

Air System Sizing Summary for DILLI STREAT

Project Name: DILLI STREAT - DELHI
Prepared by: MDS

01-02-2024
07:26PM

Air System Information

Air System Name **DILLI STREAT**
Equipment Class **CW AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **2439.0** ft²
Location **New Delhi, India**

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 **15.7** Tons
Total coil load **188.2** MBH
Sensible coil load **176.5** MBH
Coil CFM at Jul 1500 **8159** CFM
Max block CFM **8159** CFM
Sum of peak zone CFM **8159** CFM
Sensible heat ratio **0.938**
CFM/Ton **520.3**
ft²/Ton **155.6**
BTU/(hr-ft²) **77.1**
Water flow @ 10.0 °F rise **37.65** gpm

Load occurs at **Jul 1500**
OA DB / WB **110.0 / 72.0** °F
Entering DB / WB **80.8 / 66.3** °F
Leaving DB / WB **60.2 / 58.8** °F
Coil ADP **57.9** °F
Bypass Factor **0.100**
Resulting RH **55** %
Design supply temp. **58.0** °F
Zone T-stat Check **0 of 1** OK
Max zone temperature deviation **0.2** °F

Supply Fan Sizing Data

Actual max CFM **8159** CFM
Standard CFM **7932** CFM
Actual max CFM/ft² **3.35** 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 **1002** CFM
CFM/ft² **0.41** CFM/ft²

CFM/person **13.35** CFM/person

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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	8159	8159	3.35	0.0	0.00	0.0	0.00	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	145.6	Jul 1500	0.0	2439.0

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							
DILLI STREAT	1	145.6	Jul 1500	8159	0.0	2439.0	3.35

Air System Design Load Summary for DILLI STREAT

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 110.0 °F / 72.0 °F			HEATING OA DB / WB 44.0 °F / 36.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	0 ft ²	0	-	0 ft ²	-	-
Wall Transmission	0 ft ²	0	-	0 ft ²	0	-
Roof Transmission	0 ft ²	0	-	0 ft ²	0	-
Window Transmission	0 ft ²	0	-	0 ft ²	0	-
Skylight Transmission	0 ft ²	0	-	0 ft ²	0	-
Door Loads	0 ft ²	0	-	0 ft ²	0	-
Floor Transmission	348 ft ²	0	-	348 ft ²	0	-
Partitions	1400 ft ²	0	-	1400 ft ²	0	-
Ceiling	0 ft ²	0	-	0 ft ²	0	-
Overhead Lighting	2439 W	8322	-	0	0	-
Task Lighting	1220 W	4161	-	0	0	-
Electric Equipment	20000 W	68240	-	0	0	-
People	75	22125	34125	0	0	0
Infiltration	-	35854	-11634	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 5%	6935	1125	0%	0	0
>> Total Zone Loads	-	145636	23616	-	0	0
Zone Conditioning	-	141433	23616	-	-17064	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	8159 CFM	0	-	8159 CFM	0	-
Ventilation Load	1002 CFM	35043	-11944	1002 CFM	17363	0
Supply Fan Load	8159 CFM	0	-	8159 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	176476	11671	-	299	0
Central Cooling Coil	-	176476	11681	-	0	0
>> Total Conditioning	-	176476	11681	-	0	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for DILLI STREAT

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July DESIGN COOLING DAY, 1500

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	110.0	0.00859	1002	400	35043	-11944
Vent - Return Mixing	Outlet	80.8	0.01086	8159	1036	-	-
Central Cooling Coil	Outlet	60.2	0.01055	8159	1036	176476	11681
Supply Fan	Outlet	60.2	0.01055	8159	1036	0	-
Cold Supply Duct	Outlet	60.2	0.01055	8159	1036	-	-
Zone Air	-	76.7	0.01117	8159	1125	141433	23616
Return Plenum	Outlet	76.7	0.01117	8159	1125	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.050 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4614.8 BTU/(hr-CFM)

Site Altitude = 777.0 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	145636	Cooling	141433	76.7	8159	1125	0	0

System Psychrometrics for DILLI STREAT

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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	44.0	0.00313	1002	400	-17363	0
Vent - Return Mixing	Outlet	58.5	0.00313	8159	464	-	-
Central Cooling Coil	Outlet	58.5	0.00313	8159	464	0	0
Supply Fan	Outlet	58.5	0.00313	8159	464	0	-
Cold Supply Duct	Outlet	58.5	0.00313	8159	464	-	-
Zone Air	-	60.5	0.00313	8159	473	17064	0
Return Plenum	Outlet	60.5	0.00313	8159	473	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.050 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4614.8 BTU/(hr-CFM)

Site Altitude = 777.0 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	0	Deadband	17064	60.5	8159	473	0	0

System Psychrometrics for DILLI STREAT

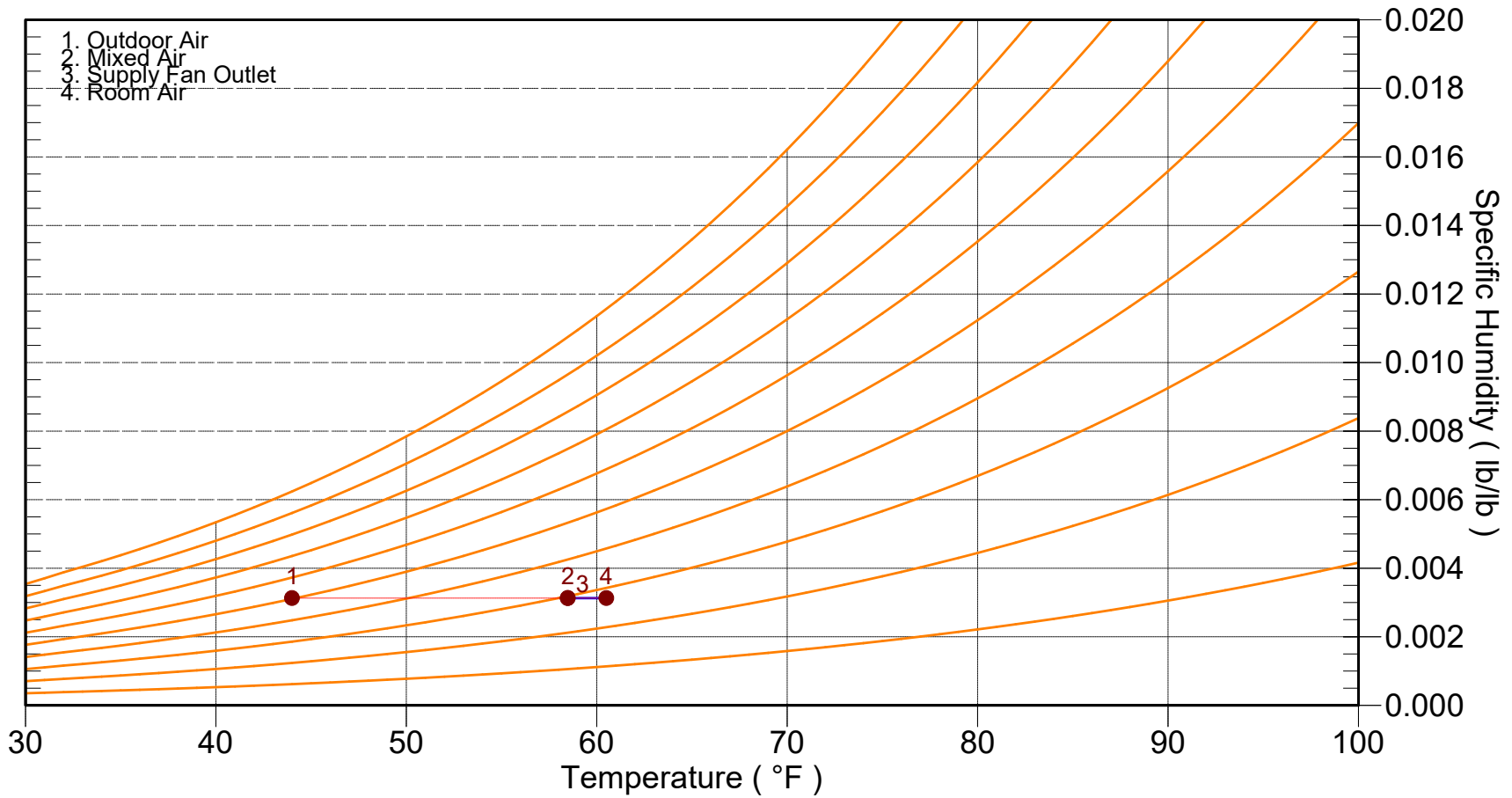
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Location: New Delhi, India

Altitude: 777.0 ft.

Data for: WINTER DESIGN HEATING



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Location: New Delhi, India
Altitude: 777.0 ft.
Data for: July DESIGN COOLING DAY, 1500

