Air System Sizing Summary for 001-E-APT- 01-LVG (4BK)

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:33PM

Air System Information

Air System Name	**001-E-APT- 01-LVG (4BK)**		Number of zones	**1**
Equipment Class	**UNDEF**		Floor Area	**458.0** ft²
Air System Type	**SZCAV**		Location	**THANE, India**

Sizing Calculation Information

Calculation Months	**Jan to Dec**	Zone CFM Sizing	**Sum of space airflow rates**
Sizing Data	**Calculated**	Space CFM Sizing	**Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load	**3.2**	Tons	Load occurs at	**Oct 1200**	
Total coil load	**38.6**	MBH	OA DB / WB	**92.6** / **79.2**	°F
Sensible coil load	**32.7**	MBH	Entering DB / WB	**74.1** / **62.2**	°F
Coil CFM at Oct 1200	**1536**	CFM	Leaving DB / WB	**54.4** / **53.3**	°F
Max block CFM	**1718**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**1718**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.847**		Resulting RH	**50**	%
CFM/Ton	**477.1**		Design supply temp.	**55.0**	°F
ft²/Ton	**142.2**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**84.4**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**7.73**	gpm			

Supply Fan Sizing Data

Actual max CFM	**1718**	CFM	Fan motor BHP	**0.42**	BHP
Standard CFM	**1716**	CFM	Fan motor kW	**0.34**	kW
Actual max CFM/ft²	**3.75**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**89**	CFM	CFM/person	**11.08**	CFM/person
CFM/ft²	**0.19**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1200 COOLING OA DB / WB 92.6 °F / 79.2 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	116 ft²	10257	-	116 ft²	-	-
Wall Transmission	34 ft²	570	-	34 ft²	61	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	116 ft²	2215	-	116 ft²	593	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	458 ft²	4025	-	458 ft²	0	-
Partitions	834 ft²	3298	-	834 ft²	0	-
Ceiling	458 ft²	4025	-	458 ft²	0	-
Overhead Lighting	458 W	1563	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	458 W	1453	-	0	0	-
People	8	2240	2160	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	1482	65	0%	0	0
>> Total Zone Loads	**-**	**31129**	**2225**	**-**	**654**	**0**
Zone Conditioning	-	30044	2225	-	0	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	1536 CFM	0	-	0 CFM	0	-
Ventilation Load	79 CFM	1661	3679	0 CFM	0	0
Supply Fan Load	1536 CFM	1025	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**32730**	**5904**	**-**	**0**	**0**
Central Cooling Coil	-	32730	5908	-	0	0
>> Total Conditioning	**-**	**32730**	**5908**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1200

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	92.6	0.01847	79	400	1661	3679
Vent - Return Mixing	Outlet	74.1	0.00919	1536	1456	-	-
Central Cooling Coil	Outlet	54.4	0.00838	1536	1456	32730	5908
Supply Fan	Outlet	55.0	0.00838	1536	1456	1025	-
Cold Supply Duct	Outlet	55.0	0.00838	1536	1456	-	-
Zone Air	-	73.1	0.00868	1536	1513	30044	2225
Return Plenum	Outlet	73.1	0.00868	1536	1513	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	31129	Cooling	30044	73.1	1536	1513	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.6	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-654	Deadband	0	69.0	0	0	0	0

Air System Sizing Summary for 002-E-APT-01-M- BM

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:33PM

Air System Information

Air System Name	**002-E-APT-01-M- BM**		Number of zones	**1**
Equipment Class	**UNDEF**		Floor Area	**188.0** ft²
Air System Type	**SZCAV**		Location	**THANE, India**

Sizing Calculation Information

Calculation Months	**Jan to Dec**	Zone CFM Sizing	**Sum of space airflow rates**
Sizing Data	**Calculated**	Space CFM Sizing	**Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load	**1.3**	Tons	Load occurs at	**Oct 1600**	
Total coil load	**15.0**	MBH	OA DB / WB	**95.6** / **79.9**	°F
Sensible coil load	**13.3**	MBH	Entering DB / WB	**74.0** / **61.7**	°F
Coil CFM at Oct 1600	**628**	CFM	Leaving DB / WB	**54.4** / **53.2**	°F
Max block CFM	**704**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**704**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.885**		Resulting RH	**49**	%
CFM/Ton	**501.1**		Design supply temp.	**55.0**	°F
ft²/Ton	**150.1**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**79.9**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**3.01**	gpm			

Supply Fan Sizing Data

Actual max CFM	**704**	CFM	Fan motor BHP	**0.17**	BHP
Standard CFM	**703**	CFM	Fan motor kW	**0.14**	kW
Actual max CFM/ft²	**3.74**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**28**	CFM	CFM/person	**14.02**	CFM/person
CFM/ft²	**0.15**	CFM/ft²			

Air System Design Load Summary for 002-E-APT-01-M- BM

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:33PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 95.6 °F / 79.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	16 ft²	1006	-	16 ft²	-	-
Wall Transmission	230 ft²	3887	-	230 ft²	412	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	16 ft²	350	-	16 ft²	82	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	188 ft²	1813	-	188 ft²	0	-
Partitions	338 ft²	1467	-	338 ft²	0	-
Ceiling	188 ft²	1813	-	188 ft²	0	-
Overhead Lighting	188 W	641	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	188 W	607	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	607	16	0%	0	0
>> Total Zone Loads	**-**	**12752**	**556**	**-**	**494**	**0**
Zone Conditioning	-	12270	556	-	0	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	628 CFM	0	-	0 CFM	0	-
Ventilation Load	25 CFM	605	1177	0 CFM	0	0
Supply Fan Load	628 CFM	419	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**13293**	**1733**	**-**	**0**	**0**
Central Cooling Coil	-	13293	1734	-	0	0
>> Total Conditioning	**-**	**13293**	**1734**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1600

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	95.6	0.01847	25	400	605	1177
Vent - Return Mixing	Outlet	74.0	0.00894	628	1204	-	-
Central Cooling Coil	Outlet	54.4	0.00836	628	1204	13293	1734
Supply Fan	Outlet	55.0	0.00836	628	1204	419	-
Cold Supply Duct	Outlet	55.0	0.00836	628	1204	-	-
Zone Air	-	73.1	0.00854	628	1237	12270	556
Return Plenum	Outlet	73.1	0.00854	628	1237	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	12752	Cooling	12270	73.1	628	1237	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.7	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-494	Deadband	0	68.4	0	0	0	0

Air System Sizing Summary for 003-E-APT-01- BM 2

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:33PM

Air System Information

Air System Name	**003-E-APT-01- BM 2**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**110.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.3**	Tons	Load occurs at	**Oct 1600**	
Total coil load	**15.7**	MBH	OA DB / WB	**95.6** / **79.9**	°F
Sensible coil load	**14.2**	MBH	Entering DB / WB	**73.8** / **61.5**	°F
Coil CFM at Oct 1600	**678**	CFM	Leaving DB / WB	**54.4** / **53.2**	°F
Max block CFM	**753**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**753**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.905**		Resulting RH	**49**	%
CFM/Ton	**519.0**		Design supply temp.	**55.0**	°F
ft²/Ton	**84.2**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**142.6**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**3.14**	gpm			

Supply Fan Sizing Data

Actual max CFM	**753**	CFM	Fan motor BHP	**0.19**	BHP
Standard CFM	**752**	CFM	Fan motor kW	**0.15**	kW
Actual max CFM/ft²	**6.85**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**22**	CFM	CFM/person	**10.90**	CFM/person
CFM/ft²	**0.20**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 95.6 °F / 79.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	58 ft²	6268	-	58 ft²	-	-
Wall Transmission	39 ft²	680	-	39 ft²	70	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	58 ft²	1267	-	58 ft²	296	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	110 ft²	1061	-	110 ft²	0	-
Partitions	314 ft²	1363	-	314 ft²	0	-
Ceiling	110 ft²	1061	-	110 ft²	0	-
Overhead Lighting	110 W	375	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	110 W	355	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	650	16	0%	0	0
>> Total Zone Loads	**-**	**13641**	**556**	**-**	**366**	**0**
Zone Conditioning	-	13271	556	-	0	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	678 CFM	0	-	0 CFM	0	-
Ventilation Load	20 CFM	475	926	0 CFM	0	0
Supply Fan Load	678 CFM	452	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**14198**	**1482**	**-**	**0**	**0**
Central Cooling Coil	-	14198	1484	-	0	0
>> Total Conditioning	**-**	**14198**	**1484**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1600

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	95.6	0.01847	20	400	475	926
Vent - Return Mixing	Outlet	73.8	0.00881	678	1267	-	-
Central Cooling Coil	Outlet	54.4	0.00835	678	1267	14198	1484
Supply Fan	Outlet	55.0	0.00835	678	1267	452	-
Cold Supply Duct	Outlet	55.0	0.00835	678	1267	-	-
Zone Air	-	73.1	0.00852	678	1293	13271	556
Return Plenum	Outlet	73.1	0.00852	678	1293	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	13641	Cooling	13271	73.1	678	1293	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.6	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-366	Deadband	0	68.3	0	0	0	0

Air System Information

Air System Name	**004-E-APT-01 BM3**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**116.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.4**	Tons	Load occurs at	**Nov 1200**	
Total coil load	**16.4**	MBH	OA DB / WB	**89.6** / **78.2**	°F
Sensible coil load	**14.9**	MBH	Entering DB / WB	**73.6** / **61.4**	°F
Coil CFM at Nov 1200	**718**	CFM	Leaving DB / WB	**54.4** / **53.2**	°F
Max block CFM	**797**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**797**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.910**		Resulting RH	**49**	%
CFM/Ton	**526.6**		Design supply temp.	**55.0**	°F
ft²/Ton	**85.1**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**141.0**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**3.27**	gpm			

Supply Fan Sizing Data

Actual max CFM	**797**	CFM	Fan motor BHP	**0.20**	BHP
Standard CFM	**796**	CFM	Fan motor kW	**0.16**	kW
Actual max CFM/ft²	**6.87**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**22**	CFM	CFM/person	**11.14**	CFM/person
CFM/ft²	**0.19**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Nov 1200 COOLING OA DB / WB 89.6 °F / 78.2 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	78 ft²	7874	-	78 ft²	-	-
Wall Transmission	22 ft²	361	-	22 ft²	39	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	78 ft²	1250	-	78 ft²	399	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	116 ft²	890	-	116 ft²	0	-
Partitions	338 ft²	1167	-	338 ft²	0	-
Ceiling	116 ft²	890	-	116 ft²	0	-
Overhead Lighting	116 W	396	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	116 W	368	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	688	16	0%	0	0
>> Total Zone Loads	**-**	**14444**	**556**	**-**	**438**	**0**
Zone Conditioning	-	14045	556	-	0	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	718 CFM	0	-	0 CFM	0	-
Ventilation Load	20 CFM	355	921	0 CFM	0	0
Supply Fan Load	718 CFM	479	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**14879**	**1478**	**-**	**0**	**0**
Central Cooling Coil	-	14879	1478	-	0	0
>> Total Conditioning	**-**	**14879**	**1478**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

November DESIGN COOLING DAY, 1200

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	89.6	0.01820	20	400	355	921
Vent - Return Mixing	Outlet	73.6	0.00879	718	1242	-	-
Central Cooling Coil	Outlet	54.4	0.00835	718	1242	14879	1478
Supply Fan	Outlet	55.0	0.00835	718	1242	479	-
Cold Supply Duct	Outlet	55.0	0.00835	718	1242	-	-
Zone Air	-	73.1	0.00852	718	1266	14045	556
Return Plenum	Outlet	73.1	0.00852	718	1266	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	14444	Cooling	14045	73.1	718	1266	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.5	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-438	Deadband	0	68.2	0	0	0	0

Air System Information

Air System Name	**005-E-APT-01 -BM-4**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**150.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.5**	Tons	Load occurs at	**Oct 1600**	
Total coil load	**18.0**	MBH	OA DB / WB	**95.6** / **79.9**	°F
Sensible coil load	**16.4**	MBH	Entering DB / WB	**73.8** / **61.4**	°F
Coil CFM at Oct 1600	**784**	CFM	Leaving DB / WB	**54.4** / **53.2**	°F
Max block CFM	**873**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**873**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.910**		Resulting RH	**49**	%
CFM/Ton	**522.0**		Design supply temp.	**55.0**	°F
ft²/Ton	**99.9**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**120.2**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**3.61**	gpm			

Supply Fan Sizing Data

Actual max CFM	**873**	CFM	Fan motor BHP	**0.22**	BHP
Standard CFM	**872**	CFM	Fan motor kW	**0.17**	kW
Actual max CFM/ft²	**5.82**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**25**	CFM	CFM/person	**12.50**	CFM/person
CFM/ft²	**0.17**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 95.6 °F / 79.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	57 ft²	6160	-	57 ft²	-	-
Wall Transmission	152 ft²	2058	-	152 ft²	273	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	57 ft²	1246	-	57 ft²	291	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	150 ft²	1447	-	150 ft²	0	-
Partitions	264 ft²	1146	-	264 ft²	0	-
Ceiling	150 ft²	1447	-	150 ft²	0	-
Overhead Lighting	150 W	512	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	150 W	484	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	753	16	0%	0	0
>> Total Zone Loads	**-**	**15813**	**556**	**-**	**564**	**0**
Zone Conditioning	-	15338	556	-	0	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	784 CFM	0	-	0 CFM	0	-
Ventilation Load	22 CFM	543	1062	0 CFM	0	0
Supply Fan Load	784 CFM	523	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**16405**	**1619**	**-**	**0**	**0**
Central Cooling Coil	-	16405	1621	-	0	0
>> Total Conditioning	**-**	**16405**	**1621**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1600

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	95.6	0.01847	22	400	543	1062
Vent - Return Mixing	Outlet	73.8	0.00878	784	1183	-	-
Central Cooling Coil	Outlet	54.4	0.00835	784	1183	16405	1621
Supply Fan	Outlet	55.0	0.00835	784	1183	523	-
Cold Supply Duct	Outlet	55.0	0.00835	784	1183	-	-
Zone Air	-	73.1	0.00850	784	1206	15338	556
Return Plenum	Outlet	73.1	0.00850	784	1206	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	15813	Cooling	15338	73.1	784	1206	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.6	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-564	Deadband	0	68.0	0	0	0	0

Air System Sizing Summary for 006-E-APT-02/03-LVG

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:33PM

Air System Information

Air System Name	**006-E-APT-02/03-LVG**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**235.4**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**2.0**	Tons	Load occurs at	**Oct 1600**	
Total coil load	**24.1**	MBH	OA DB / WB	**95.6** / **79.9**	°F
Sensible coil load	**20.1**	MBH	Entering DB / WB	**74.4** / **62.4**	°F
Coil CFM at Oct 1600	**930**	CFM	Leaving DB / WB	**54.4** / **53.3**	°F
Max block CFM	**1037**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**1037**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.832**		Resulting RH	**50**	%
CFM/Ton	**462.6**		Design supply temp.	**55.0**	°F
ft²/Ton	**117.1**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**102.5**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**4.83**	gpm			

Supply Fan Sizing Data

Actual max CFM	**1037**	CFM	Fan motor BHP	**0.26**	BHP
Standard CFM	**1036**	CFM	Fan motor kW	**0.20**	kW
Actual max CFM/ft²	**4.41**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**58**	CFM	CFM/person	**9.64**	CFM/person
CFM/ft²	**0.25**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 95.6 °F / 79.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	56 ft²	6052	-	56 ft²	-	-
Wall Transmission	16 ft²	282	-	16 ft²	29	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	56 ft²	1224	-	56 ft²	286	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	235 ft²	2271	-	235 ft²	0	-
Partitions	590 ft²	2561	-	590 ft²	0	-
Ceiling	235 ft²	2271	-	235 ft²	0	-
Overhead Lighting	235 W	803	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	235 W	760	-	0	0	-
People	6	1680	1620	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	895	49	0%	0	0
>> Total Zone Loads	**-**	**18799**	**1669**	**-**	**315**	**0**
Zone Conditioning	-	18190	1669	-	0	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	930 CFM	0	-	0 CFM	0	-
Ventilation Load	52 CFM	1254	2388	0 CFM	0	0
Supply Fan Load	930 CFM	620	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**20064**	**4056**	**-**	**0**	**0**
Central Cooling Coil	-	20064	4059	-	0	0
>> Total Conditioning	**-**	**20064**	**4059**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1600

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	95.6	0.01847	52	400	1254	2388
Vent - Return Mixing	Outlet	74.4	0.00930	930	1621	-	-
Central Cooling Coil	Outlet	54.4	0.00838	930	1621	20064	4059
Supply Fan	Outlet	55.0	0.00838	930	1621	620	-
Cold Supply Duct	Outlet	55.0	0.00838	930	1621	-	-
Zone Air	-	73.1	0.00876	930	1693	18190	1669
Return Plenum	Outlet	73.1	0.00876	930	1693	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	18799	Cooling	18190	73.1	930	1693	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.6	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-315	Deadband	0	69.1	0	0	0	0

Air System Sizing Summary for 007- E-APT-02/03-M-BM

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:33PM

Air System Information

Air System Name	**007- E-APT-02/03-M-BM**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**130.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.5**	Tons	Load occurs at	**Oct 1600**	
Total coil load	**17.8**	MBH	OA DB / WB	**95.6** / **79.9**	°F
Sensible coil load	**16.2**	MBH	Entering DB / WB	**73.7** / **61.4**	°F
Coil CFM at Oct 1600	**776**	CFM	Leaving DB / WB	**54.4** / **53.2**	°F
Max block CFM	**863**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**863**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.913**		Resulting RH	**49**	%
CFM/Ton	**524.3**		Design supply temp.	**55.0**	°F
ft²/Ton	**87.9**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**136.6**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**3.55**	gpm			

Supply Fan Sizing Data

Actual max CFM	**863**	CFM	Fan motor BHP	**0.21**	BHP
Standard CFM	**862**	CFM	Fan motor kW	**0.17**	kW
Actual max CFM/ft²	**6.64**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**23**	CFM	CFM/person	**11.70**	CFM/person
CFM/ft²	**0.18**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 95.6 °F / 79.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	58 ft²	6268	-	58 ft²	-	-
Wall Transmission	224 ft²	2533	-	224 ft²	401	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	58 ft²	1267	-	58 ft²	296	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	130 ft²	1254	-	130 ft²	0	-
Partitions	207 ft²	896	-	207 ft²	0	-
Ceiling	130 ft²	1254	-	130 ft²	0	-
Overhead Lighting	130 W	444	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	130 W	420	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	745	16	0%	0	0
>> Total Zone Loads	**-**	**15641**	**556**	**-**	**698**	**0**
Zone Conditioning	-	15177	556	-	0	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	776 CFM	0	-	0 CFM	0	-
Ventilation Load	21 CFM	509	995	0 CFM	0	0
Supply Fan Load	776 CFM	518	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**16203**	**1551**	**-**	**0**	**0**
Central Cooling Coil	-	16203	1553	-	0	0
>> Total Conditioning	**-**	**16203**	**1553**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1600

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	95.6	0.01847	21	400	509	995
Vent - Return Mixing	Outlet	73.7	0.00877	776	1205	-	-
Central Cooling Coil	Outlet	54.4	0.00835	776	1205	16203	1553
Supply Fan	Outlet	55.0	0.00835	776	1205	518	-
Cold Supply Duct	Outlet	55.0	0.00835	776	1205	-	-
Zone Air	-	73.1	0.00850	776	1227	15177	556
Return Plenum	Outlet	73.1	0.00850	776	1227	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	15641	Cooling	15177	73.1	776	1227	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.6	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-698	Deadband	0	67.5	0	0	0	0

Air System Information

Air System Name	**008- E-APT-02/03-BM -2**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**113.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.3**	Tons	Load occurs at	**Oct 1600**	
Total coil load	**15.7**	MBH	OA DB / WB	**95.6** / **79.9**	°F
Sensible coil load	**14.2**	MBH	Entering DB / WB	**73.8** / **61.5**	°F
Coil CFM at Oct 1600	**680**	CFM	Leaving DB / WB	**54.4** / **53.2**	°F
Max block CFM	**755**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**755**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.905**		Resulting RH	**49**	%
CFM/Ton	**518.6**		Design supply temp.	**55.0**	°F
ft²/Ton	**86.2**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**139.2**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**3.15**	gpm			

Supply Fan Sizing Data

Actual max CFM	**755**	CFM	Fan motor BHP	**0.19**	BHP
Standard CFM	**754**	CFM	Fan motor kW	**0.15**	kW
Actual max CFM/ft²	**6.68**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**22**	CFM	CFM/person	**11.02**	CFM/person
CFM/ft²	**0.20**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 95.6 °F / 79.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	57 ft²	6160	-	57 ft²	-	-
Wall Transmission	43 ft²	749	-	43 ft²	77	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	57 ft²	1246	-	57 ft²	291	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	113 ft²	1090	-	113 ft²	0	-
Partitions	325 ft²	1411	-	325 ft²	0	-
Ceiling	110 ft²	1061	-	110 ft²	0	-
Overhead Lighting	113 W	386	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	113 W	365	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	651	16	0%	0	0
>> Total Zone Loads	**-**	**13679**	**556**	**-**	**368**	**0**
Zone Conditioning	-	13302	556	-	0	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	680 CFM	0	-	0 CFM	0	-
Ventilation Load	20 CFM	480	936	0 CFM	0	0
Supply Fan Load	680 CFM	454	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**14236**	**1493**	**-**	**0**	**0**
Central Cooling Coil	-	14236	1495	-	0	0
>> Total Conditioning	**-**	**14236**	**1495**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1600

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	95.6	0.01847	20	400	480	936
Vent - Return Mixing	Outlet	73.8	0.00881	680	1262	-	-
Central Cooling Coil	Outlet	54.4	0.00835	680	1262	14236	1495
Supply Fan	Outlet	55.0	0.00835	680	1262	454	-
Cold Supply Duct	Outlet	55.0	0.00835	680	1262	-	-
Zone Air	-	73.1	0.00852	680	1288	13302	556
Return Plenum	Outlet	73.1	0.00852	680	1288	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	13679	Cooling	13302	73.1	680	1288	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.6	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-368	Deadband	0	68.3	0	0	0	0

Air System Sizing Summary for 009-E-APT-04- LVG

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:33PM

Air System Information

Air System Name	**009-E-APT-04- LVG**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**247.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.9**	Tons	Load occurs at	**Jun 1400**	
Total coil load	**22.6**	MBH	OA DB / WB	**98.6** / **81.9**	°F
Sensible coil load	**18.2**	MBH	Entering DB / WB	**74.7** / **62.9**	°F
Coil CFM at Jun 1400	**830**	CFM	Leaving DB / WB	**54.4** / **53.3**	°F
Max block CFM	**930**	CFM	Coil ADP	**52.1**	°F
Sum of peak zone CFM	**930**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.806**		Resulting RH	**51**	%
CFM/Ton	**440.5**		Design supply temp.	**55.0**	°F
ft²/Ton	**131.0**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**91.6**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**4.53**	gpm			

Supply Fan Sizing Data

Actual max CFM	**930**	CFM	Fan motor BHP	**0.23**	BHP
Standard CFM	**929**	CFM	Fan motor kW	**0.18**	kW
Actual max CFM/ft²	**3.77**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**59**	CFM	CFM/person	**9.79**	CFM/person
CFM/ft²	**0.24**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1400 COOLING OA DB / WB 98.6 °F / 81.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	58 ft²	3413	-	58 ft²	-	-
Wall Transmission	18 ft²	287	-	18 ft²	32	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	58 ft²	1424	-	58 ft²	296	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	247 ft²	2427	-	247 ft²	0	-
Partitions	612 ft²	2706	-	612 ft²	0	-
Ceiling	247 ft²	2427	-	247 ft²	0	-
Overhead Lighting	247 W	843	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	247 W	791	-	0	0	-
People	6	1680	1620	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	800	49	0%	0	0
>> Total Zone Loads	**-**	**16798**	**1669**	**-**	**329**	**0**
Zone Conditioning	-	16238	1669	-	0	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	830 CFM	0	-	0 CFM	0	-
Ventilation Load	52 CFM	1439	2725	0 CFM	0	0
Supply Fan Load	830 CFM	554	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**18231**	**4393**	**-**	**0**	**0**
Central Cooling Coil	-	18231	4394	-	0	0
>> Total Conditioning	**-**	**18231**	**4394**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

June DESIGN COOLING DAY, 1400

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	98.6	0.01977	52	400	1439	2725
Vent - Return Mixing	Outlet	74.7	0.00951	830	1654	-	-
Central Cooling Coil	Outlet	54.4	0.00839	830	1654	18231	4394
Supply Fan	Outlet	55.0	0.00839	830	1654	554	-
Cold Supply Duct	Outlet	55.0	0.00839	830	1654	-	-
Zone Air	-	73.1	0.00881	830	1738	16238	1669
Return Plenum	Outlet	73.1	0.00881	830	1738	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	16798	Cooling	16238	73.1	830	1738	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.5	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-329	Deadband	0	69.1	0	0	0	0

Air System Information

Air System Name	**010-E-APT-04- M-BM**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**127.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.1**	Tons	Load occurs at	**Jun 1100**	
Total coil load	**12.7**	MBH	OA DB / WB	**93.2** / **80.6**	°F
Sensible coil load	**11.0**	MBH	Entering DB / WB	**73.9** / **61.9**	°F
Coil CFM at Jun 1100	**522**	CFM	Leaving DB / WB	**54.4** / **53.3**	°F
Max block CFM	**581**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**581**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.869**		Resulting RH	**50**	%
CFM/Ton	**494.4**		Design supply temp.	**55.0**	°F
ft²/Ton	**120.4**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**99.7**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**2.53**	gpm			

Supply Fan Sizing Data

Actual max CFM	**581**	CFM	Fan motor BHP	**0.14**	BHP
Standard CFM	**580**	CFM	Fan motor kW	**0.11**	kW
Actual max CFM/ft²	**4.57**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**23**	CFM	CFM/person	**11.58**	CFM/person
CFM/ft²	**0.18**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1100 COOLING OA DB / WB 93.2 °F / 80.6 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	58 ft²	4111	-	58 ft²	-	-
Wall Transmission	40 ft²	602	-	40 ft²	72	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	58 ft²	1183	-	58 ft²	296	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	127 ft²	1171	-	127 ft²	0	-
Partitions	376 ft²	1560	-	376 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	127 W	433	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	127 W	401	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	501	16	0%	0	0
>> Total Zone Loads	**-**	**10522**	**556**	**-**	**368**	**0**
Zone Conditioning	-	10204	556	-	0	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	522 CFM	0	-	0 CFM	0	-
Ventilation Load	21 CFM	449	1102	0 CFM	0	0
Supply Fan Load	522 CFM	348	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**11002**	**1659**	**-**	**0**	**0**
Central Cooling Coil	-	11002	1660	-	0	0
>> Total Conditioning	**-**	**11002**	**1660**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

June DESIGN COOLING DAY, 1100

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	93.2	0.01977	21	400	449	1102
Vent - Return Mixing	Outlet	73.9	0.00904	522	1331	-	-
Central Cooling Coil	Outlet	54.4	0.00837	522	1331	11002	1660
Supply Fan	Outlet	55.0	0.00837	522	1331	348	-
Cold Supply Duct	Outlet	55.0	0.00837	522	1331	-	-
Zone Air	-	73.1	0.00859	522	1370	10204	556
Return Plenum	Outlet	73.1	0.00859	522	1370	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	10522	Cooling	10204	73.1	522	1370	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.3	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-368	Deadband	0	68.1	0	0	0	0

Air System Sizing Summary for 011-E-APT-04- B RM

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:34PM

Air System Information

Air System Name	**011-E-APT-04- B RM**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**124.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**	Zone CFM Sizing	**Sum of space airflow rates**
Sizing Data	**Calculated**	Space CFM Sizing	**Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load	**1.1**	Tons	Load occurs at	**Jun 1100**	
Total coil load	**13.8**	MBH	OA DB / WB	**93.2** / **80.6**	°F
Sensible coil load	**12.1**	MBH	Entering DB / WB	**73.8** / **61.7**	°F
Coil CFM at Jun 1100	**576**	CFM	Leaving DB / WB	**54.4** / **53.3**	°F
Max block CFM	**643**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**643**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.880**		Resulting RH	**49**	%
CFM/Ton	**503.0**		Design supply temp.	**55.0**	°F
ft²/Ton	**108.2**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**110.9**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**2.75**	gpm			

Supply Fan Sizing Data

Actual max CFM	**643**	CFM	Fan motor BHP	**0.16**	BHP
Standard CFM	**642**	CFM	Fan motor kW	**0.13**	kW
Actual max CFM/ft²	**5.19**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**23**	CFM	CFM/person	**11.46**	CFM/person
CFM/ft²	**0.18**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1100 COOLING OA DB / WB 93.2 °F / 80.6 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	58 ft²	4111	-	58 ft²	-	-
Wall Transmission	40 ft²	602	-	40 ft²	72	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	58 ft²	1183	-	58 ft²	296	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	122 ft²	1125	-	122 ft²	0	-
Partitions	380 ft²	1577	-	380 ft²	0	-
Ceiling	122 ft²	1125	-	122 ft²	0	-
Overhead Lighting	124 W	423	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	124 W	391	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	555	16	0%	0	0
>> Total Zone Loads	**-**	**11652**	**556**	**-**	**368**	**0**
Zone Conditioning	-	11275	556	-	0	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	576 CFM	0	-	0 CFM	0	-
Ventilation Load	21 CFM	444	1091	0 CFM	0	0
Supply Fan Load	576 CFM	385	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**12103**	**1647**	**-**	**0**	**0**
Central Cooling Coil	-	12103	1649	-	0	0
>> Total Conditioning	**-**	**12103**	**1649**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

June DESIGN COOLING DAY, 1100

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	93.2	0.01977	21	400	444	1091
Vent - Return Mixing	Outlet	73.8	0.00897	576	1304	-	-
Central Cooling Coil	Outlet	54.4	0.00836	576	1304	12103	1649
Supply Fan	Outlet	55.0	0.00836	576	1304	385	-
Cold Supply Duct	Outlet	55.0	0.00836	576	1304	-	-
Zone Air	-	73.1	0.00857	576	1337	11275	556
Return Plenum	Outlet	73.1	0.00857	576	1337	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	11652	Cooling	11275	73.1	576	1337	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.4	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-368	Deadband	0	68.5	0	0	0	0

Air System Information

Air System Name	**012-F-01-02-03-LVG**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**290.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**2.2**	Tons	Load occurs at	**Oct 1600**	
Total coil load	**27.0**	MBH	OA DB / WB	**95.6** / **79.9**	°F
Sensible coil load	**22.8**	MBH	Entering DB / WB	**74.3** / **62.3**	°F
Coil CFM at Oct 1600	**1058**	CFM	Leaving DB / WB	**54.4** / **53.3**	°F
Max block CFM	**1183**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**1183**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.843**		Resulting RH	**50**	%
CFM/Ton	**470.4**		Design supply temp.	**55.0**	°F
ft²/Ton	**128.9**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**93.1**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**5.40**	gpm			

Supply Fan Sizing Data

Actual max CFM	**1183**	CFM	Fan motor BHP	**0.29**	BHP
Standard CFM	**1182**	CFM	Fan motor kW	**0.23**	kW
Actual max CFM/ft²	**4.08**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**62**	CFM	CFM/person	**10.37**	CFM/person
CFM/ft²	**0.21**	CFM/ft²			

Air System Design Load Summary for 012-F-01-02-03-LVG

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:34PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 95.6 °F / 79.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	58 ft²	6268	-	58 ft²	-	-
Wall Transmission	18 ft²	314	-	18 ft²	32	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	58 ft²	1267	-	58 ft²	296	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	290 ft²	2797	-	290 ft²	0	-
Partitions	776 ft²	3368	-	776 ft²	0	-
Ceiling	290 ft²	2797	-	290 ft²	0	-
Overhead Lighting	290 W	989	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	290 W	936	-	0	0	-
People	6	1680	1620	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	1021	49	0%	0	0
>> Total Zone Loads	**-**	**21439**	**1669**	**-**	**329**	**0**
Zone Conditioning	-	20700	1669	-	0	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	1058 CFM	0	-	0 CFM	0	-
Ventilation Load	56 CFM	1346	2576	0 CFM	0	0
Supply Fan Load	1058 CFM	706	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**22752**	**4245**	**-**	**0**	**0**
Central Cooling Coil	-	22752	4248	-	0	0
>> Total Conditioning	**-**	**22752**	**4248**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1600

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	95.6	0.01847	56	400	1346	2576
Vent - Return Mixing	Outlet	74.3	0.00922	1058	1525	-	-
Central Cooling Coil	Outlet	54.4	0.00838	1058	1525	22752	4248
Supply Fan	Outlet	55.0	0.00838	1058	1525	706	-
Cold Supply Duct	Outlet	55.0	0.00838	1058	1525	-	-
Zone Air	-	73.1	0.00871	1058	1588	20700	1669
Return Plenum	Outlet	73.1	0.00871	1058	1588	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	21439	Cooling	20700	73.1	1058	1588	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.6	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-329	Deadband	0	69.3	0	0	0	0

Air System Information

Air System Name	**013-F-01-02-03- M BM**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**136.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.4**	Tons	Load occurs at	**Oct 1600**	
Total coil load	**16.4**	MBH	OA DB / WB	**95.6** / **79.9**	°F
Sensible coil load	**14.8**	MBH	Entering DB / WB	**73.8** / **61.5**	°F
Coil CFM at Oct 1600	**707**	CFM	Leaving DB / WB	**54.4** / **53.2**	°F
Max block CFM	**788**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**788**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.904**		Resulting RH	**49**	%
CFM/Ton	**517.7**		Design supply temp.	**55.0**	°F
ft²/Ton	**99.6**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**120.5**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**3.28**	gpm			

Supply Fan Sizing Data

Actual max CFM	**788**	CFM	Fan motor BHP	**0.19**	BHP
Standard CFM	**787**	CFM	Fan motor kW	**0.15**	kW
Actual max CFM/ft²	**5.80**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**24**	CFM	CFM/person	**11.94**	CFM/person
CFM/ft²	**0.18**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 95.6 °F / 79.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	49 ft²	5296	-	49 ft²	-	-
Wall Transmission	129 ft²	1374	-	129 ft²	231	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	49 ft²	1071	-	49 ft²	250	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	127 ft²	1225	-	127 ft²	0	-
Partitions	430 ft²	1866	-	430 ft²	0	-
Ceiling	136 ft²	1312	-	136 ft²	0	-
Overhead Lighting	136 W	464	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	136 W	439	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	680	16	0%	0	0
>> Total Zone Loads	**-**	**14288**	**556**	**-**	**482**	**0**
Zone Conditioning	-	13829	556	-	0	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	707 CFM	0	-	0 CFM	0	-
Ventilation Load	21 CFM	518	1011	0 CFM	0	0
Supply Fan Load	707 CFM	472	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**14818**	**1567**	**-**	**0**	**0**
Central Cooling Coil	-	14818	1569	-	0	0
>> Total Conditioning	**-**	**14818**	**1569**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1600

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	95.6	0.01847	21	400	518	1011
Vent - Return Mixing	Outlet	73.8	0.00882	707	1226	-	-
Central Cooling Coil	Outlet	54.4	0.00835	707	1226	14818	1569
Supply Fan	Outlet	55.0	0.00835	707	1226	472	-
Cold Supply Duct	Outlet	55.0	0.00835	707	1226	-	-
Zone Air	-	73.1	0.00852	707	1252	13829	556
Return Plenum	Outlet	73.1	0.00852	707	1252	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	14288	Cooling	13829	73.1	707	1252	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.6	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-482	Deadband	0	68.3	0	0	0	0

Air System Sizing Summary for 014-F-01 BM 2

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:34PM

Air System Information

Air System Name	**014-F-01 BM 2**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**124.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**	Zone CFM Sizing	**Sum of space airflow rates**
Sizing Data	**Calculated**	Space CFM Sizing	**Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load	**1.3**	Tons	Load occurs at	**Oct 1600**	
Total coil load	**15.9**	MBH	OA DB / WB	**95.6** / **79.9**	°F
Sensible coil load	**14.3**	MBH	Entering DB / WB	**73.8** / **61.5**	°F
Coil CFM at Oct 1600	**683**	CFM	Leaving DB / WB	**54.4** / **53.2**	°F
Max block CFM	**760**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**760**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.903**		Resulting RH	**49**	%
CFM/Ton	**517.2**		Design supply temp.	**55.0**	°F
ft²/Ton	**93.8**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**127.9**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**3.17**	gpm			

Supply Fan Sizing Data

Actual max CFM	**760**	CFM	Fan motor BHP	**0.19**	BHP
Standard CFM	**759**	CFM	Fan motor kW	**0.15**	kW
Actual max CFM/ft²	**6.13**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**23**	CFM	CFM/person	**11.46**	CFM/person
CFM/ft²	**0.18**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 95.6 °F / 79.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	57 ft²	6160	-	57 ft²	-	-
Wall Transmission	16 ft²	279	-	16 ft²	29	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	57 ft²	1246	-	57 ft²	291	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	124 ft²	1196	-	124 ft²	0	-
Partitions	380 ft²	1649	-	380 ft²	0	-
Ceiling	124 ft²	1196	-	124 ft²	0	-
Overhead Lighting	124 W	423	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	124 W	400	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	655	16	0%	0	0
>> Total Zone Loads	**-**	**13765**	**556**	**-**	**320**	**0**
Zone Conditioning	-	13371	556	-	0	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	683 CFM	0	-	0 CFM	0	-
Ventilation Load	21 CFM	499	973	0 CFM	0	0
Supply Fan Load	683 CFM	456	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**14325**	**1529**	**-**	**0**	**0**
Central Cooling Coil	-	14325	1531	-	0	0
>> Total Conditioning	**-**	**14325**	**1531**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1600

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	95.6	0.01847	21	400	499	973
Vent - Return Mixing	Outlet	73.8	0.00882	683	1249	-	-
Central Cooling Coil	Outlet	54.4	0.00835	683	1249	14325	1531
Supply Fan	Outlet	55.0	0.00835	683	1249	456	-
Cold Supply Duct	Outlet	55.0	0.00835	683	1249	-	-
Zone Air	-	73.1	0.00852	683	1275	13371	556
Return Plenum	Outlet	73.1	0.00852	683	1275	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	13765	Cooling	13371	73.1	683	1275	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.6	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-320	Deadband	0	68.6	0	0	0	0

Air System Information

Air System Name	**015-F-01-02-03- BM-3**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**124.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.1**	Tons	Load occurs at	**Jun 1100**	
Total coil load	**13.5**	MBH	OA DB / WB	**93.2** / **80.6**	°F
Sensible coil load	**11.8**	MBH	Entering DB / WB	**73.9** / **61.8**	°F
Coil CFM at Jun 1100	**563**	CFM	Leaving DB / WB	**54.4** / **53.3**	°F
Max block CFM	**627**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**627**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.878**		Resulting RH	**49**	%
CFM/Ton	**501.1**		Design supply temp.	**55.0**	°F
ft²/Ton	**110.4**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**108.7**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**2.70**	gpm			

Supply Fan Sizing Data

Actual max CFM	**627**	CFM	Fan motor BHP	**0.15**	BHP
Standard CFM	**627**	CFM	Fan motor kW	**0.12**	kW
Actual max CFM/ft²	**5.06**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**23**	CFM	CFM/person	**11.46**	CFM/person
CFM/ft²	**0.18**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1100 COOLING OA DB / WB 93.2 °F / 80.6 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	57 ft²	4040	-	57 ft²	-	-
Wall Transmission	41 ft²	617	-	41 ft²	74	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	57 ft²	1163	-	57 ft²	291	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	124 ft²	1144	-	124 ft²	0	-
Partitions	325 ft²	1349	-	325 ft²	0	-
Ceiling	124 ft²	1144	-	124 ft²	0	-
Overhead Lighting	124 W	423	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	124 W	391	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	541	16	0%	0	0
>> Total Zone Loads	**-**	**11371**	**556**	**-**	**365**	**0**
Zone Conditioning	-	11006	556	-	0	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	563 CFM	0	-	0 CFM	0	-
Ventilation Load	21 CFM	444	1091	0 CFM	0	0
Supply Fan Load	563 CFM	375	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**11825**	**1647**	**-**	**0**	**0**
Central Cooling Coil	-	11825	1648	-	0	0
>> Total Conditioning	**-**	**11825**	**1648**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

June DESIGN COOLING DAY, 1100

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	93.2	0.01977	21	400	444	1091
Vent - Return Mixing	Outlet	73.9	0.00898	563	1312	-	-
Central Cooling Coil	Outlet	54.4	0.00837	563	1312	11825	1648
Supply Fan	Outlet	55.0	0.00837	563	1312	375	-
Cold Supply Duct	Outlet	55.0	0.00837	563	1312	-	-
Zone Air	-	73.1	0.00857	563	1346	11006	556
Return Plenum	Outlet	73.1	0.00857	563	1346	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	11371	Cooling	11006	73.1	563	1346	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.4	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-365	Deadband	0	68.4	0	0	0	0

Air System Sizing Summary for 016-F-01-02-03-STDY

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:34PM

Air System Information

Air System Name	**016-F-01-02-03-STDY**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**42.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.2**	Tons	Load occurs at	**Oct 1600**	
Total coil load	**14.1**	MBH	OA DB / WB	**95.6** / **79.9**	°F
Sensible coil load	**13.4**	MBH	Entering DB / WB	**73.4** / **61.0**	°F
Coil CFM at Oct 1600	**653**	CFM	Leaving DB / WB	**54.4** / **53.2**	°F
Max block CFM	**724**	CFM	Coil ADP	**52.3**	°F
Sum of peak zone CFM	**724**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.950**		Resulting RH	**49**	%
CFM/Ton	**554.5**		Design supply temp.	**55.0**	°F
ft²/Ton	**35.7**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**336.2**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**2.83**	gpm			

Supply Fan Sizing Data

Actual max CFM	**724**	CFM	Fan motor BHP	**0.18**	BHP
Standard CFM	**723**	CFM	Fan motor kW	**0.14**	kW
Actual max CFM/ft²	**17.24**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**10**	CFM	CFM/person	**9.86**	CFM/person
CFM/ft²	**0.23**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 95.6 °F / 79.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	57 ft²	6160	-	57 ft²	-	-
Wall Transmission	17 ft²	296	-	17 ft²	30	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	57 ft²	1246	-	57 ft²	291	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	42 ft²	405	-	42 ft²	0	-
Partitions	789 ft²	3425	-	789 ft²	0	-
Ceiling	42 ft²	405	-	42 ft²	0	-
Overhead Lighting	42 W	143	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	42 W	136	-	0	0	-
People	1	280	270	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	625	8	0%	0	0
>> Total Zone Loads	**-**	**13121**	**278**	**-**	**322**	**0**
Zone Conditioning	-	12769	278	-	0	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	653 CFM	0	-	0 CFM	0	-
Ventilation Load	9 CFM	215	423	0 CFM	0	0
Supply Fan Load	653 CFM	435	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**13419**	**701**	**-**	**0**	**0**
Central Cooling Coil	-	13419	702	-	0	0
>> Total Conditioning	**-**	**13419**	**702**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

October DESIGN COOLING DAY, 1600

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	95.6	0.01847	9	400	215	423
Vent - Return Mixing	Outlet	73.4	0.00856	653	1094	-	-
Central Cooling Coil	Outlet	54.4	0.00834	653	1094	13419	702
Supply Fan	Outlet	55.0	0.00834	653	1094	435	-
Cold Supply Duct	Outlet	55.0	0.00834	653	1094	-	-
Zone Air	-	73.1	0.00843	653	1104	12769	278
Return Plenum	Outlet	73.1	0.00843	653	1104	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	13121	Cooling	12769	73.1	653	1104	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.5	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-322	Deadband	0	68.7	0	0	0	0

Air System Sizing Summary for 017-F-4-05-06-LVF -2 bk

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:34PM

Air System Information

Air System Name	**017-F-4-05-06-LVF -2 bk**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**239.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.9**	Tons	Load occurs at	**Jun 1400**	
Total coil load	**22.3**	MBH	OA DB / WB	**98.6** / **81.9**	°F
Sensible coil load	**17.9**	MBH	Entering DB / WB	**74.7** / **62.9**	°F
Coil CFM at Jun 1400	**816**	CFM	Leaving DB / WB	**54.4** / **53.3**	°F
Max block CFM	**914**	CFM	Coil ADP	**52.1**	°F
Sum of peak zone CFM	**914**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.804**		Resulting RH	**51**	%
CFM/Ton	**439.4**		Design supply temp.	**55.0**	°F
ft²/Ton	**128.7**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**93.2**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**4.46**	gpm			

Supply Fan Sizing Data

Actual max CFM	**914**	CFM	Fan motor BHP	**0.23**	BHP
Standard CFM	**913**	CFM	Fan motor kW	**0.18**	kW
Actual max CFM/ft²	**3.82**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**58**	CFM	CFM/person	**9.69**	CFM/person
CFM/ft²	**0.24**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1400 COOLING OA DB / WB 98.6 °F / 81.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	58 ft²	3413	-	58 ft²	-	-
Wall Transmission	18 ft²	287	-	18 ft²	32	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	58 ft²	1424	-	58 ft²	296	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	239 ft²	2348	-	239 ft²	0	-
Partitions	595 ft²	2631	-	595 ft²	0	-
Ceiling	239 ft²	2348	-	239 ft²	0	-
Overhead Lighting	239 W	815	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	239 W	765	-	0	0	-
People	6	1680	1620	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	786	49	0%	0	0
>> Total Zone Loads	**-**	**16498**	**1669**	**-**	**329**	**0**
Zone Conditioning	-	15953	1669	-	0	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	816 CFM	0	-	0 CFM	0	-
Ventilation Load	52 CFM	1423	2693	0 CFM	0	0
Supply Fan Load	816 CFM	544	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**17920**	**4362**	**-**	**0**	**0**
Central Cooling Coil	-	17920	4362	-	0	0
>> Total Conditioning	**-**	**17920**	**4362**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

June DESIGN COOLING DAY, 1400

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	98.6	0.01977	52	400	1423	2693
Vent - Return Mixing	Outlet	74.7	0.00952	816	1669	-	-
Central Cooling Coil	Outlet	54.4	0.00839	816	1669	17920	4362
Supply Fan	Outlet	55.0	0.00839	816	1669	544	-
Cold Supply Duct	Outlet	55.0	0.00839	816	1669	-	-
Zone Air	-	73.1	0.00882	816	1755	15953	1669
Return Plenum	Outlet	73.1	0.00882	816	1755	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	16498	Cooling	15953	73.1	816	1755	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.5	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-329	Deadband	0	69.1	0	0	0	0

Air System Sizing Summary for 018-F-4-05-06- MB RM

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:34PM

Air System Information

Air System Name	**018-F-4-05-06- MB RM**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**125.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**	Zone CFM Sizing	**Sum of space airflow rates**
Sizing Data	**Calculated**	Space CFM Sizing	**Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load	**1.2**	Tons	Load occurs at	**Jun 1600**	
Total coil load	**14.8**	MBH	OA DB / WB	**98.6** / **81.9**	°F
Sensible coil load	**13.2**	MBH	Entering DB / WB	**74.0** / **61.7**	°F
Coil CFM at Jun 1600	**622**	CFM	Leaving DB / WB	**54.4** / **53.2**	°F
Max block CFM	**693**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**693**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.888**		Resulting RH	**49**	%
CFM/Ton	**504.2**		Design supply temp.	**55.0**	°F
ft²/Ton	**101.2**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**118.5**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**2.96**	gpm			

Supply Fan Sizing Data

Actual max CFM	**693**	CFM	Fan motor BHP	**0.17**	BHP
Standard CFM	**692**	CFM	Fan motor kW	**0.14**	kW
Actual max CFM/ft²	**5.54**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**23**	CFM	CFM/person	**11.50**	CFM/person
CFM/ft²	**0.18**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1600 COOLING OA DB / WB 98.6 °F / 81.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	58 ft²	3129	-	58 ft²	-	-
Wall Transmission	158 ft²	2367	-	158 ft²	283	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	58 ft²	1445	-	58 ft²	296	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	125 ft²	1239	-	125 ft²	0	-
Partitions	258 ft²	1150	-	258 ft²	0	-
Ceiling	125 ft²	1239	-	125 ft²	0	-
Overhead Lighting	125 W	426	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	125 W	404	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	598	16	0%	0	0
>> Total Zone Loads	**-**	**12557**	**556**	**-**	**580**	**0**
Zone Conditioning	-	12177	556	-	0	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	622 CFM	0	-	0 CFM	0	-
Ventilation Load	21 CFM	566	1100	0 CFM	0	0
Supply Fan Load	622 CFM	415	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**13159**	**1656**	**-**	**0**	**0**
Central Cooling Coil	-	13159	1656	-	0	0
>> Total Conditioning	**-**	**13159**	**1656**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

June DESIGN COOLING DAY, 1600

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	98.6	0.01977	21	400	566	1100
Vent - Return Mixing	Outlet	74.0	0.00892	622	1277	-	-
Central Cooling Coil	Outlet	54.4	0.00836	622	1277	13159	1656
Supply Fan	Outlet	55.0	0.00836	622	1277	415	-
Cold Supply Duct	Outlet	55.0	0.00836	622	1277	-	-
Zone Air	-	73.1	0.00854	622	1307	12177	556
Return Plenum	Outlet	73.1	0.00854	622	1307	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	12557	Cooling	12177	73.1	622	1307	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.4	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-580	Deadband	0	67.8	0	0	0	0

Air System Sizing Summary for 019-F-4-05-06-B RM

Project Name: LODHA - ACME -THANE-TYPICAL 7.7.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 02:34PM

Air System Information

Air System Name	**019-F-4-05-06-B RM**		Number of zones	**1**	
Equipment Class	**UNDEF**		Floor Area	**116.0**	ft²
Air System Type	**SZCAV**		Location	**THANE, India**	

Sizing Calculation Information

Calculation Months	**Jan to Dec**		Zone CFM Sizing	**Sum of space airflow rates**	
Sizing Data	**Calculated**		Space CFM Sizing	**Individual peak space loads**	

Central Cooling Coil Sizing Data

Total coil load	**1.1**	Tons	Load occurs at	**Jun 1100**	
Total coil load	**13.4**	MBH	OA DB / WB	**93.2** / **80.6**	°F
Sensible coil load	**11.7**	MBH	Entering DB / WB	**73.8** / **61.7**	°F
Coil CFM at Jun 1100	**559**	CFM	Leaving DB / WB	**54.4** / **53.3**	°F
Max block CFM	**623**	CFM	Coil ADP	**52.2**	°F
Sum of peak zone CFM	**623**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.879**		Resulting RH	**49**	%
CFM/Ton	**502.2**		Design supply temp.	**55.0**	°F
ft²/Ton	**104.3**		Zone T-stat Check	**1 of 1**	OK
BTU/(hr·ft²)	**115.1**		Max zone temperature deviation	**0.0**	°F
Water flow @ 10.0 °F rise	**2.67**	gpm			

Supply Fan Sizing Data

Actual max CFM	**623**	CFM	Fan motor BHP	**0.15**	BHP
Standard CFM	**622**	CFM	Fan motor kW	**0.12**	kW
Actual max CFM/ft²	**5.37**	CFM/ft²	Fan static	**1.00**	in wg

Outdoor Ventilation Air Data

Design airflow CFM	**22**	CFM	CFM/person	**11.14**	CFM/person
CFM/ft²	**0.19**	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1100 COOLING OA DB / WB 93.2 °F / 80.6 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 65.0 °F / 58.0 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	58 ft²	4111	-	58 ft²	-	-
Wall Transmission	42 ft²	632	-	42 ft²	75	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	58 ft²	1183	-	58 ft²	296	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	116 ft²	1070	-	116 ft²	0	-
Partitions	328 ft²	1361	-	328 ft²	0	-
Ceiling	116 ft²	1070	-	116 ft²	0	-
Overhead Lighting	116 W	396	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	116 W	366	-	0	0	-
People	2	560	540	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 3%	537	16	0%	0	0
>> Total Zone Loads	**-**	**11285**	**556**	**-**	**372**	**0**
Zone Conditioning	-	10929	556	-	0	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	559 CFM	0	-	0 CFM	0	-
Ventilation Load	20 CFM	432	1061	0 CFM	0	0
Supply Fan Load	559 CFM	373	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**11734**	**1617**	**-**	**0**	**0**
Central Cooling Coil	-	11734	1618	-	0	0
>> Total Conditioning	**-**	**11734**	**1618**	**-**	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

June DESIGN COOLING DAY, 1100

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	93.2	0.01977	20	400	432	1061
Vent - Return Mixing	Outlet	73.8	0.00898	559	1325	-	-
Central Cooling Coil	Outlet	54.4	0.00836	559	1325	11734	1618
Supply Fan	Outlet	55.0	0.00836	559	1325	373	-
Cold Supply Duct	Outlet	55.0	0.00836	559	1325	-	-
Zone Air	-	73.1	0.00857	559	1359	10929	556
Return Plenum	Outlet	73.1	0.00857	559	1359	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	11285	Cooling	10929	73.1	559	1359	0	0

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	65.0	0.00866	0	400	0	0
Vent - Return Mixing	Outlet	0.0	0.00000	0	0	-	-
Central Cooling Coil	Outlet	0.0	0.00000	0	0	0	0
Supply Fan	Outlet	0.0	0.00000	0	0	0	-
Zone Air	-	0.0	0.00000	0	0	0	0
Return Plenum	Outlet	72.4	0.00000	0	0	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4741.0 BTU/(hr-CFM)
Site Altitude = 32.8 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	-372	Deadband	0	68.4	0	0	0	0