

Air System Sizing Summary for 01 CU/AHU-1.1

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **01 CU/AHU-1.1**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **1745.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **4.7** Tons
Total coil load **56.4** MBH
Sensible coil load **45.1** MBH
Coil CFM at Jul 1600 **1971** CFM
Max block CFM **1971** CFM
Sum of peak zone CFM **1971** CFM
Sensible heat ratio **0.798**
CFM/Ton **419.0**
ft²/Ton **371.0**
BTU/(hr·ft²) **32.3**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Jul 1600**
OA DB / WB **91.5 / 77.5** °F
Entering DB / WB **76.0 / 63.6** °F
Leaving DB / WB **54.8 / 53.7** °F
Coil ADP **52.5** °F
Bypass Factor **0.100**
Resulting RH **50** %
Design supply temp. **52.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **12.0** MBH
Coil CFM at Des Htg **1971** CFM
Max coil CFM **1971** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr·ft²) **6.9**
Ent. DB / Lvg DB **70.6 / 76.2** °F

Supply Fan Sizing Data

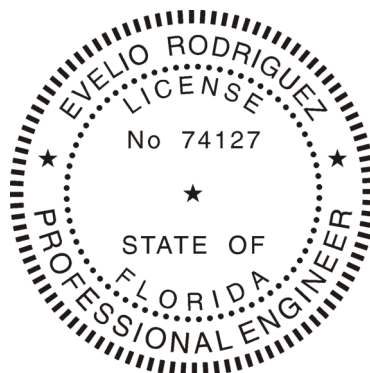
Actual max CFM **1971** CFM
Standard CFM **1969** CFM
Actual max CFM/ft² **1.13** CFM/ft²

Fan motor BHP **0.32** BHP
Fan motor kW **0.26** kW
Fan static **0.60** in wvg

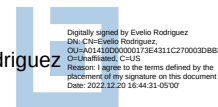
Outdoor Ventilation Air Data

Design airflow CFM **100** CFM
CFM/ft² **0.06** CFM/ft²

CFM/person **2.38** CFM/person



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Zone Sizing Summary for 01 CU/AHU-1.1

Project Name: 22.06.13 DE LA CONCEPCION V2
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Air System Information

Air System Name **01 CU/AHU-1.1**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **1745.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
AHU-1.1	1971	1971	1.13	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
AHU-1.1	43.1	Aug 1600	10.5	1745.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
AHU-1.1							
101 Living room	1	12.9	Jul 0900	542	3.0	501.0	1.08
111 Family room	1	7.9	Jul 1400	334	1.8	370.0	0.90
112 Dining room	1	10.3	Jul 1700	433	1.7	276.0	1.57
113 Breakfast	1	6.1	Nov 1400	258	2.0	204.0	1.26
114 Kitchen	1	4.4	Nov 1500	186	0.6	205.0	0.91
115 Cathering Kitchen	1	4.6	Sep 1600	193	1.1	115.0	1.67
115A Hall	1	0.6	Jul 2000	26	0.3	74.0	0.35

Air System Design Load Summary for 01 CU/AHU-1.1

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1600 COOLING OA DB / WB 91.5 °F / 77.5 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 48.8 °F / 40.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	726 ft²	13698	-	726 ft²	-	-
Wall Transmission	758 ft²	2094	-	758 ft²	2276	-
Roof Transmission	220 ft²	287	-	220 ft²	147	-
Window Transmission	726 ft²	5465	-	726 ft²	8084	-
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	1745 W	5954	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1500 W	5118	-	0	0	-
People	42	10420	7680	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	43036	7680	-	10507	0
Zone Conditioning	-	42419	7680	-	10366	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	1971 CFM	0	-	1971 CFM	0	-
Ventilation Load	100 CFM	1767	3703	100 CFM	2476	0
Supply Fan Load	1971 CFM	877	-	1971 CFM	-877	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	45063	11383	-	11965	0
Central Cooling Coil	-	45063	11385	-	0	0
Central Heating Coil	-	0	-	-	11965	-
>> Total Conditioning	-	45063	11385	-	11965	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for 01 CU/AHU-1.1

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

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July 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	91.5	0.01714	100	400	1767	3703
Vent - Return Mixing	Outlet	76.0	0.00972	1971	3505	-	-
Central Cooling Coil	Outlet	54.8	0.00851	1971	3505	45063	11385
Central Heating Coil	Outlet	54.8	0.00851	1971	3505	0	-
Supply Fan	Outlet	55.2	0.00851	1971	3505	877	-
Cold Supply Duct	Outlet	55.2	0.00851	1971	3505	-	-
Zone Air	-	75.2	0.00933	1971	3671	42419	7680
Return Plenum	Outlet	75.2	0.00933	1971	3671	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.1	43036	Cooling	42419	75.2	1971	3671	0	0

System Psychrometrics for 01 CU/AHU-1.1

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

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WINTER DESIGN HEATING

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	48.8	0.00360	100	400	-2476	0
Vent - Return Mixing	Outlet	70.6	0.00360	1971	583	-	-
Central Cooling Coil	Outlet	70.6	0.00360	1971	583	0	0
Central Heating Coil	Outlet	76.2	0.00360	1971	583	11965	-
Supply Fan	Outlet	76.6	0.00360	1971	583	877	-
Cold Supply Duct	Outlet	76.6	0.00360	1971	583	-	-
Zone Air	-	71.8	0.00360	1971	593	-10366	0
Return Plenum	Outlet	71.8	0.00360	1971	593	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.1	-10507	Heating	-10366	71.8	1971	593	0	0

Air System Sizing Summary for 02 CU/AHU-1.2

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **02 CU/AHU-1.2**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **1687.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **4.6** Tons
Total coil load **55.3** MBH
Sensible coil load **43.9** MBH
Coil CFM at Jul 1600 **1916** CFM
Max block CFM **1916** CFM
Sum of peak zone CFM **1916** CFM
Sensible heat ratio **0.794**
CFM/Ton **415.9**
ft²/Ton **366.3**
BTU/(hr·ft²) **32.8**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Jul 1600**
OA DB / WB **91.5 / 77.5** °F
Entering DB / WB **75.9 / 63.6** °F
Leaving DB / WB **54.7 / 53.5** °F
Coil ADP **52.3** °F
Bypass Factor **0.100**
Resulting RH **50** %
Design supply temp. **52.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **14.0** MBH
Coil CFM at Des Htg **1916** CFM
Max coil CFM **1916** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr·ft²) **8.3**
Ent. DB / Lvg DB **70.5 / 77.3** °F

Supply Fan Sizing Data

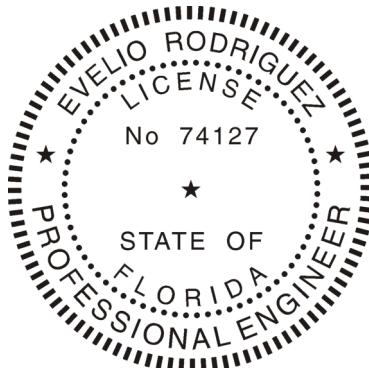
Actual max CFM **1916** CFM
Standard CFM **1914** CFM
Actual max CFM/ft² **1.14** CFM/ft²

Fan motor BHP **0.31** BHP
Fan motor kW **0.25** kW
Fan static **0.60** in wg

Outdoor Ventilation Air Data

Design airflow CFM **100** CFM
CFM/ft² **0.06** CFM/ft²

CFM/person **4.55** CFM/person



Evelio Rodriguez

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ou=0141000000173E4311C270003DBB3,
o=Unaffiliated, c=US
Reason: I agree to the terms defined by the
placement of my signature on this document
Date: 2022.12.20 16:44:09-05'00'

Zone Sizing Summary for 02 CU/AHU-1.2

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name 02 CU/AHU-1.2
Equipment Class SPLT AHU
Air System Type SZCAV

Number of zones 1
Floor Area 1687.0 ft²
Location Miami IAP, Florida

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated

Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
AHU-1.2	1916	1916	1.14	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
AHU-1.2	41.9	Jul 1700	12.5	1687.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
AHU-1.2							
100 Living room/foyer	1	4.4	Aug 1700	187	1.9	400.0	0.47
102 Library room	1	7.9	Jul 1700	334	1.7	177.0	1.89
103 Guest bed.	1	7.6	Jul 1700	322	2.5	199.0	1.62
104 WIC	1	0.3	Jan 2300	14	0.0	22.0	0.62
105 Guest bath	1	0.8	Jun 2000	33	0.2	55.0	0.60
105A Hall	1	0.2	Jun 2000	9	0.1	21.0	0.42
106 Gym	1	14.4	Nov 1400	606	4.3	445.0	1.36
106A Hall	1	1.8	Jul 0900	78	0.6	29.0	2.68
107 Gym/pool bath	1	2.3	Jul 0900	96	0.6	37.0	2.61
107A Gym/pool bath	1	2.2	Jul 0900	95	0.6	27.0	3.51
108 PWDR	1	0.4	Jan 2300	15	0.0	30.0	0.49
110 Bar	1	2.4	Jan 2300	103	0.0	77.0	1.34
110A Corridor	1	0.6	Jan 2300	24	0.0	168.0	0.14

Air System Design Load Summary for 02 CU/AHU-1.2

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1600 COOLING OA DB / WB 91.5 °F / 77.5 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 48.8 °F / 40.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	777 ft²	15448	-	777 ft²	-	-
Wall Transmission	1063 ft²	2883	-	1063 ft²	3191	-
Roof Transmission	431 ft²	487	-	431 ft²	283	-
Window Transmission	777 ft²	5850	-	777 ft²	8653	-
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	94 ft²	221	-	94 ft²	324	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	1687 W	5756	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1050 W	3583	-	0	0	-
People	22	7310	7690	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	41537	7690	-	12452	0
Zone Conditioning	-	41231	7690	-	12421	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	1916 CFM	0	-	1916 CFM	0	-
Ventilation Load	100 CFM	1784	3713	100 CFM	2469	0
Supply Fan Load	1916 CFM	852	-	1916 CFM	-852	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	43866	11403	-	14037	0
Central Cooling Coil	-	43866	11406	-	0	0
Central Heating Coil	-	0	-	-	14037	-
>> Total Conditioning	-	43866	11406	-	14037	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for 02 CU/AHU-1.2

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
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July 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	91.5	0.01714	100	400	1784	3713
Vent - Return Mixing	Outlet	75.9	0.00971	1916	3030	-	-
Central Cooling Coil	Outlet	54.7	0.00846	1916	3030	43866	11406
Central Heating Coil	Outlet	54.7	0.00846	1916	3030	0	-
Supply Fan	Outlet	55.1	0.00846	1916	3030	852	-
Cold Supply Duct	Outlet	55.1	0.00846	1916	3030	-	-
Zone Air	-	75.0	0.00931	1916	3175	41231	7690
Return Plenum	Outlet	75.0	0.00931	1916	3175	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.2	41537	Cooling	41231	75.0	1916	3175	0	0

System Psychrometrics for 02 CU/AHU-1.2

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

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02:54PM

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	48.8	0.00360	100	400	-2469	0
Vent - Return Mixing	Outlet	70.5	0.00360	1916	579	-	-
Central Cooling Coil	Outlet	70.5	0.00360	1916	579	0	0
Central Heating Coil	Outlet	77.3	0.00360	1916	579	14037	-
Supply Fan	Outlet	77.7	0.00360	1916	579	852	-
Cold Supply Duct	Outlet	77.7	0.00360	1916	579	-	-
Zone Air	-	71.7	0.00360	1916	589	-12421	0
Return Plenum	Outlet	71.7	0.00360	1916	589	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.2	-12452	Heating	-12421	71.7	1916	589	0	0

Air System Sizing Summary for 03 CU/AHU-1.3

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **03 CU/AHU-1.3**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **269.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **1.4** Tons
Total coil load **16.6** MBH
Sensible coil load **14.0** MBH
Coil CFM at Jun 1700 **669** CFM
Max block CFM **669** CFM
Sum of peak zone CFM **669** CFM
Sensible heat ratio **0.841**
CFM/Ton **483.1**
ft²/Ton **194.3**
BTU/(hr·ft²) **61.8**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Jun 1700**
OA DB / WB **89.7 / 77.3** °F
Entering DB / WB **75.2 / 63.3** °F
Leaving DB / WB **55.9 / 54.7** °F
Coil ADP **53.7** °F
Bypass Factor **0.100**
Resulting RH **52** %
Design supply temp. **54.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **5.8** MBH
Coil CFM at Des Htg **669** CFM
Max coil CFM **669** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr·ft²) **21.6**
Ent. DB / Lvg DB **69.3 / 77.4** °F

Supply Fan Sizing Data

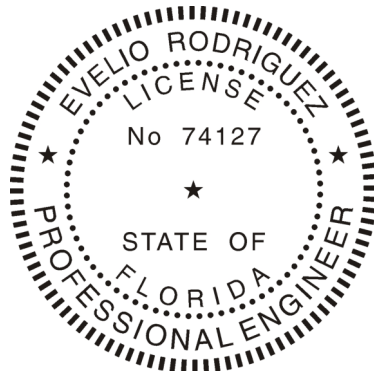
Actual max CFM **669** CFM
Standard CFM **668** CFM
Actual max CFM/ft² **2.49** CFM/ft²

Fan motor BHP **0.11** BHP
Fan motor kW **0.09** kW
Fan static **0.60** in wg

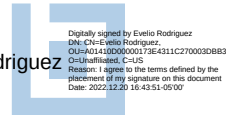
Outdoor Ventilation Air Data

Design airflow CFM **0** CFM
CFM/ft² **0.00** CFM/ft²

CFM/person **0.00** CFM/person



Evelio Rodriguez



Zone Sizing Summary for 03 CU/AHU-1.3

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

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Air System Information

Air System Name **03 CU/AHU-1.3**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **269.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
AHU-1.3	669	669	2.49	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
AHU-1.3	14.4	Aug 1600	6.4	269.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
AHU-1.3							
124 Cabana	1	13.0	Aug 1600	604	5.6	229.0	2.64
124A WC	1	0.8	Jul 1500	38	0.4	20.0	1.89
124B WIC	1	0.6	Aug 1500	27	0.4	20.0	1.33

Air System Design Load Summary for 03 CU/AHU-1.3

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1700 COOLING OA DB / WB 89.7 °F / 77.3 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 48.8 °F / 40.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	351 ft²	6384	-	351 ft²	-	-
Wall Transmission	553 ft²	1712	-	553 ft²	1518	-
Roof Transmission	290 ft²	377	-	290 ft²	181	-
Window Transmission	351 ft²	2398	-	351 ft²	3570	-
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	161 W	551	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	200 W	682	-	0	0	-
People	5	1230	820	0	0	0
Infiltration	-	848	1820	-	1144	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	14183	2640	-	6412	0
Zone Conditioning	-	13674	2640	-	6112	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	669 CFM	0	-	669 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	669 CFM	297	-	669 CFM	-297	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	13971	2640	-	5815	0
Central Cooling Coil	-	13971	2641	-	0	0
Central Heating Coil	-	0	-	-	5815	-
>> Total Conditioning	-	13971	2641	-	5815	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for 03 CU/AHU-1.3

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

June DESIGN COOLING DAY, 1700

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	89.7	0.01737	0	400	0	0
Vent - Return Mixing	Outlet	75.2	0.00969	669	1329	-	-
Central Cooling Coil	Outlet	55.9	0.00886	669	1329	13971	2641
Central Heating Coil	Outlet	55.9	0.00886	669	1329	0	-
Supply Fan	Outlet	56.3	0.00886	669	1329	297	-
Cold Supply Duct	Outlet	56.3	0.00886	669	1329	-	-
Zone Air	-	75.2	0.00969	669	1329	13674	2640
Return Plenum	Outlet	75.2	0.00969	669	1329	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.3	14183	Cooling	13674	75.2	669	1329	0	0

System Psychrometrics for 03 CU/AHU-1.3

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

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	48.8	0.00360	0	400	0	0
Vent - Return Mixing	Outlet	69.3	0.00360	669	800	-	-
Central Cooling Coil	Outlet	69.3	0.00360	669	800	0	0
Central Heating Coil	Outlet	77.4	0.00360	669	800	5815	-
Supply Fan	Outlet	77.8	0.00360	669	800	297	-
Cold Supply Duct	Outlet	77.8	0.00360	669	800	-	-
Zone Air	-	69.3	0.00360	669	800	-6112	0
Return Plenum	Outlet	69.3	0.00360	669	800	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.3	-6412	Heating	-6112	69.3	669	800	0	0

Air System Sizing Summary for 04 CU/AHU-1.4

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **04 CU/AHU-1.4**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **262.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **1.3** Tons
Total coil load **15.7** MBH
Sensible coil load **10.8** MBH
Coil CFM at Aug 1600 **414** CFM
Max block CFM **414** CFM
Sum of peak zone CFM **414** CFM
Sensible heat ratio **0.688**
CFM/Ton **316.6**
ft²/Ton **200.3**
BTU/(hr·ft²) **59.9**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Aug 1600**
OA DB / WB **91.5 / 77.5** °F
Entering DB / WB **79.1 / 66.6** °F
Leaving DB / WB **55.0 / 53.9** °F
Coil ADP **52.3** °F
Bypass Factor **0.100**
Resulting RH **49** %
Design supply temp. **53.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **4.7** MBH
Coil CFM at Des Htg **414** CFM
Max coil CFM **414** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr·ft²) **17.9**
Ent. DB / Lvg DB **64.7 / 75.2** °F

Supply Fan Sizing Data

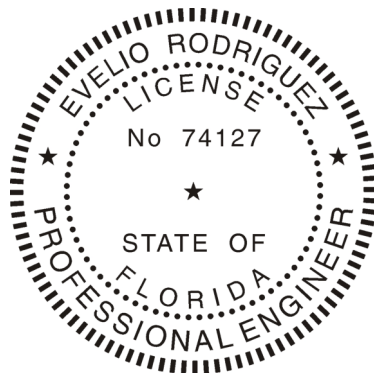
Actual max CFM **414** CFM
Standard CFM **414** CFM
Actual max CFM/ft² **1.58** CFM/ft²

Fan motor BHP **0.07** BHP
Fan motor kW **0.05** kW
Fan static **0.60** in wvg

Outdoor Ventilation Air Data

Design airflow CFM **100** CFM
CFM/ft² **0.38** CFM/ft²

CFM/person **16.67** CFM/person



Evelio Rodriguez

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Zone Sizing Summary for 04 CU/AHU-1.4

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **04 CU/AHU-1.4**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **262.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
AHU-1.4	414	414	1.58	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
AHU-1.4	9.0	Aug 1600	2.5	262.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
AHU-1.4							
116 Laundry	1	3.6	Jul 1000	157	0.7	59.0	2.66
117 Staff room	1	3.3	Aug 1700	144	0.9	85.0	1.70
118 S. bath	1	1.1	Nov 1500	48	0.1	37.0	1.30
119 Hallway	1	1.5	Jul 1900	65	0.8	81.0	0.80

Air System Design Load Summary for 04 CU/AHU-1.4

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1600 COOLING OA DB / WB 91.5 °F / 77.5 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 48.8 °F / 40.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	74 ft²	1826	-	74 ft²	-	-
Wall Transmission	595 ft²	1652	-	595 ft²	1632	-
Roof Transmission	262 ft²	356	-	262 ft²	161	-
Window Transmission	74 ft²	559	-	74 ft²	756	-
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	262 W	894	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	650 W	2218	-	0	0	-
People	6	1490	1110	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	8994	1110	-	2549	0
Zone Conditioning	-	8849	1110	-	2601	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	414 CFM	0	-	414 CFM	0	-
Ventilation Load	100 CFM	1766	3785	100 CFM	2268	0
Supply Fan Load	414 CFM	184	-	414 CFM	-184	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	10799	4895	-	4684	0
Central Cooling Coil	-	10799	4895	-	0	0
Central Heating Coil	-	0	-	-	4684	-
>> Total Conditioning	-	10799	4895	-	4684	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for 04 CU/AHU-1.4

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

August 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	91.5	0.01714	100	400	1766	3785
Vent - Return Mixing	Outlet	79.1	0.01108	414	902	-	-
Central Cooling Coil	Outlet	55.0	0.00859	414	902	10799	4895
Central Heating Coil	Outlet	55.0	0.00859	414	902	0	-
Supply Fan	Outlet	55.4	0.00859	414	902	184	-
Cold Supply Duct	Outlet	55.4	0.00859	414	902	-	-
Zone Air	-	75.2	0.00916	414	1062	8849	1110
Return Plenum	Outlet	75.2	0.00916	414	1062	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.4	8994	Cooling	8849	75.2	414	1062	0	0

System Psychrometrics for 04 CU/AHU-1.4

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

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	48.8	0.00360	100	400	-2268	0
Vent - Return Mixing	Outlet	64.7	0.00360	414	425	-	-
Central Cooling Coil	Outlet	64.7	0.00360	414	425	0	0
Central Heating Coil	Outlet	75.2	0.00360	414	425	4684	-
Supply Fan	Outlet	75.6	0.00360	414	425	184	-
Cold Supply Duct	Outlet	75.6	0.00360	414	425	-	-
Zone Air	-	69.8	0.00360	414	433	-2601	0
Return Plenum	Outlet	69.8	0.00360	414	433	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.4	-2549	Heating	-2601	69.8	414	433	0	0

Air System Sizing Summary for 05 CU/AHU-1.5

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **05 CU/AHU-1.5**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **588.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **1.9** Tons
Total coil load **22.3** MBH
Sensible coil load **18.9** MBH
Coil CFM at Aug 1600 **811** CFM
Max block CFM **811** CFM
Sum of peak zone CFM **811** CFM
Sensible heat ratio **0.847**
CFM/Ton **437.2**
ft²/Ton **316.9**
BTU/(hr·ft²) **37.9**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Aug 1600**
OA DB / WB **91.5 / 77.5** °F
Entering DB / WB **76.3 / 63.1** °F
Leaving DB / WB **54.7 / 53.5** °F
Coil ADP **52.3** °F
Bypass Factor **0.100**
Resulting RH **47** %
Design supply temp. **53.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **8.6** MBH
Coil CFM at Des Htg **811** CFM
Max coil CFM **811** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr·ft²) **14.7**
Ent. DB / Lvg DB **68.4 / 78.3** °F

Supply Fan Sizing Data

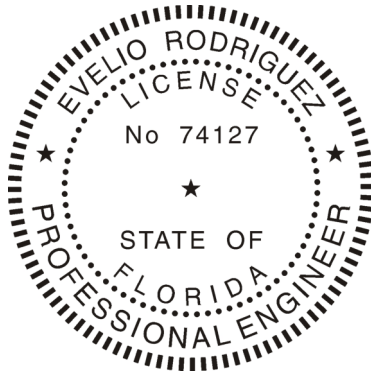
Actual max CFM **811** CFM
Standard CFM **810** CFM
Actual max CFM/ft² **1.38** CFM/ft²

Fan motor BHP **0.13** BHP
Fan motor kW **0.11** kW
Fan static **0.60** in wg

Outdoor Ventilation Air Data

Design airflow CFM **50** CFM
CFM/ft² **0.09** CFM/ft²

CFM/person **5.56** CFM/person



Evelio Rodriguez

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Date: 2022.12.20 16:42:42-05'00'

Zone Sizing Summary for 05 CU/AHU-1.5

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **05 CU/AHU-1.5**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **588.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
AHU-1.5	811	811	1.38	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
AHU-1.5	18.3	Jul 1600	7.8	588.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
AHU-1.5							
120 Studio	1	16.6	Aug 1600	732	7.0	536.0	1.37
121 WC studio	1	1.1	Jun 1700	48	0.5	27.0	1.79
122 Stor.	1	0.7	Jun 1700	31	0.4	25.0	1.25

Air System Design Load Summary for 05 CU/AHU-1.5

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1600 COOLING OA DB / WB 91.5 °F / 77.5 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 48.8 °F / 40.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	497 ft²	5641	-	497 ft²	-	-
Wall Transmission	883 ft²	2658	-	883 ft²	2422	-
Roof Transmission	588 ft²	875	-	588 ft²	366	-
Window Transmission	497 ft²	3742	-	497 ft²	5058	-
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	588 W	2006	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	300 W	1024	-	0	0	-
People	9	2210	1440	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	18157	1440	-	7847	0
Zone Conditioning	-	17611	1440	-	7877	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	811 CFM	0	-	811 CFM	0	-
Ventilation Load	50 CFM	879	1975	50 CFM	1129	0
Supply Fan Load	811 CFM	361	-	811 CFM	-361	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	18850	3415	-	8646	0
Central Cooling Coil	-	18850	3416	-	0	0
Central Heating Coil	-	0	-	-	8646	-
>> Total Conditioning	-	18850	3416	-	8646	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for 05 CU/AHU-1.5

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

August 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	91.5	0.01714	50	400	879	1975
Vent - Return Mixing	Outlet	76.3	0.00932	811	1827	-	-
Central Cooling Coil	Outlet	54.7	0.00843	811	1827	18850	3416
Central Heating Coil	Outlet	54.7	0.00843	811	1827	0	-
Supply Fan	Outlet	55.1	0.00843	811	1827	361	-
Cold Supply Duct	Outlet	55.1	0.00843	811	1827	-	-
Zone Air	-	75.3	0.00880	811	1920	17611	1440
Return Plenum	Outlet	75.3	0.00880	811	1920	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.5	18157	Cooling	17611	75.3	811	1920	0	0

System Psychrometrics for 05 CU/AHU-1.5

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

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	48.8	0.00360	50	400	-1129	0
Vent - Return Mixing	Outlet	68.4	0.00360	811	545	-	-
Central Cooling Coil	Outlet	68.4	0.00360	811	545	0	0
Central Heating Coil	Outlet	78.3	0.00360	811	545	8646	-
Supply Fan	Outlet	78.7	0.00360	811	545	361	-
Cold Supply Duct	Outlet	78.7	0.00360	811	545	-	-
Zone Air	-	69.7	0.00360	811	554	-7877	0
Return Plenum	Outlet	69.7	0.00360	811	554	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.5	-7847	Heating	-7877	69.7	811	554	0	0

Air System Sizing Summary for 06 CU/AHU-1.6

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **06 CU/AHU-1.6**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **957.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **1.7** Tons
Total coil load **20.4** MBH
Sensible coil load **16.4** MBH
Coil CFM at Jun 1700 **791** CFM
Max block CFM **791** CFM
Sum of peak zone CFM **791** CFM
Sensible heat ratio **0.805**
CFM/Ton **465.5**
ft²/Ton **563.5**
BTU/(hr·ft²) **21.3**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Jun 1700**
OA DB / WB **89.7 / 77.3** °F
Entering DB / WB **76.1 / 64.5** °F
Leaving DB / WB **56.9 / 55.8** °F
Coil ADP **54.7** °F
Bypass Factor **0.100**
Resulting RH **53** %
Design supply temp. **55.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **7.8** MBH
Coil CFM at Des Htg **791** CFM
Max coil CFM **791** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr·ft²) **8.2**
Ent. DB / Lvg DB **70.0 / 79.2** °F

Supply Fan Sizing Data

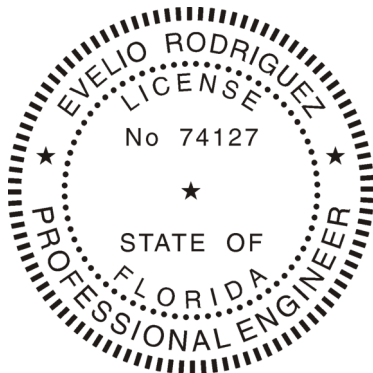
Actual max CFM **791** CFM
Standard CFM **790** CFM
Actual max CFM/ft² **0.83** CFM/ft²

Fan motor BHP **0.13** BHP
Fan motor kW **0.10** kW
Fan static **0.60** in wg

Outdoor Ventilation Air Data

Design airflow CFM **50** CFM
CFM/ft² **0.05** CFM/ft²

CFM/person **25.00** CFM/person



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Zone Sizing Summary for 06 CU/AHU-1.6

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **06 CU/AHU-1.6**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **957.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
AHU-1.6	791	791	0.83	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
AHU-1.6	16.2	Jul 1700	7.1	957.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
AHU-1.6							
123 Garage	1	16.2	Jul 1700	791	7.1	957.0	0.83

Air System Design Load Summary for 06 CU/AHU-1.6

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1700 COOLING OA DB / WB 89.7 °F / 77.3 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 48.8 °F / 40.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	182 ft²	4380	-	182 ft²	-	-
Wall Transmission	1067 ft²	3035	-	1067 ft²	3203	-
Roof Transmission	958 ft²	1270	-	958 ft²	653	-
Window Transmission	182 ft²	1245	-	182 ft²	2029	-
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	957 W	3265	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	400 W	1365	-	0	0	-
People	2	500	400	0	0	0
Infiltration	-	848	1791	-	1251	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	15909	2191	-	7136	0
Zone Conditioning	-	15263	2191	-	6962	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	791 CFM	0	-	791 CFM	0	-
Ventilation Load	50 CFM	784	1791	50 CFM	1223	0
Supply Fan Load	791 CFM	352	-	791 CFM	-352	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	16398	3982	-	7834	0
Central Cooling Coil	-	16398	3983	-	0	0
Central Heating Coil	-	0	-	-	7834	-
>> Total Conditioning	-	16398	3983	-	7834	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for 06 CU/AHU-1.6

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

June DESIGN COOLING DAY, 1700

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	89.7	0.01737	50	400	784	1791
Vent - Return Mixing	Outlet	76.1	0.01029	791	697	-	-
Central Cooling Coil	Outlet	56.9	0.00923	791	697	16398	3983
Central Heating Coil	Outlet	56.9	0.00923	791	697	0	-
Supply Fan	Outlet	57.3	0.00923	791	697	352	-
Cold Supply Duct	Outlet	57.3	0.00923	791	697	-	-
Zone Air	-	75.2	0.00982	791	717	15263	2191
Return Plenum	Outlet	75.2	0.00982	791	717	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.6	15909	Cooling	15263	75.2	791	717	0	0

System Psychrometrics for 06 CU/AHU-1.6

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

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	48.8	0.00360	50	400	-1223	0
Vent - Return Mixing	Outlet	70.0	0.00360	791	541	-	-
Central Cooling Coil	Outlet	70.0	0.00360	791	541	0	0
Central Heating Coil	Outlet	79.2	0.00360	791	541	7834	-
Supply Fan	Outlet	79.6	0.00360	791	541	352	-
Cold Supply Duct	Outlet	79.6	0.00360	791	541	-	-
Zone Air	-	71.5	0.00360	791	550	-6962	0
Return Plenum	Outlet	71.5	0.00360	791	550	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-1.6	-7136	Heating	-6962	71.5	791	550	0	0

Air System Sizing Summary for 07 CU/AHU-2.1

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **07 CU/AHU-2.1**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **1893.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **3.2** Tons
Total coil load **37.8** MBH
Sensible coil load **33.3** MBH
Coil CFM at Aug 1500 **1561** CFM
Max block CFM **1561** CFM
Sum of peak zone CFM **1561** CFM
Sensible heat ratio **0.880**
CFM/Ton **494.9**
ft²/Ton **600.2**
BTU/(hr·ft²) **20.0**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Aug 1500**
OA DB / WB **91.9 / 77.6** °F
Entering DB / WB **75.4 / 62.9** °F
Leaving DB / WB **55.6 / 54.5** °F
Coil ADP **53.4** °F
Bypass Factor **0.100**
Resulting RH **50** %
Design supply temp. **53.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **10.9** MBH
Coil CFM at Des Htg **1561** CFM
Max coil CFM **1561** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr·ft²) **5.7**
Ent. DB / Lvg DB **71.2 / 77.7** °F

Supply Fan Sizing Data

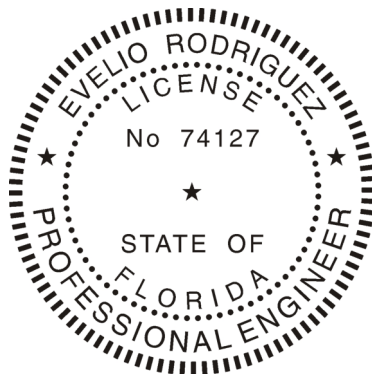
Actual max CFM **1561** CFM
Standard CFM **1559** CFM
Actual max CFM/ft² **0.82** CFM/ft²

Fan motor BHP **0.21** BHP
Fan motor kW **0.17** kW
Fan static **0.50** in wg

Outdoor Ventilation Air Data

Design airflow CFM **30** CFM
CFM/ft² **0.02** CFM/ft²

CFM/person **1.58** CFM/person



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Zone Sizing Summary for 07 CU/AHU-2.1

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **07 CU/AHU-2.1**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **1893.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
AHU-2.1	1561	1561	0.82	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
AHU-2.1	33.3	Jul 1600	10.6	1893.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
AHU-2.1							
200 Vest.	1	5.0	Aug 1700	220	1.5	472.0	0.47
200A Vest.	1	0.9	Jul 1500	39	0.1	124.0	0.32
201 Bed. 3	1	5.4	Oct 1600	239	1.8	253.0	0.94
202 WIC 3	1	0.5	Jul 1400	23	0.0	59.0	0.38
203 Bath 3	1	1.4	Jul 1700	62	0.3	55.0	1.12
204 Bed. 2	1	4.4	Aug 1400	193	1.7	183.0	1.05
205 Bath 2	1	2.3	Oct 1600	103	0.9	72.0	1.43
206 WIC 2	1	0.4	Jul 1400	16	0.0	24.0	0.66
207 Bed. 1	1	4.9	Jul 0900	217	1.4	231.0	0.94
208 WIC 1	1	0.4	Jul 1300	18	0.0	37.0	0.49
209 Bath 1	1	1.7	Jul 0900	77	0.5	50.0	1.54
210 Intimate Family	1	8.0	Jul 0900	355	2.3	333.0	1.07

Air System Design Load Summary for 07 CU/AHU-2.1

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1500 COOLING OA DB / WB 91.9 °F / 77.6 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 48.8 °F / 40.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	618 ft²	10304	-	618 ft²	-	-
Wall Transmission	819 ft²	2236	-	819 ft²	2459	-
Roof Transmission	1893 ft²	2312	-	1893 ft²	1253	-
Window Transmission	618 ft²	4684	-	618 ft²	6883	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	100 ft²	7	-	100 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	1617 W	5517	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	900 W	3071	-	0	0	-
People	19	4705	3395	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	32836	3395	-	10595	0
Zone Conditioning	-	32202	3395	-	10700	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	1561 CFM	0	-	1561 CFM	0	-
Ventilation Load	30 CFM	544	1128	30 CFM	741	3
Supply Fan Load	1561 CFM	579	-	1561 CFM	-579	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	33325	4523	-	10862	3
Central Cooling Coil	-	33325	4525	-	0	0
Central Heating Coil	-	0	-	-	10862	-
>> Total Conditioning	-	33325	4525	-	10862	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for 07 CU/AHU-2.1

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

August 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	91.9	0.01714	30	400	544	1128
Vent - Return Mixing	Outlet	75.4	0.00936	1561	2942	-	-
Central Cooling Coil	Outlet	55.6	0.00875	1561	2942	33325	4525
Central Heating Coil	Outlet	55.6	0.00875	1561	2942	0	-
Supply Fan	Outlet	56.0	0.00875	1561	2942	579	-
Cold Supply Duct	Outlet	56.0	0.00875	1561	2942	-	-
Zone Air	-	75.1	0.00921	1561	2992	32202	3395
Return Plenum	Outlet	75.1	0.00921	1561	2992	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-2.1	32836	Cooling	32202	75.1	1561	2992	0	0

System Psychrometrics for 07 CU/AHU-2.1

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

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	48.8	0.00360	30	400	-741	-3
Vent - Return Mixing	Outlet	71.2	0.00362	1561	792	-	-
Central Cooling Coil	Outlet	71.2	0.00362	1561	792	0	0
Central Heating Coil	Outlet	77.7	0.00362	1561	792	10862	-
Supply Fan	Outlet	78.0	0.00362	1561	792	579	-
Cold Supply Duct	Outlet	78.0	0.00362	1561	792	-	-
Zone Air	-	71.7	0.00362	1561	800	-10700	0
Return Plenum	Outlet	71.7	0.00362	1561	800	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-2.1	-10595	Heating	-10700	71.7	1561	800	0	0

Air System Sizing Summary for 08 CU/AHU-2.2

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **08 CU/AHU-2.2**
Equipment Class **SPLT AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **1030.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **2.5** Tons
Total coil load **30.4** MBH
Sensible coil load **24.6** MBH
Coil CFM at Jul 1700 **1182** CFM
Max block CFM **1182** CFM
Sum of peak zone CFM **1182** CFM
Sensible heat ratio **0.807**
CFM/Ton **465.7**
ft²/Ton **406.0**
BTU/(hr·ft²) **29.6**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Jul 1700**
OA DB / WB **90.7 / 77.3** °F
Entering DB / WB **76.5 / 64.8** °F
Leaving DB / WB **57.3 / 56.2** °F
Coil ADP **55.1** °F
Bypass Factor **0.100**
Resulting RH **53** %
Design supply temp. **55.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **8.9** MBH
Coil CFM at Des Htg **1182** CFM
Max coil CFM **1182** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr·ft²) **8.6**
Ent. DB / Lvg DB **69.9 / 76.8** °F

Supply Fan Sizing Data

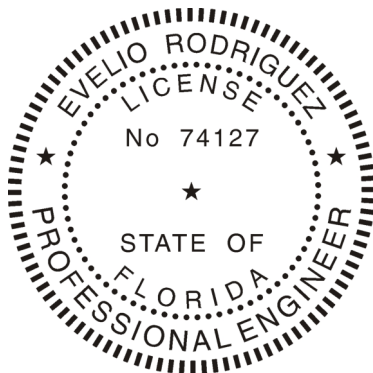
Actual max CFM **1182** CFM
Standard CFM **1180** CFM
Actual max CFM/ft² **1.15** CFM/ft²

Fan motor BHP **0.16** BHP
Fan motor kW **0.13** kW
Fan static **0.50** in wg

Outdoor Ventilation Air Data

Design airflow CFM **100** CFM
CFM/ft² **0.10** CFM/ft²

CFM/person **8.33** CFM/person



Evelio Rodriguez

Digitally signed by Evelio Rodriguez
DN: cn=Evelio Rodriguez,
ou=014100000017E4311C7000D8B3,
o=LuseoEngineering, c=US
Reason: I agree in the terms defined by the
placement of my signature on this document
Date: 2022.12.20 15:42:40-05'00'

Zone Sizing Summary for 08 CU/AHU-2.2

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

Air System Information

Air System Name **08 CU/AHU-2.2**
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Number of zones **1**
Floor Area **1030.0** ft²
Location **Miami IAP, Florida**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
AHU-2.2	1182	1182	1.15	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
AHU-2.2	23.2	Jul 1700	6.8	1030.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
AHU-2.2							
200B Vest.	1	1.1	Jun 1600	100	0.3	94.0	1.06
211 Master bed.	1	8.8	Jul 1700	431	2.0	347.0	1.24
212 Her WIC	1	4.5	Jul 1700	222	1.6	175.0	1.27
213 His WIC	1	0.8	Jul 1500	39	0.0	72.0	0.54
214 Master bath	1	6.5	Jul 1700	316	2.6	273.0	1.16
215 Her WC	1	0.8	Jul 1700	39	0.2	23.0	1.69
216 His WC	1	0.4	Jul 1300	19	0.0	23.0	0.84
217 Elev, vest	1	0.3	Jan 2300	16	0.0	23.0	0.70

Air System Design Load Summary for 08 CU/AHU-2.2

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 90.7 °F / 77.3 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 48.8 °F / 40.9 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	360 ft²	7843	-	360 ft²	-	-
Wall Transmission	712 ft²	2083	-	712 ft²	2136	-
Roof Transmission	1024 ft²	1368	-	1024 ft²	698	-
Window Transmission	360 ft²	2637	-	360 ft²	4014	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	100 ft²	7	-	100 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	1030 W	3514	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	800 W	2730	-	0	0	-
People	12	3000	2400	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	23182	2400	-	6848	0
Zone Conditioning	-	22451	2400	-	6807	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	1182 CFM	0	-	1182 CFM	0	-
Ventilation Load	100 CFM	1672	3485	100 CFM	2481	0
Supply Fan Load	1182 CFM	438	-	1182 CFM	-438	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	24561	5885	-	8851	0
Central Cooling Coil	-	24561	5886	-	0	0
Central Heating Coil	-	0	-	-	8851	-
>> Total Conditioning	-	24561	5886	-	8851	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for 08 CU/AHU-2.2

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
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July DESIGN COOLING DAY, 1700

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	90.7	0.01714	100	400	1672	3485
Vent - Return Mixing	Outlet	76.5	0.01041	1182	1561	-	-
Central Cooling Coil	Outlet	57.3	0.00936	1182	1561	24561	5886
Central Heating Coil	Outlet	57.3	0.00936	1182	1561	0	-
Supply Fan	Outlet	57.6	0.00936	1182	1561	438	-
Cold Supply Duct	Outlet	57.6	0.00936	1182	1561	-	-
Zone Air	-	75.2	0.00979	1182	1669	22451	2400
Return Plenum	Outlet	75.2	0.00979	1182	1669	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-2.2	23182	Cooling	22451	75.2	1182	1669	0	0

System Psychrometrics for 08 CU/AHU-2.2

Project Name: 22.06.13 DE LA CONCEPCION V2
Prepared by: Luseo Engineering

06/14/2022
02:54PM

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	48.8	0.00360	100	400	-2481	0
Vent - Return Mixing	Outlet	69.9	0.00360	1182	506	-	-
Central Cooling Coil	Outlet	69.9	0.00360	1182	506	0	0
Central Heating Coil	Outlet	76.8	0.00360	1182	506	8851	-
Supply Fan	Outlet	77.1	0.00360	1182	506	438	-
Cold Supply Duct	Outlet	77.1	0.00360	1182	506	-	-
Zone Air	-	71.8	0.00360	1182	516	-6807	0
Return Plenum	Outlet	71.8	0.00360	1182	516	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 = 4741.6 BTU/(hr-CFM)

Site Altitude = 29.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
AHU-2.2	-6848	Heating	-6807	71.8	1182	516	0	0