	72	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	65 ft²	0	-	65 ft²	0	-
Partitions	230 ft²	0	-	230 ft²	0	-
Ceiling	65 ft²	0	-	65 ft²	0	-
Overhead Lighting	65 W	194	-	0	0	-
Task Lighting	65 W	206	-	0	0	-
Electric Equipment	30 W	97	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	160	10	0%	0	0
>> Total Zone Loads	-	1230	215	-	744	0

TABLE 1.4.B. Envelope Loads For Space "Her WIC" 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	65	0.020	-	29	-	70
S EXPOSURE						
WALL	65	0.020	-	33	-	70
E EXPOSURE						
WALL	100	0.020	-	67	-	107
W EXPOSURE						
WALL	79	0.020	-	53	-	85
DOOR	21	0.300	-	114	-	340
H EXPOSURE						
ROOF	65	0.021	-	71	-	72

Space Design Load Summary for HVAC 1

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

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.7 °F / 69.8 °F			HEATING OA DB / WB 16.0 °F / 12.9 °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	844 ft²	484	-	844 ft²	906	-
Roof Transmission	502 ft²	548	-	502 ft²	556	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	56 ft²	303	-	56 ft²	907	-
Floor Transmission	502 ft²	0	-	502 ft²	0	-
Partitions	695 ft²	0	-	695 ft²	0	-
Ceiling	502 ft²	0	-	502 ft²	0	-
Overhead Lighting	502 W	1500	-	0	0	-
Task Lighting	502 W	1594	-	0	0	-
Electric Equipment	200 W	645	-	0	0	-
People	3	621	615	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	854	31	0%	0	0
>> Total Zone Loads	-	6549	646	-	2370	0

TABLE 1.5.B. Envelope Loads For Space "MultimediaRoom" 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	205	0.020	-	91	-	220
S EXPOSURE						
WALL	205	0.020	-	103	-	220
E EXPOSURE						
WALL	189	0.020	-	126	-	203
DOOR	56	0.300	-	303	-	907
W EXPOSURE						
WALL	245	0.020	-	164	-	263
H EXPOSURE						
ROOF	502	0.021	-	548	-	556

Space Design Load Summary for HVAC 1

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TABLE 1.6.A. Component Loads For Space "Open bar Area" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1400 COOLING OA DB / WB 98.4 °F / 70.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	434 ft²	198	-	434 ft²	466	-
Roof Transmission	172 ft²	145	-	172 ft²	190	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	224 ft²	1321	-	224 ft²	3629	-
Floor Transmission	172 ft²	0	-	172 ft²	0	-
Partitions	200 ft²	0	-	200 ft²	0	-
Ceiling	172 ft²	0	-	172 ft²	0	-
Overhead Lighting	172 W	516	-	0	0	-
Task Lighting	172 W	547	-	0	0	-
Electric Equipment	50 W	162	-	0	0	-
People	3	626	615	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	527	31	0%	0	0
>> Total Zone Loads	-	4042	646	-	4285	0

TABLE 1.6.B. Envelope Loads For Space "Open bar Area" 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	124	0.020	-	42	-	133
DOOR	140	0.300	-	826	-	2268
S EXPOSURE						
WALL	208	0.020	-	103	-	223
DOOR	56	0.300	-	330	-	907
E EXPOSURE						
WALL	37	0.020	-	23	-	40
DOOR	28	0.300	-	165	-	454
W EXPOSURE						
WALL	65	0.020	-	30	-	70
H EXPOSURE						
ROOF	172	0.021	-	145	-	190

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

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	736 ft²	427	-	736 ft²	790	-
Roof Transmission	702 ft²	766	-	702 ft²	778	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	336 ft²	1816	-	336 ft²	5443	-
Floor Transmission	702 ft²	0	-	702 ft²	0	-
Partitions	764 ft²	0	-	764 ft²	0	-
Ceiling	702 ft²	0	-	702 ft²	0	-
Overhead Lighting	702 W	2097	-	0	0	-
Task Lighting	702 W	2230	-	0	0	-
Electric Equipment	200 W	645	-	0	0	-
People	3	621	615	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	1290	31	0%	0	0
>> Total Zone Loads	-	9891	646	-	7011	0

TABLE 1.7.B. Envelope Loads For Space "Sofa Area" 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	168	0.020	-	75	-	180
DOOR	140	0.300	-	757	-	2268
S EXPOSURE						
WALL	168	0.020	-	85	-	180
DOOR	140	0.300	-	757	-	2268
E EXPOSURE						
WALL	172	0.020	-	114	-	185
DOOR	56	0.300	-	303	-	907
W EXPOSURE						
WALL	228	0.020	-	153	-	245
H EXPOSURE						
ROOF	702	0.021	-	766	-	778

Space Design Load Summary for HVAC 1

Project Name: Project 120
Prepared by: E Lab

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

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1400 COOLING OA DB / WB 98.4 °F / 70.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	163 ft²	77	-	163 ft²	175	-
Roof Transmission	22 ft²	20	-	22 ft²	25	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	124	-	21 ft²	340	-
Floor Transmission	22 ft²	0	-	22 ft²	0	-
Partitions	184 ft²	0	-	184 ft²	0	-
Ceiling	22 ft²	0	-	22 ft²	0	-
Overhead Lighting	222 W	667	-	0	0	-
Task Lighting	22 W	71	-	0	0	-
Electric Equipment	40 W	129	-	0	0	-
People	1	209	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	194	10	0%	0	0
>> Total Zone Loads	-	1491	215	-	540	0

TABLE 1.8.B. Envelope Loads For Space "Stor. clst." 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	52	0.020	-	20	-	56
S EXPOSURE						
WALL	52	0.020	-	22	-	56
E EXPOSURE						
WALL	40	0.020	-	26	-	43
W EXPOSURE						
WALL	19	0.020	-	9	-	20
DOOR	21	0.300	-	124	-	340
H EXPOSURE						
ROOF	22	0.021	-	20	-	25

Space Design Load Summary for HVAC 1

Project Name: Project 120
Prepared by: E Lab

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TABLE 1.9.A. Component Loads For Space "Workout Room" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	58 ft²	1236	-	58 ft²	-	-
Wall Transmission	618 ft²	351	-	618 ft²	663	-
Roof Transmission	314 ft²	343	-	314 ft²	348	-
Window Transmission	58 ft²	609	-	58 ft²	1826	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	42 ft²	227	-	42 ft²	680	-
Floor Transmission	314 ft²	0	-	314 ft²	0	-
Partitions	260 ft²	0	-	260 ft²	0	-
Ceiling	314 ft²	0	-	314 ft²	0	-
Overhead Lighting	314 W	939	-	0	0	-
Task Lighting	314 W	999	-	0	0	-
Electric Equipment	200 W	645	-	0	0	-
People	3	621	615	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	895	31	0%	0	0
>> Total Zone Loads	-	6864	646	-	3518	0

TABLE 1.9.B. Envelope Loads For Space "Workout 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	127	0.020	-	56	-	136
WINDOW 1	58	0.588	0.811	609	1236	1826
DOOR	21	0.300	-	114	-	340
S EXPOSURE						
WALL	205	0.020	-	103	-	220
E EXPOSURE						
WALL	133	0.020	-	88	-	142
DOOR	21	0.300	-	114	-	340
W EXPOSURE						
WALL	154	0.020	-	103	-	165
H EXPOSURE						
ROOF	314	0.021	-	343	-	348

System Psychrometrics for HVAC 1

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

August DESIGN COOLING DAY, 1400

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	98.4	0.01094	148	400	3343	177
Vent - Return Mixing	Outlet	77.8	0.01069	1930	1555	-	-
Central Cooling Coil	Outlet	58.5	0.01021	1930	1555	37578	4057
Central Heating Coil	Outlet	58.5	0.01021	1930	1555	0	-
Supply Fan	Outlet	58.5	0.01021	1930	1555	0	-
Cold Supply Duct	Outlet	58.5	0.01021	1930	1555	-	-
Zone Air	-	76.1	0.01067	1930	1651	34235	3875
Return Plenum	Outlet	76.1	0.01067	1930	1651	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.012 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4447.3 BTU/(hr-CFM)

Site Altitude = 1791.0 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	38014	Cooling	34235	76.1	1930	1651	0	0

System Psychrometrics for HVAC 1

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

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	16.0	0.00093	148	400	-8012	0
Vent - Return Mixing	Outlet	65.4	0.00093	1930	512	-	-
Central Cooling Coil	Outlet	65.4	0.00093	1930	512	0	0
Central Heating Coil	Outlet	81.0	0.00093	1930	512	30443	-
Supply Fan	Outlet	81.0	0.00093	1930	512	0	-
Cold Supply Duct	Outlet	81.0	0.00093	1930	512	-	-
Zone Air	-	69.5	0.00093	1930	521	-22430	0
Return Plenum	Outlet	69.5	0.00093	1930	521	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.012 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4447.3 BTU/(hr-CFM)

Site Altitude = 1791.0 ft

TABLE 2: ZONE DATA

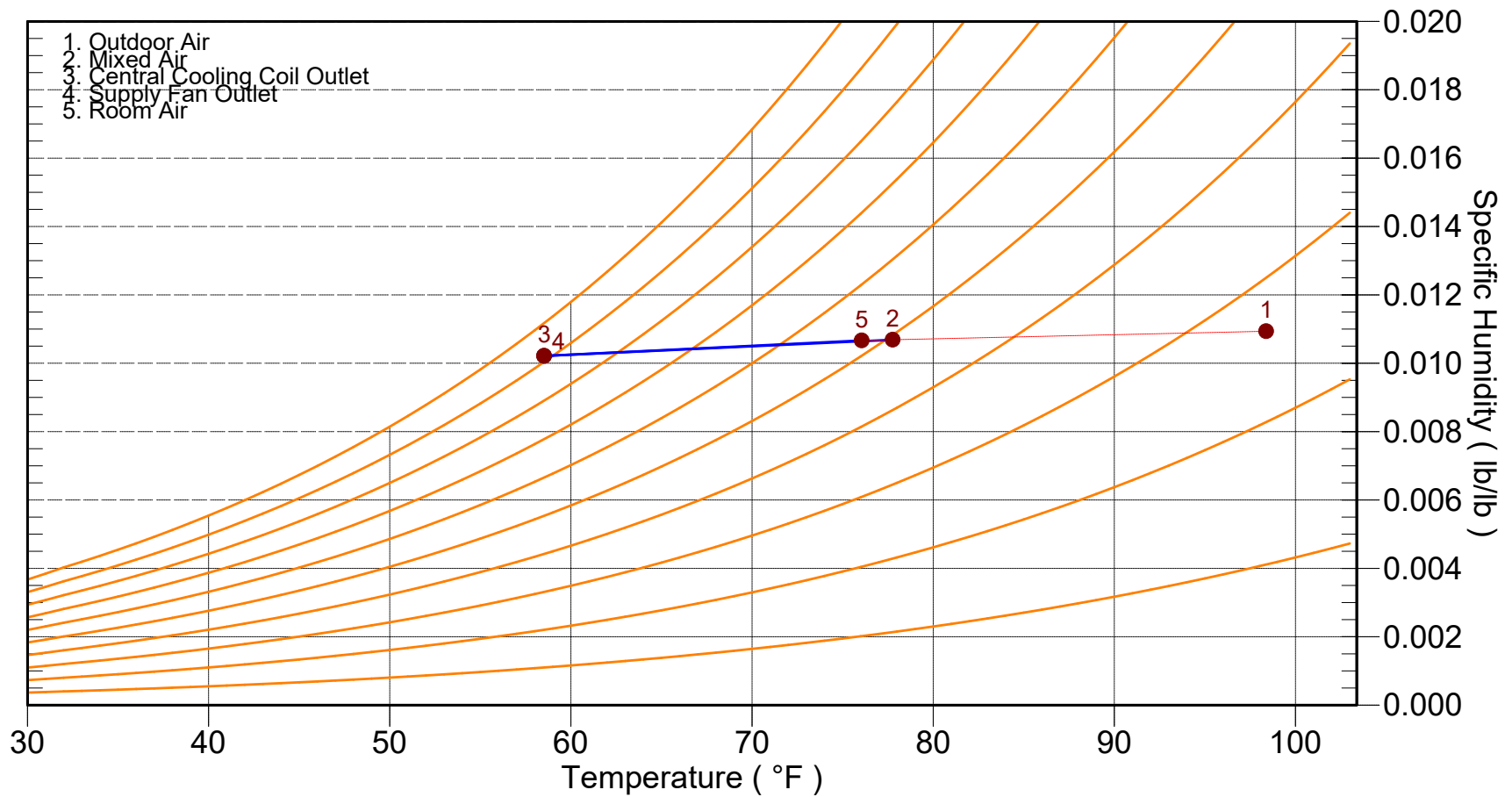
Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	-23308	Heating	-22430	69.5	1930	521	0	0

System Psychrometrics for HVAC 1

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

Location: Cedar Hill, Texas
Altitude: 1791.0 ft.
Data for: August DESIGN COOLING DAY, 1400

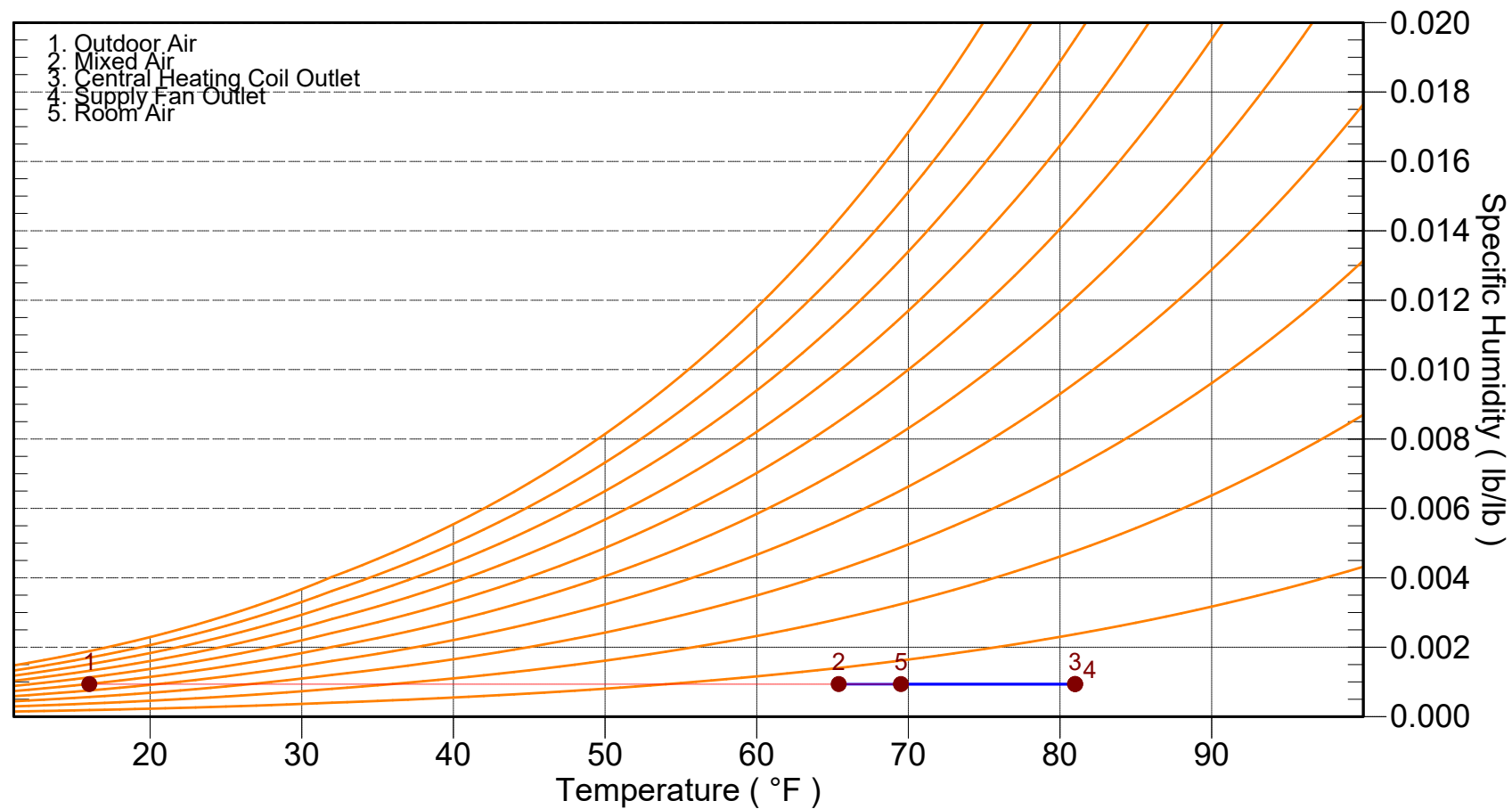


System Psychrometrics for HVAC 1

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

Location: Cedar Hill, Texas
Altitude: 1791.0 ft.
Data for: WINTER DESIGN HEATING



Air System Sizing Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

Air System Information

Air System Name HVAC 2
Equipment Class SPLT AHU
Air System Type SZCAV

Number of zones 1
Floor Area 1198.0 ft²
Location Cedar Hill, 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 2.7 Tons
Total coil load 31.9 MBH
Sensible coil load 28.7 MBH
Coil CFM at Jul 1800 1581 CFM
Max block CFM 1581 CFM
Sum of peak zone CFM 1581 CFM
Sensible heat ratio 0.898
CFM/Ton 594.5
ft²/Ton 450.5
BTU/(hr-ft²) 26.6
Water flow @ 10.0 °F rise N/A

Load occurs at Jul 1800
OA DB / WB 94.7 / 69.8 °F
Entering DB / WB 76.2 / 63.8 °F
Leaving DB / WB 58.3 / 56.9 °F
Coil ADP 55.9 °F
Bypass Factor 0.120
Resulting RH 52 %
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 21.9 MBH
Coil CFM at Des Htg 1581 CFM
Max coil CFM 1581 CFM
Water flow @ 20.0 °F drop N/A

Load occurs at Des Htg
BTU/(hr-ft²) 18.2
Ent. DB / Lvg DB 69.2 / 82.8 °F

Supply Fan Sizing Data

Actual max CFM 1581 CFM
Standard CFM 1481 CFM
Actual max CFM/ft² 1.32 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 0 CFM
CFM/ft² 0.00 CFM/ft²

CFM/person 0.00 CFM/person

Zone Sizing Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

Air System Information

Air System Name HVAC 2
Equipment Class SPLT AHU
Air System Type SZCAV

Number of zones 1
Floor Area 1198.0 ft²
Location Cedar Hill, 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

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	1581	1581	1.32	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	31.9	Jul 1800	23.9	1198.0

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							
Her Closet 2F	1	2.4	Jul 1900	120	1.3	178.0	0.67
Her W.C. 2F	1	0.7	Jul 1800	36	0.5	18.0	2.00
His Closet 2F	1	1.4	Jul 1800	70	0.9	76.4	0.91
His W.C. 2F	1	0.7	Jul 1800	36	0.5	18.0	2.00
Kitchen & Livingroom 2F	1	10.1	Jul 1800	501	11.6	1.7	294.67
Master Bath 2F	1	4.0	Jul 1800	200	3.1	172.0	1.16
Master Bed 2F	1	12.5	Jul 1400	618	6.0	733.9	0.84

Ventilation Sizing Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

1. Summary

Ventilation Sizing Method **Sum of Space OA Airflows**
Design Ventilation Airflow Rate **0** 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									
Her Closet 2F	1	178.0	1.0	120.1	0.00	0.00	0.0	0.0	0.0
Her W.C. 2F	1	18.0	1.0	36.0	0.00	0.00	0.0	0.0	0.0
His Closet 2F	1	76.4	1.0	69.8	0.00	0.00	0.0	0.0	0.0
His W.C. 2F	1	18.0	1.0	36.0	0.00	0.00	0.0	0.0	0.0
Kitchen & Livingroom 2F	1	1.7	5.0	500.9	0.00	0.00	0.0	0.0	0.0
Master Bath 2F	1	172.0	1.0	199.6	0.00	0.00	0.0	0.0	0.0
Master Bed 2F	1	733.9	5.0	618.3	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				1580.8					0.0

Air System Design Load Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.7 °F / 69.8 °F			HEATING OA DB / WB 16.0 °F / 12.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	119 ft²	4312	-	119 ft²	-	-
Wall Transmission	5020 ft²	2892	-	5020 ft²	5391	-
Roof Transmission	1198 ft²	1307	-	1198 ft²	1327	-
Window Transmission	119 ft²	1258	-	119 ft²	3771	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	830 ft²	4487	-	830 ft²	13446	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	2275 ft²	0	-	2275 ft²	0	-
Ceiling	1196 ft²	0	-	1196 ft²	0	-
Overhead Lighting	1198 W	3579	-	0	0	-
Task Lighting	1198 W	3805	-	0	0	-
Electric Equipment	920 W	2965	-	0	0	-
People	15	3104	3075	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	4156	154	0%	0	0
>> Total Zone Loads	-	31866	3229	-	23934	0
Zone Conditioning	-	28671	3229	-	21853	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	1581 CFM	0	-	1581 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	1581 CFM	0	-	1581 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	28671	3229	-	21853	0
Central Cooling Coil	-	28671	3240	-	0	0
Central Heating Coil	-	0	-	-	21853	-
>> Total Conditioning	-	28671	3240	-	21853	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 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

Zone 1	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.7 °F / 69.8 °F			HEATING OA DB / WB 16.0 °F / 12.9 °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	119 ft²	4312	-	119 ft²	-	-
Wall Transmission	5020 ft²	2892	-	5020 ft²	5391	-
Roof Transmission	1198 ft²	1307	-	1198 ft²	1327	-
Window Transmission	119 ft²	1258	-	119 ft²	3771	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	830 ft²	4487	-	830 ft²	13446	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	2275 ft²	0	-	2275 ft²	0	-
Ceiling	1196 ft²	0	-	1196 ft²	0	-
Overhead Lighting	1198 W	3579	-	0	0	-
Task Lighting	1198 W	3805	-	0	0	-
Electric Equipment	920 W	2965	-	0	0	-
People	15	3104	3075	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	4156	154	0%	0	0
>> Total Zone Loads	-	31866	3229	-	23934	0

Space Design Load Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

TABLE 1.1.A. Component Loads For Space "Her Closet 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1900 COOLING OA DB / WB 92.0 °F / 69.0 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	678 ft²	417	-	678 ft²	728	-
Roof Transmission	178 ft²	182	-	178 ft²	197	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	103	-	21 ft²	340	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	178 ft²	0	-	178 ft²	0	-
Overhead Lighting	178 W	537	-	0	0	-
Task Lighting	178 W	568	-	0	0	-
Electric Equipment	30 W	97	-	0	0	-
People	1	209	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	317	10	0%	0	0
>> Total Zone Loads	-	2430	215	-	1266	0

TABLE 1.1.B. Envelope Loads For Space "Her Closet 2F" 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	126	0.020	-	58	-	135
S EXPOSURE						
WALL	126	0.020	-	64	-	135
E EXPOSURE						
WALL	203	0.020	-	134	-	218
DOOR	21	0.300	-	103	-	340
W EXPOSURE						
WALL	224	0.020	-	161	-	240
H EXPOSURE						
ROOF	178	0.021	-	182	-	197

Space Design Load Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

TABLE 1.2.A. Component Loads For Space "Her W.C. 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	159 ft²	86	-	159 ft²	171	-
Roof Transmission	18 ft²	20	-	18 ft²	20	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	60 ft²	0	-	60 ft²	0	-
Ceiling	18 ft²	0	-	18 ft²	0	-
Overhead Lighting	18 W	54	-	0	0	-
Task Lighting	18 W	57	-	0	0	-
Electric Equipment	30 W	97	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	95	10	0%	0	0
>> Total Zone Loads	-	729	215	-	531	0

TABLE 1.2.B. Envelope Loads For Space "Her W.C. 2F" 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	60	0.020	-	27	-	64
S EXPOSURE						
WALL	39	0.020	-	20	-	42
DOOR	21	0.300	-	114	-	340
E EXPOSURE						
WALL	30	0.020	-	20	-	32
W EXPOSURE						
WALL	30	0.020	-	20	-	32
H EXPOSURE						
ROOF	18	0.021	-	20	-	20

Space Design Load Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
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TABLE 1.3.A. Component Loads For Space "His Closet 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	434 ft²	257	-	434 ft²	466	-
Roof Transmission	76 ft²	83	-	76 ft²	85	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	150 ft²	0	-	150 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	76 W	228	-	0	0	-
Task Lighting	76 W	243	-	0	0	-
Electric Equipment	30 W	97	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	184	10	0%	0	0
>> Total Zone Loads	-	1413	215	-	891	0

TABLE 1.3.B. Envelope Loads For Space "His Closet 2F" 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	84	0.020	-	37	-	91
S EXPOSURE						
WALL	84	0.020	-	43	-	91
E EXPOSURE						
WALL	143	0.020	-	95	-	154
W EXPOSURE						
WALL	122	0.020	-	82	-	131
DOOR	21	0.300	-	114	-	340
H EXPOSURE						
ROOF	76	0.021	-	83	-	85

Space Design Load Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

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TABLE 1.4.A. Component Loads For Space "His W.C. 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	159 ft²	86	-	159 ft²	171	-
Roof Transmission	18 ft²	20	-	18 ft²	20	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	60 ft²	0	-	60 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	18 W	54	-	0	0	-
Task Lighting	18 W	57	-	0	0	-
Electric Equipment	30 W	97	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	95	10	0%	0	0
>> Total Zone Loads	-	729	215	-	531	0

TABLE 1.4.B. Envelope Loads For Space "His W.C. 2F" 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	60	0.020	-	27	-	64
S EXPOSURE						
WALL	39	0.020	-	20	-	42
DOOR	21	0.300	-	114	-	340
E EXPOSURE						
WALL	30	0.020	-	20	-	32
W EXPOSURE						
WALL	30	0.020	-	20	-	32
H EXPOSURE						
ROOF	18	0.021	-	20	-	20

Space Design Load Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

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TABLE 1.5.A. Component Loads For Space "Kitchen & Livingroom 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	29 ft²	1915	-	29 ft²	-	-
Wall Transmission	1832 ft²	1041	-	1832 ft²	1967	-
Roof Transmission	2 ft²	2	-	2 ft²	2	-
Window Transmission	29 ft²	305	-	29 ft²	913	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	536 ft²	2897	-	536 ft²	8683	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	1200 ft²	0	-	1200 ft²	0	-
Ceiling	700 ft²	0	-	700 ft²	0	-
Overhead Lighting	2 W	5	-	0	0	-
Task Lighting	2 W	5	-	0	0	-
Electric Equipment	500 W	1611	-	0	0	-
People	5	1035	1025	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	1322	51	0%	0	0
>> Total Zone Loads	-	10138	1076	-	11565	0

TABLE 1.5.B. Envelope Loads For Space "Kitchen & Livingroom 2F" 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	399	0.020	-	177	-	429
DOOR	340	0.300	-	1838	-	5508
S EXPOSURE						
WALL	571	0.020	-	288	-	613
DOOR	168	0.300	-	908	-	2722
E EXPOSURE						
WALL	431	0.020	-	287	-	463
DOOR	28	0.300	-	151	-	454
W EXPOSURE						
WALL	430	0.020	-	288	-	462
WINDOW 1	29	0.588	0.811	305	1915	913
H EXPOSURE						
ROOF	2	0.021	-	2	-	2

Space Design Load Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
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TABLE 1.6.A. Component Loads For Space "Master Bath 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	645	-	30 ft²	-	-
Wall Transmission	572 ft²	319	-	572 ft²	614	-
Roof Transmission	172 ft²	188	-	172 ft²	191	-
Window Transmission	30 ft²	318	-	30 ft²	953	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	84 ft²	454	-	84 ft²	1361	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	120 ft²	0	-	120 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	172 W	514	-	0	0	-
Task Lighting	172 W	546	-	0	0	-
Electric Equipment	100 W	322	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	527	10	0%	0	0
>> Total Zone Loads	-	4039	215	-	3118	0

TABLE 1.6.B. Envelope Loads For Space "Master Bath 2F" 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	124	0.020	-	55	-	133
WINDOW 1	30	0.588	0.811	318	645	953
DOOR	63	0.300	-	341	-	1021
S EXPOSURE						
WALL	217	0.020	-	110	-	233
E EXPOSURE						
WALL	126	0.020	-	84	-	135
W EXPOSURE						
WALL	105	0.020	-	70	-	113
DOOR	21	0.300	-	114	-	340
H EXPOSURE						
ROOF	172	0.021	-	188	-	191

Space Design Load Summary for HVAC 2

Project Name: Project 120
Prepared by: E Lab

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TABLE 1.7.A. Component Loads For Space "Master Bed 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1400 COOLING OA DB / WB 98.4 °F / 70.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	60 ft²	1974	-	60 ft²	-	-
Wall Transmission	1185 ft²	585	-	1185 ft²	1273	-
Roof Transmission	734 ft²	652	-	734 ft²	813	-
Window Transmission	60 ft²	694	-	60 ft²	1905	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	126 ft²	743	-	126 ft²	2041	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	685 ft²	0	-	685 ft²	0	-
Ceiling	300 ft²	0	-	300 ft²	0	-
Overhead Lighting	734 W	2206	-	0	0	-
Task Lighting	734 W	2338	-	0	0	-
Electric Equipment	200 W	646	-	0	0	-
People	5	1043	1025	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	1632	51	0%	0	0
>> Total Zone Loads	-	12513	1076	-	6032	0

TABLE 1.7.B. Envelope Loads For Space "Master Bed 2F" 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	234	0.020	-	89	-	251
WINDOW 1	30	0.588	0.811	347	586	953
DOOR	42	0.300	-	248	-	680
S EXPOSURE						
WALL	250	0.020	-	105	-	268
DOOR	56	0.300	-	330	-	907
E EXPOSURE						
WALL	322	0.020	-	211	-	346
WINDOW 1	30	0.588	0.811	347	1388	953
DOOR	28	0.300	-	165	-	454
W EXPOSURE						
WALL	380	0.020	-	180	-	408
H EXPOSURE						
ROOF	734	0.021	-	652	-	813

System Psychrometrics for HVAC 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
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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	94.7	0.01094	0	400	0	0
Vent - Return Mixing	Outlet	76.2	0.01066	1581	3077	-	-
Central Cooling Coil	Outlet	58.3	0.01020	1581	3077	28671	3240
Central Heating Coil	Outlet	58.3	0.01020	1581	3077	0	-
Supply Fan	Outlet	58.3	0.01020	1581	3077	0	-
Cold Supply Duct	Outlet	58.3	0.01020	1581	3077	-	-
Zone Air	-	76.2	0.01066	1581	3077	28671	3229
Return Plenum	Outlet	76.2	0.01066	1581	3077	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.012 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4447.3 BTU/(hr-CFM)

Site Altitude = 1791.0 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	31866	Cooling	28671	76.2	1581	3077	0	0

System Psychrometrics for HVAC 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

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	16.0	0.00093	0	400	0	0
Vent - Return Mixing	Outlet	69.2	0.01636	1581	800	-	-
Central Cooling Coil	Outlet	69.2	0.01636	1581	800	0	0
Central Heating Coil	Outlet	82.8	0.01636	1581	800	21853	-
Supply Fan	Outlet	82.8	0.01636	1581	800	0	-
Cold Supply Duct	Outlet	82.8	0.01636	1581	800	-	-
Zone Air	-	69.2	0.01636	1581	800	-21853	0
Return Plenum	Outlet	69.2	0.01636	1581	800	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.012 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4447.3 BTU/(hr-CFM)

Site Altitude = 1791.0 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	-23934	Heating	-21853	69.2	1581	800	0	0

System Psychrometrics for HVAC 2

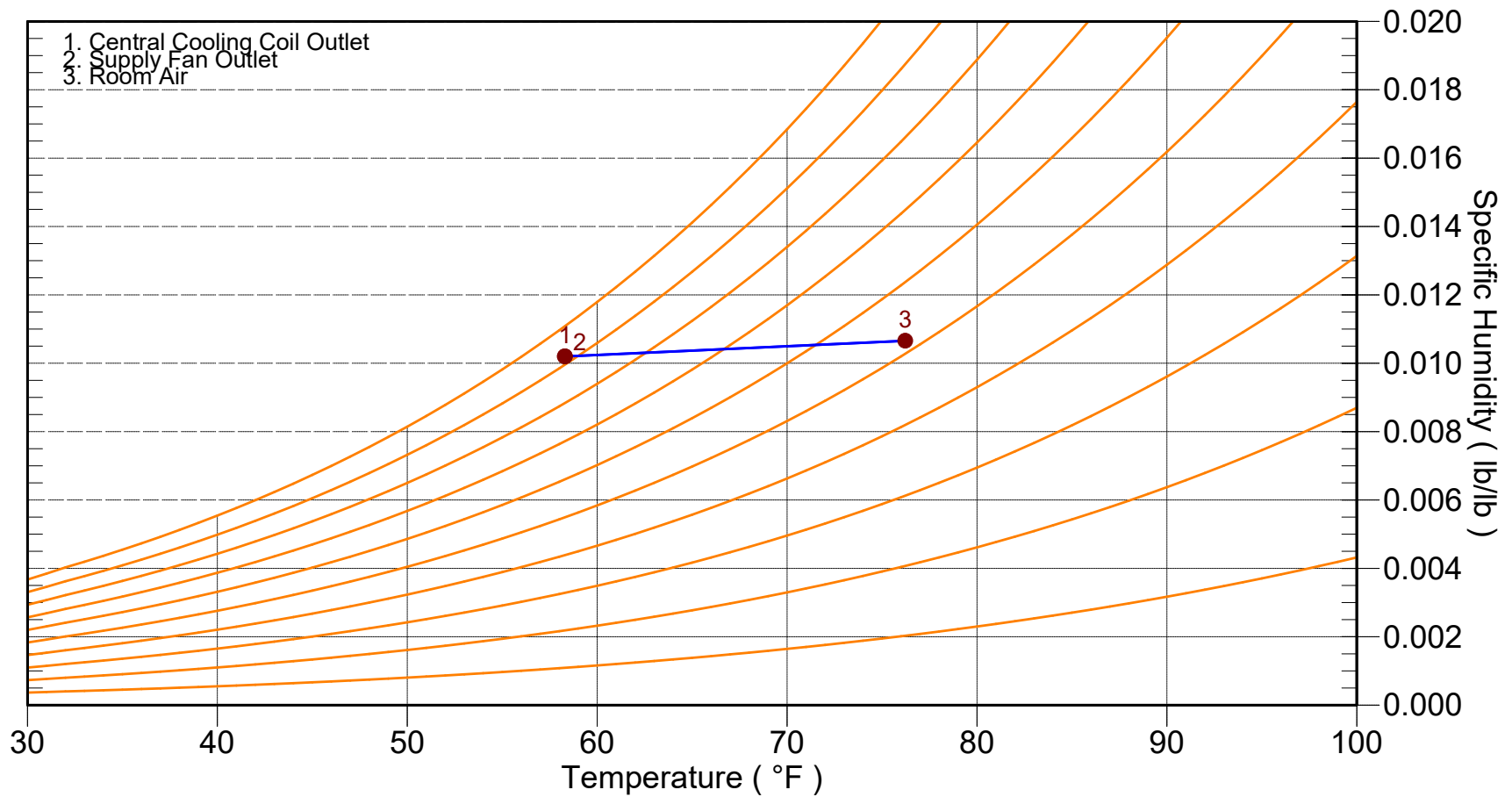
Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

Location: Cedar Hill, Texas

Altitude: 1791.0 ft.

Data for: July DESIGN COOLING DAY, 1800

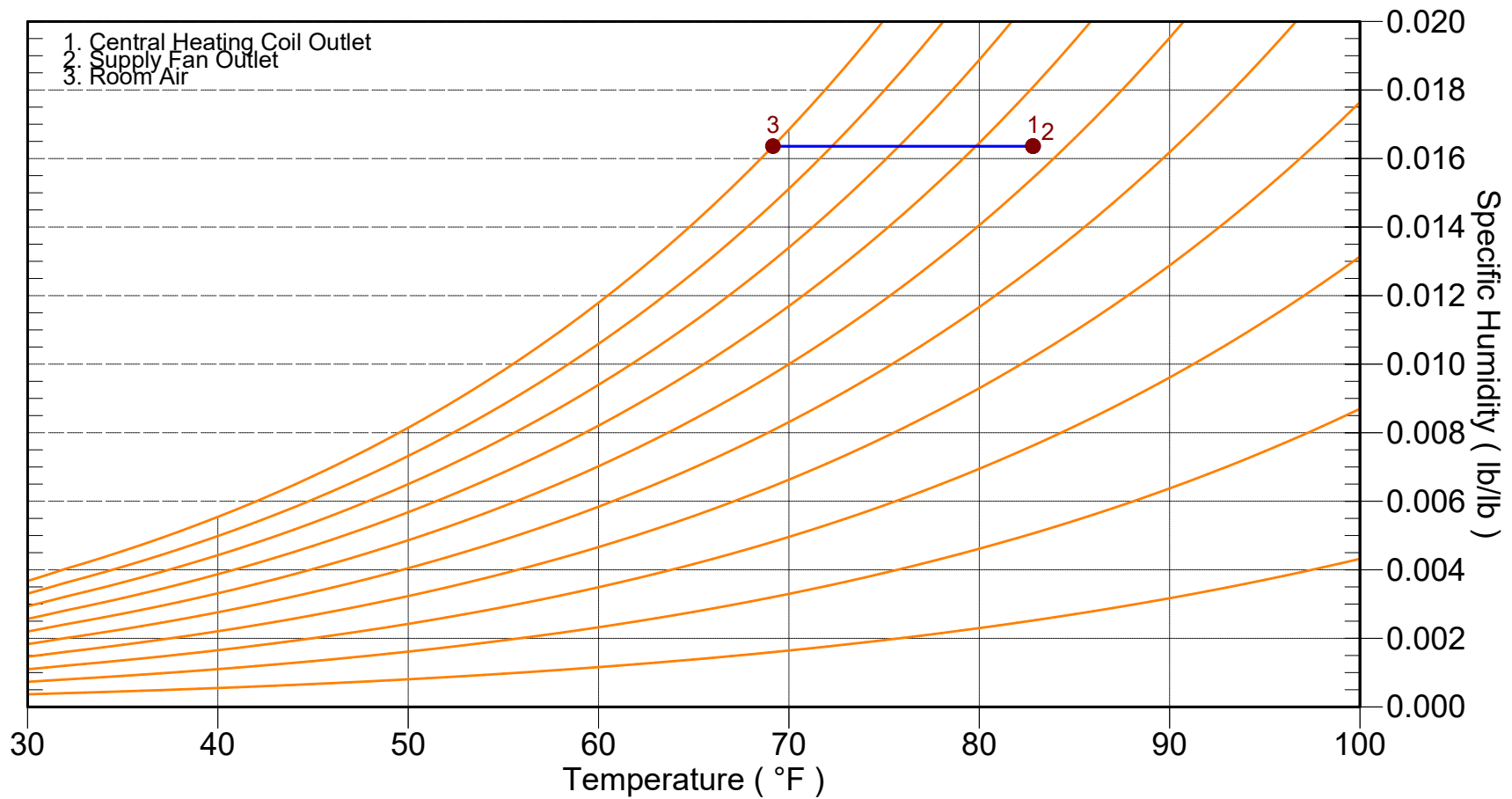


System Psychrometrics for HVAC 2

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

Location: Cedar Hill, Texas
Altitude: 1791.0 ft.
Data for: WINTER DESIGN HEATING



Air System Sizing Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

Air System Information

Air System Name **HVAC 3**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **1311.5** ft²
Location **Cedar Hill, 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 **3.5** Tons
Total coil load **41.6** MBH
Sensible coil load **37.8** MBH
Coil CFM at Jul 1800 **2152** CFM
Max block CFM **2152** CFM
Sum of peak zone CFM **2152** CFM
Sensible heat ratio **0.907**
CFM/Ton **620.3**
ft²/Ton **378.0**
BTU/(hr-ft²) **31.7**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Jul 1800**
OA DB / WB **94.7 / 69.8** °F
Entering DB / WB **76.0 / 63.9** °F
Leaving DB / WB **58.7 / 57.3** °F
Coil ADP **56.3** °F
Bypass Factor **0.120**
Resulting RH **53** %
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 **27.9** MBH
Coil CFM at Des Htg **2152** CFM
Max coil CFM **2152** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr-ft²) **21.3**
Ent. DB / Lvg DB **69.4 / 82.3** °F

Supply Fan Sizing Data

Actual max CFM **2152** CFM
Standard CFM **2017** CFM
Actual max CFM/ft² **1.64** 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 **0** CFM
CFM/ft² **0.00** CFM/ft²

CFM/person **0.00** CFM/person

Zone Sizing Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

Air System Information

Air System Name HVAC 3
Equipment Class SPLT AHU
Air System Type SZCAV

Number of zones 1
Floor Area 1311.5 ft²
Location Cedar Hill, 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

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft²	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	2152	2152	1.64	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 (ft²)
Zone 1	41.3	Jul 1800	29.6	1311.5

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 (ft²)	Space CFM/ft²
Zone 1							
Coat Closet 2F	1	1.0	Jul 1800	49	0.6	36.0	1.37
Cov back Entry 2F	1	0.9	Aug 1800	45	0.6	28.0	1.61
Half Bath 2F	1	1.3	Jul 1800	62	0.7	60.0	1.04
Hall 2F	1	2.7	Aug 1800	135	2.9	85.0	1.59
Kitchen & Livingroom 2F	1	10.1	Jul 1800	501	11.6	1.7	294.67
Laundry Room 2F	1	5.1	Jul 1800	253	2.1	172.8	1.46
Mud Room 2F	1	2.7	Jul 1400	132	2.5	125.4	1.05
Pantry 2F	1	4.6	Jul 1800	230	2.0	137.6	1.67
Studio Living Room 2F	1	13.0	Sep 1400	641	5.4	526.0	1.22
WC Bathroom 2F	1	2.1	Jul 1800	104	1.1	139.0	0.75

Ventilation Sizing Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:06PM

1. Summary

Ventilation Sizing Method Sum of Space OA Airflows
Design Ventilation Airflow Rate 0 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									
Coat Closet 2F	1	36.0	1.0	49.2	0.00	0.00	0.0	0.0	0.0
Cov back Entry 2F	1	28.0	1.0	45.2	0.00	0.00	0.0	0.0	0.0
Half Bath 2F	1	60.0	1.0	62.1	0.00	0.00	0.0	0.0	0.0
Hall 2F	1	85.0	2.0	135.1	0.00	0.00	0.0	0.0	0.0
Kitchen & Livingroom 2F	1	1.7	5.0	500.9	0.00	0.00	0.0	0.0	0.0
Laundry Room 2F	1	172.8	1.0	253.1	0.00	0.00	0.0	0.0	0.0
Mud Room 2F	1	125.4	1.0	131.8	0.00	0.00	0.0	0.0	0.0
Pantry 2F	1	137.6	1.0	229.7	0.00	0.00	0.0	0.0	0.0
Studio Living Room 2F	1	526.0	4.0	641.2	0.00	0.00	0.0	0.0	0.0
WC Bathroom 2F	1	139.0	1.0	103.9	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				2152.3					0.0

Air System Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	174 ft²	7994	-	174 ft²	-	-
Wall Transmission	6717 ft²	3852	-	6717 ft²	7212	-
Roof Transmission	1312 ft²	1431	-	1312 ft²	1453	-
Window Transmission	174 ft²	1841	-	174 ft²	5517	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	949 ft²	5130	-	949 ft²	15374	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	4722 ft²	0	-	4722 ft²	0	-
Ceiling	945 ft²	0	-	945 ft²	0	-
Overhead Lighting	1312 W	3918	-	0	0	-
Task Lighting	1312 W	4166	-	0	0	-
Electric Equipment	1200 W	3867	-	0	0	-
People	18	3725	3690	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	5388	185	0%	0	0
>> Total Zone Loads	-	41312	3875	-	29556	0
Zone Conditioning	-	37759	3875	-	27945	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	2152 CFM	0	-	2152 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	2152 CFM	0	-	2152 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	37759	3875	-	27945	0
Central Cooling Coil	-	37759	3876	-	0	0
Central Heating Coil	-	0	-	-	27945	-
>> Total Conditioning	-	37759	3876	-	27945	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 3

Project Name: Project 120
Prepared by: E Lab

Zone 1	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.7 °F / 69.8 °F			HEATING OA DB / WB 16.0 °F / 12.9 °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	174 ft²	7994	-	174 ft²	-	-
Wall Transmission	6717 ft²	3852	-	6717 ft²	7212	-
Roof Transmission	1312 ft²	1431	-	1312 ft²	1453	-
Window Transmission	174 ft²	1841	-	174 ft²	5517	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	949 ft²	5130	-	949 ft²	15374	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	4722 ft²	0	-	4722 ft²	0	-
Ceiling	945 ft²	0	-	945 ft²	0	-
Overhead Lighting	1312 W	3918	-	0	0	-
Task Lighting	1312 W	4166	-	0	0	-
Electric Equipment	1200 W	3867	-	0	0	-
People	18	3725	3690	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	5388	185	0%	0	0
>> Total Zone Loads	-	41312	3875	-	29556	0

Space Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

TABLE 1.1.A. Component Loads For Space "Coat Closet 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	219 ft²	123	-	219 ft²	235	-
Roof Transmission	36 ft²	39	-	36 ft²	40	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	240 ft²	0	-	240 ft²	0	-
Ceiling	60 ft²	0	-	60 ft²	0	-
Overhead Lighting	36 W	108	-	0	0	-
Task Lighting	36 W	114	-	0	0	-
Electric Equipment	50 W	161	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	130	10	0%	0	0
>> Total Zone Loads	-	996	215	-	615	0

TABLE 1.1.B. Envelope Loads For Space "Coat Closet 2F" 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	60	0.020	-	27	-	64
S EXPOSURE						
WALL	60	0.020	-	30	-	64
E EXPOSURE						
WALL	39	0.020	-	26	-	42
DOOR	21	0.300	-	114	-	340
W EXPOSURE						
WALL	60	0.020	-	40	-	64
H EXPOSURE						
ROOF	36	0.021	-	39	-	40

Space Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

TABLE 1.2.A. Component Loads For Space "Cov back Entry 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	191 ft²	113	-	191 ft²	205	-
Roof Transmission	28 ft²	29	-	28 ft²	31	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	156 ft²	0	-	156 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	28 W	84	-	0	0	-
Task Lighting	28 W	89	-	0	0	-
Electric Equipment	50 W	161	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	119	10	0%	0	0
>> Total Zone Loads	-	915	215	-	576	0

TABLE 1.2.B. Envelope Loads For Space "Cov back Entry 2F" 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	35	0.020	-	14	-	38
DOOR	21	0.300	-	114	-	340
S EXPOSURE						
WALL	56	0.020	-	33	-	60
E EXPOSURE						
WALL	50	0.020	-	32	-	54
W EXPOSURE						
WALL	50	0.020	-	33	-	54
H EXPOSURE						
ROOF	28	0.021	-	29	-	31

Space Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

TABLE 1.3.A. Component Loads For Space "Half Bath 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	299 ft²	176	-	299 ft²	321	-
Roof Transmission	60 ft²	65	-	60 ft²	66	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	320 ft²	0	-	320 ft²	0	-
Ceiling	60 ft²	0	-	60 ft²	0	-
Overhead Lighting	60 W	179	-	0	0	-
Task Lighting	60 W	191	-	0	0	-
Electric Equipment	50 W	161	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	164	10	0%	0	0
>> Total Zone Loads	-	1257	215	-	728	0

TABLE 1.3.B. Envelope Loads For Space "Half Bath 2F" 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	60	0.020	-	27	-	64
S EXPOSURE						
WALL	60	0.020	-	30	-	64
E EXPOSURE						
WALL	79	0.020	-	53	-	85
DOOR	21	0.300	-	114	-	340
W EXPOSURE						
WALL	100	0.020	-	67	-	107
H EXPOSURE						
ROOF	60	0.021	-	65	-	66

Space Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

TABLE 1.4.A. Component Loads For Space "Hall 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	956 ft²	586	-	956 ft²	1027	-
Roof Transmission	85 ft²	88	-	85 ft²	94	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	112 ft²	605	-	112 ft²	1814	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	528 ft²	0	-	528 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	85 W	254	-	0	0	-
Task Lighting	85 W	270	-	0	0	-
Electric Equipment	50 W	161	-	0	0	-
People	2	414	410	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	357	21	0%	0	0
>> Total Zone Loads	-	2735	431	-	2935	0

TABLE 1.4.B. Envelope Loads For Space "Hall 2F" 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	18	0.020	-	7	-	19
DOOR	42	0.300	-	227	-	680
S EXPOSURE						
WALL	600	0.020	-	358	-	644
E EXPOSURE						
WALL	176	0.020	-	113	-	189
DOOR	28	0.300	-	151	-	454
W EXPOSURE						
WALL	162	0.020	-	107	-	174
DOOR	42	0.300	-	227	-	680
H EXPOSURE						
ROOF	85	0.021	-	88	-	94

Space Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

TABLE 1.5.A. Component Loads For Space "Kitchen & Livingroom 2F" In Zone "Zone 1"						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	29 ft²	1915	-	29 ft²	-	-
Wall Transmission	1832 ft²	1041	-	1832 ft²	1967	-
Roof Transmission	2 ft²	2	-	2 ft²	2	-
Window Transmission	29 ft²	305	-	29 ft²	913	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	536 ft²	2897	-	536 ft²	8683	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	1200 ft²	0	-	1200 ft²	0	-
Ceiling	700 ft²	0	-	700 ft²	0	-
Overhead Lighting	2 W	5	-	0	0	-
Task Lighting	2 W	5	-	0	0	-
Electric Equipment	500 W	1611	-	0	0	-
People	5	1035	1025	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	1322	51	0%	0	0
>> Total Zone Loads	-	10138	1076	-	11565	0

TABLE 1.5.B. Envelope Loads For Space "Kitchen & Livingroom 2F" 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	399	0.020	-	177	-	429
DOOR	340	0.300	-	1838	-	5508
S EXPOSURE						
WALL	571	0.020	-	288	-	613
DOOR	168	0.300	-	908	-	2722
E EXPOSURE						
WALL	431	0.020	-	287	-	463
DOOR	28	0.300	-	151	-	454
W EXPOSURE						
WALL	430	0.020	-	288	-	462
WINDOW 1	29	0.588	0.811	305	1915	913
H EXPOSURE						
ROOF	2	0.021	-	2	-	2

Space Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

TABLE 1.6.A. Component Loads For Space "Laundry Room 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.7 °F / 69.8 °F			HEATING OA DB / WB 16.0 °F / 12.9 °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	29 ft²	1915	-	29 ft²	-	-
Wall Transmission	615 ft²	338	-	615 ft²	661	-
Roof Transmission	173 ft²	189	-	173 ft²	191	-
Window Transmission	29 ft²	305	-	29 ft²	913	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	521 ft²	0	-	521 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	173 W	516	-	0	0	-
Task Lighting	173 W	549	-	0	0	-
Electric Equipment	100 W	322	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	668	10	0%	0	0
>> Total Zone Loads	-	5121	215	-	2105	0

TABLE 1.6.B. Envelope Loads For Space "Laundry Room 2F" 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	189	0.020	-	84	-	203
S EXPOSURE						
WALL	189	0.020	-	95	-	203
E EXPOSURE						
WALL	123	0.020	-	82	-	132
DOOR	21	0.300	-	114	-	340
W EXPOSURE						
WALL	115	0.020	-	77	-	124
WINDOW 1	29	0.588	0.811	305	1915	913
H EXPOSURE						
ROOF	173	0.021	-	189	-	191

Space Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

TABLE 1.7.A. Component Loads For Space "Mud Room 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1400			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 98.4 °F / 70.8 °F			HEATING OA DB / WB 16.0 °F / 12.9 °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	419 ft²	199	-	419 ft²	449	-
Roof Transmission	125 ft²	111	-	125 ft²	139	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	119 ft²	702	-	119 ft²	1928	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	448 ft²	0	-	448 ft²	0	-
Ceiling	125 ft²	0	-	125 ft²	0	-
Overhead Lighting	125 W	377	-	0	0	-
Task Lighting	125 W	400	-	0	0	-
Electric Equipment	100 W	323	-	0	0	-
People	1	209	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	348	10	0%	0	0
>> Total Zone Loads	-	2668	215	-	2516	0

TABLE 1.7.B. Envelope Loads For Space "Mud Room 2F" 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	134	0.020	-	51	-	144
S EXPOSURE						
WALL	78	0.020	-	33	-	84
DOOR	56	0.300	-	330	-	907
E EXPOSURE						
WALL	92	0.020	-	61	-	99
DOOR	42	0.300	-	248	-	680
W EXPOSURE						
WALL	113	0.020	-	54	-	122
DOOR	21	0.300	-	124	-	340
H EXPOSURE						
ROOF	125	0.021	-	111	-	139

Space Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

TABLE 1.8.A. Component Loads For Space "Pantry 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	29 ft²	1915	-	29 ft²	-	-
Wall Transmission	569 ft²	343	-	569 ft²	611	-
Roof Transmission	138 ft²	150	-	138 ft²	152	-
Window Transmission	29 ft²	305	-	29 ft²	913	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	417 ft²	0	-	417 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	138 W	411	-	0	0	-
Task Lighting	138 W	437	-	0	0	-
Electric Equipment	50 W	161	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	606	10	0%	0	0
>> Total Zone Loads	-	4648	215	-	2017	0

TABLE 1.8.B. Envelope Loads For Space "Pantry 2F" 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	87	0.020	-	39	-	94
DOOR	21	0.300	-	114	-	340
S EXPOSURE						
WALL	108	0.020	-	55	-	116
E EXPOSURE						
WALL	201	0.020	-	134	-	216
W EXPOSURE						
WALL	173	0.020	-	116	-	185
WINDOW 1	29	0.588	0.811	305	1915	913
H EXPOSURE						
ROOF	138	0.021	-	150	-	152

Space Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

TABLE 1.9.A. Component Loads For Space "Studio Living Room 2F" In Zone "Zone 1"						
	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Sep 1400 COOLING OA DB / WB 93.8 °F / 68.2 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	88 ft²	4762	-	88 ft²	-	-
Wall Transmission	1037 ft²	399	-	1037 ft²	1113	-
Roof Transmission	526 ft²	358	-	526 ft²	583	-
Window Transmission	88 ft²	775	-	88 ft²	2778	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	56 ft²	253	-	56 ft²	907	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	467 ft²	0	-	467 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	526 W	1581	-	0	0	-
Task Lighting	526 W	1676	-	0	0	-
Electric Equipment	200 W	646	-	0	0	-
People	4	834	820	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	1693	41	0%	0	0
>> Total Zone Loads	-	12977	861	-	5381	0

TABLE 1.9.B. Envelope Loads For Space "Studio Living Room 2F" 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	240	0.020	-	52	-	258
S EXPOSURE						
WALL	183	0.020	-	97	-	196
WINDOW 1	58	0.588	0.811	509	3587	1826
E EXPOSURE						
WALL	264	0.020	-	131	-	283
WINDOW 1	30	0.588	0.811	266	1175	953
DOOR	56	0.300	-	253	-	907
W EXPOSURE						
WALL	350	0.020	-	118	-	376
H EXPOSURE						
ROOF	526	0.021	-	358	-	583

Space Design Load Summary for HVAC 3

Project Name: Project 120
Prepared by: E Lab

TABLE 1.10.A. Component Loads For Space "WC Bathroom 2F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.7 °F / 69.8 °F			HEATING OA DB / WB 16.0 °F / 12.9 °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	580 ft²	339	-	580 ft²	623	-
Roof Transmission	139 ft²	152	-	139 ft²	154	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	21 ft²	114	-	21 ft²	340	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	425 ft²	0	-	425 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	139 W	415	-	0	0	-
Task Lighting	139 W	441	-	0	0	-
Electric Equipment	50 W	161	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	274	10	0%	0	0
>> Total Zone Loads	-	2103	215	-	1117	0

TABLE 1.10.B. Envelope Loads For Space "WC Bathroom 2F" 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	126	0.020	-	56	-	135
S EXPOSURE						
WALL	126	0.020	-	63	-	135
E EXPOSURE						
WALL	175	0.020	-	116	-	188
W EXPOSURE						
WALL	154	0.020	-	103	-	165
DOOR	21	0.300	-	114	-	340
H EXPOSURE						
ROOF	139	0.021	-	152	-	154

System Psychrometrics for HVAC 3

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

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	94.7	0.01094	0	400	0	0
Vent - Return Mixing	Outlet	76.0	0.01076	2152	2807	-	-
Central Cooling Coil	Outlet	58.7	0.01035	2152	2807	37759	3876
Central Heating Coil	Outlet	58.7	0.01035	2152	2807	0	-
Supply Fan	Outlet	58.7	0.01035	2152	2807	0	-
Cold Supply Duct	Outlet	58.7	0.01035	2152	2807	-	-
Zone Air	-	76.0	0.01076	2152	2807	37759	3875
Return Plenum	Outlet	76.0	0.01076	2152	2807	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.012 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4447.3 BTU/(hr-CFM)

Site Altitude = 1791.0 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	41312	Cooling	37759	76.0	2152	2807	0	0

System Psychrometrics for HVAC 3

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

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	16.0	0.00093	0	400	0	0
Vent - Return Mixing	Outlet	69.4	0.01651	2152	800	-	-
Central Cooling Coil	Outlet	69.4	0.01651	2152	800	0	0
Central Heating Coil	Outlet	82.3	0.01651	2152	800	27945	-
Supply Fan	Outlet	82.3	0.01651	2152	800	0	-
Cold Supply Duct	Outlet	82.3	0.01651	2152	800	-	-
Zone Air	-	69.4	0.01651	2152	800	-27945	0
Return Plenum	Outlet	69.4	0.01651	2152	800	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.012 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4447.3 BTU/(hr-CFM)

Site Altitude = 1791.0 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	-29556	Heating	-27945	69.4	2152	800	0	0

System Psychrometrics for HVAC 3

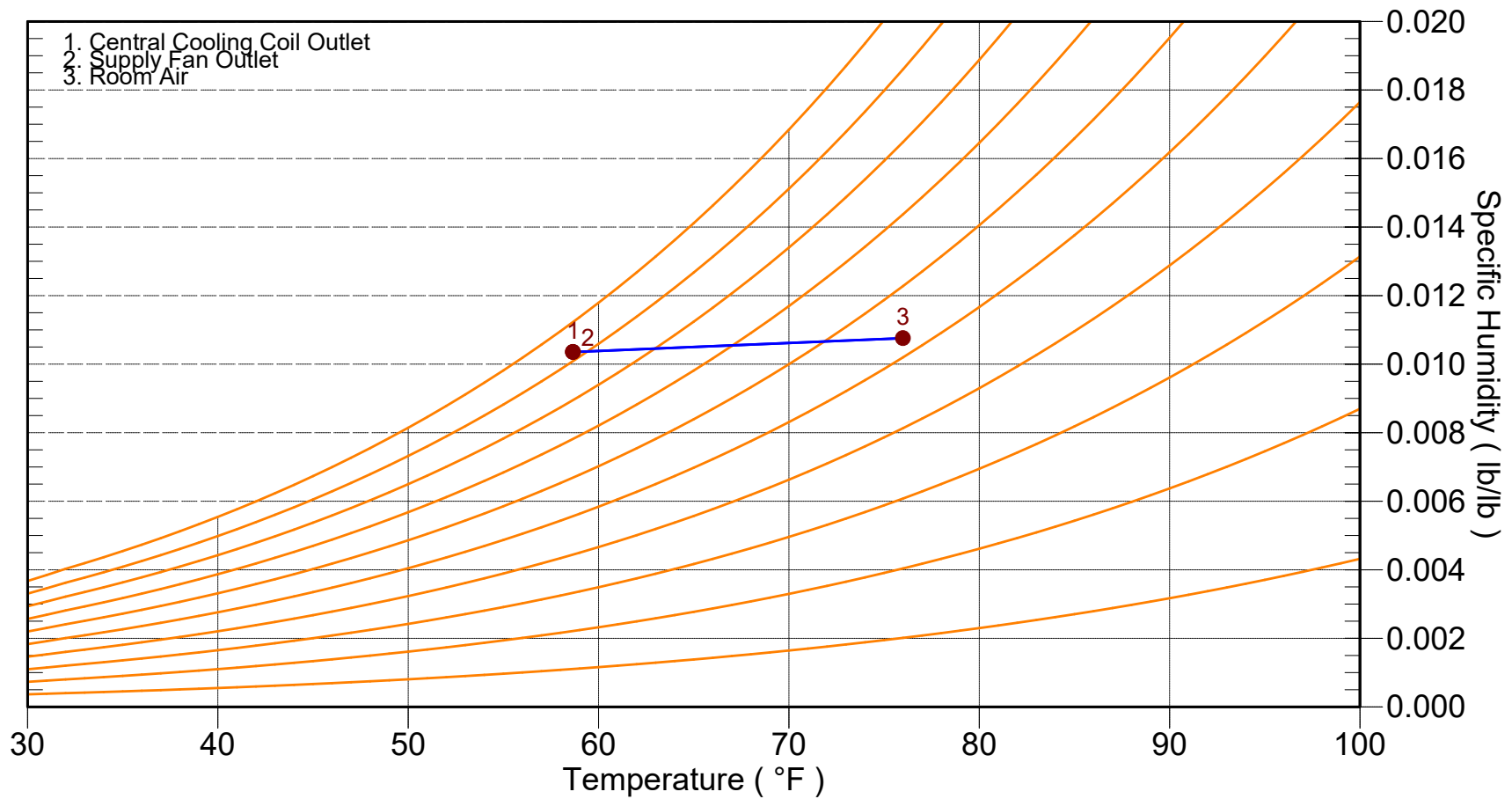
Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

Location: Cedar Hill, Texas

Altitude: 1791.0 ft.

Data for: July DESIGN COOLING DAY, 1800

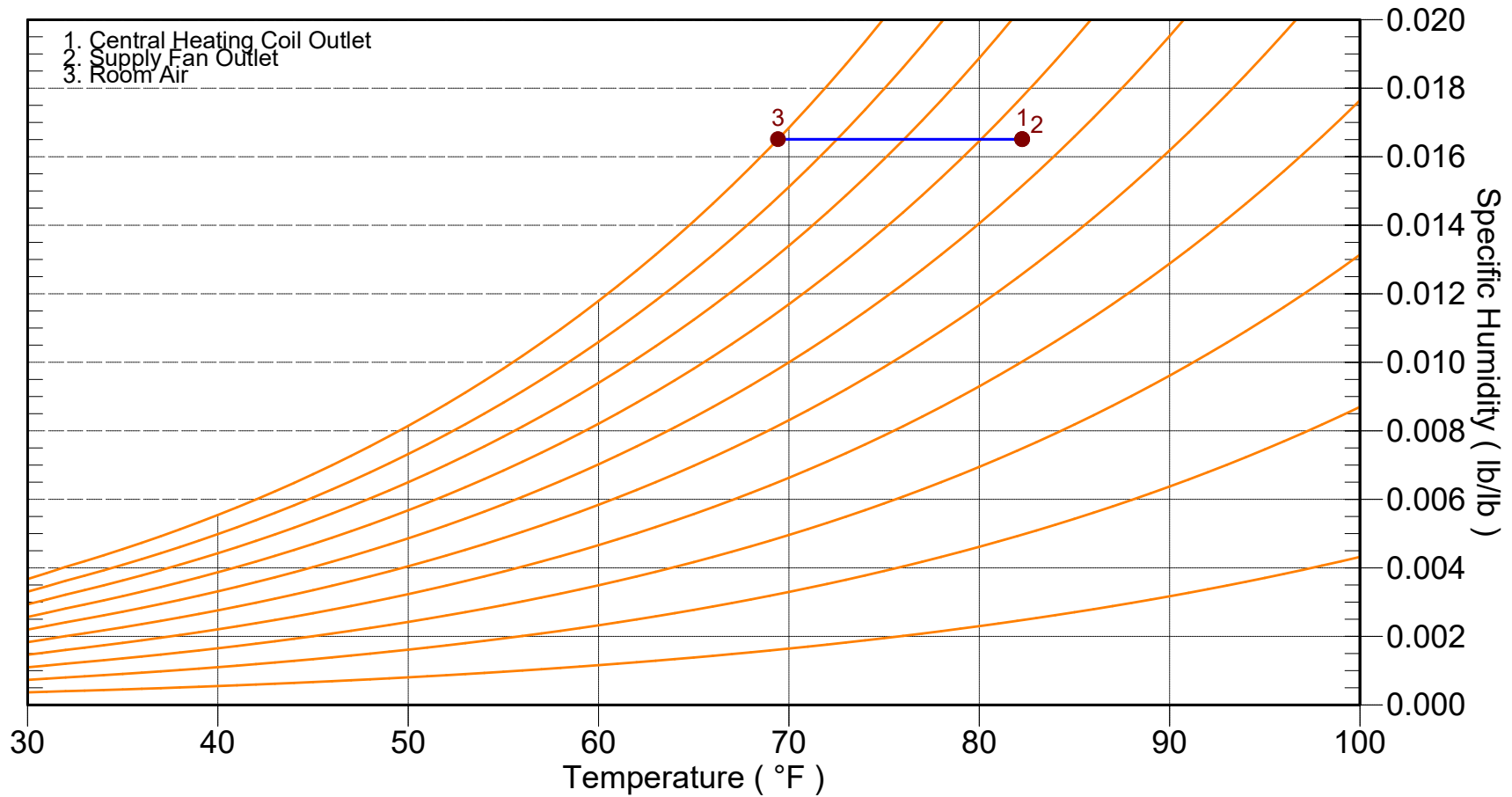


System Psychrometrics for HVAC 3

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

Location: Cedar Hill, Texas
Altitude: 1791.0 ft.
Data for: WINTER DESIGN HEATING



Air System Sizing Summary for HVAC 4

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

Air System Information

Air System Name **HVAC 4**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **1472.1** ft²
Location **Cedar Hill, 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 **6.1** Tons
Total coil load **72.8** MBH
Sensible coil load **70.4** MBH
Coil CFM at Aug 1400 **3726** CFM
Max block CFM **3726** CFM
Sum of peak zone CFM **3726** CFM
Sensible heat ratio **0.968**
CFM/Ton **614.4**
ft²/Ton **242.7**
BTU/(hr-ft²) **49.4**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Aug 1400**
OA DB / WB **98.4 / 70.8** °F
Entering DB / WB **76.3 / 62.9** °F
Leaving DB / WB **57.6 / 56.1** °F
Coil ADP **55.1** °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 **13.5** MBH
Coil CFM at Des Htg **3726** CFM
Max coil CFM **3726** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr-ft²) **9.2**
Ent. DB / Lvg DB **69.6 / 73.2** °F

Supply Fan Sizing Data

Actual max CFM **3726** CFM
Standard CFM **3491** CFM
Actual max CFM/ft² **2.53** 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 **0** CFM
CFM/ft² **0.00** CFM/ft²

CFM/person **0.00** CFM/person

Zone Sizing Summary for HVAC 4

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

Air System Information

Air System Name HVAC 4
Equipment Class SPLT AHU
Air System Type SZCAV

Number of zones 1
Floor Area 1472.1 ft²
Location Cedar Hill, 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

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	3726	3726	2.53	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	73.1	Sep 1400	14.6	1472.1

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							
Study Bath 3F	1	3.2	Jul 1900	160	1.0	60.1	2.66
Upper Bath 3F	1	4.4	Jul 1900	216	1.2	87.0	2.48
Upper BED 3F	1	23.8	Jul 1800	1176	3.6	522.0	2.25
Upper Hall 3F	1	4.7	Jul 1800	232	1.6	91.5	2.54
Upper Loft 3F	1	12.5	Jul 2200	618	2.1	268.3	2.30
Upper Study 3F	1	26.8	Oct 1400	1324	5.1	443.2	2.99

Ventilation Sizing Summary for HVAC 4

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

1. Summary

Ventilation Sizing Method Sum of Space OA Airflows
Design Ventilation Airflow Rate 0 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									
Study Bath 3F	1	60.1	1.0	159.8	0.00	0.00	0.0	0.0	0.0
Upper Bath 3F	1	87.0	1.0	216.0	0.00	0.00	0.0	0.0	0.0
Upper BED 3F	1	522.0	2.0	1176.5	0.00	0.00	0.0	0.0	0.0
Upper Hall 3F	1	91.5	1.0	232.2	0.00	0.00	0.0	0.0	0.0
Upper Loft 3F	1	268.3	3.0	618.0	0.00	0.00	0.0	0.0	0.0
Upper Study 3F	1	443.2	3.0	1323.8	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				3726.3					0.0

Air System Design Load Summary for HVAC 4

Project Name: Project 120
Prepared by: E Lab

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1400 COOLING OA DB / WB 98.4 °F / 70.8 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	131 ft²	4071	-	131 ft²	-	-
Wall Transmission	3188 ft²	1566	-	3188 ft²	3423	-
Roof Transmission	1472 ft²	1247	-	1472 ft²	1631	-
Window Transmission	131 ft²	1518	-	131 ft²	4167	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	329 ft²	1941	-	329 ft²	5330	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	1568 ft²	0	-	1568 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	14721 W	44243	-	0	0	-
Task Lighting	1472 W	4690	-	0	0	-
Electric Equipment	450 W	1454	-	0	0	-
People	11	2294	2255	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	9454	113	0%	0	0
>> Total Zone Loads	-	72477	2368	-	14551	0
Zone Conditioning	-	70421	2368	-	13513	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	3726 CFM	0	-	3726 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	3726 CFM	0	-	3726 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	70421	2368	-	13513	0
Central Cooling Coil	-	70421	2364	-	0	0
Central Heating Coil	-	0	-	-	13513	-
>> Total Conditioning	-	70421	2364	-	13513	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 4

Project Name: Project 120
Prepared by: E Lab

Zone 1	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Sep 1400			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 93.8 °F / 68.2 °F			HEATING OA DB / WB 16.0 °F / 12.9 °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	131 ft²	5968	-	131 ft²	-	-
Wall Transmission	3188 ft²	1280	-	3188 ft²	3423	-
Roof Transmission	1472 ft²	1003	-	1472 ft²	1631	-
Window Transmission	131 ft²	1163	-	131 ft²	4167	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	329 ft²	1487	-	329 ft²	5330	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	1568 ft²	0	-	1568 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	14721 W	44243	-	0	0	-
Task Lighting	1472 W	4690	-	0	0	-
Electric Equipment	450 W	1454	-	0	0	-
People	11	2294	2255	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	9537	113	0%	0	0
>> Total Zone Loads	-	73119	2368	-	14551	0

Space Design Load Summary for HVAC 4

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

TABLE 1.1.A. Component Loads For Space "Study Bath 3F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1900 COOLING OA DB / WB 92.0 °F / 69.0 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	276 ft²	170	-	276 ft²	296	-
Roof Transmission	60 ft²	62	-	60 ft²	67	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	42 ft²	206	-	42 ft²	680	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	97 ft²	0	-	97 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	601 W	1812	-	0	0	-
Task Lighting	60 W	192	-	0	0	-
Electric Equipment	50 W	162	-	0	0	-
People	1	209	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	422	10	0%	0	0
>> Total Zone Loads	-	3235	215	-	1043	0

TABLE 1.1.B. Envelope Loads For Space "Study Bath 3F" 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	41	0.020	-	19	-	44
DOOR	21	0.300	-	103	-	340
S EXPOSURE						
WALL	62	0.020	-	32	-	67
E EXPOSURE						
WALL	76	0.020	-	50	-	82
DOOR	21	0.300	-	103	-	340
W EXPOSURE						
WALL	97	0.020	-	70	-	104
H EXPOSURE						
ROOF	60	0.021	-	62	-	67

Space Design Load Summary for HVAC 4

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

TABLE 1.2.A. Component Loads For Space "Upper Bath 3F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1900 COOLING OA DB / WB 92.0 °F / 69.0 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	368 ft²	233	-	368 ft²	395	-
Roof Transmission	87 ft²	89	-	87 ft²	96	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	42 ft²	206	-	42 ft²	680	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	205 ft²	0	-	205 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	870 W	2624	-	0	0	-
Task Lighting	87 W	278	-	0	0	-
Electric Equipment	50 W	162	-	0	0	-
People	1	209	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	570	10	0%	0	0
>> Total Zone Loads	-	4370	215	-	1172	0

TABLE 1.2.B. Envelope Loads For Space "Upper Bath 3F" 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	39	0.020	-	18	-	42
DOOR	21	0.300	-	103	-	340
S EXPOSURE						
WALL	60	0.020	-	31	-	64
E EXPOSURE						
WALL	145	0.020	-	96	-	156
W EXPOSURE						
WALL	124	0.020	-	89	-	133
DOOR	21	0.300	-	103	-	340
H EXPOSURE						
ROOF	87	0.021	-	89	-	96

Space Design Load Summary for HVAC 4

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

TABLE 1.3.A. Component Loads For Space "Upper BED 3F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	967	-	45 ft²	-	-
Wall Transmission	853 ft²	474	-	853 ft²	916	-
Roof Transmission	522 ft²	570	-	522 ft²	578	-
Window Transmission	45 ft²	477	-	45 ft²	1429	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	42 ft²	227	-	42 ft²	680	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	470 ft²	0	-	470 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	5220 W	15596	-	0	0	-
Task Lighting	522 W	1658	-	0	0	-
Electric Equipment	100 W	322	-	0	0	-
People	2	414	410	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	3106	21	0%	0	0
>> Total Zone Loads	-	23810	431	-	3604	0

TABLE 1.3.B. Envelope Loads For Space "Upper BED 3F" 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	245	0.020	-	109	-	263
WINDOW 1	45	0.588	0.811	477	967	1429
S EXPOSURE						
WALL	248	0.020	-	125	-	266
DOOR	42	0.300	-	227	-	680
E EXPOSURE						
WALL	180	0.020	-	120	-	193
W EXPOSURE						
WALL	180	0.020	-	121	-	193
H EXPOSURE						
ROOF	522	0.021	-	570	-	578

Space Design Load Summary for HVAC 4

Project Name: Project 120
Prepared by: E Lab

01/04/2025
09:07PM

TABLE 1.4.A. Component Loads For Space "Upper Hall 3F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800 COOLING OA DB / WB 94.7 °F / 69.8 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	403 ft²	254	-	403 ft²	433	-
Roof Transmission	92 ft²	100	-	92 ft²	101	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	63 ft²	341	-	63 ft²	1021	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	366 ft²	0	-	366 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	915 W	2734	-	0	0	-
Task Lighting	92 W	291	-	0	0	-
Electric Equipment	50 W	161	-	0	0	-
People	1	207	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	613	10	0%	0	0
>> Total Zone Loads	-	4700	215	-	1555	0

TABLE 1.4.B. Envelope Loads For Space "Upper Hall 3F" 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	29	0.020	-	13	-	31
DOOR	21	0.300	-	114	-	340
S EXPOSURE						
WALL	50	0.020	-	25	-	54
E EXPOSURE						
WALL	183	0.020	-	122	-	196
W EXPOSURE						
WALL	141	0.020	-	94	-	151
DOOR	42	0.300	-	227	-	680
H EXPOSURE						
ROOF	92	0.021	-	100	-	101

Space Design Load Summary for HVAC 4

Project Name: Project 120
Prepared by: E Lab

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TABLE 1.5.A. Component Loads For Space "Upper Loft 3F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2200 COOLING OA DB / WB 85.1 °F / 67.0 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	590 ft²	325	-	590 ft²	634	-
Roof Transmission	268 ft²	179	-	268 ft²	297	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	70 ft²	242	-	70 ft²	1134	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	330 ft²	0	-	330 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	2683 W	8287	-	0	0	-
Task Lighting	268 W	867	-	0	0	-
Electric Equipment	100 W	327	-	0	0	-
People	3	648	615	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	1631	31	0%	0	0
>> Total Zone Loads	-	12507	646	-	2065	0

TABLE 1.5.B. Envelope Loads For Space "Upper Loft 3F" 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	164	0.020	-	75	-	176
DOOR	21	0.300	-	73	-	340
S EXPOSURE						
WALL	185	0.020	-	90	-	199
E EXPOSURE						
WALL	124	0.020	-	77	-	133
DOOR	21	0.300	-	73	-	340
W EXPOSURE						
WALL	117	0.020	-	83	-	126
DOOR	28	0.300	-	97	-	454
H EXPOSURE						
ROOF	268	0.021	-	179	-	297

Space Design Load Summary for HVAC 4

Project Name: Project 120
Prepared by: E Lab

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TABLE 1.6.A. Component Loads For Space "Upper Study 3F" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1400 COOLING OA DB / WB 84.0 °F / 63.6 °F OCCUPIED T-STAT 75.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 16.0 °F / 12.9 °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	86 ft²	6942	-	86 ft²	-	-
Wall Transmission	698 ft²	124	-	698 ft²	749	-
Roof Transmission	443 ft²	172	-	443 ft²	491	-
Window Transmission	86 ft²	267	-	86 ft²	2739	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	70 ft²	111	-	70 ft²	1134	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	100 ft²	0	-	100 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	4432 W	13320	-	0	0	-
Task Lighting	443 W	1412	-	0	0	-
Electric Equipment	100 W	323	-	0	0	-
People	3	626	615	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	3494	31	0%	0	0
>> Total Zone Loads	-	26791	646	-	5113	0

TABLE 1.6.B. Envelope Loads For Space "Upper Study 3F" 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	155	0.020	-	1	-	166
DOOR	21	0.300	-	33	-	340
S EXPOSURE						
WALL	90	0.020	-	39	-	96
WINDOW 1	86	0.588	0.811	267	6942	2739
E EXPOSURE						
WALL	223	0.020	-	57	-	239
DOOR	28	0.300	-	44	-	454
W EXPOSURE						
WALL	230	0.020	-	26	-	247
DOOR	21	0.300	-	33	-	340
H EXPOSURE						
ROOF	443	0.021	-	172	-	491

System Psychrometrics for HVAC 4

Project Name: Project 120
Prepared by: E Lab

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August DESIGN COOLING DAY, 1400

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	98.4	0.01094	0	400	0	0
Vent - Return Mixing	Outlet	76.3	0.01001	3726	1508	-	-
Central Cooling Coil	Outlet	57.6	0.00986	3726	1508	70421	2364
Central Heating Coil	Outlet	57.6	0.00986	3726	1508	0	-
Supply Fan	Outlet	57.6	0.00986	3726	1508	0	-
Cold Supply Duct	Outlet	57.6	0.00986	3726	1508	-	-
Zone Air	-	76.3	0.01001	3726	1508	70421	2368
Return Plenum	Outlet	76.3	0.01001	3726	1508	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.012 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4447.3 BTU/(hr-CFM)

Site Altitude = 1791.0 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	72477	Cooling	70421	76.3	3726	1508	0	0

System Psychrometrics for HVAC 4

Project Name: Project 120
Prepared by: E Lab

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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	16.0	0.00093	0	400	0	0
Vent - Return Mixing	Outlet	69.6	0.01270	3726	800	-	-
Central Cooling Coil	Outlet	69.6	0.01270	3726	800	0	0
Central Heating Coil	Outlet	73.2	0.01270	3726	800	13513	-
Supply Fan	Outlet	73.2	0.01270	3726	800	0	-
Cold Supply Duct	Outlet	73.2	0.01270	3726	800	-	-
Zone Air	-	69.6	0.01270	3726	800	-13513	0
Return Plenum	Outlet	69.6	0.01270	3726	800	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.012 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4447.3 BTU/(hr-CFM)

Site Altitude = 1791.0 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	-14551	Heating	-13513	69.6	3726	800	0	0

System Psychrometrics for HVAC 4

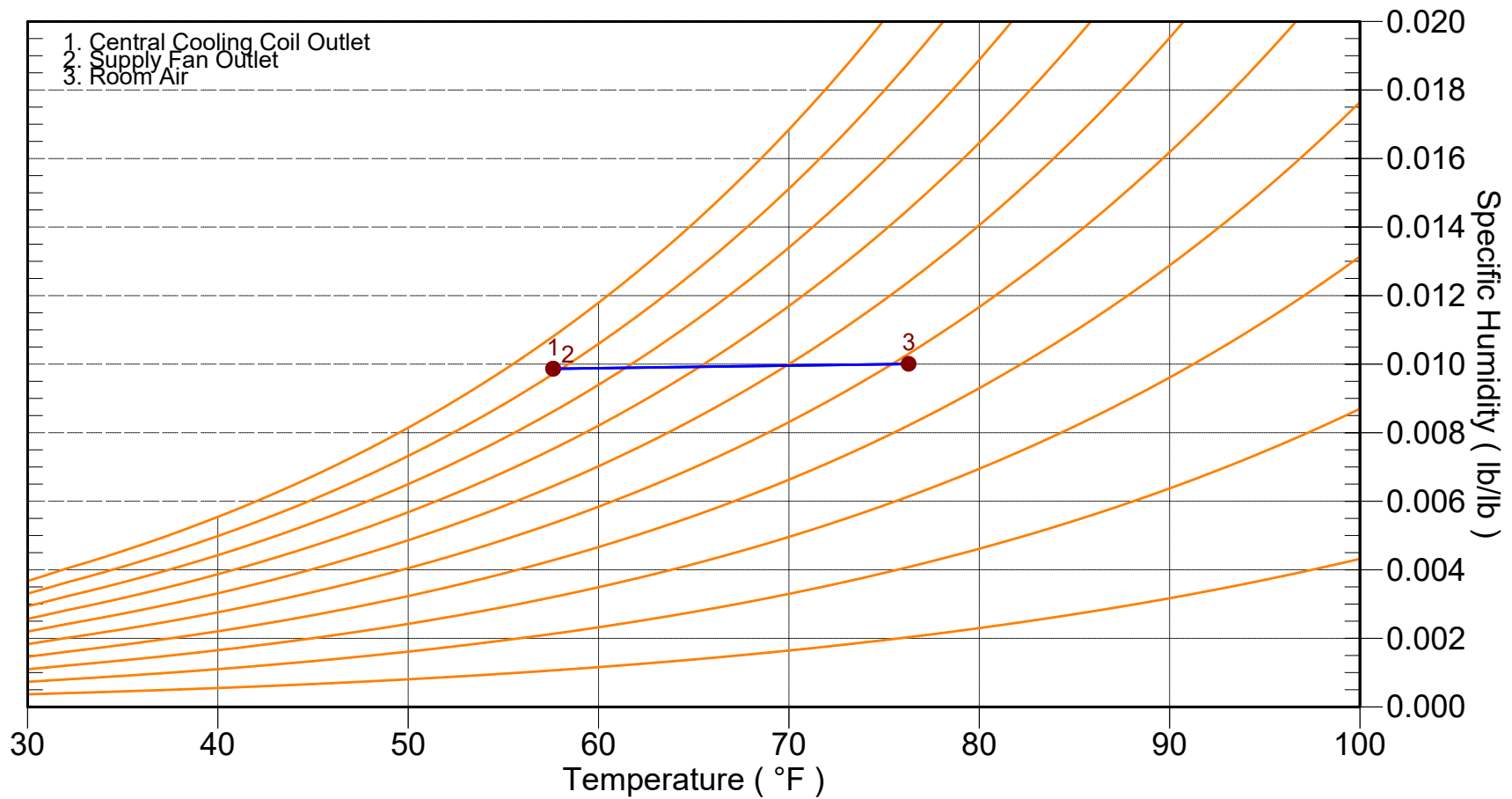
Project Name: Project 120
Prepared by: E Lab

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Location: Cedar Hill, Texas

Altitude: 1791.0 ft.

Data for: August DESIGN COOLING DAY, 1400



System Psychrometrics for HVAC 4

Project Name: Project 120
Prepared by: E Lab

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09:07PM

Location: Cedar Hill, Texas
Altitude: 1791.0 ft.
Data for: WINTER DESIGN HEATING

