

Air System Sizing Summary for Unit #1

Project Name: Coffey County Housing Authority - Triplex
 Prepared by: Schmidt Engineering Consultants, Inc

02/21/2016
 01:23PM

Air System Information

Air System Name:..... **Unit #1**
 Air System Type:..... **Single Zone CAV**
 Number of zones:..... **1**
 Floor Area:..... **1094.5** sqft
 Location:..... **Topeka, Kansas**

Sizing Calculation Information

Calculation Months:..... **Jan to Dec**
 Calculation method:..... **Transfer Function Method**

Central Cooling Coil Sizing Data

Total coil load:.....	0.9 Tons	Load occurs at:.....	Jul 1600
Total coil load:.....	10.9 MBH	OA DB / WB:.....	95.4/74.8 F
Sensible coil load:.....	9.0 MBH	Entering DB / WB:.....	78.9/66.0 F
Coil airflow:.....	432 CFM	Leaving DB / WB:.....	58.9/57.7 F
Sensible heat ratio:.....	0.829	Coil ADP:.....	56.7 F
Area per unit load:.....	1204.7 sqft/Ton	Bypass Factor:.....	0.100
Load per unit area:.....	10.0 BTU/(hr-sqft)	Resulting RH:.....	54 %
		Design supply temp:.....	58.0 F

Central Heating Coil Sizing Data

Max coil load:.....	13.9 MBH	Load occurs at:.....	Des Htg
Coil airflow:.....	432 CFM	Ent DB / Lvg DB:.....	57.2/88.0 F
Load per unit area:.....	12.7 BTU/(hr-sqft)		

Supply Fan Sizing Data

Actual max airflow:.....	432 CFM	Fan motor BHP:.....	0.00 BHP
Standard airflow:.....	418 CFM	Fan motor kW:.....	0.00 kW
Actual max airflow per unit area:.....	0.39 CFM/sqft	Fan static:.....	0.00 in wg

Outdoor Ventilation Air Data

Design airflow:.....	75 CFM	Airflow per person:.....	18.75 CFM/person
Airflow per unit floor area:.....	0.07 CFM/sqft		

Space Sizing Data

Space Name	Maximum Cooling Sensible Load MBH	Design Airflow CFM	Time of Peak Load	Maximum Heating Load MBH	Space Floor Area sqft	Space CFM/sqft
Bath(1)	0.3	15	Jul 1500	0.6	85.5	0.17
Bedroom #1(1)	1.5	83	Jul 1400	2.0	183.0	0.45
Bedroom #2(1)	1.8	102	Jul 1700	2.2	180.6	0.56
Corridor(1)	0.1	4	Jul 1500	0.1	39.1	0.11
Dining Room(1)	0.3	17	Jul 1400	0.3	165.5	0.11
Kitchen(1)	1.4	77	Jul 1400	1.1	142.7	0.54
Living Room(1)	1.8	102	Jul 1700	1.8	231.4	0.44
Utility(1)	0.8	44	Jul 1400	0.5	66.7	0.66
Zone	7.7	432	Jul 1600	8.6	1094.5	0.39

Note: Table contains data for all spaces controlled by a single thermostat:

Space sizing basis:..... **Peak space load**
 Zone sizing basis:..... **Peak zone load**

System Design Load Summary for Unit #1

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Zone Loads based on TFM	DESIGN COOLING			DESIGN HEATING		
	Jul 1600			Design Heating Day		
	OA DB / WB 95.4 F / 74.8 F			OA DB / WB -2 F / -3.4 F		
	Details	Sensible BTU/hr	Latent BTU/hr	Details	Sensible BTU/hr	Latent BTU/hr
Window and Skylight Solar Loads	75 sqft	1671	-	75 sqft	-	-
Wall Transmission	734 sqft	1135	-	734 sqft	2274	-
Roof Transmission	1177 sqft	2104	-	1177 sqft	2033	-
Window Transmission	75 sqft	387	-	75 sqft	1620	-
Skylight Transmission	0 sqft	0	-	0 sqft	0	-
Door Loads	40 sqft	131	-	40 sqft	550	-
Floor Transmission	1095 sqft	0	-	1095 sqft	2139	-
Partitions/Ceilings	0 sqft	0	-	0 sqft	0	-
Overhead Lighting	0 W	0	-	0 W	0	-
Electric Equipment	0 W	0	-	0 W	0	-
People	4	920	480	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	1325	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>>Total Zone Loads	-	7673	480	-	8615	0
Thermostat and Pulldown Adjustment	-	-197	0	-	-338	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Ventilation Load	75 CFM	1564	1382	75 CFM	5618	0
Supply Fan Load	432 CFM	0	-	432 CFM	0	-
>> Total System Loads	-	9041	1862	-	13895	0
Central Cooling Coil	-	9041	1862	-	0	0
Central Heating Coil	-	0	-	-	13895	-
>> Total Coil Loads	-	9041	1862	-	13895	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 Unit #1

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Bath(1)	DESIGN COOLING			DESIGN HEATING		
	Jul 1600			Design Heating Day		
	OA DB / WB 95.4 F / 74.8 F			OA DB / WB -2 F / -3.4 F		
	Thermostat Setpoint 75.0 F			Thermostat Setpoint 70.0 F		
Zone Loads based on TFM	Details	Sensible BTU/hr	Latent BTU/hr	Details	Sensible BTU/hr	Latent BTU/hr
Window and Skylight Solar Loads	75 sqft	1671	-	75 sqft	-	-
Wall Transmission	734 sqft	1135	-	734 sqft	2274	-
Roof Transmission	1177 sqft	2104	-	1177 sqft	2033	-
Window Transmission	75 sqft	387	-	75 sqft	1620	-
Skylight Transmission	0 sqft	0	-	0 sqft	0	-
Door Loads	40 sqft	131	-	40 sqft	550	-
Floor Transmission	1095 sqft	0	-	1095 sqft	2139	-
Partitions/Ceilings	0 sqft	0	-	0 sqft	0	-
Overhead Lighting	0 W	0	-	0 W	0	-
Electric Equipment	0 W	0	-	0 W	0	-
People	4	920	480	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	1325	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	7673	480	-	8615	0