

AIR SYSTEM SIZING SUMMARY FOR BLOCK LOAD

Air System Information
 Air System Name: BLOCK LOAD
 Equipment Class: PKG ROOF
 Air System Type: SZCAV
 Number of zones: 1
 Floor Area: 14852.0 ft²
 Location: Atlanta, Georgia

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: 38.9 Tons
 Total coil load: 467.0 MBH
 Sensible coil load: 362.7 MBH
 Coil CFM at Jul 1400: 18000 CFM
 Max block CFM: 18000 CFM
 Sum of peak zone CFM: 18000 CFM
 Sensible heat ratio: 0.777
 R7/Ton: 381.6
 BTU/(hr-ft²): 31.4
 Water flow @ 10.0 °F rise: N/A

Central Heating Coil Sizing Data
 Max coil load: 207.1 MBH
 Coil CFM at Des Htg: 18000 CFM
 Max coil CFM: 18000 CFM
 Water flow @ 20.0 °F drop: N/A

Supply Fan Sizing Data
 Actual max CFM: 18000 CFM
 Standard CFM: 17338 CFM
 Actual max CFM/R²: 1.21 CFM/R²
 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: 3388 CFM
 CFM/R²: 0.23 CFM/R²

AIR SYSTEM SIZING SUMMARY FOR AHU-1

Air System Information
 Air System Name: AHU-1 plan S
 Equipment Class: PKG ROOF
 Air System Type: SZCAV
 Number of zones: 1
 Floor Area: 4824.0 ft²
 Location: Atlanta, Georgia

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: 13.6 Tons
 Total coil load: 163.3 MBH
 Sensible coil load: 126.4 MBH
 Coil CFM at Jul 1500: 6000 CFM
 Max block CFM: 6000 CFM
 Sum of peak zone CFM: 6000 CFM
 Sensible heat ratio: 0.774
 R7/Ton: 354.5
 BTU/(hr-ft²): 33.9
 Water flow @ 10.0 °F rise: N/A

Central Heating Coil Sizing Data
 Max coil load: 62.6 MBH
 Coil CFM at Des Htg: 6000 CFM
 Max coil CFM: 6000 CFM
 Water flow @ 20.0 °F drop: N/A

Supply Fan Sizing Data
 Actual max CFM: 6000 CFM
 Standard CFM: 5779 CFM
 Actual max CFM/R²: 1.24 CFM/R²
 Fan motor BHP: 1.04 BHP
 Fan motor kW: 0.83 kW
 Fan static: 1.00 in wg

REMODEL STORE

OLD NAVY

DEVELOPMENT
 STORE DEVELOPMENT
 1 FOLSOM STREET
 SAN FRANCISCO, CA 94105

REPS I.D.: 00000131847

STORE NUMBER: 5724

STORE LOCATION: BUCKHEAD STATION
 1 BUCKHEAD LOOP NE
 ATLANTA, GA 30326

DESIGN TYPE: P3
 GENERATION: 180Q12
 PROTOTYPE DATE: 08/31/17
 OPENING: 2018

CONSULTANT INFO:

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ISSUE TYPE:

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 MECHANICAL LOAD
 CALCULATIONS

SHEET NUMBER:
M4-1

ZONE SIZING SUMMARY FOR BLOCK LOAD

Air System Information
 Air System Name: BLOCK LOAD
 Equipment Class: PKG ROOF
 Air System Type: SZCAV
 Number of zones: 1
 Floor Area: 14852.0 ft²
 Location: Atlanta, Georgia

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/R²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	18000	18000	1.21	0.0	0.0	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	276.9	Jul 1900	40.1	14852.0

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 (ft²)	Space CFM/R²
Zone 1							
Corridor	1	0.7	Jan 2100	45	0.0	130.0	0.34
employee areas	1	8.5	Jul 1900	555	1.0	614.0	0.90
Fitting Rooms	1	10.2	Jan 1900	685	0.0	512.0	1.30
Mgr Office	1	10.2	Jan 2100	685	0.2	101.0	6.59
Restroom	1	3.2	Jul 2100	205	1.2	148.0	1.38
AHU-3 NSALES	1	74.9	Jul 1900	4865	5.9	4211.0	1.16
AHU-2 sales	1	75.3	Jul 1900	4893	12.0	4211.0	1.16
AHU-1 Sales	1	75.3	Jul 1900	4893	6.5	4211.0	1.16
Stockroom 1	1	18.7	Jul 1900	1213	13.4	714.0	1.70

AIR SYSTEM SIZING SUMMARY FOR AHU-2

Air System Information
 Air System Name: AHU-2 MID
 Equipment Class: PKG ROOF
 Air System Type: SZCAV
 Number of zones: 1
 Floor Area: 4925.0 ft²
 Location: Atlanta, Georgia

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: 13.4 Tons
 Total coil load: 161.3 MBH
 Sensible coil load: 125.2 MBH
 Coil CFM at Jul 1700: 6000 CFM
 Max block CFM: 6000 CFM
 Sum of peak zone CFM: 6000 CFM
 Sensible heat ratio: 0.776
 R7/Ton: 366.5
 BTU/(hr-ft²): 32.7
 Water flow @ 10.0 °F rise: N/A

Central Heating Coil Sizing Data
 Max coil load: 80.7 MBH
 Coil CFM at Des Htg: 6000 CFM
 Max coil CFM: 6000 CFM
 Water flow @ 20.0 °F drop: N/A

Supply Fan Sizing Data
 Actual max CFM: 6000 CFM
 Standard CFM: 5779 CFM
 Actual max CFM/R²: 1.22 CFM/R²
 Fan motor BHP: 1.04 BHP
 Fan motor kW: 0.83 kW
 Fan static: 1.00 in wg

DESIGN WEATHER PARAMETERS

Design Parameters:

Name	Atlanta
Location	Georgia
Latitude	33.7 Deg.
Longitude	84.4 Deg.
Elevation	1033.0 ft
Summer Design Dry-Bulb	93.0 °F
Summer Coincident Wet-Bulb	75.0 °F
Summer Daily Range	17.3 °F
Winter Design Dry-Bulb	18.0 °F
Winter Design Wet-Bulb	14.8 °F
Atmospheric Clearness Number	0.95
Average Ground Reflectance	0.20
Soil Conductivity	0.800 BTU/(hr-ft²-F)
Local Time Zone (GMT +/- N hours)	5.0 hours
Consider Daylight Savings Time	No
Simulation Weather Data	N/A
Current Data is	2001 ASHRAE Handbook
Design Cooling Months	January to December

AIR SYSTEM DESIGN LOAD SUMMARY FOR BLOCK LOAD

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	600 ft²	6570	0	600 ft²	13702	0
Wall Transmission	2940 ft²	3333	0	2940 ft²	0	0
Roof Transmission	0 ft²	0	0	0 ft²	0	0
Window Transmission	600 ft²	4416	0	600 ft²	0	0
Skylight Transmission	0 ft²	0	0	0 ft²	0	0
Door Loads	110 ft²	1941	0	110 ft²	6325	0
Floor Transmission	14852 ft²	0	0	14852 ft²	5626	0
Partitions	0 ft²	0	0	0 ft²	0	0
Ceiling	0 ft²	0	0	0 ft²	0	0
Overhead Lighting	0 W	0	0	0 W	0	0
Task Lighting	52814 W	146149	0	0 W	0	0
Electric Equipment	13116 W	43300	0	0 W	0	0
People	32	1611	36	0	0	0
Infiltration	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0
Safety Factor	10%	798	0%	0%	0	0
>> Total Zone Loads		29788	38511		40053	0
Zone Conditioning		30365	38511		33283	0
Plenum Wall Load	0%	0	0	0	0	0
Plenum Roof Load	0%	0	0	0	0	0
Plenum Lighting Load	0	0	0	0	0	0
Reheat Fan Load	18000 CFM	0	0	18000 CFM	0	0
Ventilation Load	3368 CFM	59050	65741	3368 CFM	173772	0
Supply Fan Load	18000 CFM	0	0	18000 CFM	0	0
Supply Fan Coil Fans	0	0	0	0	0	0
Ductwork Gain / Loss	0%	0	0	0%	0	0
>> Total System Loads		362748	104252		207055	0
Central Cooling Coil		362749	104264		207055	0
Central Heating Coil		0	0		207055	0
>> Total Conditioning		362749	104264		207055	0

Key:
 Positive values are ckg loads
 Negative values are htg loads

AIR SYSTEM SIZING SUMMARY FOR AHU-3

Air System Information
 Air System Name: AHU-3 (PLAN N)
 Equipment Class: PKG ROOF
 Air System Type: SZCAV
 Number of zones: 1
 Floor Area: 5103.0 ft²
 Location: Atlanta, Georgia

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: 12.6 Tons
 Total coil load: 151.8 MBH
 Sensible coil load: 118.4 MBH
 Coil CFM at Aug 1400: 6000 CFM
 Max block CFM: 6000 CFM
 Sum of peak zone CFM: 6000 CFM
 Sensible heat ratio: 0.780
 R7/Ton: 403.5
 BTU/(hr-ft²): 29.7
 Water flow @ 10.0 °F rise: N/A

Central Heating Coil Sizing Data
 Max coil load: 61.4 MBH
 Coil CFM at Des Htg: 6000 CFM
 Max coil CFM: 6000 CFM
 Water flow @ 20.0 °F drop: N/A

Supply Fan Sizing Data
 Actual max CFM: 6000 CFM
 Standard CFM: 5779 CFM
 Actual max CFM/R²: 1.18 CFM/R²
 Fan motor BHP: 1.04 BHP
 Fan motor kW: 0.83 kW
 Fan static: 1.00 in wg

OUTSIDE AIR VENTILATION REQUIREMENTS

1. Summary
 Ventilation Sizing Method: ASHRAE Std 62.1-2013
 Design Condition: Heating operation
 Occupant Diversity (D): 1.000
 Uncorrected Outdoor Air Intake (Vou): 3140 CFM
 System Ventilation Efficiency (Ev): 0.932
 Outdoor Air Intake (Vot): 3368 CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpd)	Space Floor Area (ft²) (A _s)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Person) (Pa)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
Corridor	1	45	130.0	0.06	0.2	0.00	0.90	10	8	0.957
employee areas	1	555	614.0	0.06	8.2	5.00	0.90	97	78	0.999
Fitting Rooms	1	685	512.0	0.12	9.0	7.50	0.90	161	129	0.932
Mgr Office	1	685	101.0	0.06	2.0	5.00	0.90	20	16	1.144
Restroom	1	205	148.0	0.06	0.2	0.00	0.90	11	9	1.120
AHU-3 NSALES	1	4865	4211.0	0.12	56.1	7.50	0.90	1158	926	0.938
AHU-2 sales	1	4893	4211.0	0.12	56.1	7.50	0.90	1158	926	0.938
AHU-1 Sales	1	4893	4211.0	0.12	56.1	7.50	0.90	1158	926	0.938
Stockroom 1	1	1213	714.0	0.12	3.6	10.00	0.90	152	121	1.049
Totals (incl. Space Multipliers)		18000						3140	3140	0.932