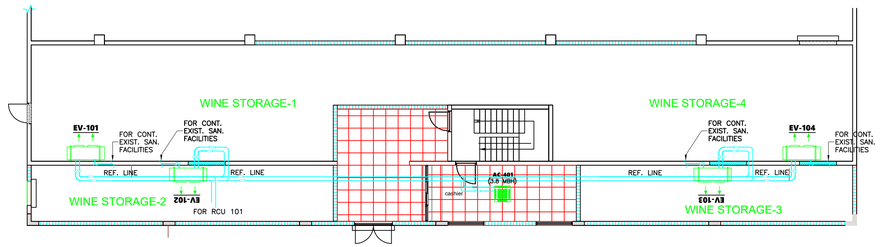
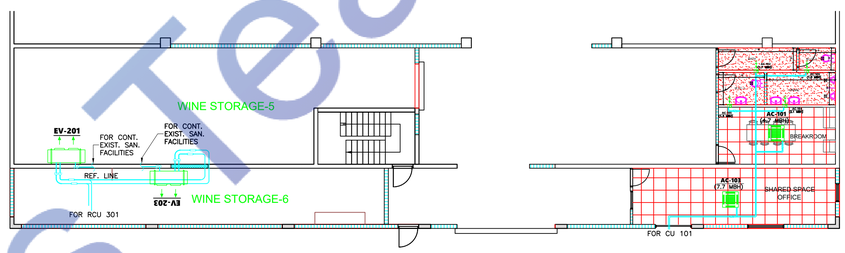
HVAC Legend

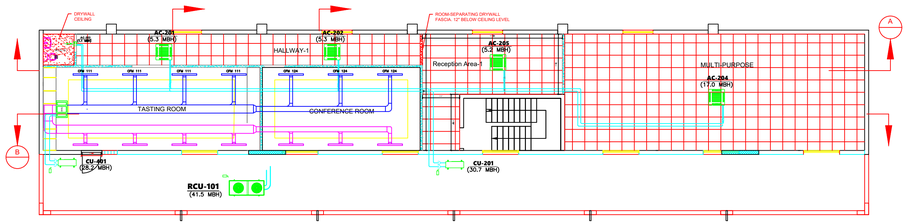
	EV
	Ceiling Mount AC
	Wall Mount AC
	Wall Mount Bathroom AC
	RCU
	CU



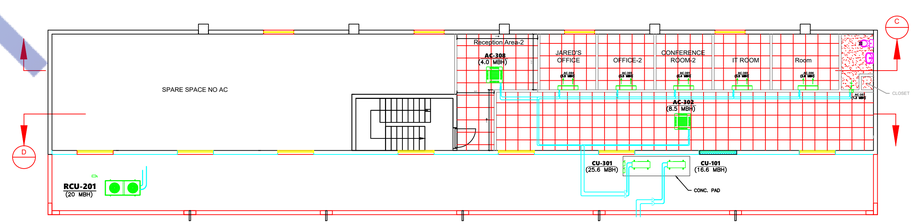
BULK BUILDING, 1ST FLOOR



PICKING BUILDING, 1ST FLOOR



BULK BUILDING, 2ND FLOOR



PICKING BUILDING, 2ND FLOOR

BULK BUILDING, 2ND FLOOR

Note:
This HVAC Layout Plan has been meticulously designed to adhere to all applicable codes and regulations relevant to Cole Bay, Sint Maarten. The following standards and guidelines have been incorporated:

1. Sint Maarten Building Code: Ensuring structural integrity and safety in all HVAC installations.

2. Environmental Norms: Incorporating sustainable practices in line with Sint Maarten's environmental guidelines.

3. ASHRAE Standards: Aligning with the American Society of Heating, Refrigerating, and Air-Conditioning Engineers' standards for system design and efficiency.

4. International Mechanical Code (IMC): Following international best practices for mechanical systems.

5. Local Product Approval Codes: Utilizing materials and equipment approved for use in Cole Bay, Sint Maarten.

This plan reflects our commitment to quality, safety, and environmental responsibility in HVAC system design.

EXHAUST FAN SCHEDULE

MARK	SERVING	CFM	SP	WATTS	RPM	VOLTAGE	MAKE MODEL	NOTES	FAN TYPE
EF-1	BATHROOM	50	-	50	460	120/60/1	Broan-NuTone 688		IN-LINE

NOTES
1. COMPLETE W/BACKDRAFT DAMPER.
2. PROVIDE THERMOSTATIC CONTROL DEVICES
3. INTERLOCK TO OPERATE WHENEVER RTU'S OPERATE.
4. MAINTAIN A MINIMUM CLEARANCE OF 10'-0" FROM ALL INTAKE AIR FANS AND ALL ROOF TOP UNITS OUTSIDE AIR INTAKE OPENINGS.

Exhaust Legend
No Scale

ENGINEER'S TEAM
430 E 8TH ST STE 8017
HOLLAND MI 49423
SUPPORT@ENGRTEAM.COM
ENGRTEAM.COM

OWNER:

Proposed Plan

Cole Bay, Sint Maarten

SEAL:

Release for construction

HVAC Layout Plan

Drawn by:	Engr. Al Amin
Checked:	
Date:	March, 16.
	H-1
Scale:	1/4" = 1'

Air System Information

Air System Name: RCU-101
Equipment Class: TERM
Air System Type: VRF

Number of zones: 1
Floor Area: 3296.0 ft²
Location: Cole Bay, Sint Maart

VRF Outdoor Unit Sizing Data

	Cooling [MBH]	Cooling [Tons]	Heating [MBH]	Brand [Model]
Peak Coincident Indoor Unit Loads	41.3	3.4	0.4	Toshiba
Estimated Piping / Line Losses	0.0	0.0	0.0	
				Toshiba
Total Required ODU Capacity	41.3	3.4	0.4	[MCY-MAP0367HS-UL]

Note: VRF piping / line losses are based on typical loss factors for this class of equipment. Actual line loss varies widely from one product to another. Therefore, when selecting equipment it is critical to consult manufacturer's guidance to utilize actual line loss data.

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
Zone 1, RCU-101							
AC-401	1	3.8	Jul 1800	177	0.0	224.0	0.79
EV-101	1	11.1	Jul 1800	514	0.1	932.0	0.55
EV-102	1	6.5	Jul 1900	300	0.1	455.0	0.66
EV-103	1	5.9	Jul 1900	275	0.1	410.0	0.67
EV-104	1	14.5	Jun 1800	675	0.1	1275.0	0.53

Air System Information

Air System Name: RCU-102
Equipment Class: TERM
Air System Type: VRF

Number of zones: 1
Floor Area: 1647.0 ft²

VRF Outdoor Unit Sizing Data

	Cooling [MBH]	Cooling [Tons]	Heating [MBH]	Brand [Model]
Peak Coincident Indoor Unit Loads	20.1	1.7	0.5	Toshiba
Estimated Piping / Line Losses	0.0	0.0	0.0	
				Toshiba
Total Required ODU Capacity	20.1	1.7	0.5	[MCY-MAP0367HS-UL]

Note: VRF piping / line losses are based on typical loss factors for this class of equipment. Actual line loss varies widely from one product to another. Therefore, when selecting equipment it is critical to consult manufacturer's guidance to utilize actual line loss data.

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
RCU-201							
EV-201	1	12.9	Jul 1800	598	0.1	1087.0	0.55
EV-202	1	7.7	Jul 1900	359	0.1	560.0	0.64

Air System Information

Air System Name: CU-301
Equipment Class: TERM
Air System Type: VRF

Number of zones: 1
Floor Area: 1046.0 ft²

VRF Outdoor Unit Sizing Data

	Cooling [MBH]	Cooling [Tons]	Heating [MBH]	Brand [Model]
Peak Coincident Indoor Unit Loads	29.3	2.4	0.5	Toshiba
Estimated Piping / Line Losses	0.0	0.0	0.0	
				Toshiba
Total Required ODU Capacity	29.3	2.4	0.5	[MCY-MAP0367HS-UL]

Note: VRF piping / line losses are based on typical loss factors for this class of equipment. Actual line loss varies widely from one product to another. Therefore, when selecting equipment it is critical to consult manufacturer's guidance to utilize actual line loss data.

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
CU-301							
AC-301	1	2.4	Jul 1900	112	0.0	82.0	1.36
AC-302	1	8.5	Jul 1800	393	0.1	582.0	0.67
AC-303	1	3.5	Jun 1700	162	0.0	81.0	2.00
AC-304	1	3.5	Jun 1700	162	0.0	81.0	2.00
AC-305	1	3.5	Jun 1700	162	0.0	81.0	2.00
AC-306	1	2.6	Jul 1900	120	0.0	97.0	1.24
AC-307	1	1.3	Jul 1900	62	0.0	42.0	1.48
AC-308	1	4.0	Jul 1900	185	0.1	175.9	1.05

Air System Information

Air System Name: CU-101
Equipment Class: TERM
Air System Type: VRF

Number of zones: 1
Floor Area: 645.2 ft²

VRF Outdoor Unit Sizing Data

	Cooling [MBH]	Cooling [Tons]	Heating [MBH]	Brand [Model]
Peak Coincident Indoor Unit Loads	19.1	1.6	0.3	Toshiba
Estimated Piping / Line Losses	0.0	0.0	0.0	
				Toshiba
Total Required ODU Capacity	19.1	1.6	0.3	[MCY-MAP0367HS-UL]

Note: VRF piping / line losses are based on typical loss factors for this class of equipment. Actual line loss varies widely from one product to another. Therefore, when selecting equipment it is critical to consult manufacturer's guidance to utilize actual line loss data.

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
CU-101							
AC-1	1	4.7	Jul 1900	216	0.0	177.0	1.22
AC-2	1	1.7	Jul 1800	79	0.0	45.2	1.75
AC-3	1	7.7	Jul 1900	359	0.1	306.0	1.17
AC-4	1	2.1	Jul 1900	99	0.0	57.4	1.73
AC-5	1	1.3	Jul 1900	62	0.0	38.5	1.60
AC-6	1	1.0	Jul 1800	49	0.0	21.1	2.30

Air System Information

Air System Name: CU-201
Equipment Class: TERM
Air System Type: VRF

Number of zones: 1
Floor Area: 2679.0 ft²

VRF Outdoor Unit Sizing Data

	Cooling [MBH]	Cooling [Tons]	Heating [MBH]	Brand [Model]
Peak Coincident Indoor Unit Loads	36.4	3.0	0.7	Toshiba
Estimated Piping / Line Losses	0.0	0.0	0.0	
				Toshiba
Total Required ODU Capacity	36.4	3.0	0.7	[MCY-MAP0607HS-UL]

Note: VRF piping / line losses are based on typical loss factors for this class of equipment. Actual line loss varies widely from one product to another. Therefore, when selecting equipment it is critical to consult manufacturer's guidance to utilize actual line loss data.

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
CU-201							
AC-201, AC-202	2	5.3	Jul 1800	244	0.1	283.0	0.86
AC-203	1	1.1	Jul 1900	52	0.0	26.0	1.98
AC-204	1	17.0	Jul 1800	787	0.1	925.0	0.85
AC-205	1	5.2	Jul 1800	243	0.1	273.1	0.89

Air System Information

Air System Name: CU-401
Equipment Class: SPLT AHU
Air System Type: SZCAV

Number of zones: 1
Floor Area: 818.0 ft²

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: 2.3 Tons
Total coil load: 28.2 MBH
Sensible coil load: 19.4 MBH
Coil CFM at Jul 1500: 812 CFM
Max block CFM: 812 CFM
Sum of peak zone CFM: 812 CFM
Sensible heat ratio: 0.689
CFM/Ton: 345.9
ft²/Ton: 348.4
BTU/(hr·ft²): 34.4
Water flow @ 10.0 °F rise: N/A

Load occurs at: Jul 1500
OA DB / WB: 92.0 / 77.0 °F
Entering DB / WB: 79.1 / 67.0 °F
Leaving DB / WB: 56.9 / 55.6 °F
Coil ADP: 53.9 °F
Bypass Factor: 0.120
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: 0.2 MBH
Coil CFM at Des Htg: 812 CFM
Max coil CFM: 812 CFM
Water flow @ 20.0 °F drop: N/A

Load occurs at: Des Htg
BTU/(hr·ft²): 0.2
Ent. DB / Lvg DB: 69.8 / 70.0 °F

Supply Fan Sizing Data

Actual max CFM: 812 CFM
Standard CFM: 810 CFM
Actual max CFM/ft²: 0.99 CFM/ft²

Fan motor BHP: 0.00 BHP
Fan motor kW: 0.00 kW
Fan static: 0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM: 149 CFM
CFM/ft²: 0.18 CFM/ft²

CFM/person: 7.45 CFM/person

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)
CU-401	812	812	0.99	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible Peak (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
CU-401	17.5	Jul 1800	0.1	818.0

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 (ft²)	Space CFM/ft²
CU-401							
TASTING ROOM	1	9.5	Jul 1800	443	0.1	474.0	0.93
CONFERENCE ROOM-1	1	8.0	Jul 1900	370	0.0	344.0	1.07

SPLT AHU Unit Sizing Data

	Cooling [MBH]	Cooling [Tons]	Brand [Model]
Peak Coincident Indoor Unit Loads	28.2	2.3	ACIQ-36W-P
Total Required ODU Capacity	28.2	2.3	ACIQ-36-EHPB

ENGINEER'S TEAM
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HOLLAND MI 49423
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OWNER:

Proposed Plan

Cole Bay, Sint Maarten

SEAL:

Release for construction

HVAC Load Schedule

Drawn by: Engr. Al Amin
Checked:
Date: March, 16.

H-2

Scale: 1/4" = 1'

Type	Appearance	Model name	Capacity type	Capacity code	Cooling capacity (kBtu/h)	Heating capacity (kBtu/h)
4-Way Cassette		MMU-AP0072H2UL	007 type	7.5	7.5	8.5
		MMU-AP0092H2UL	009 type	9.5	9.5	10.5
		MMU-AP0122H2UL	012 type	12	12	13.5
		MMU-AP0152H2UL	015 type	15.4	15.4	17
		MMU-AP0182H2UL	018 type	18	18	20
		MMU-AP0212H2UL	021 type	21	21	24
		MMU-AP0242H2UL	024 type	24	24	27
		MMU-AP0302H2UL	030 type	30	30	34
		MMU-AP0362H2UL	036 type	36	36	40
		MMU-AP0422H2UL	042 type	42	42	47.5
		*MMU-AP0072H2UL-1	007 type	7.5	7.5	8.5
Compact 4-Way Cassette		MMU-AP0071MH2UL	007 type	7.5	7.5	8.5
		MMU-AP0091MH2UL	009 type	9.5	9.5	10.5
		MMU-AP0121MH2UL	012 type	12	12	13.5
		MMU-AP0151MH2UL	015 type	15.4	15.4	17
		MMU-AP0181MH2UL	018 type	18	18	20
Ceiling		MMC-AP0181H2UL	018 type	18	18	20
		MMC-AP0241H2UL	024 type	24	24	27
		MMC-AP0361H2UL	036 type	36	36	40
		MMC-AP0421H2UL	042 type	42	42	47.5
High Wall		MMK-AP0073H2UL	007 type	7.5	7.5	8.5
		MMK-AP0093H2UL	009 type	9.5	9.5	10.5
		MMK-AP0123H2UL	012 type	12	12	13.5
		MMK-AP0153H2UL	015 type	15.4	15.4	17
		MMK-AP0183H2UL	018 type	18	18	20
		MMK-AP0243H2UL	024 type	24	24	27
Slim Ducted		MMD-AP0074SPH2UL	007 type	7.5	7.5	8.5
		MMD-AP0094SPH2UL	009 type	9.5	9.5	10.5
		MMD-AP0124SPH2UL	012 type	12	12	13.5
		MMD-AP0154SPH2UL	015 type	15.4	15.4	17
		MMD-AP0184SPH2UL	018 type	18	18	20
Medium Static Duct		MMD-AP0074BH2UL	007 type	7.5	7.5	8.5
		MMD-AP0094BH2UL	009 type	9.5	9.5	10.5
		MMD-AP0124BH2UL	012 type	12	12	13.5
		MMD-AP0074BH2UL-1	007 type	7.5	7.5	8.5
		MMD-AP0094BH2UL-1	009 type	9.5	9.5	10.5
		MMD-AP0124BH2UL-1	012 type	12	12	13.5
		MMD-AP0154BH2UL-1	015 type	15.4	15.4	17
		MMD-AP0184BH2UL-1	018 type	18	18	20
		MMD-AP0214BH2UL-1	021 type	21	21	24
		MMD-AP0244BH2UL-1	024 type	24	24	27
		MMD-AP0304BH2UL-1	030 type	30	30	34
		MMD-AP0364BH2UL-1	036 type	36	36	40
		MMD-AP0424BH2UL-1	042 type	42	42	47.5
		MMD-AP0484BH2UL-1	048 type	48	48	54
High Static Duct		MMD-AP0304H2UL	030 type	30	30	34
		MMD-AP0364H2UL	036 type	36	36	40
		MMD-AP0484H2UL	048 type	48	48	54
Floor console exposed		MML-AP0074H2UL	007 type	7.5	7.5	8.5
		MML-AP0094H2UL	009 type	9.5	9.5	10.5
		MML-AP0124H2UL	012 type	12	12	13.5
		MML-AP0154H2UL	015 type	15.4	15.4	17
		MML-AP0184H2UL	018 type	18	18	20
		MML-AP0244H2UL	024 type	24	24	27
Floor console recessed		MML-AP0074BH2UL	007 type	7.5	7.5	8.5
		MML-AP0094BH2UL	009 type	9.5	9.5	10.5
		MML-AP0124BH2UL	012 type	12	12	13.5
		MML-AP0154BH2UL	015 type	15.4	15.4	17
		MML-AP0184BH2UL	018 type	18	18	20
		MML-AP0244BH2UL	024 type	24	24	27

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SEAL:

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HVAC Installation

Drawn by: Engr. Al Amin
Checked:
Date: March, 16.

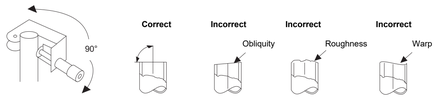
H-3

Scale: 1/4" = 1'

Pipe connection method

Flaring

1. Cut the pipe with a pipe cutter.



2. Remove the burr inside the pipe.
   When removing the burr, be careful that the chips do not fall into the pipe.
3. Remove the flare nuts attached to the outdoor / indoor unit, then insert them into each of the pipes.
4. Flare the pipes.
   See the following table for the projection margin (A) and flaring size (B).

	Pipe		A		B	Flare Nut			
	Outside diameter	Thickness	Rigid (clutch type) R410A tool	Imperial (wing nut type) R410A tool		Width across flat	Tighten torque		
							lbf·ft	N·m	kgf·m
in	1/4"	0.03"	0 to 0.02"	0.04" to 0.06"	0.39"	0.67"	10.3 to 13.3	14 to 18	1.4 to 1.8
mm	6.35	0.8	0 to 0.5	1.0 to 1.5	9.9	17			
in	3/8"	0.03"	0 to 0.02"	0.04" to 0.06"	0.52"	0.87"	24.3 to 31.0	33 to 42	3.3 to 4.2
mm	9.52	0.8	0 to 0.5	1.0 to 1.5	13.2	22			
in	1/2"	0.03"	0 to 0.02"	0.04" to 0.06"	0.65"	1.02"	36.1 to 45.0	49 to 61	4.9 to 6.1
mm	12.7	0.8	0 to 0.5	1.0 to 1.5	16.6	26			
in	5/8"	0.04"	0 to 0.02"	0.04" to 0.06"	0.78"	1.14"	46.5 to 56.8	63 to 77	6.3 to 7.7
mm	15.88	1.0	0 to 0.5	1.0 to 1.5	19.7	29			
in	3/4"	0.05"	0 to 0.02"	0.04" to 0.06"	0.94"	1.42"	73.8 to 88.5	100 to 120	10.0 to 12.0
mm	19.05	1.2	0 to 0.5	1.0 to 1.5	24.0	36			

Coupling size of brazed pipe

Connected section	
External size	Internal size
K	G

	Standard outer dia. of connected copper pipe	Connected section: External size / Standard outer dia.	Connected section: Internal size	Min. depth of insertion: K	Min. depth of insertion: G	Oval value	Min. thickness of coupling
		CF		K	G		
in	1/4"	1/4"±0.001	0.25" +0.002 -0.001	0.28"	0.24"	0.002" or less	0.02"
mm	6.35	6.35±0.03	6.45 +0.04 -0.02	7	6	0.06 or less	0.5
in	3/8"	3/8"±0.001	0.38" +0.002 -0.001	0.31"	0.28"	0.003" or less	0.02"
mm	9.52	9.52±0.03	9.62 +0.04 -0.02	8	7	0.08 or less	0.6
in	1/2"	1/2"±0.001	0.50" +0.002 -0.001	0.35"	0.31"	0.004" or less	0.03"
mm	12.7	12.7±0.03	12.81 +0.04 -0.02	9	8	0.10 or less	0.7
in	5/8"	5/8"±0.001	0.63" +0.002 -0.001	0.35"	0.31"	0.005" or less	0.03"
mm	15.88	15.88±0.03	16.00 +0.04 -0.02	9	8	0.13 or less	0.8
in	3/4"	3/4"±0.001	0.76" +0.002 -0.001	0.43"	0.39"	0.006" or less	0.03"
mm	19.05	19.05±0.03	19.19 +0.04 -0.02		10	0.15 or less	0.8

(3)	Branching section ↓ Indoor unit	Indoor unit connecting pipe	**Connecting pipe size of indoor unit**
(4)	Branching section	Y-shaped branching joint	**Selection of branching section (Y-shaped branching joint)**
(5)	Branching section	Branching header	**Selection of branching section (Branching header)**

Capacity rank	Gas pipe	Liquid pipe
007 to 012 type	Ø3/8"	Ø1/4"
015 to 018 type	Ø1/2"	Ø1/4"
021 to 048 type	Ø5/8"	Ø3/8"

	Model name
Y-shape branch joint	RBM-BY55UL

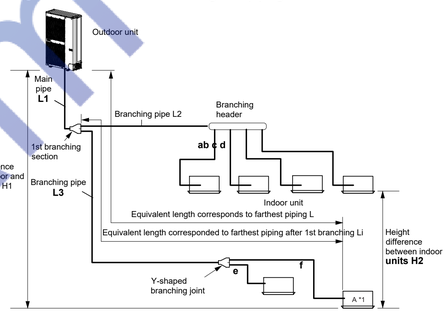
		Model name
Branching header*	For 4 branches	RBM-HY1043UL
	For 8 branches	RBM-HY1083UL

* A capacity code up to a maximum of 57 is connectable to one line after branching from the header.

		Allowable value (ft.(m))	Pipes
Piping Length	Total extension of pipe (liquid pipe, real length)	591 (180)	L1 + L2 + L3 + a + b + c + d + e + f
	Furthest piping length L (*1) — Real length	328 (100)	L1 + L3 + f
	Furthest piping length L (*1) — Equivalent length	410 (125)	
	Max. equivalent length of main pipe	213 (65)	L1
	Max. equivalent length of furthest piping from 1st branching Li (*1)	115 (35)	L3 + f
	Max. real length of indoor unit connecting pipe	49 (15)	a, b, c, d, e, f
Height Difference	Height between indoor and outdoor units H1 — Upper outdoor unit	164 (50)	
	Height between indoor and outdoor units H1 — Lower outdoor unit	131 (40)	
	Height between indoor units H2	49 (15)	

*1 Furthest indoor unit from 1st branch to be named "A".

Allowable length / height difference of the refrigerant piping



Selection of pipe materials and size

Selection of pipe material

Material: Phosphorus deoxidation seam-less pipe

Capacity code of indoor and outdoor units

- For the indoor unit, the capacity code is decided at each capacity rank.
- The outdoor unit's capacity codes are decided at each capacity rank.
  The maximum No. of the connectable indoor unit and the total value of the indoor unit's capacity codes are also decided.

Minimum wall thickness for R410A application

Soft	Half Hard or Hard	OD (inch)	OD (mm)	Minimum wall thickness (mm)
OK	OK	1/4"	6.35	0.80
OK	OK	3/8"	9.52	0.80
OK	OK	1/2"	12.70	0.80
OK	OK	5/8"	15.88	1.00
NG *(1)	OK	3/4"	19.05	1.00

*(1) If the pipe size is Ø3/4" (19.05), use a suitable material.

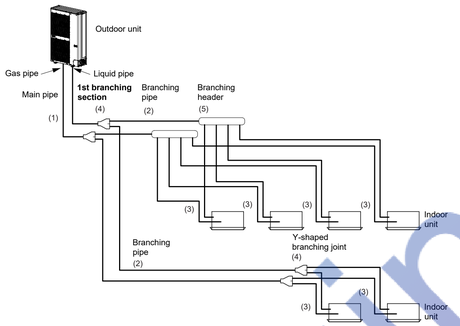
Table 1

Indoor unit capacity type	Capacity code: Equivalent to capacity	Indoor unit capacity type	Capacity code: Equivalent to capacity
007 type	7.5	036 type	36
009 type	9.5	042 type	42
012 type	12	048 type	48
015 type	15.4	—	—
018 type	18	—	—
021 type	21	—	—
024 type	24	—	—
027 type	27	—	—
030 type	30	—	—

Table 2

Outdoor unit capacity type	Capacity code: Equivalent to capacity	No. of connectable indoor units	Total capacity code of connectable indoor units: Min.*(2)	Total capacity code of connectable indoor units: Max.
036 type	36	2 to 6	18	48
048 type	48	2 to 8	24	64
060 type	60	2 to 9	30	81

Selection of refrigerant piping



No.	Piping parts Name		Selection of pipe size	Remarks
(1)	Outdoor unit ↓ 1st branching section	Main pipe	**Size of main pipe** Outdoor unit capacity type / Gas pipe / Liquid pipe 0367 type: Ø5/8" / Ø3/8" 0487 type: Ø5/8" / Ø3/8" 0607 type: Ø3/4" / Ø3/8"	Same as the outdoor unit's connecting pipe size.
(2)	Branching section ↓ Branching section	Branching pipe	**Pipe size between branching sections** Total capacity codes of indoor units at down stream side / Gas pipe / Liquid pipe Below 23: Ø1/2" / Ø3/8" 23 to below 61: Ø5/8" / Ø3/8" 61 or more: Ø3/4" / Ø3/8"	Pipe size differs based on the total capacity code value of the indoor units at the downstream side. If the total value exceeds the capacity code of the outdoor unit, apply the capacity code of the outdoor unit. (See Table 1 and 2.)

Full opening of the valve

Open the valves of the outdoor unit fully.

Liquid side	Gas side
Packed valve Using a 4 mm-hexagonal wrench, fully open the valve rods.	Valve unit Using a minus screwdriver, turn it counterclockwise by 90° until it hits the stopper. (Full open) Charge port Flare nut Closed completely Grooves for driver Opened fully

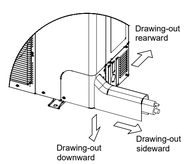
Heat insulation for pipe

- Apply the pipe's heat insulation separately at the liquid and gas sides.
- Be sure to use a thermal insulator resistant up to 248 °F (120 °C) or higher for pipes at the gas side.

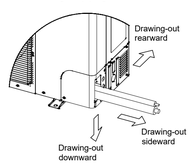
Finishing after connecting pipes

- After the piping connection work has been finished, cover the opening of the piping / wiring panel with the piping cover, or fill silicon or putty in the space between the pipes.
- In case of drawing-out the pipes downward or sideward, also close the openings of the base plate and the side plate.
- Under the opened condition, a problem may be caused due to the entering of water or dust.

When using the piping cover



When not using the piping cover



Pipe holding bracket

Attach the pipe holding brackets following the table below.

Diameter of pipe in (mm)	Interval
Ø3/4" (Ø19.05) or less	78.7" (2 m)

Adding refrigerant

After vacuuming is complete, exchange the vacuum pump with a refrigerant canister and start the additional charging of refrigerant.

Calculation of additional refrigerant charge amount

The default refrigerant amount does not include the refrigerant for pipes at the local site.
For refrigerant to be charged in pipes at the local site, calculate the amount and charge it additionally.

Outdoor unit type	MAP0367	MAP0487	MAP0607
Charging amount (lbs (kg))	14.8 (6.7)	14.8 (6.7)	14.8 (6.7)

Additional refrigerant charge amount at local site = Real length of liquid pipe × Additional refrigerant charge amount per 1 ft liquid pipe (Table 1) × 1.2 + Compensation by outdoor HP (Table 2)

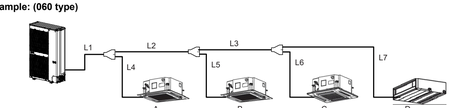
Table 1

Liquid pipe dia. (in)	Ø1/4"	Ø3/8"
Additional refrigerant amount / 1 ft liquid pipe (lbs/ft)	0.017	0.038

Table 2

Outdoor unit type	MAP0367	MAP0487	MAP0607
Compensation by outdoor capacity (lbs (kg))	0 (0)	0.88 (0.4)	1.76 (0.8)

Example: (060 type)



L1	Ø3/8": 32.8 ft	L2	Ø3/8": 32.8 ft	L3	Ø3/8": 16.4 ft	L4	Ø3/8": 9.8 ft
L5	Ø1/4": 9.8 ft	L6	Ø1/4": 13.1 ft	L7	Ø1/4": 16.4 ft		

Additional charge amount R (kg)

Lx: Real total length of liquid pipe diameter 1/4" (ft)
Ly: Real total length of liquid pipe diameter 3/8" (ft)

= (Lx × 0.017 lbs/ft) + (Ly × 0.038 lbs/ft) × 1.2 + (1.76 lbs)
= (39.3 × 0.017 lbs) + (91.8 × 0.038 lbs) × 1.2 + (1.76 lbs)
= 6.75 lbs

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OWNER:

Proposed Plan

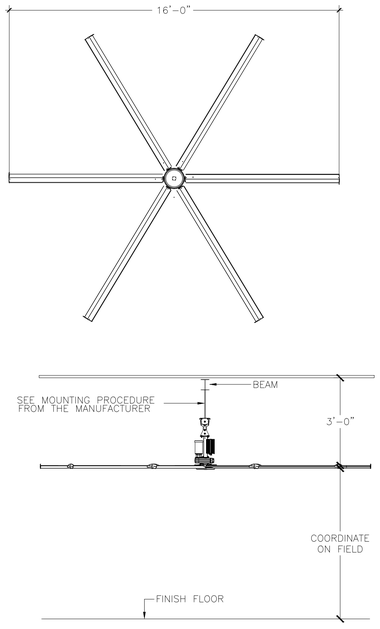
Cole Bay, Sint Maarten

SEAL:

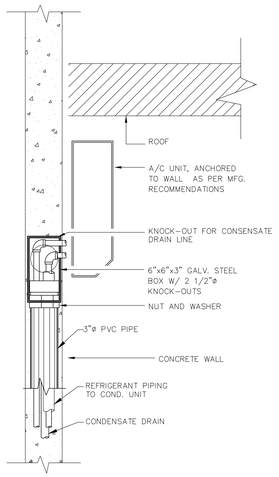
Release for construction

HVAC Installation

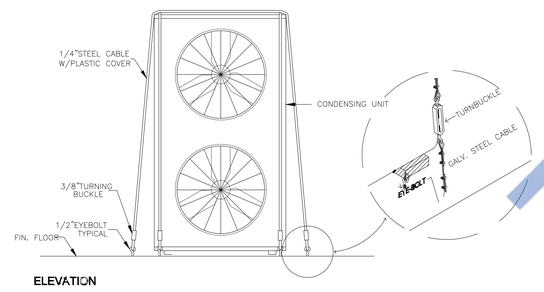
Drawn by:	Engr. Al Amin
Checked:	
Date:	March, 16.
	H-4
Scale:	1/4" = 1'



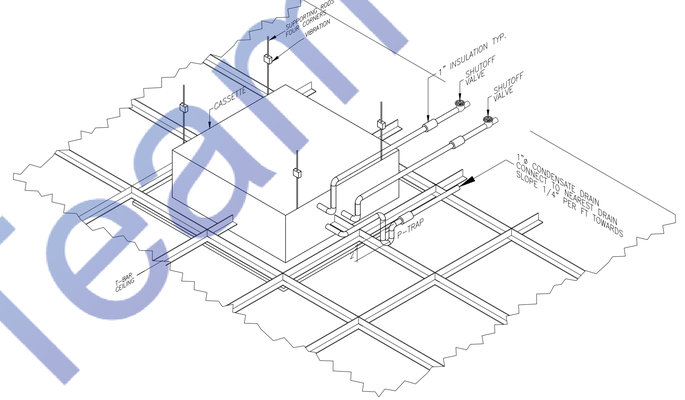
1 PROPELLER (HVLS) FAN INSTALLATION DETAIL
NOT TO SCALE



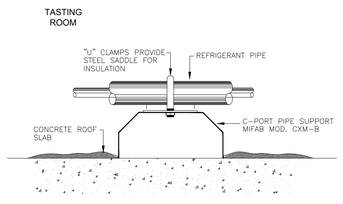
3 MINI SPLIT COIL UNIT WITH PLENUM INSTALLATION DETAIL
NOT TO SCALE



5 CONDENSING UNIT ANCHORING DETAIL
NOT TO SCALE

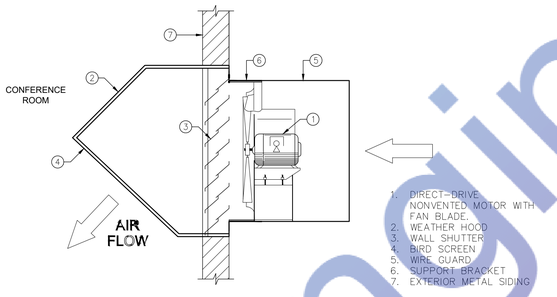


7 CASSETTE UNIT INSTALLATION DETAIL
NOTE: THE A/C UNIT SHALL BE HANGED SEISMICALLY FROM ROOF SLAB OR STEEL JOIST.
NOT TO SCALE

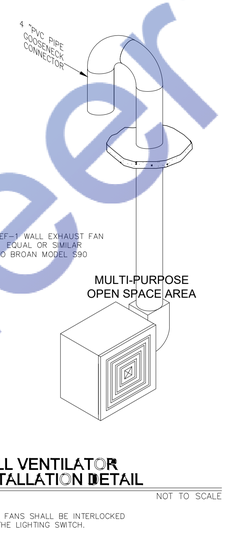


*REFRIGERANT PIPE SUPPORT SHALL BE INSTALLED EVERY 5'-0" (MAX.) OF PIPE TO BE SUPPORTED

2 REFRIGERANTS PIPES SUPPORT
NOT TO SCALE



4 WALL FAN DETAIL
NOTES: 1. PROVIDE DISCONNECT SWITCH TO ALL FANS.
NOT TO SCALE



6 WALL VENTILATOR INSTALLATION DETAIL
NOTE:
1. THE FANS SHALL BE INTERLOCKED WITH THE LIGHTING SWITCH.
NOT TO SCALE

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