

# Air System Sizing Summary for RTU-1 - Floor 1

Project Name: HAP\_ASHRAE Bldg  
Prepared by: Antella

05/07/2017  
06:10PM

## Air System Information

Air System Name .....	RTU-1 - Floor 1	Number of zones .....	5
Equipment Class .....	PKG ROOF	Floor Area .....	22500.0 ft <sup>2</sup>
Air System Type .....	VAV	Location .....	Kansas City, Missouri

## Sizing Calculation Information

Calculation Months .....	Jan to Dec	Zone CFM Sizing .....	Peak zone sensible load
Sizing Data .....	Calculated	Space CFM Sizing .....	Individual peak space loads

## Central Cooling Coil Sizing Data

Total coil load .....	29.5	Tons	Load occurs at .....	Jul 1600
Total coil load .....	354.1	MBH	OA DB / WB .....	96.0 / 75.0 °F
Sensible coil load .....	286.5	MBH	Entering DB / WB .....	78.2 / 64.4 °F
Coil CFM at Jul 1600 .....	11452	CFM	Leaving DB / WB .....	55.0 / 53.8 °F
Max block CFM at Aug 1600 .....	11522	CFM	Coil ADP .....	52.4 °F
Sum of peak zone CFM .....	11647	CFM	Bypass Factor .....	0.100
Sensible heat ratio .....	0.809		Resulting RH .....	54 %
ft <sup>2</sup> /Ton .....	762.4		Design supply temp. ....	55.0 °F
BTU/(hr-ft <sup>2</sup> ) .....	15.7		Zone T-stat Check .....	4 of 5 OK
Water flow @ 10.0 °F rise .....	N/A		Max zone temperature deviation .....	0.0 °F

## Preheat Coil Sizing Data

Max coil load .....	33.8	MBH	Load occurs at .....	Des Htg
Coil CFM at Des Htg .....	11250	CFM	Ent. DB / Lvg DB .....	57.2 / 60.0 °F
Max coil CFM .....	11522	CFM		
Water flow @ 20.0 °F drop .....	N/A			

## Supply Fan Sizing Data

Actual max CFM at Aug 1600 .....	11522	CFM	Fan motor BHP .....	10.36	BHP
Standard CFM .....	11522	CFM	Fan motor kW .....	8.58	kW
Actual max CFM/ft <sup>2</sup> .....	0.51	CFM/ft <sup>2</sup>			

## Outdoor Ventilation Air Data

Design airflow CFM .....	1913	CFM	CFM/person .....	17.00	CFM/person
CFM/ft <sup>2</sup> .....	0.09	CFM/ft <sup>2</sup>			

## Air System Design Load Summary for RTU-1 - Floor 1

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 96.0 °F / 75.0 °F			HEATING OA DB / WB -1.0 °F / -2.5 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	1040 ft²	24060	-	1040 ft²	-	-
Wall Transmission	7360 ft²	7551	-	7360 ft²	33605	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	1040 ft²	10086	-	1040 ft²	40612	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	22500 ft²	0	-	22500 ft²	18474	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	20250 W	56380	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	16875 W	52851	-	0	0	-
People	113	20375	23063	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
<b>&gt;&gt; Total Zone Loads</b>	-	<b>171302</b>	<b>23063</b>	-	<b>92691</b>	<b>0</b>
Zone Conditioning	-	181369	23063	-	91490	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	11452 CFM	0	-	11250 CFM	0	-
Ventilation Load	1913 CFM	50013	44546	1913 CFM	144875	0
Supply Fan Load	11452 CFM	28883	-	11250 CFM	-27701	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
<b>&gt;&gt; Total System Loads</b>	-	<b>260266</b>	<b>67608</b>	-	<b>208665</b>	<b>0</b>
Central Cooling Coil	-	286516	67630	-	0	0
Preheat Coil	-	0	-	-	33817	-
Terminal Reheat Coils	-	-26250	-	-	174847	-
<b>&gt;&gt; Total Conditioning</b>	-	<b>260266</b>	<b>67630</b>	-	<b>208665</b>	<b>0</b>
<b>Key:</b>	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		