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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **3.0** | Tons | Load occurs at | **Oct 1200** | |
| Total coil load | **36.4** | MBH | OA DB / WB | **92.6** / **79.2** | °F |
| Sensible coil load | **30.5** | MBH | Entering DB / WB | **74.2** / **62.3** | °F |
| Coil CFM at Oct 1200 | **1425** | CFM | Leaving DB / WB | **54.4** / **53.3** | °F |
| Max block CFM | **1594** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **1594** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.838** | | Resulting RH | **50** | % |
| CFM/Ton | **470.1** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **151.1** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **79.4** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **7.28** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **1594** | CFM | Fan motor BHP | **0.39** | BHP |
| Standard CFM | **1592** | CFM | Fan motor kW | **0.31** | kW |
| Actual max CFM/ft² | **3.48** | 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 | | | |

# Air System Design Load Summary for 001-E-APT- 01-LVG (4BK)

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

| | DESIGN COOLING | | | DESIGN HEATING | | |
|---|---|---|---|---|---|---|
| | COOLING DATA AT Oct 1200<br>COOLING OA DB / WB 92.6 °F / 79.2 °F | | | HEATING DATA AT DES HTG<br>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 | 458 ft² | 1780 | - | 458 ft² | 274 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 1370 | 65 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **28772** | **2225** | **-** | **928** | **0** |
| Zone Conditioning | - | 27875 | 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 | 1425 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 79 CFM | 1661 | 3668 | 0 CFM | 0 | 0 |
| Supply Fan Load | 1425 CFM | 951 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **30486** | **5893** | **-** | **0** | **0** |
| Central Cooling Coil | - | 30486 | 5895 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **30486** | **5895** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 3668 |
| Vent - Return Mixing | Outlet | 74.2 | 0.00925 | 1425 | 1480 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00838 | 1425 | 1480 | 30486 | 5895 |
| Supply Fan | Outlet | 55.0 | 0.00838 | 1425 | 1480 | 951 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00838 | 1425 | 1480 | - | - |
| Zone Air | - | 73.1 | 0.00871 | 1425 | 1544 | 27875 | 2225 |
| Return Plenum | Outlet | 73.1 | 0.00871 | 1425 | 1544 | 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 | 28772 | Cooling | 27875 | 73.1 | 1425 | 1544 | 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 | -928 | Deadband | 0 | 68.2 | 0 | 0 | 0 | 0 |

## 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 | **1.2** | Tons | Load occurs at | **Sep 1500** | |
| Total coil load | **14.7** | MBH | OA DB / WB | **98.0** / **81.0** | °F |
| Sensible coil load | **12.9** | MBH | Entering DB / WB | **74.1** / **61.9** | °F |
| Coil CFM at Sep 1500 | **607** | CFM | Leaving DB / WB | **54.4** / **53.2** | °F |
| Max block CFM | **683** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **683** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.878** | | Resulting RH | **49** | % |
| CFM/Ton | **494.5** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **153.1** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **78.4** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **2.95** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **683** | CFM | Fan motor BHP | **0.17** | BHP |
| Standard CFM | **682** | CFM | Fan motor kW | **0.13** | kW |
| Actual max CFM/ft² | **3.63** | 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 | | | |

| | DESIGN COOLING | | | DESIGN HEATING | | |
|---|---|---|---|---|---|---|
| | COOLING DATA AT Sep 1500<br>COOLING OA DB / WB 98.0 °F / 81.0 °F | | | HEATING DATA AT DES HTG<br>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 | 939 | - | 16 ft² | - | - |
| Wall Transmission | 230 ft² | 3467 | - | 230 ft² | 412 | - |
| Roof Transmission | 188 ft² | 1778 | - | 188 ft² | 113 | - |
| Window Transmission | 16 ft² | 384 | - | 16 ft² | 82 | - |
| Skylight Transmission | 0 ft² | 0 | - | 0 ft² | 0 | - |
| Door Loads | 0 ft² | 0 | - | 0 ft² | 0 | - |
| Floor Transmission | 188 ft² | 1839 | - | 188 ft² | 0 | - |
| Partitions | 338 ft² | 1488 | - | 338 ft² | 0 | - |
| Ceiling | 0 ft² | 0 | - | 0 ft² | 0 | - |
| Overhead Lighting | 188 W | 641 | - | 0 | 0 | - |
| Task Lighting | 0 W | 0 | - | 0 | 0 | - |
| Electric Equipment | 188 W | 605 | - | 0 | 0 | - |
| People | 2 | 560 | 540 | 0 | 0 | 0 |
| Infiltration | - | 0 | 0 | - | 0 | 0 |
| Miscellaneous | - | 0 | 0 | - | 0 | 0 |
| Safety Factor | 5% / 3% | 585 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **12286** | **556** | **-** | **608** | **0** |
| Zone Conditioning | - | 11870 | 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 | 607 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 25 CFM | 669 | 1234 | 0 CFM | 0 | 0 |
| Supply Fan Load | 607 CFM | 405 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **12945** | **1790** | **-** | **0** | **0** |
| Central Cooling Coil | - | 12945 | 1791 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **12945** | **1791** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>Negative values are clg loads** | | |

**September DESIGN COOLING DAY, 1500**

## TABLE 1: SYSTEM DATA

| Component | Location | Dry-Bulb Temp (°F) | Specific Humidity (lb/lb) | Airflow (CFM) | CO2 Level (ppm) | Sensible Heat (BTU/hr) | Latent Heat (BTU/hr) |
|---|---|---|---|---|---|---|---|
| Ventilation Air | Inlet | 98.0 | 0.01899 | 25 | 400 | 669 | 1234 |
| Vent - Return Mixing | Outlet | 74.1 | 0.00898 | 607 | 1213 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00836 | 607 | 1213 | 12945 | 1791 |
| Supply Fan | Outlet | 55.0 | 0.00836 | 607 | 1213 | 405 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00836 | 607 | 1213 | - | - |
| Zone Air | - | 73.1 | 0.00855 | 607 | 1248 | 11870 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00855 | 607 | 1248 | 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 | 12286 | Cooling | 11870 | 73.1 | 607 | 1248 | 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 | -608 | Deadband | 0 | 67.7 | 0 | 0 | 0 | 0 |

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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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<br>COOLING OA DB / WB 95.6 °F / 79.9 °F | | | HEATING DATA AT DES HTG<br>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<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 Sizing Summary for 004-E-APT-01 BM3

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **16.5** | MBH | OA DB / WB | **89.6** / **78.2** | °F |
| Sensible coil load | **15.0** | MBH | Entering DB / WB | **73.6** / **61.4** | °F |
| Coil CFM at Nov 1200 | **724** | CFM | Leaving DB / WB | **54.4** / **53.2** | °F |
| Max block CFM | **802** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **802** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.910** | | Resulting RH | **49** | % |
| CFM/Ton | **526.9** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **84.5** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **142.1** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **3.30** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **802** | CFM | Fan motor BHP | **0.20** | BHP |
| Standard CFM | **801** | CFM | Fan motor kW | **0.16** | kW |
| Actual max CFM/ft² | **6.91** | 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<br>COOLING OA DB / WB 89.6 °F / 78.2 °F | | | HEATING DATA AT DES HTG<br>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 | 116 ft² | 969 | - | 116 ft² | 70 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 692 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **14527** | **556** | **-** | **508** | **0** |
| Zone Conditioning | - | 14163 | 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 | 724 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 20 CFM | 356 | 924 | 0 CFM | 0 | 0 |
| Supply Fan Load | 724 CFM | 483 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **15002** | **1480** | **-** | **0** | **0** |
| Central Cooling Coil | - | 15002 | 1481 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **15002** | **1481** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 356 | 924 |
| Vent - Return Mixing | Outlet | 73.6 | 0.00879 | 724 | 1238 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00835 | 724 | 1238 | 15002 | 1481 |
| Supply Fan | Outlet | 55.0 | 0.00835 | 724 | 1238 | 483 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00835 | 724 | 1238 | - | - |
| Zone Air | - | 73.1 | 0.00852 | 724 | 1262 | 14163 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00852 | 724 | 1262 | 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 | 14527 | Cooling | 14163 | 73.1 | 724 | 1262 | 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 | -508 | Deadband | 0 | 67.6 | 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 | **1.4** | Tons | Load occurs at | **Oct 1600** | |
| Total coil load | **17.2** | MBH | OA DB / WB | **95.6** / **79.9** | °F |
| Sensible coil load | **15.5** | MBH | Entering DB / WB | **73.8** / **61.5** | °F |
| Coil CFM at Oct 1600 | **741** | CFM | Leaving DB / WB | **54.4** / **53.2** | °F |
| Max block CFM | **823** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **823** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.906** | | Resulting RH | **49** | % |
| CFM/Ton | **518.2** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **104.9** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **114.4** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **3.43** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **823** | CFM | Fan motor BHP | **0.20** | BHP |
| Standard CFM | **822** | CFM | Fan motor kW | **0.16** | kW |
| Actual max CFM/ft² | **5.49** | 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<br>COOLING OA DB / WB 95.6 °F / 79.9 °F | | | HEATING DATA AT DES HTG<br>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 | 150 ft² | 599 | - | 150 ft² | 90 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 711 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **14923** | **556** | **-** | **654** | **0** |
| Zone Conditioning | - | 14504 | 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 | 741 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 23 CFM | 544 | 1063 | 0 CFM | 0 | 0 |
| Supply Fan Load | 741 CFM | 495 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **15543** | **1619** | **-** | **0** | **0** |
| Central Cooling Coil | - | 15543 | 1622 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **15543** | **1622** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 23 | 400 | 544 | 1063 |
| Vent - Return Mixing | Outlet | 73.8 | 0.00881 | 741 | 1197 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00835 | 741 | 1197 | 15543 | 1622 |
| Supply Fan | Outlet | 55.0 | 0.00835 | 741 | 1197 | 495 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00835 | 741 | 1197 | - | - |
| Zone Air | - | 73.1 | 0.00851 | 741 | 1222 | 14504 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00851 | 741 | 1222 | 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 | 14923 | Cooling | 14504 | 73.1 | 741 | 1222 | 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 | 67.3 | 0 | 0 | 0 | 0 |

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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **23.5** | MBH | OA DB / WB | **95.6** / **79.9** | °F |
| Sensible coil load | **19.5** | MBH | Entering DB / WB | **74.4** / **62.5** | °F |
| Coil CFM at Oct 1600 | **900** | CFM | Leaving DB / WB | **54.4** / **53.3** | °F |
| Max block CFM | **1001** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **1001** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.827** | | Resulting RH | **51** | % |
| CFM/Ton | **459.1** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **120.0** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **100.0** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **4.71** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **1001** | CFM | Fan motor BHP | **0.25** | BHP |
| Standard CFM | **1000** | CFM | Fan motor kW | **0.20** | kW |
| Actual max CFM/ft² | **4.25** | 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 | | | |

# Air System Design Load Summary for 006-E-APT-02/03-LVG

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

| | DESIGN COOLING | | | DESIGN HEATING | | |
|---|---|---|---|---|---|---|
| | COOLING DATA AT Oct 1600<br>COOLING OA DB / WB 95.6 °F / 79.9 °F | | | HEATING DATA AT DES HTG<br>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 | 235 ft² | 1640 | - | 235 ft² | 142 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 864 | 49 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **18137** | **1669** | **-** | **457** | **0** |
| Zone Conditioning | - | 17616 | 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 | 900 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 52 CFM | 1258 | 2393 | 0 CFM | 0 | 0 |
| Supply Fan Load | 900 CFM | 601 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **19474** | **4061** | **-** | **0** | **0** |
| Central Cooling Coil | - | 19474 | 4061 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **19474** | **4061** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 1258 | 2393 |
| Vent - Return Mixing | Outlet | 74.4 | 0.00933 | 900 | 1630 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00838 | 900 | 1630 | 19474 | 4061 |
| Supply Fan | Outlet | 55.0 | 0.00838 | 900 | 1630 | 601 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00838 | 900 | 1630 | - | - |
| Zone Air | - | 73.1 | 0.00877 | 900 | 1706 | 17616 | 1669 |
| Return Plenum | Outlet | 73.1 | 0.00877 | 900 | 1706 | 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 | 18137 | Cooling | 17616 | 73.1 | 900 | 1706 | 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 | -457 | Deadband | 0 | 68.5 | 0 | 0 | 0 | 0 |

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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **1.4** | Tons | Load occurs at | **Oct 1600** | |
| Total coil load | **17.0** | MBH | OA DB / WB | **95.6** / **79.9** | °F |
| Sensible coil load | **15.5** | MBH | Entering DB / WB | **73.8** / **61.4** | °F |
| Coil CFM at Oct 1600 | **739** | CFM | Leaving DB / WB | **54.4** / **53.2** | °F |
| Max block CFM | **820** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **820** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.909** | | Resulting RH | **49** | % |
| CFM/Ton | **521.1** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **91.7** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **130.8** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **3.40** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **820** | CFM | Fan motor BHP | **0.20** | BHP |
| Standard CFM | **820** | CFM | Fan motor kW | **0.16** | kW |
| Actual max CFM/ft² | **6.31** | 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<br>COOLING OA DB / WB 95.6 °F / 79.9 °F | | | HEATING DATA AT DES HTG<br>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 | 130 ft² | 519 | - | 130 ft² | 78 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 708 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **14869** | **556** | **-** | **776** | **0** |
| Zone Conditioning | - | 14454 | 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 | 739 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 21 CFM | 509 | 995 | 0 CFM | 0 | 0 |
| Supply Fan Load | 739 CFM | 493 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **15456** | **1552** | **-** | **0** | **0** |
| Central Cooling Coil | - | 15456 | 1554 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **15456** | **1554** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 73.8 | 0.00879 | 739 | 1218 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00835 | 739 | 1218 | 15456 | 1554 |
| Supply Fan | Outlet | 55.0 | 0.00835 | 739 | 1218 | 493 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00835 | 739 | 1218 | - | - |
| Zone Air | - | 73.1 | 0.00851 | 739 | 1242 | 14454 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00851 | 739 | 1242 | 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 | 14869 | Cooling | 14454 | 73.1 | 739 | 1242 | 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 | -776 | Deadband | 0 | 66.8 | 0 | 0 | 0 | 0 |

# Air System Sizing Summary for 008- E-APT-02/03-BM -2

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **15.1** | MBH | OA DB / WB | **95.6** / **79.9** | °F |
| Sensible coil load | **13.6** | MBH | Entering DB / WB | **73.8** / **61.5** | °F |
| Coil CFM at Oct 1600 | **649** | CFM | Leaving DB / WB | **54.4** / **53.2** | °F |
| Max block CFM | **720** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **720** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.901** | | Resulting RH | **49** | % |
| CFM/Ton | **515.5** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **89.7** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **133.7** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **3.02** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **720** | CFM | Fan motor BHP | **0.18** | BHP |
| Standard CFM | **719** | CFM | Fan motor kW | **0.14** | kW |
| Actual max CFM/ft² | **6.37** | 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 | | | |

# Air System Design Load Summary for 008- E-APT-02/03-BM -2

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

| | DESIGN COOLING | | | DESIGN HEATING | | |
|---|---|---|---|---|---|---|
| | COOLING DATA AT Oct 1600<br>COOLING OA DB / WB 95.6 °F / 79.9 °F | | | HEATING DATA AT DES HTG<br>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 | 113 ft² | 451 | - | 113 ft² | 68 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 621 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **13039** | **556** | **-** | **436** | **0** |
| Zone Conditioning | - | 12703 | 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 | 649 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 20 CFM | 480 | 936 | 0 CFM | 0 | 0 |
| Supply Fan Load | 649 CFM | 433 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **13616** | **1492** | **-** | **0** | **0** |
| Central Cooling Coil | - | 13616 | 1494 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **13616** | **1494** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 0.00884 | 649 | 1277 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00835 | 649 | 1277 | 13616 | 1494 |
| Supply Fan | Outlet | 55.0 | 0.00835 | 649 | 1277 | 433 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00835 | 649 | 1277 | - | - |
| Zone Air | - | 73.1 | 0.00853 | 649 | 1305 | 12703 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00853 | 649 | 1305 | 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 | 13039 | Cooling | 12703 | 73.1 | 649 | 1305 | 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 | -436 | Deadband | 0 | 67.7 | 0 | 0 | 0 | 0 |

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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **1.8** | Tons | Load occurs at | **Jun 1400** | |
| Total coil load | **21.4** | MBH | OA DB / WB | **98.6** / **81.9** | °F |
| Sensible coil load | **17.0** | MBH | Entering DB / WB | **74.9** / **63.0** | °F |
| Coil CFM at Jun 1400 | **769** | CFM | Leaving DB / WB | **54.4** / **53.3** | °F |
| Max block CFM | **863** | CFM | Coil ADP | **52.1** | °F |
| Sum of peak zone CFM | **863** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.795** | | Resulting RH | **51** | % |
| CFM/Ton | **431.9** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **138.7** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **86.5** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **4.28** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **863** | CFM | Fan motor BHP | **0.21** | BHP |
| Standard CFM | **861** | CFM | Fan motor kW | **0.17** | kW |
| Actual max CFM/ft² | **3.49** | 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<br>COOLING OA DB / WB 98.6 °F / 81.9 °F | | | HEATING DATA AT DES HTG<br>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 | 247 ft² | 1189 | - | 247 ft² | 148 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 738 | 49 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **15498** | **1669** | **-** | **477** | **0** |
| Zone Conditioning | - | 15040 | 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 | 769 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 52 CFM | 1437 | 2712 | 0 CFM | 0 | 0 |
| Supply Fan Load | 769 CFM | 513 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **16990** | **4381** | **-** | **0** | **0** |
| Central Cooling Coil | - | 16990 | 4381 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **16990** | **4381** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 1437 | 2712 |
| Vent - Return Mixing | Outlet | 74.9 | 0.00960 | 769 | 1681 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00840 | 769 | 1681 | 16990 | 4381 |
| Supply Fan | Outlet | 55.0 | 0.00840 | 769 | 1681 | 513 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00840 | 769 | 1681 | - | - |
| Zone Air | - | 73.1 | 0.00885 | 769 | 1774 | 15040 | 1669 |
| Return Plenum | Outlet | 73.1 | 0.00885 | 769 | 1774 | 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 | 15498 | Cooling | 15040 | 73.1 | 769 | 1774 | 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 | -477 | Deadband | 0 | 68.5 | 0 | 0 | 0 | 0 |

# Air System Sizing Summary for 010-E-APT-04- M-BM

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **13.3** | MBH | OA DB / WB | **93.2** / **80.6** | °F |
| Sensible coil load | **11.7** | MBH | Entering DB / WB | **73.9** / **61.8** | °F |
| Coil CFM at Jun 1100 | **554** | CFM | Leaving DB / WB | **54.4** / **53.3** | °F |
| Max block CFM | **616** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **616** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.875** | | Resulting RH | **49** | % |
| CFM/Ton | **499.1** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **114.4** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **104.9** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **2.67** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **616** | CFM | Fan motor BHP | **0.15** | BHP |
| Standard CFM | **616** | CFM | Fan motor kW | **0.12** | kW |
| Actual max CFM/ft² | **4.85** | 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<br>COOLING OA DB / WB 93.2 °F / 80.6 °F | | | HEATING DATA AT DES HTG<br>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 | 127 ft² | 618 | - | 127 ft² | 76 | - |
| 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% | 532 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **11171** | **556** | **-** | **444** | **0** |
| Zone Conditioning | - | 10838 | 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 | 554 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 21 CFM | 449 | 1104 | 0 CFM | 0 | 0 |
| Supply Fan Load | 554 CFM | 370 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **11657** | **1661** | **-** | **0** | **0** |
| Central Cooling Coil | - | 11657 | 1661 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **11657** | **1661** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 1104 |
| Vent - Return Mixing | Outlet | 73.9 | 0.00900 | 554 | 1312 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00837 | 554 | 1312 | 11657 | 1661 |
| Supply Fan | Outlet | 55.0 | 0.00837 | 554 | 1312 | 370 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00837 | 554 | 1312 | - | - |
| Zone Air | - | 73.1 | 0.00858 | 554 | 1347 | 10838 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00858 | 554 | 1347 | 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 | 11171 | Cooling | 10838 | 73.1 | 554 | 1347 | 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 | -444 | Deadband | 0 | 67.9 | 0 | 0 | 0 | 0 |

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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **13.2** | MBH | OA DB / WB | **93.2** / **80.6** | °F |
| Sensible coil load | **11.6** | MBH | Entering DB / WB | **73.9** / **61.8** | °F |
| Coil CFM at Jun 1100 | **551** | CFM | Leaving DB / WB | **54.4** / **53.3** | °F |
| Max block CFM | **613** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **613** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.875** | | Resulting RH | **49** | % |
| CFM/Ton | **499.3** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **112.4** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **106.7** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **2.65** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **613** | CFM | Fan motor BHP | **0.15** | BHP |
| Standard CFM | **612** | CFM | Fan motor kW | **0.12** | kW |
| Actual max CFM/ft² | **4.94** | 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<br>COOLING OA DB / WB 93.2 °F / 80.6 °F | | | HEATING DATA AT DES HTG<br>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 | 124 ft² | 603 | - | 124 ft² | 74 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 529 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **11104** | **556** | **-** | **442** | **0** |
| Zone Conditioning | - | 10774 | 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 | 551 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 21 CFM | 445 | 1093 | 0 CFM | 0 | 0 |
| Supply Fan Load | 551 CFM | 367 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **11586** | **1649** | **-** | **0** | **0** |
| Central Cooling Coil | - | 11586 | 1650 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **11586** | **1650** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 445 | 1093 |
| Vent - Return Mixing | Outlet | 73.9 | 0.00900 | 551 | 1318 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00837 | 551 | 1318 | 11586 | 1650 |
| Supply Fan | Outlet | 55.0 | 0.00837 | 551 | 1318 | 367 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00837 | 551 | 1318 | - | - |
| Zone Air | - | 73.1 | 0.00858 | 551 | 1353 | 10774 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00858 | 551 | 1353 | 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 | 11104 | Cooling | 10774 | 73.1 | 551 | 1353 | 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 | -442 | Deadband | 0 | 67.9 | 0 | 0 | 0 | 0 |

# Air System Sizing Summary for 012-F-01-02-03-LVG

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **2.1** | Tons | Load occurs at | **Oct 1600** | |
| Total coil load | **25.3** | MBH | OA DB / WB | **95.6** / **79.9** | °F |
| Sensible coil load | **21.1** | MBH | Entering DB / WB | **74.4** / **62.4** | °F |
| Coil CFM at Oct 1600 | **976** | CFM | Leaving DB / WB | **54.4** / **53.3** | °F |
| Max block CFM | **1088** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **1088** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.832** | | Resulting RH | **50** | % |
| CFM/Ton | **462.2** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **137.4** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **87.4** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **5.07** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **1088** | CFM | Fan motor BHP | **0.27** | BHP |
| Standard CFM | **1087** | CFM | Fan motor kW | **0.21** | kW |
| Actual max CFM/ft² | **3.75** | 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 | | | |

| | DESIGN COOLING | | | DESIGN HEATING | | |
|---|---|---|---|---|---|---|
| | COOLING DATA AT Oct 1600<br>COOLING OA DB / WB 95.6 °F / 79.9 °F | | | HEATING DATA AT DES HTG<br>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 | 290 ft² | 1159 | - | 290 ft² | 174 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 939 | 49 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **19719** | **1669** | **-** | **502** | **0** |
| Zone Conditioning | - | 19089 | 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 | 976 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 56 CFM | 1349 | 2574 | 0 CFM | 0 | 0 |
| Supply Fan Load | 976 CFM | 651 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **21089** | **4243** | **-** | **0** | **0** |
| Central Cooling Coil | - | 21089 | 4246 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **21089** | **4246** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 1349 | 2574 |
| Vent - Return Mixing | Outlet | 74.4 | 0.00930 | 976 | 1552 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00838 | 976 | 1552 | 21089 | 4246 |
| Supply Fan | Outlet | 55.0 | 0.00838 | 976 | 1552 | 651 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00838 | 976 | 1552 | - | - |
| Zone Air | - | 73.1 | 0.00874 | 976 | 1622 | 19089 | 1669 |
| Return Plenum | Outlet | 73.1 | 0.00874 | 976 | 1622 | 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 | 19719 | Cooling | 19089 | 73.1 | 976 | 1622 | 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 | -502 | Deadband | 0 | 68.6 | 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 | **1.3** | Tons | Load occurs at | **Oct 1600** | |
| Total coil load | **15.6** | MBH | OA DB / WB | **95.6** / **79.9** | °F |
| Sensible coil load | **14.0** | MBH | Entering DB / WB | **73.9** / **61.5** | °F |
| Coil CFM at Oct 1600 | **668** | CFM | Leaving DB / WB | **54.4** / **53.2** | °F |
| Max block CFM | **744** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **744** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.899** | | Resulting RH | **49** | % |
| CFM/Ton | **513.8** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **104.6** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **114.8** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **3.12** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **744** | CFM | Fan motor BHP | **0.18** | BHP |
| Standard CFM | **743** | CFM | Fan motor kW | **0.15** | kW |
| Actual max CFM/ft² | **5.47** | 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<br>COOLING OA DB / WB 95.6 °F / 79.9 °F | | | HEATING DATA AT DES HTG<br>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 | 136 ft² | 543 | - | 136 ft² | 81 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 642 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **13481** | **556** | **-** | **563** | **0** |
| Zone Conditioning | - | 13072 | 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 | 668 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 21 CFM | 519 | 1011 | 0 CFM | 0 | 0 |
| Supply Fan Load | 668 CFM | 446 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **14036** | **1568** | **-** | **0** | **0** |
| Central Cooling Coil | - | 14036 | 1570 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **14036** | **1570** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 519 | 1011 |
| Vent - Return Mixing | Outlet | 73.9 | 0.00885 | 668 | 1243 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00835 | 668 | 1243 | 14036 | 1570 |
| Supply Fan | Outlet | 55.0 | 0.00835 | 668 | 1243 | 446 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00835 | 668 | 1243 | - | - |
| Zone Air | - | 73.1 | 0.00853 | 668 | 1270 | 13072 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00853 | 668 | 1270 | 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 | 13481 | Cooling | 13072 | 73.1 | 668 | 1270 | 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 | -563 | Deadband | 0 | 67.7 | 0 | 0 | 0 | 0 |

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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **15.1** | MBH | OA DB / WB | **95.6** / **79.9** | °F |
| Sensible coil load | **13.6** | MBH | Entering DB / WB | **73.9** / **61.6** | °F |
| Coil CFM at Oct 1600 | **648** | CFM | Leaving DB / WB | **54.4** / **53.2** | °F |
| Max block CFM | **719** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **719** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.899** | | Resulting RH | **49** | % |
| CFM/Ton | **513.5** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **98.3** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **122.1** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **3.03** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **719** | CFM | Fan motor BHP | **0.18** | BHP |
| Standard CFM | **718** | CFM | Fan motor kW | **0.14** | kW |
| Actual max CFM/ft² | **5.80** | 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 | | | |

# Air System Design Load Summary for 014-F-01 BM 2

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

| | DESIGN COOLING | | | DESIGN HEATING | | |
|---|---|---|---|---|---|---|
| | COOLING DATA AT Oct 1600<br>COOLING OA DB / WB 95.6 °F / 79.9 °F | | | HEATING DATA AT DES HTG<br>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 | 124 ft² | 495 | - | 124 ft² | 74 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 620 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **13030** | **556** | **-** | **394** | **0** |
| Zone Conditioning | - | 12681 | 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 | 648 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 21 CFM | 499 | 973 | 0 CFM | 0 | 0 |
| Supply Fan Load | 648 CFM | 432 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **13612** | **1530** | **-** | **0** | **0** |
| Central Cooling Coil | - | 13612 | 1531 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **13612** | **1531** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 73.9 | 0.00885 | 648 | 1265 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00835 | 648 | 1265 | 13612 | 1531 |
| Supply Fan | Outlet | 55.0 | 0.00835 | 648 | 1265 | 432 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00835 | 648 | 1265 | - | - |
| Zone Air | - | 73.1 | 0.00853 | 648 | 1293 | 12681 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00853 | 648 | 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 | 13030 | Cooling | 12681 | 73.1 | 648 | 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 | -394 | Deadband | 0 | 68.0 | 0 | 0 | 0 | 0 |

# Air System Sizing Summary for 015-F-01-02-03- BM-3

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **12.9** | MBH | OA DB / WB | **93.2** / **80.6** | °F |
| Sensible coil load | **11.3** | MBH | Entering DB / WB | **73.9** / **61.8** | °F |
| Coil CFM at Jun 1100 | **536** | CFM | Leaving DB / WB | **54.4** / **53.3** | °F |
| Max block CFM | **597** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **597** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.873** | | Resulting RH | **50** | % |
| CFM/Ton | **497.2** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **115.0** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **104.3** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **2.59** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **597** | CFM | Fan motor BHP | **0.15** | BHP |
| Standard CFM | **596** | CFM | Fan motor kW | **0.12** | kW |
| Actual max CFM/ft² | **4.81** | 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<br>COOLING OA DB / WB 93.2 °F / 80.6 °F | | | HEATING DATA AT DES HTG<br>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 | 124 ft² | 603 | - | 124 ft² | 74 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 514 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **10804** | **556** | **-** | **439** | **0** |
| Zone Conditioning | - | 10487 | 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 | 536 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 21 CFM | 445 | 1092 | 0 CFM | 0 | 0 |
| Supply Fan Load | 536 CFM | 358 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **11289** | **1648** | **-** | **0** | **0** |
| Central Cooling Coil | - | 11289 | 1649 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **11289** | **1649** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 445 | 1092 |
| Vent - Return Mixing | Outlet | 73.9 | 0.00902 | 536 | 1327 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00837 | 536 | 1327 | 11289 | 1649 |
| Supply Fan | Outlet | 55.0 | 0.00837 | 536 | 1327 | 358 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00837 | 536 | 1327 | - | - |
| Zone Air | - | 73.1 | 0.00859 | 536 | 1364 | 10487 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00859 | 536 | 1364 | 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 | 10804 | Cooling | 10487 | 73.1 | 536 | 1364 | 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 | -439 | Deadband | 0 | 67.8 | 0 | 0 | 0 | 0 |

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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **13.9** | MBH | OA DB / WB | **95.6** / **79.9** | °F |
| Sensible coil load | **13.2** | MBH | Entering DB / WB | **73.5** / **61.0** | °F |
| Coil CFM at Oct 1600 | **641** | CFM | Leaving DB / WB | **54.4** / **53.2** | °F |
| Max block CFM | **710** | CFM | Coil ADP | **52.3** | °F |
| Sum of peak zone CFM | **710** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.949** | | Resulting RH | **49** | % |
| CFM/Ton | **553.8** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **36.3** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **330.5** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **2.78** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **710** | CFM | Fan motor BHP | **0.18** | BHP |
| Standard CFM | **709** | CFM | Fan motor kW | **0.14** | kW |
| Actual max CFM/ft² | **16.91** | 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<br>COOLING OA DB / WB 95.6 °F / 79.9 °F | | | HEATING DATA AT DES HTG<br>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 | 42 ft² | 168 | - | 42 ft² | 25 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 613 | 8 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **12872** | **278** | **-** | **347** | **0** |
| Zone Conditioning | - | 12535 | 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 | 641 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 9 CFM | 215 | 423 | 0 CFM | 0 | 0 |
| Supply Fan Load | 641 CFM | 427 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **13178** | **702** | **-** | **0** | **0** |
| Central Cooling Coil | - | 13178 | 703 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **13178** | **703** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 73.5 | 0.00857 | 641 | 1099 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00834 | 641 | 1099 | 13178 | 703 |
| Supply Fan | Outlet | 55.0 | 0.00834 | 641 | 1099 | 427 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00834 | 641 | 1099 | - | - |
| Zone Air | - | 73.1 | 0.00843 | 641 | 1109 | 12535 | 278 |
| Return Plenum | Outlet | 73.1 | 0.00843 | 641 | 1109 | 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 | 12872 | Cooling | 12535 | 73.1 | 641 | 1109 | 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 | -347 | Deadband | 0 | 68.5 | 0 | 0 | 0 | 0 |

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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **1.8** | Tons | Load occurs at | **Jun 1400** | |
| Total coil load | **21.1** | MBH | OA DB / WB | **98.6** / **81.9** | °F |
| Sensible coil load | **16.7** | MBH | Entering DB / WB | **74.9** / **63.1** | °F |
| Coil CFM at Jun 1400 | **757** | CFM | Leaving DB / WB | **54.4** / **53.3** | °F |
| Max block CFM | **849** | CFM | Coil ADP | **52.1** | °F |
| Sum of peak zone CFM | **849** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.794** | | Resulting RH | **51** | % |
| CFM/Ton | **431.0** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **136.1** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **88.1** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **4.22** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **849** | CFM | Fan motor BHP | **0.21** | BHP |
| Standard CFM | **848** | CFM | Fan motor kW | **0.17** | kW |
| Actual max CFM/ft² | **3.55** | 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<br>COOLING OA DB / WB 98.6 °F / 81.9 °F | | | HEATING DATA AT DES HTG<br>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 | 239 ft² | 1150 | - | 239 ft² | 143 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 726 | 49 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **15240** | **1669** | **-** | **472** | **0** |
| Zone Conditioning | - | 14794 | 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 | 757 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 52 CFM | 1421 | 2679 | 0 CFM | 0 | 0 |
| Supply Fan Load | 757 CFM | 505 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **16720** | **4348** | **-** | **0** | **0** |
| Central Cooling Coil | - | 16720 | 4348 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **16720** | **4348** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 1421 | 2679 |
| Vent - Return Mixing | Outlet | 74.9 | 0.00961 | 757 | 1696 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00840 | 757 | 1696 | 16720 | 4348 |
| Supply Fan | Outlet | 55.0 | 0.00840 | 757 | 1696 | 505 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00840 | 757 | 1696 | - | - |
| Zone Air | - | 73.1 | 0.00886 | 757 | 1791 | 14794 | 1669 |
| Return Plenum | Outlet | 73.1 | 0.00886 | 757 | 1791 | 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 | 15240 | Cooling | 14794 | 73.1 | 757 | 1791 | 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 | -472 | Deadband | 0 | 68.4 | 0 | 0 | 0 | 0 |

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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **1.1** | Tons | Load occurs at | **Jun 1600** | |
| Total coil load | **13.6** | MBH | OA DB / WB | **98.6** / **81.9** | °F |
| Sensible coil load | **11.9** | MBH | Entering DB / WB | **74.1** / **61.8** | °F |
| Coil CFM at Jun 1600 | **561** | CFM | Leaving DB / WB | **54.4** / **53.2** | °F |
| Max block CFM | **622** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **622** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.878** | | Resulting RH | **49** | % |
| CFM/Ton | **495.8** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **110.4** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **108.6** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **2.72** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **622** | CFM | Fan motor BHP | **0.15** | BHP |
| Standard CFM | **622** | CFM | Fan motor kW | **0.12** | kW |
| Actual max CFM/ft² | **4.98** | 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 | | | |

# Air System Design Load Summary for 018-F-4-05-06- MB RM

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

| | DESIGN COOLING | | | DESIGN HEATING | | |
|---|---|---|---|---|---|---|
| | COOLING DATA AT Jun 1600<br>COOLING OA DB / WB 98.6 °F / 81.9 °F | | | HEATING DATA AT DES HTG<br>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 | 125 ft² | 616 | - | 125 ft² | 75 | - |
| 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 | 125 ft² | 557 | - | 125 ft² | 0 | - |
| Ceiling | 0 ft² | 0 | - | 0 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% | 537 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **11280** | **556** | **-** | **655** | **0** |
| Zone Conditioning | - | 10981 | 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 | 561 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 21 CFM | 568 | 1101 | 0 CFM | 0 | 0 |
| Supply Fan Load | 561 CFM | 374 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **11923** | **1657** | **-** | **0** | **0** |
| Central Cooling Coil | - | 11923 | 1658 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **11923** | **1658** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 568 | 1101 |
| Vent - Return Mixing | Outlet | 74.1 | 0.00898 | 561 | 1309 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00836 | 561 | 1309 | 11923 | 1658 |
| Supply Fan | Outlet | 55.0 | 0.00836 | 561 | 1309 | 374 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00836 | 561 | 1309 | - | - |
| Zone Air | - | 73.1 | 0.00857 | 561 | 1344 | 10981 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00857 | 561 | 1344 | 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 | 11280 | Cooling | 10981 | 73.1 | 561 | 1344 | 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 | -655 | Deadband | 0 | 66.8 | 0 | 0 | 0 | 0 |

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

Project Name: LODHA - ACME -THANE- TERRACE FLOOR 22.08.2022 08/22/2022
Prepared by: Pankaj Dharkar & Associates 12:56PM

## 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 | **12.8** | MBH | OA DB / WB | **93.2** / **80.6** | °F |
| Sensible coil load | **11.2** | MBH | Entering DB / WB | **73.9** / **61.8** | °F |
| Coil CFM at Jun 1100 | **534** | CFM | Leaving DB / WB | **54.4** / **53.3** | °F |
| Max block CFM | **594** | CFM | Coil ADP | **52.2** | °F |
| Sum of peak zone CFM | **594** | CFM | Bypass Factor | **0.100** | |
| Sensible heat ratio | **0.874** | | Resulting RH | **50** | % |
| CFM/Ton | **498.5** | | Design supply temp. | **55.0** | °F |
| ft²/Ton | **108.3** | | Zone T-stat Check | **1 of 1** | OK |
| BTU/(hr·ft²) | **110.8** | | Max zone temperature deviation | **0.0** | °F |
| Water flow @ 10.0 °F rise | **2.57** | gpm | | | |

## Supply Fan Sizing Data

| | | | | | |
|---|---|---|---|---|---|
| Actual max CFM | **594** | CFM | Fan motor BHP | **0.15** | BHP |
| Standard CFM | **594** | CFM | Fan motor kW | **0.12** | kW |
| Actual max CFM/ft² | **5.12** | 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<br>COOLING OA DB / WB 93.2 °F / 80.6 °F | | | HEATING DATA AT DES HTG<br>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 | 116 ft² | 564 | - | 116 ft² | 69 | - |
| 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 | 0 ft² | 0 | - | 0 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% | 512 | 16 | 0% | 0 | 0 |
| **>> Total Zone Loads** | **-** | **10755** | **556** | **-** | **441** | **0** |
| Zone Conditioning | - | 10444 | 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 | 534 CFM | 0 | - | 0 CFM | 0 | - |
| Ventilation Load | 20 CFM | 432 | 1061 | 0 CFM | 0 | 0 |
| Supply Fan Load | 534 CFM | 356 | - | 0 CFM | 0 | - |
| Space Fan Coil Fans | - | 0 | - | - | 0 | - |
| Duct Heat Gain / Loss | 0% | 0 | - | 0% | 0 | - |
| **>> Total System Loads** | **-** | **11232** | **1617** | **-** | **0** | **0** |
| Central Cooling Coil | - | 11232 | 1618 | - | 0 | 0 |
| **>> Total Conditioning** | **-** | **11232** | **1618** | **-** | **0** | **0** |
| **Key:** | **Positive values are clg loads<br>Negative values are htg loads** | | | **Positive values are htg loads<br>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 | 73.9 | 0.00901 | 534 | 1340 | - | - |
| Central Cooling Coil | Outlet | 54.4 | 0.00837 | 534 | 1340 | 11232 | 1618 |
| Supply Fan | Outlet | 55.0 | 0.00837 | 534 | 1340 | 356 | - |
| Cold Supply Duct | Outlet | 55.0 | 0.00837 | 534 | 1340 | - | - |
| Zone Air | - | 73.1 | 0.00859 | 534 | 1376 | 10444 | 556 |
| Return Plenum | Outlet | 73.1 | 0.00859 | 534 | 1376 | 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 | 10755 | Cooling | 10444 | 73.1 | 534 | 1376 | 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 | -441 | Deadband | 0 | 67.7 | 0 | 0 | 0 | 0 |