Air System Sizing Summary for Unit #3

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

02/21/2016
01:30PM

Air System Information

Air System Name: **Unit #3**
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 1500**
Total coil load:	**11.4**	MBH	OA DB / WB:	**96.0/75.0** F
Sensible coil load:	**9.5**	MBH	Entering DB / WB:	**78.8/65.8** F
Coil airflow:	**455**	CFM	Leaving DB / WB:	**58.8/57.6** F
Sensible heat ratio:	**0.835**		Coil ADP:	**56.6** F
Area per unit load:	**1153.4**	sqft/Ton	Bypass Factor:	**0.100**
Load per unit area:	**10.4**	BTU/(hr-sqft)	Resulting RH:	**54** %
			Design supply temp:	**58.0** F

Central Heating Coil Sizing Data

Max coil load:	**14.3**	MBH	Load occurs at:	**Des Htg**
Coil airflow:	**455**	CFM	Ent DB / Lvg DB:	**58.0/87.9** F
Load per unit area:	**13.0**	BTU/(hr-sqft)		

Supply Fan Sizing Data

Actual max airflow:	**455**	CFM	Fan motor BHP:	**0.00** BHP
Standard airflow:	**441**	CFM	Fan motor kW:	**0.00** kW
Actual max airflow per unit area:	**0.42**	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 MBH	Design Airflow CFM	Time of Peak Load	Maximum Heating Load MBH	Space Floor Area sqft	Space CFM/sqft
Bath(3)	0.3	19	Aug 1500	0.6	85.5	0.22
Bedroom #1(3)	1.8	101	Aug 1400	2.0	183.0	0.55
Bedroom #2(3)	2.0	112	Aug 1600	2.2	180.6	0.62
Corridor(3)	0.1	4	Jul 1500	0.1	39.1	0.11
Dining Room(3)	0.3	17	Jul 1400	0.3	165.5	0.11
Kitchen(3)	1.4	77	Jul 1400	1.1	142.7	0.54
Living Room(3)	1.8	102	Jul 1700	1.8	231.4	0.44
Utility(3)	0.8	44	Jul 1400	0.5	66.7	0.65
Zone	**8.1**	**455**	**Aug 1500**	**8.6**	**1094.5**	**0.42**

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 #3

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	DESIGN COOLING			DESIGN HEATING		
	Jul 1500 OA DB / WB 96 F / 75 F			Design Heating Day OA DB / WB -2 F / -3.4 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	1765	-	75 sqft	-	-
Wall Transmission	734 sqft	1235	-	734 sqft	2274	-
Roof Transmission	1177 sqft	2205	-	1177 sqft	2033	-
Window Transmission	75 sqft	391	-	75 sqft	1620	-
Skylight Transmission	0 sqft	0	-	0 sqft	0	-
Door Loads	40 sqft	133	-	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	**-**	**7973**	**480**	**-**	**8615**	**0**
Thermostat and Pulldown Adjustment	-	-83	0	-	13	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	1619	1398	75 CFM	5630	0
Supply Fan Load	455 CFM	0	-	455 CFM	0	-
>> Total System Loads	**-**	**9509**	**1878**	**-**	**14259**	**0**
Central Cooling Coil	-	9509	1878	-	0	0
Central Heating Coil	-	0	-	-	14259	-
>> Total Coil Loads	**-**	**9509**	**1878**	**-**	**14259**	**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 #3

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Bath(3)	DESIGN COOLING			DESIGN HEATING		
	Aug 1500			Design Heating Day		
	OA DB / WB 96 F / 75 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	1950	-	75 sqft	-	-
Wall Transmission	734 sqft	1327	-	734 sqft	2274	-
Roof Transmission	1177 sqft	2051	-	1177 sqft	2033	-
Window Transmission	75 sqft	391	-	75 sqft	1620	-
Skylight Transmission	0 sqft	0	-	0 sqft	0	-
Door Loads	40 sqft	133	-	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	**-**	**8096**	**480**	**-**	**8615**	**0**