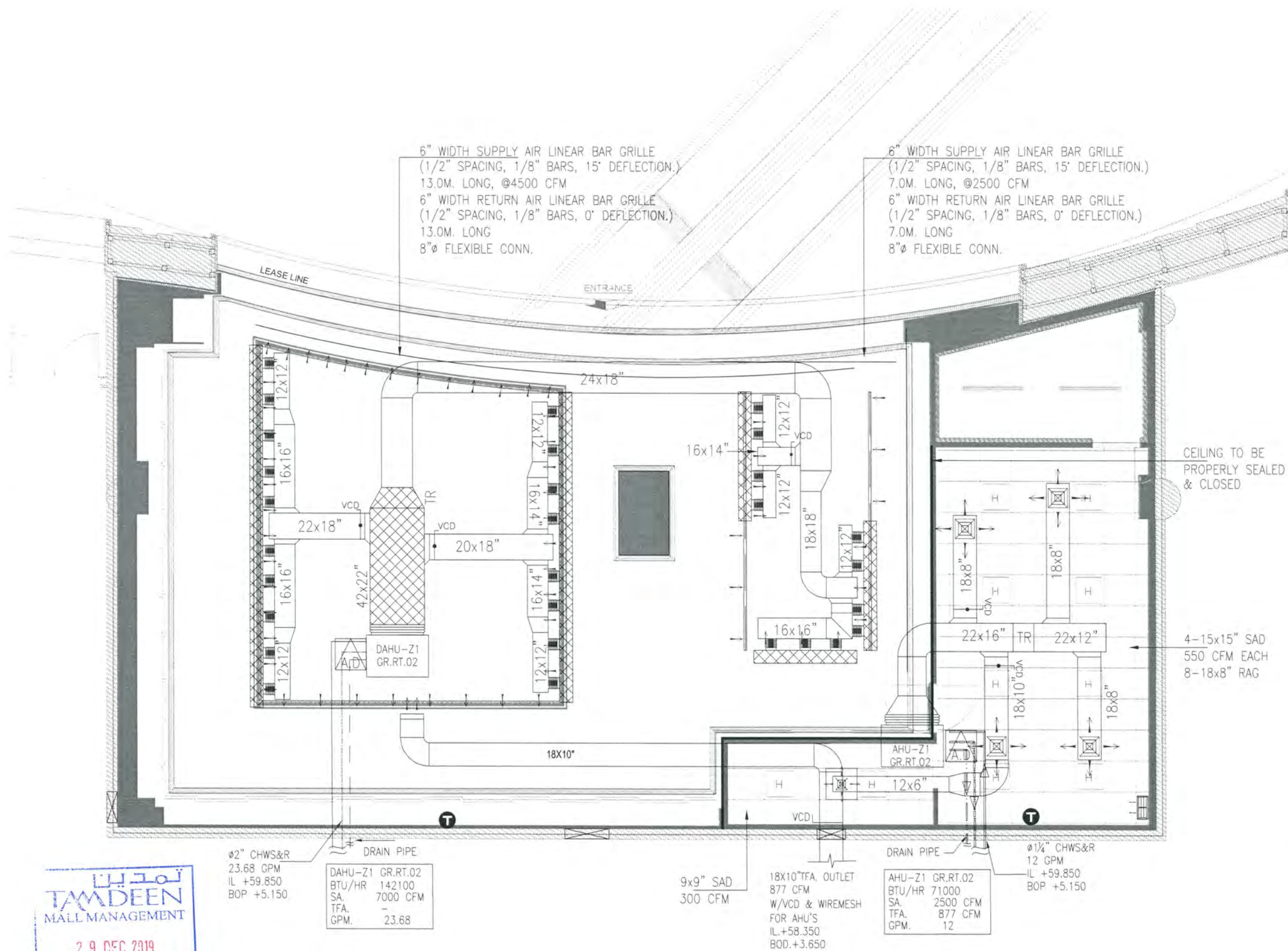


**ONE (1) SUBMITTAL / TRANSMITTAL for each SUBMITTAL TYPE**

AMDEEN  
MALL MANAGEMENT  
29 DEC 2019  
Time: 2:05  
RECEIVED

NO. OF PAGES: Page of





تیمبین  
TAMDEEN  
MALL MANAGEMENT

29 DEC 2019

Time: .....  
**RECEIVED**  
Retail Design & Delivery Dept.

NOTES:

CLIENT:

PROJECT L'ETO @ 360 MALL , EXTENSION

**L'ETO**  
CAFFE'

CONTRACTOR:

**globalidentity**  
جلوبل آیدنتیتی

NO	DESCRIPTION	DATE	REMARKS

## SHOP DRAWING

DRAWING TITLE:-

**HVAC LAYOUT**

PROJECT:-

L'ETO @ 360 MALL , EXTENSION

DRAWN BY:-

Praveen

DESIGNED BY:-

DATE:-

29-12-2019

PROJECT IN CHARGE

DWG NO:-

AC-01

PROJECT NO:-

SCALE:-

NTS

REV:-







Project Name: LETO(REV 01) 12/28/2019 09:02PM  
Prepared by: f

### Air System Sizing Summary for AHU-RESTAURANT

#### Air System Information

Air System Name ..... AHU-RESTAURANT  
Equipment Class ..... CW AHU  
Air System Type ..... SZCAV

Number of zones ..... 1  
Floor Area ..... 1684.6 ft<sup>2</sup>  
Location ..... Kuwait City, Kuwait

#### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone CFM Sizing ..... Peak zone sensible load  
Space CFM Sizing ..... Individual peak space loads

#### Central Cooling Coil Sizing Data

Total coil load ..... 5.3 Tons  
Total coil load ..... 63.6 MBH  
Sensible coil load ..... 58.0 MBH  
Coil CFM at Jan 0800 ..... 2605 CFM  
Max block CFM ..... 2605 CFM  
Sum of peak zone CFM ..... 2605 CFM  
Sensible heat ratio ..... 0.911  
CFM/Ton ..... 491.2  
ft<sup>3</sup>/Ton ..... 317.6  
BTU/(hr-ft<sup>3</sup>) ..... 37.8  
Water flow @ 10.0 °F rise ..... 12.74 gpm

Load occurs at ..... Jan 0800  
OA DB / WB ..... 67.4 / 42.1 °F  
Entering DB / WB ..... 75.3 / 62.0 °F  
Leaving DB / WB ..... 54.6 / 53.3 °F  
Coil ADP ..... 52.3 °F  
Bypass Factor ..... 0.100  
Resulting RH ..... 47 %  
Design supply temp. .... 57.2 °F  
Zone T-stat Check ..... 0 of 1 OK  
Max zone temperature deviation ..... 0.0 °F

#### Central Heating Coil Sizing Data

No central heating coil loads occurred during this calculation.

#### Supply Fan Sizing Data

Actual max CFM ..... 2605 CFM  
Standard CFM ..... 2588 CFM  
Actual max CFM/ft<sup>2</sup> ..... 1.55 CFM/ft<sup>2</sup>

Fan motor BHP ..... 2.52 BHP  
Fan motor kW ..... 2.00 kW

#### Outdoor Ventilation Air Data

Design airflow CFM ..... 0 CFM  
CFM/ft<sup>2</sup> ..... 0.00 CFM/ft<sup>2</sup>

CFM/person ..... 0.00 CFM/person



Project Name: LETO(REV 01) 12/28/2019 09:02PM  
Prepared by: f

### Zone Sizing Summary for AHU-RESTAURANT

#### Air System Information

Air System Name ..... AHU-RESTAURANT  
Equipment Class ..... CW AHU  
Air System Type ..... SZCAV

Number of zones ..... 1  
Floor Area ..... 1684.6 ft<sup>2</sup>  
Location ..... Kuwait City, Kuwait

#### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone CFM Sizing ..... Peak zone sensible load  
Space CFM Sizing ..... Individual peak space loads

#### Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft <sup>2</sup>	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
AHU-RESTAURANT	2605	2605	1.55	0.0	0.00	0.0	0.00	0

#### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft <sup>2</sup> )
AHU-RESTAURANT	50.3	Jan 2300	0.0	1684.6

#### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft <sup>2</sup> )	Space CFM/ft <sup>2</sup>
AHU-RESTAURANT							
RESTAURANT	1	50.3	Jan 2300	2605	0.0	1684.6	1.55

NOTES:

CLIENT

PROJECT L'ETO @ 360 MALL, EXTENSION

L'ETO  
CAFFE'

CONTRACTOR :



NO	DESCRIPTION	DATE	REMARKS
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### SHOP DRAWING

DRAWING TITLE:-

HEAT LOAD CALCULATION

PROJECT:-

L'ETO @ 360 MALL, EXTENSION

DRAWN BY:-

Praveen

DESIGNED BY:-

DATE:-

29-12-2019

PROJECT IN CHARGE

DWG NO:-

AC-03

PROJECT NO:-

SCALE:-

NTS

REV:-



Project Name: LETO(REV 01)  
Prepared by: f

12/28/2019  
09:02PM

### Air System Design Load Summary for AHU-RESTAURANT

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	0 ft²	0	-	0 ft²	0	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	1690 W	5767	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	8750 W	29855	-	0	0	-
People	44	10119	5285	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 7%	4574	370	0%	0	0
>> Total Zone Loads	-	50314	5655	-	0	0
Zone Conditioning	-	50659	5655	-	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	2605 CFM	0	-	2605 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	2605 CFM	6824	-	2605 CFM	-6824	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	1%	503	-	1%	0	-
>> Total System Loads	-	57987	5655	-	-6824	0
Central Cooling Coil	-	57987	5658	-	-6824	0
Central Heating Coil	-	0	-	-	0	-
>> Total Conditioning	-	57987	5658	-	-6824	0

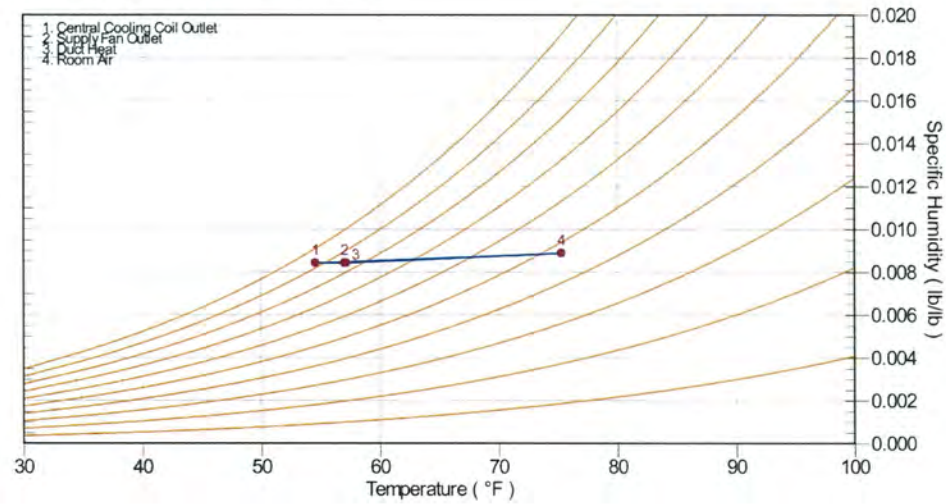
Key: Positive values are clg loads  
Negative values are htg loads

Project Name: LETO(REV 01)  
Prepared by: f

### System Psychrometrics for AHU-RESTAURANT

12/28/2019  
09:02PM

Location: Kuwait City, Kuwait  
Altitude: 180.0 ft  
Data for: January DESIGN COOLING DAY, 0800



Hourly Analysis Program 5.11

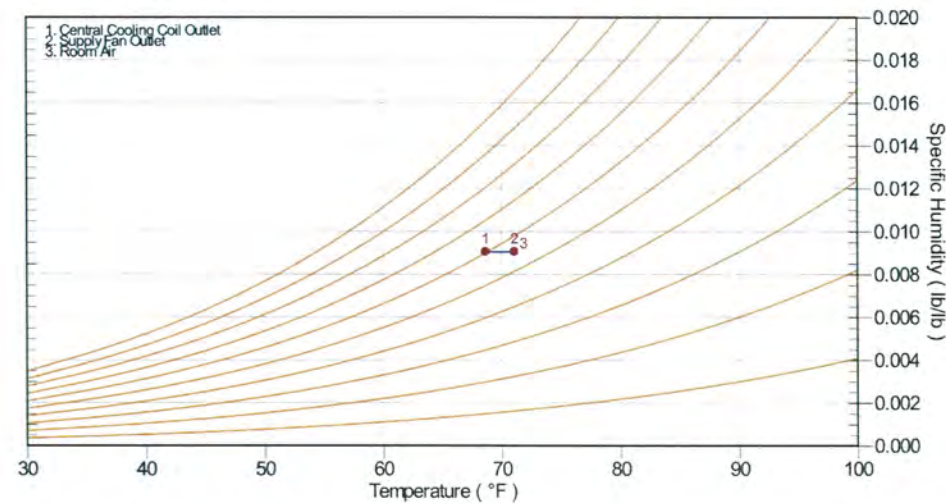
Page 4 of 5

Project Name: LETO(REV 01)  
Prepared by: f

### System Psychrometrics for AHU-RESTAURANT

12/28/2019  
09:02PM

Location: Kuwait City, Kuwait  
Altitude: 180.0 ft  
Data for: WINTER DESIGN HEATING



Hourly Analysis Program 5.11

Page 5 of 5

NOTES

CLIENT

PROJECT: LETO @ 360 MALL . EXTENSION

L'ETO  
CAFFE'

CONTRACTOR



NO	DESCRIPTION	DATE	REMARKS
SHOP DRAWING			
DRAWING TITLE -			
HEAT LOAD CALCULATION			
PROJECT -			
LETO @ 360 MALL . EXTENSION			
DRAWN BY -		DESIGNED BY -	
Praveen			
DATE -		PROJECT IN CHARGE	
29-12-2019			
DWG NO -		PROJECT NO -	
AC-04			
SCALE -		REV -	
NTS			





LETO(REV 01)  
f

Space Input Data

12/28/2019  
09:03PM

RESTAURANT

1. General Details:  
Floor Area ..... 1684.6 ft²  
Avg. Ceiling Height ..... 9.8 ft  
Building Weight ..... 70.0 lb/ft²

1.1. OA Ventilation Requirements:  
Space Usage ..... User-Defined  
OA Requirement 1 ..... 0.0 CFM/person  
OA Requirement 2 ..... 0.0 CFM/ft²  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

2. Internals:  
2.1. Overhead Lighting:  
Fixture Type ..... Recessed (Unvented)  
Wattage ..... 0.93 W/ft²  
Ballast Multiplier ..... 1.08  
Schedule ..... LIGHTING SCHEDULE

2.2. Task Lighting:  
Wattage ..... 0.00 W/ft²  
Schedule ..... None

2.3. Electrical Equipment:  
Wattage ..... 8750.0 Watts  
Schedule ..... ELECTRICAL EQUIP SCH

3. Walls, Windows, Doors:  
(No Wall, Window, Door data).

4. Roofs, Skylights:  
(No Roof or Skylight data).

5. Infiltration:  
Design Cooling ..... 0.00 CFM  
Design Heating ..... 0.00 CFM  
Energy Analysis ..... 0.00 CFM  
Infiltration occurs only when the fan is off.

6. Floors:  
Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

7. Partitions:  
(No partition data).

2.4. People:  
Occupancy ..... 44.0 People  
Activity Level ..... Seated at Rest  
Sensible ..... 230.0 BTU/hr/person  
Latent ..... 120.1 BTU/hr/person  
Schedule ..... PEOPLE SCHEDULE

2.5. Miscellaneous Loads:  
Sensible ..... 0 BTU/hr  
Schedule ..... None  
Latent ..... 0 BTU/hr  
Schedule ..... None

Project Name: LETO(REV 01)  
Prepared by: f

Air System Sizing Summary for AHU-KITCHEN

12/28/2019  
09:02PM

Air System Information  
Air System Name ..... AHU-KITCHEN  
Equipment Class ..... CW AHU  
Air System Type ..... SZCAV

Number of zones ..... 1  
Floor Area ..... 612.5 ft²  
Location ..... Kuwait City, Kuwait

Sizing Calculation Information  
Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone CFM Sizing ..... Peak zone sensible load  
Space CFM Sizing ..... Individual peak space loads

Central Cooling Coil Sizing Data  
Total coil load ..... 10.8 Tons  
Total coil load ..... 129.5 MBH  
Sensible coil load ..... 90.5 MBH  
Coil CFM at Jan 0100 ..... 3630 CFM  
Max block CFM ..... 3630 CFM  
Sum of peak zone CFM ..... 3630 CFM  
Sensible heat ratio ..... 0.699  
CFM/Ton ..... 336.3  
ft³/Ton ..... 56.7  
BTU/(hr·ft²) ..... 211.5  
Water flow @ 10.0 °F rise ..... 25.92 gpm

Load occurs at ..... Jan 0100  
OA DB / WB ..... 66.7 / 41.8 °F  
Entering DB / WB ..... 82.5 / 69.3 °F  
Leaving DB / WB ..... 59.3 / 58.1 °F  
Coil ADP ..... 56.7 °F  
Bypass Factor ..... 0.100  
Resulting RH ..... 52 %  
Design supply temp. ..... 60.8 °F  
Zone T-stat Check ..... 0 of 1 OK  
Max zone temperature deviation ..... 0.0 °F

Central Heating Coil Sizing Data  
No central heating coil loads occurred during this calculation.

Supply Fan Sizing Data  
Actual max CFM ..... 3630 CFM  
Standard CFM ..... 3606 CFM  
Actual max CFM/ft² ..... 5.93 CFM/ft²

Fan motor BHP ..... 1.89 BHP  
Fan motor kW ..... 1.50 kW

Outdoor Ventilation Air Data  
Design airflow CFM ..... 0 CFM  
CFM/ft² ..... 0.00 CFM/ft²

CFM/person ..... 0.00 CFM/person

NOTES

CLIENT

PROJECT: LETO @ 360 MALL , EXTENSION

L'ETO  
CAFFE'

CONTRACTOR



NO	DESCRIPTION	DATE	REMARKS
SHOP DRAWING			
DRAWING TITLE - HEAT LOAD CALCULATION			
PROJECT - LETO @ 360 MALL , EXTENSION			
DRAWN BY - Praveen		DESIGNED BY -	
DATE - 29-12-2019		PROJECT IN CHARGE	
DWG NO - AC-05		PROJECT NO -	
SCALE - NTS		REV -	



Project Name: LETO(REV 01)	Zone Sizing Summary for AHU-KITCHEN	12/28/2019
Prepared by: f		09:02PM

#### Air System Information

Air System Name	AHU-KITCHEN	Number of zones	1
Equipment Class	CW AHU	Floor Area	612.5 ft²
Air System Type	SZCAV	Location	Kuwait City, Kuwait

#### Sizing Calculation Information

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

#### Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
AHU-KITCHEN	3630	3630	5.93	0.0	0.00	0.0	0.00	0

#### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
AHU-KITCHEN	84.1	Jan 2300	0.0	612.5

#### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
AHU-KITCHEN							
KITCHEN	1	84.1	Jan 2300	3630	0.0	612.5	5.93



Project Name: LETO(REV 01)	Air System Design Load Summary for AHU-KITCHEN	12/28/2019
Prepared by: f		09:02PM

	DESIGN COOLING			DESIGN HEATING		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
COOLING DATA AT Jan 0100						
COOLING OA DB / WB 66.7 °F / 41.8 °F						
HEATING DATA AT DES HTG						
HEATING OA DB / WB 40.1 °F / 35.6 °F						
<b>ZONE LOADS</b>						
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	0 ft²	0	-	0 ft²	0	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	615 W	2097	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	14	4132	6368	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	70253	30126	-	0	0
Safety Factor	10% / 7%	7648	2555	0%	0	0
<b>&gt;&gt; Total Zone Loads</b>		<b>84129</b>	<b>39048</b>		<b>0</b>	<b>0</b>
Zone Conditioning	-	84523	39048	-	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	3630 CFM	0	-	3630 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	3630 CFM	5118	-	3630 CFM	-5118	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	1%	841	-	1%	0	-
<b>&gt;&gt; Total System Loads</b>		<b>90482</b>	<b>39048</b>		<b>-5118</b>	<b>0</b>
Central Cooling Coil	-	90482	39053	-	-5118	0
Central Heating Coil	-	0	-	-	0	-
<b>&gt;&gt; Total Conditioning</b>		<b>90482</b>	<b>39053</b>		<b>-5118</b>	<b>0</b>
<b>Key:</b>	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

NOTES:

CLIENT:

PROJECT: L'ETO @ 360 MALL, EXTENSION

L'ETO  
CAFFE'

CONTRACTOR:



NO	DESCRIPTION	DATE	REMARKS

#### SHOP DRAWING

DRAWING TITLE:-  
HEAT LOAD CALCULATION

PROJECT:-  
L'ETO @ 360 MALL, EXTENSION

DRAWN BY:- Praveen  
DESIGNED BY:-

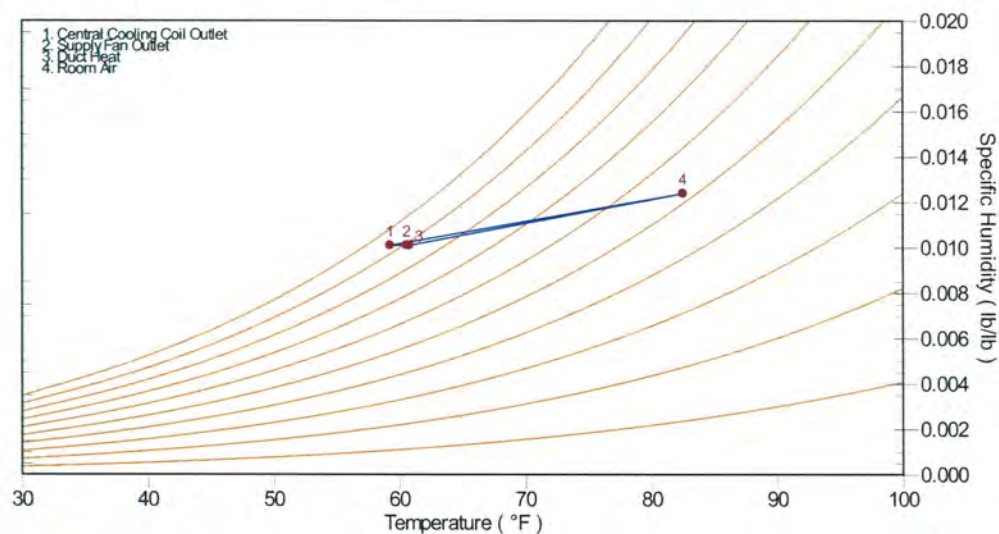
DATE:- 29-12-2019  
PROJECT IN CHARGE

DWG NO:- AC-06  
PROJECT NO:-

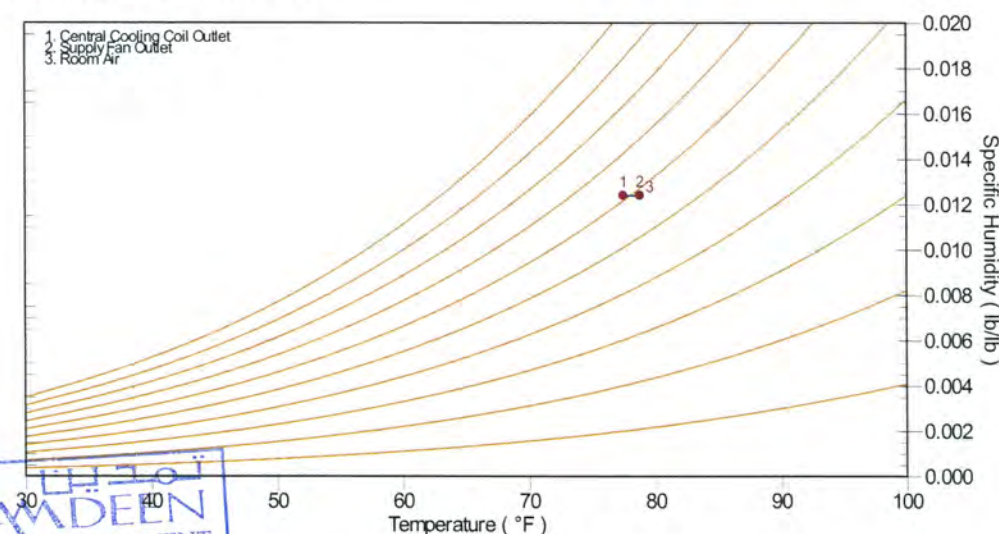
SCALE:- NTS  
REV:-



Location: Kuwait City, Kuwait  
Altitude: 180.0 ft.  
Data for: January DESIGN COOLING DAY, 0100



Location: Kuwait City, Kuwait  
Altitude: 180.0 ft.  
Data for: WINTER DESIGN HEATING



#### KITCHEN

##### 1. General Details:

Floor Area ..... 612.5 ft<sup>2</sup>  
Avg. Ceiling Height ..... 9.8 ft  
Building Weight ..... 70.0 lb/ft<sup>2</sup>

##### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 0.0 CFM/person  
OA Requirement 2 ..... 0.00 CFM/ft<sup>2</sup>  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

##### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 0.93 W/ft<sup>2</sup>  
Ballast Multiplier ..... 1.08  
Schedule ..... LIGHTING SCHEDULE

##### 2.2. Task Lighting:

Wattage ..... 0.00 W/ft<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 0.0 Watts  
Schedule ..... None

##### 3. Walls, Windows, Doors:

(No Wall, Window, Door data).

##### 4. Roofs, Skylights:

(No Roof or Skylight data).

##### 5. Infiltration:

Design Cooling ..... 0.00 CFM  
Design Heating ..... 0.00 CFM  
Energy Analysis ..... 0.00 CFM  
Infiltration occurs only when the fan is off.

##### 6. Floors:

Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

##### 7. Partitions:

(No partition data).

##### 2.4. People:

Occupancy ..... 14.0 People  
Activity Level ..... Medium Work  
Sensible ..... 295.2 BTU/hr/person  
Latent ..... 454.8 BTU/hr/person  
Schedule ..... PEOPLE SCHEDULE

##### 2.5. Miscellaneous Loads:

Sensible ..... 70253 BTU/hr  
Schedule ..... MISC SCHEDULE  
Latent ..... 30126 BTU/hr  
Schedule ..... MISC SCHEDULE

NOTES:

CLIENT

PROJECT L'ETO @ 360 MALL , EXTENSION

L'ETO  
CAFFE'

CONTRACTOR :



NO	DESCRIPTION	DATE	REMARKS
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#### SHOP DRAWING

DRAWING TITLE:-

HEAT LOAD CALCULATION

PROJECT:-

L'ETO @ 360 MALL , EXTENSION

DRAWN BY:-

Praveen

DESIGNED BY:-

DATE:-

29-12-2019

PROJECT IN CHARGE

DWG NO:-

AC-07

PROJECT NO:-

SCALE:-

NTS

REV:-

