	<b>MARIANO MARCOS STATE UNIVERSITY</b>		Document Code	PD-FRM-002
	Procurement Division		Revision No.	5
	Request for Quotation (RFQ) (Goods and Services)		Effectivity Date	April 20, 2022
				Page 1 of 3

**REQUEST FOR QUOTATION (RFQ)**

Date: June 29, 2022  
PR No. 2022-06-130 (07308603)

Sir/Madam:

Please quote your lowest price on the item/s listed below, and submit your quotation duly signed by you or your duly authorized representative not later than **3 days** subject to the Terms and Conditions provided at the last page of this RFQ.

Delivery period must be at least within **60 days** upon receipt of the Notice to Proceed or Purchase Order.

For any clarification, you may email us at [bac@mmsu.edu.ph](mailto:bac@mmsu.edu.ph).

  
**NATHANIEL R. ALIBAYOG**  
BAC Chair

ITEM	QTY	Unit	ITEM DESCRIPTION	ABC/unit	UNIT PRICE
	1	lot	Delivery and Installation of Airconditioning units for CTE, CIT, CASAT and CAFSD-Dingras	998,000.00	
			<b>For CAFSD-Dingras</b>		
			2 units 2HP Wall Mounted Split Type Variable Frequency Drive Type (Inverter)		
			<b>For CASAT</b>		
			1 unit 2HP Split Type - Wall Mounted Variable Frequency Drive (VFD) (Inverter)		
			<b>For CIT</b>		
			4 units 4HP Wall Mounted Split Type		
			1 unit 2HP Wall Mounted Split Type		
			<b>For CTE</b>		
			2 units 4HP Ceiling Suspended Aircon Variable Frequency Drive Type (Inverter)		
			1 unit 1.5HP Wall Mounted Split Type Variable		

Disclaimer: Reproduction of this form is allowed subject to compliance to the Documented Information Procedure established by MMSU.



**MARIANO MARCOS STATE UNIVERSITY**  
Procurement Division  
Request for Quotation (RFQ)  
(Goods and Services)

Document Code PD-FRM-002

Revision No. 5 Page 2 of 3

Effectivity Date April 20, 2022

Frequency Drive Type (Inverter)		
1 unit 0.8HP Wall Mounted Split Type Variable Frequency Drive Type (Inverter)		
Note: Please conduct actual site visit before quotation		
Include excess copper tubes and other materials		

**TOTAL ESTIMATED BUDGET: 998,000.00**

REMARKS/NOTE: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_


After having carefully read and accepted your Terms and Conditions, I/we submit our quotation/s on the item/s at prices indicated above.

Business Name: \_\_\_\_\_  
 Business Address: \_\_\_\_\_  
 Printed Name of the Owner: \_\_\_\_\_  
 TIN: \_\_\_\_\_  
 PhilGEPS Registration Number: \_\_\_\_\_  
 Business Permit: \_\_\_\_\_  
 Omnibus Sworn Statement: \_\_\_\_\_  
 Annual Income Tax Return: \_\_\_\_\_

Signature over Printed Name \_\_\_\_\_  
 Tel. No./Cellphone No./e-mail address \_\_\_\_\_  
 Date \_\_\_\_\_

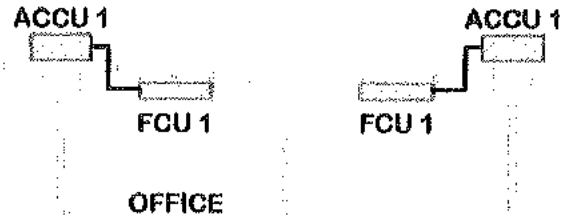
Canvassed by: \_\_\_\_\_

*Disclaimer: Reproduction of this form is allowed subject to compliance to the Documented Information Procedure established by MMSU.*

	<b>MARIANO MARCOS STATE UNIVERSITY</b> Procurement Division		Document Code	PD-FRM-002
	Request for Quotation (RFQ) (Goods and Services)		Revision No.	5
			Effectivity Date	April 20, 2022
				Page 3 of 3

**TERMS AND CONDITIONS:**

1. Bidders shall provide correct and accurate information required in this form.
2. Bidders may quote for any or all of the items.
3. Bidders shall submit a copy of the following documents along with the Quotation:
  - a. PhilGEPS Registration Number
  - b. Mayor's Permit / Business Permit
  - c. Omnibus Sworn Statement (for ABC's above P 500,000.00)
  - d. Income/Business Tax Return (for ABC's above P 500,000.00)
  - e. Certificate of Public Conveyance (CPC) for vehicle rentals and truckings
4. Price quotation/s, to be denominated in Philippine peso, shall include all taxes, duties and/or levies payable.
5. Quotations exceeding the Approved Budget for the Contract shall be rejected.
6. Award of contract shall be made to the lowest quotation which complies with the minimum technical specifications and other terms and conditions stated herein.
7. Any interlineations, erasures or overwriting shall be valid only if they are signed or initialed by you or any of your duly authorized representative/s.
8. The item/s shall be delivered according to the requirements specified in the Technical Specifications.
9. The University has the right to inspect and/or test the goods to confirm their conformity to the technical specifications.
10. Liquidated damages equivalent to one tenth of one percent (0.1%) of the value of the goods not delivered within the prescribed delivery period shall be imposed per day of delay.





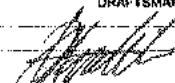
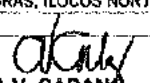
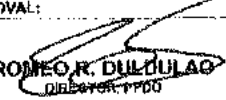



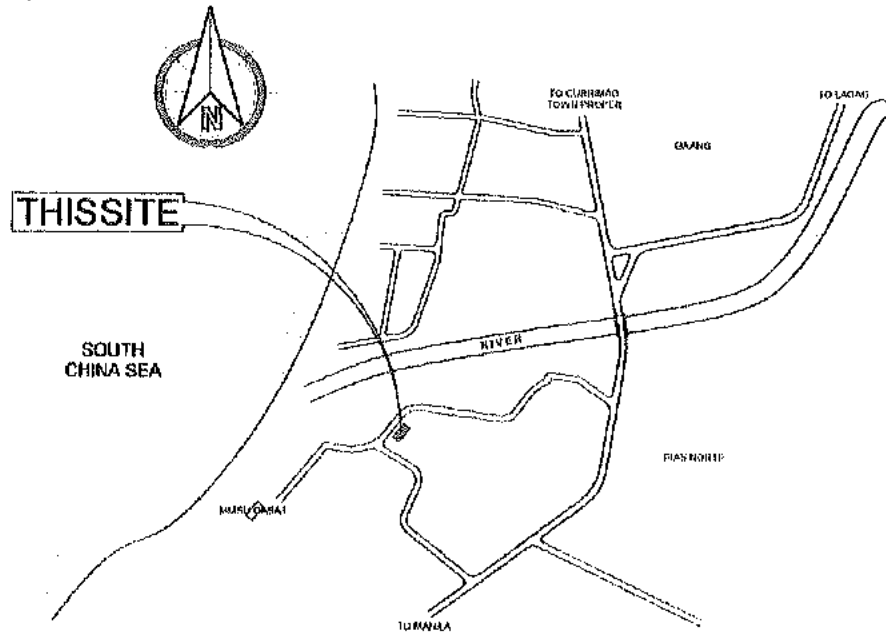
LOUNGE  
AREA

ACU LAYOUT PLAN  
SCALE 1:100m

Air-Conditioning Unit Schedule												
Designation	Description	Qty	Cooling Capacity				HP	V/hz/ph	I [Amp]	Rated Power Input [KW]	Full Load Current [Amp]	Ampacity, Iw [Amp]
			KW	Btu/h	KJ/h	TR						
ACU 1	Wall Mounted Split Type Variable Frequency Drive Type (Inverter)	2	5.3	18,000	18,990	1.5	2.0	220/60/1	6.8	1.49	9.4	11.77

SCHEDULE OF EQUIPMENT

	DRAWN BY:  <b>BJAY A. DAYANG</b> DRAFTSMAN I	PROJECT TITLE: <b>CAFSD - DINGRAS CENTER FOR FLEXIBLE LEARNING HUB</b>	CONFORME:  <b>JOCELYN A. BERNABE</b> PROJECT COORDINATOR, CAFSD-DINGRAS	 <b>SOSIMA R. DEMANDANTE</b> DEAN, CAFSD	SHEET CONTENT: As Shown	SHEET NO:
	PREPARED BY:  <b>DENNIS GLYDE G. ACANTILADO</b> MECHANICAL ENGINEER	LOCATION: MMSU-CAFSD, DINGRAS, ILOCOS NORTE CHECKED/REVIEWED BY:  <b>AIDA V. CABANA</b> ARCHITECT IV, CHIEF PHYSICAL PLANNING SECTION	RECOMMENDING APPROVAL:  <b>ROMEO R. DULULAO</b> DIRECTOR, PPDO	APPROVED BY:  <b>SHIRLEY C. AGUIRIS</b> UNIVERSITY PRESIDENT		



1 LOCATION MAP

**COOLING LOAD, VENTILATION & INFILTRATION CALCULATION NOTES:**

**Design Consideration**  
 [DATA FROM 2017 ASHRAE HANDBOOK FUNDAMENTALS]  
 MONTH = JANUARY - DECEMBER  
 TIME OF DAY = 8:00 am to 5:00 pm (Typical Office Operating Time)  
 LOCATION: LAGAN CITY, PHILIPPINES  
 18.178° NORTH LATITUDE  
 120.512° EAST LONGITUDE  
 ELEVATION = 9.00m  
 STANDARD AIR PRESSURE = 101.25 kPa  
 AVERAGE ANNUAL WIND SPEED = 2.7 m/s  
 NUMBER OF ZONES: 4  
 SPACE / ZONE DESIGN CONDITION = 24°C DB @ 60% RH AND 0.0074 kg moisture / kg dry air

**BUILDING TYPE = NON-RESIDENTIAL**  
**Wall Coefficient of Heat Transfer (U<sub>wall</sub>)**  
 U<sub>wall</sub> = 4" PLASTER + 8" CMH + 1" PLASTER  
 R<sub>wall</sub> = 0.056 m<sup>2</sup> K/W + 0.443 m<sup>2</sup> K/W + 0.056 m<sup>2</sup> K/W = 0.555 m<sup>2</sup> K/W  
 Consider outside air and inside air resistance:  
 R<sub>o</sub> = 0.04 m<sup>2</sup> K/W (outside air resistance)  
 R<sub>i</sub> = 0.18 m<sup>2</sup> K/W (inside air resistance)  
 Total R<sub>wall</sub> = 0.04 + 0.555 + 0.18 = 0.775 m<sup>2</sup> K/W  
 U<sub>wall</sub> = 1 / R<sub>wall</sub> = 1 / 0.775 = 1.29 W / m<sup>2</sup> K

**Roof Coefficient of Heat Transfer (U<sub>roof</sub>)**  
 U<sub>roof</sub> = RIBBED TYPE WITH 25cm INSULATION + 14" Cement BOARD or HARDIPLK  
 R<sub>roof</sub> = 0.04 m<sup>2</sup> K/W + 0.06 m<sup>2</sup> K/W + 0.98 m<sup>2</sup> K/W  
 Consider outside air, inside air and air space resistance:  
 R<sub>o</sub> = 0.04 m<sup>2</sup> K/W (outside air resistance)  
 R<sub>s</sub> = 0.92 m<sup>2</sup> K/W (air space resistance)  
 R<sub>i</sub> = 0.18 m<sup>2</sup> K/W (inside air resistance)  
 Total R<sub>roof</sub> = 0.04 + 0.92 + 0.06 + 0.18 = 1.20 m<sup>2</sup> K/W  
 U<sub>roof</sub> = 1 / R<sub>roof</sub> = 1 / 1.20 = 0.83 W / m<sup>2</sup> K

**Door Coefficient of Heat Transfer (U<sub>door</sub>)**  
 U<sub>door</sub> = 2" WOODEN HARD DOOR  
 R<sub>door</sub> = 0.315 m<sup>2</sup> K/W  
 Total R<sub>door</sub> = 0.04 + 0.315 + 0.18 = 0.535 m<sup>2</sup> K/W  
 U<sub>door</sub> = 1 / R<sub>door</sub> = 1 / 0.535 = 1.87 W / m<sup>2</sup> K

**Window Glass Coefficient of Heat Transfer (U<sub>glass</sub>)**  
 U<sub>glass</sub> = SINGLE GLASS, NO SYSTEM BARS, LOW EMITANCE COATING, WITH INDOOR SHADE  
 U<sub>glass</sub> = 5.005 W / m<sup>2</sup> K (No storm wall, no shade)  
 U<sub>glass</sub> = 4.506 W / m<sup>2</sup> K (No storm wall, indoor shade)  
 Shading Coefficient = 0.23  
 COLOR ADJUSTMENT FACTOR = 1.0  
 F-VALUE = 1.0

**INFILTRATION AND VENTILATION**  
 INFILTRATION RATE WAS BASED FROM THE AIR EXCHANGE RATE FOR RESIDENTIAL BUILDING, INFILTRATION RATE CAN BE NEGLECTED IF THE SPACE IS ALWAYS POSITIVE PRESSURE AND FAN IS ALWAYS ON, INFILTRATION AND LEAKAGE IS HIGH IF THE BUILDING IS OLD AT THE SAME TIME OUTSIDE WIND VELOCITY IS HIGH.  
 VENTILATION RATE WAS BASED FROM ASHRAE STANDARD 62-2010 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY. COOLING LOAD DUE TO VENTILATION WAS NEGLECTED SINCE THERE IS NO OUTSIDE AIR INTRODUCED TO THE ZONES.

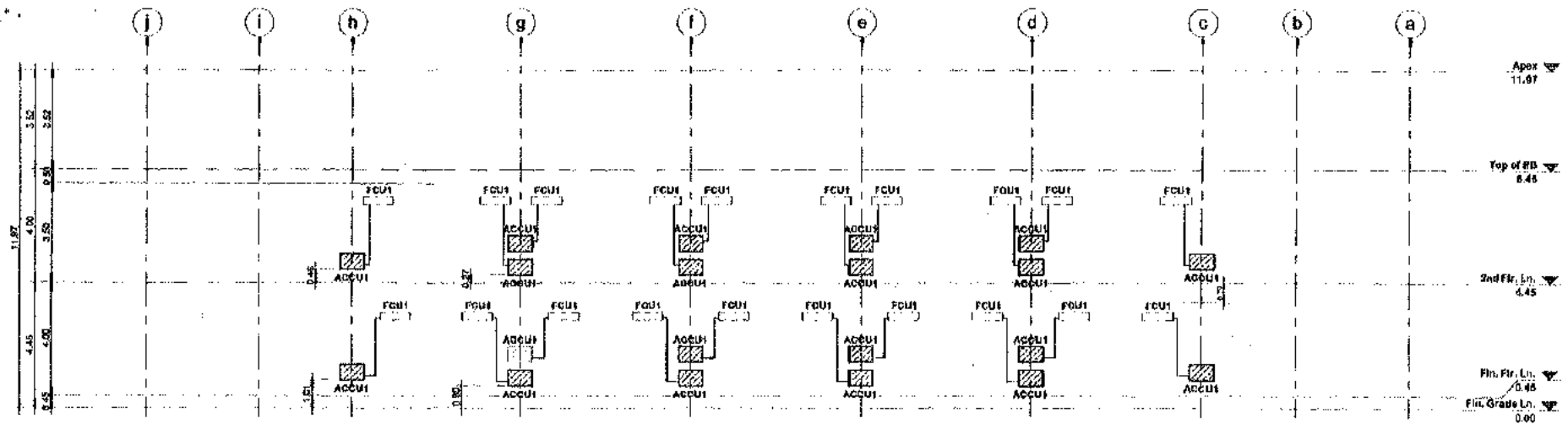
Designation	Location	Quantity	Description	Cooling Capacity					Voltage	I (Amp)	Rated Power Input (kW)	Full Load Current (Amp)	Frequency (Hz)	Ambient Air Temp	Model No. and Size
				RT	kW	TR	TR	TR							
ACU 1	Ground Floor: Laboratory Room and Conference Room Second Floor: Classroom 1, Classroom 2, Classroom 3, Classroom 4 and Faculty Room 3rd Floor	20	Split Type - WATER COOLED VERTICAL INDOOR UNIT (VRF) WHO OPERATE AT THE SOURCE OF POWER THROUGH DEDICATED LINE, INDOOR UNIT TYPE: - PLASTER BOARD - TILE WALLS - WALL TOPS - PLASTER CEILING	0.99	10.400	35.140	174	7.0	230/0/1	0.2	1.42	0.6	50.00	20	20 - 24" (H)

2 EQUIPMENT OF SCHEDULE

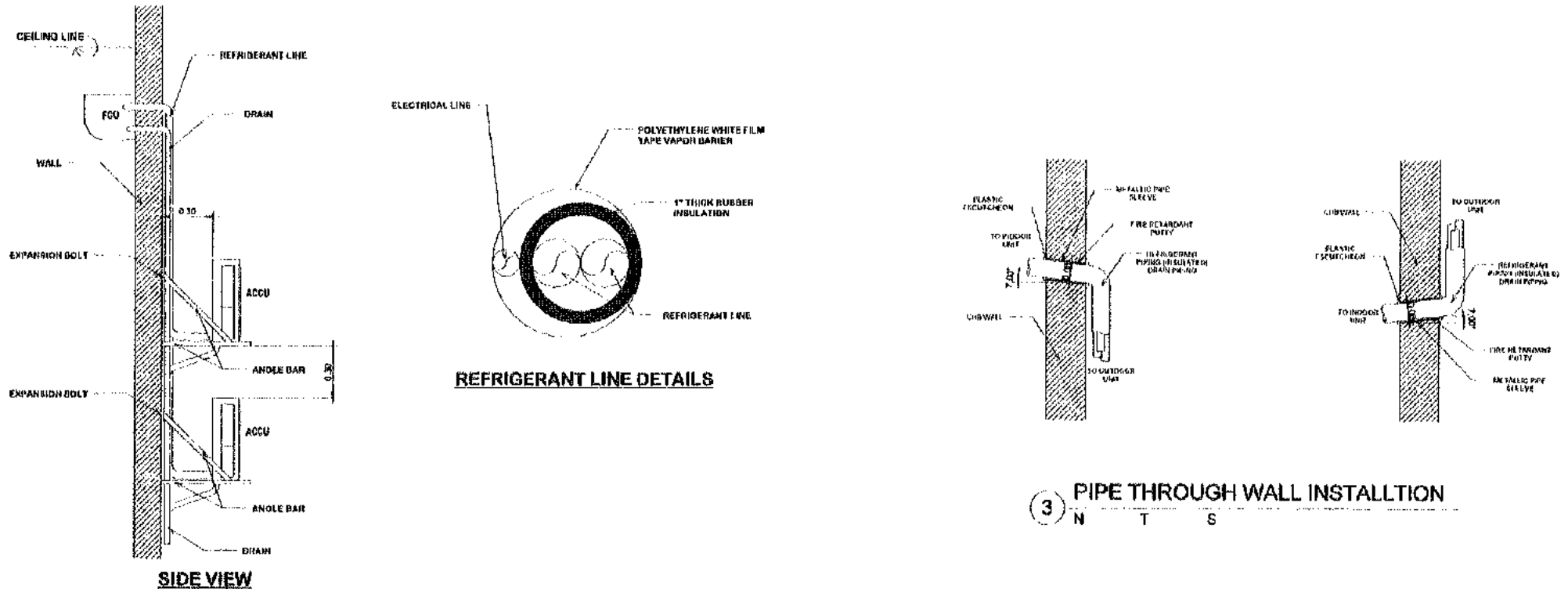
<p><b>PHYSICAL PLANNING AND DEVELOPMENT OFFICE</b>          87 JOY ANIMATED AVENUE (865) MARICORINA CITY UNIVERSITY          6110 SPANGLAN, TAGAYAYAN CITY          (02) 8769 1000 / 8769 1001</p>	FORM NO. 07 (REV. 1) DRAWN BY: <i>[Signature]</i> PREPARED BY: <i>[Signature]</i> CHECKED BY: <i>[Signature]</i> DATE: _____	SIGNED & SEALED BY: _____ SPECIAL SUPERVISOR (PPDO) DATE: _____ PLACE: TAGAYAYAN CITY	PROJECT TITLE: <b>CASAT CENTER FOR FLEXIBLE LEARNING HUB</b> LOCATION: INFU CASAT - CURRANAD, BOODS NORTH	COMPOSE: <i>[Signature]</i> RECOMMENDED APPROVAL: <i>[Signature]</i> DATE: _____	APPROVED BY: <i>[Signature]</i> DATE: _____	SHEET CONTENTS: _____	SHEET NO.: <b>M-1</b>
	<p>NOTES: 1. All dimensions are in millimeters unless otherwise specified. 2. All materials shall be of standard quality. 3. All work shall be done in accordance with the latest specifications of the Department of Public Works and Highways (DPWH) and the Bureau of Fire Protection (BFP). 4. The contractor shall be responsible for obtaining all necessary permits and clearances. 5. The contractor shall maintain access to all existing utilities and structures. 6. The contractor shall submit a copy of the as-built drawings to the PPDO upon completion of the project.</p>						







1 REAR ELEVATION  
1:100 meters

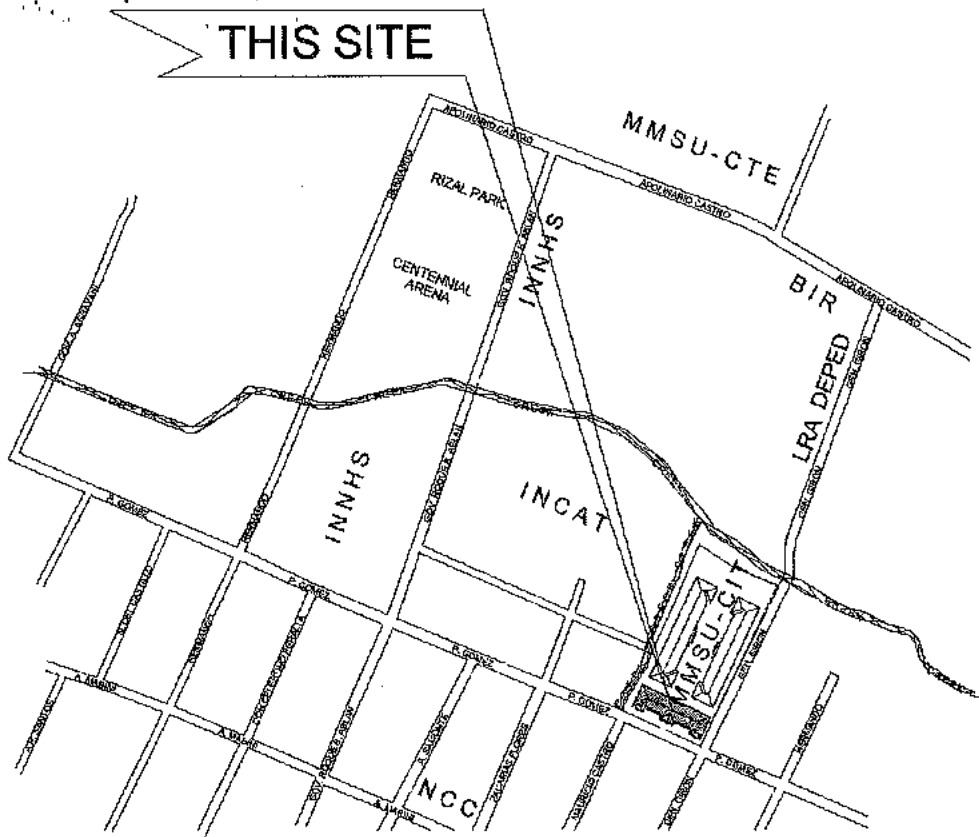


2 AIR-CONDITIONING UNIT DETAIL  
N T S

3 PIPE THROUGH WALL INSTALLTION  
N T S

	FROM THE OFFICE: <b>PHYSICAL PLANNING AND DEVELOPMENT OFFICE</b> <small>IN STRATEGIC PLANNING AND DEVELOPMENT DIVISION, UNIVERSITY OF THE PHILIPPINES - DILIGEN</small>	DESIGNED BY: 	CHECKED & COLORED BY: 	PROJECT TITLE: <b>CANAL CENTER FOR FLEXIBLE LEARNING HUB</b>	COMPOSED BY: 	APPROVED BY: 	SHEET CONTENTS: 	SHEET NO.: 
	DRAWING NO.: 	DATE: 	LOCATION: MMAN CAGAY - CUBANIGAO, BUEGG'S NORTH	RECOMMENDED APPROVAL: 	REVISIONS: 			

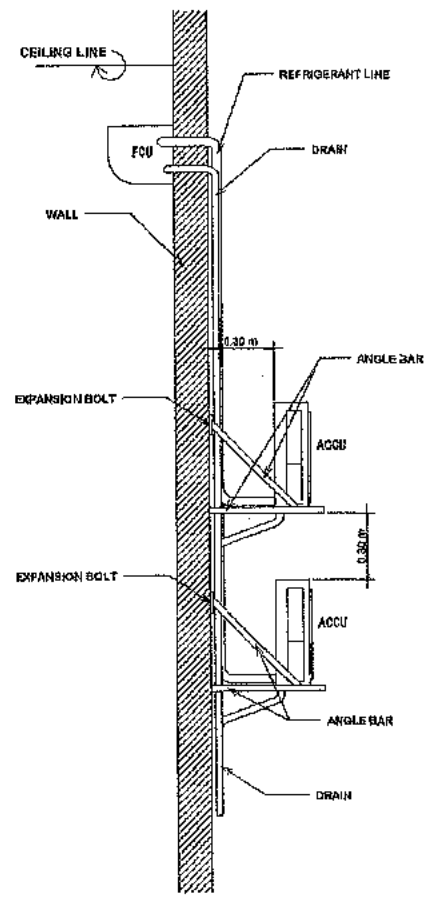
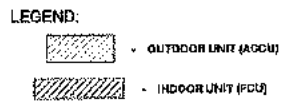




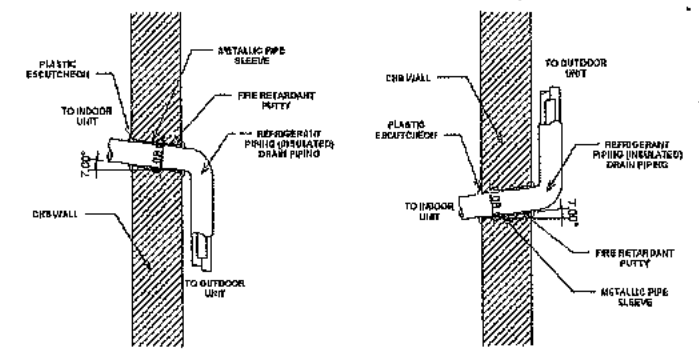
1 LOCATION MAP

Level	Floor	Room	Model / Type	Qty	Model Capacity Rated	Wh/whl	Rated Capacity (kW)	Rated Power Input (kW)
1	Ground	Director's Office, Guidance Office, Secretary's Office & ARCCUP Office	ELECTROLUX Wall Mounted Split Type	5	10,000 BTUH (2,930 W)	220/60/1	12	2,500
2	Ground	Center's Office	TOSHIBA Wall Mounted Split Type	1	10,000 BTUH (2,930 W)	220/60/1	4	1,845
3	Ground	Registrar's Office	HYUNDAI Wall Mounted Split Type	1	10,000 BTUH (2,930 W)	220/60/1	12	2,645
4	Ground	OT Office	TOSHIBA Wall Mounted Split Type	1	20,000 BTUH (5,860 W)	230/60/1	20	4,100
5	Ground	Filing Office	DAIKIN Wall Mounted Split Type	1	11,000 BTUH (3,200 W)	230/60/1	3	750
6	Second	Faculty Room	MSZ Wall Mounted Split Type	4	4,000	220/60/1	8	1,700
7	Second	Audio Visual Room & Multipurpose Hall	WALL MOUNTED SPLIT TYPE	4	20,000 BTUH (5,860 W)	230/60/1	20	4,100
8	Second	Storage Room	WALL MOUNTED SPLIT TYPE	1	10,000 BTUH (2,930 W)	220/60/1	-	-

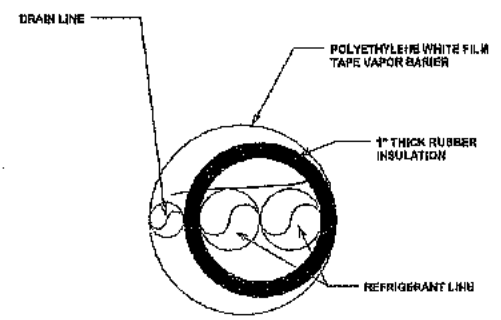
2 SCHEDULE OF EQUIPMENT



SIDE VIEW



4 PIPE THROUGH WALL INSTALLATION





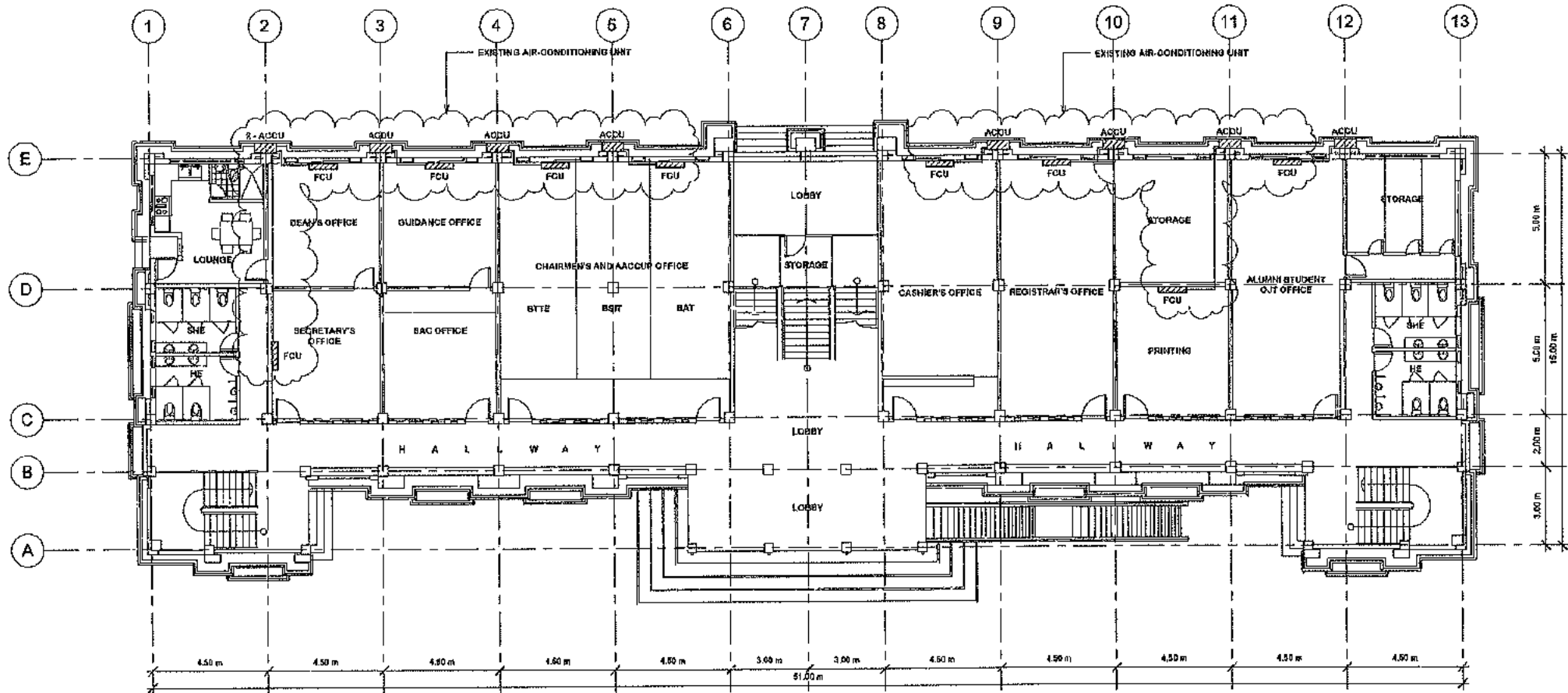
REFRIGERANT LINE DETAILS

3 AIR-CONDITIONING UNIT DETAIL

<p><b>PHYSICAL PLANNING AND DEVELOPMENT OFFICE</b> 17 DELA ROSA CORRALA ST., SUITE 201, MARIKINA CITY CITY OF MARIKINA, METRO MANILA TELEPHONE NO. 87771311</p>	<p>DRAWN BY: <i>[Signature]</i></p> <p>PREPARED BY: <i>[Signature]</i></p> <p>APPROVED BY: <i>[Signature]</i></p>	<p>DESIGNED &amp; SEALED BY: <i>[Signature]</i></p> <p>PROFESSIONAL ENGINEER</p> <p>REGISTERED</p> <p>DATE: _____</p> <p>NO. _____</p>	<p>PROJECT TITLE: <b>CPT CENTER FOR FLEXIBLE LEARNING HUB</b></p> <p>LOCATION: MMSU-CTE, LAGUNA CITY, LAGUNA</p>	<p>CONFORMS: <i>[Signature]</i></p> <p>RECOMMENDING APPROVAL: <i>[Signature]</i></p>	<p>APPROVED BY: <i>[Signature]</i></p>	<p>SHEET COMMENT: USE THIS MAP SCHEDULE OF EQUIPMENT AIR-CONDITIONING UNIT DETAIL PIPE THROUGH WALL INSTALLATION</p>	<p>SHEET NO: <b>M-1</b> 1/3</p>
---	---	--	--	--	--	--	-------------------------------------

LEGEND:



-  - OUTDOOR UNIT (ACCU)
-  - INDOOR UNIT (FCU)

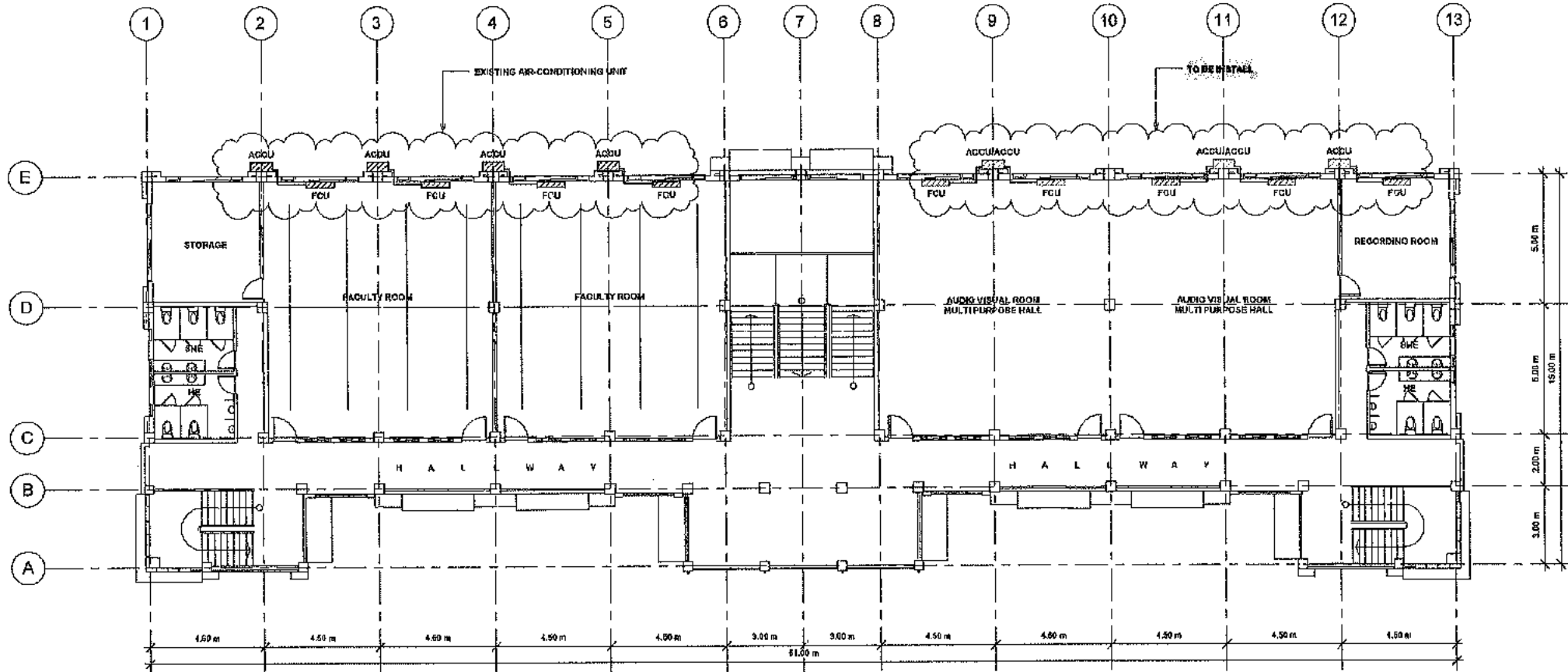


① GROUND FLOOR ACU LAYOUT PLAN  
1:100 meters


	FROM THE OFFICE: <b>PHYSICAL PLANNING AND DEVELOPMENT OFFICE</b> <small>24 330 ADMINISTRATION BLDG. MAHDIYAH OFFICE - STRADIVARI BLDG                  OFFICE BUILDING, TOWER BLDG. WARD                  TEL/FAX: +965 22999319</small>	DRAWN BY:  PREPARED BY:  DESIGN LEAD & ARCHITECTURE MEMBER	SIGNED & SEALED BY: PROFESSIONAL TECHNICAL EXPERT PHOTO: SEAL: SIGNATURE: DATE:	PROJECT TITLE: <b>OFF CENTER FOR FLEXIBLE LEARNING HUB</b> LOCATION: <b>MASRU OFF - LAJUNA QTR, ILQOOS NORTH</b>	CONFORMED:  RECOMMENDING APPROVAL: 	APPROVED BY:  SULEYMAN AL-SAYED MEMBER PRESIDENT	SHEET CONTAINS: GROUND FLOOR ACU LAYOUT PLAN	SHEET NO.: M-2 2 / 3
	<small>Design and construction of this system is subject to the approval of the relevant authorities. The user of this system is responsible for its safe and proper use. The user of this system is responsible for its safe and proper use. The user of this system is responsible for its safe and proper use.</small>							

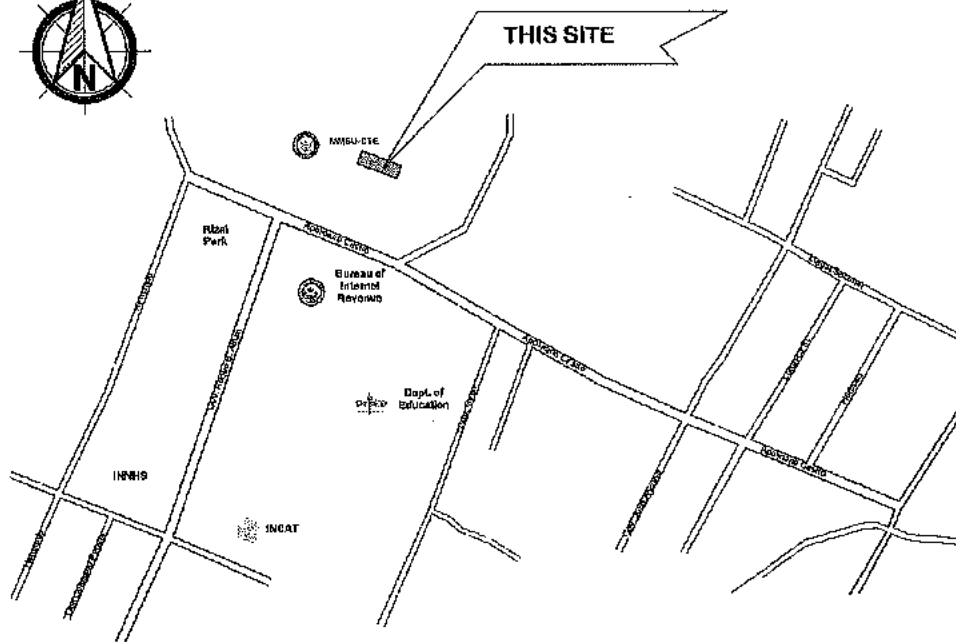
LEGEND:

-  - OUTDOOR UNIT (ACDU)
-  - INDOOR UNIT (FCU)



① SECOND FLOOR ACU LAYOUT PLAN  
1:100 meters

	FROM THE OFFICE: <b>PHYSICAL PLANNING AND DEVELOPMENT OFFICE</b> <small>117, 118 AND 119, PHU THUAN ROAD, HO CHI MINH CITY DISTRICT 1, HO CHI MINH CITY                  CITY OF HO CHI MINH, HO CHI MINH PROVINCE                  TELEPHONE: 81 277 06 37 01</small>	DRAWN BY: PREPARED BY: CHECKED BY:	SIGNED & SEALED BY: PROJECT TITLE: LOCATION:	DATE FOR THE:	APPROVED BY: RECOMMENDED APPROVAL:	SHEET CONTAINS: SECOND FLOOR ACU LAYOUT PLAN	SHEET NO.: M-3 3   3
	PROJECT TITLE: <b>OIT CENTER FOR FLEXIBLE LEARNING HUB</b>	LOCATION: MMU OF - LAO MO CITY, LOGOS ROUTE	APPROVED BY: RECOMMENDED APPROVAL:	SHEET CONTAINS: SECOND FLOOR ACU LAYOUT PLAN	SHEET NO.: M-3 3   3		



1 LOCATION MAP

Air-Conditioning Unit Schedule													
Designation	Description	Location	Qty	Cooling Capacity				IPF	Wh/whp	I (Amps)	Total Power Input (KW)	Full Load Current (Amps)	Amperage for (kVA)
				RT	BTU/h	TR	TR						
ACU 1	ceiling suspended remote condenser Frequency Drive Type (Inverter)	Lounge Area As shown	2	16.1	31,268	31,240	2.9	4.0	226.601	13.0	2.68	10.8	23.03
ACU 2	Wall Mounted split Type Variable Frequency Drive Type (Inverter)	Conference Room As shown	1	4.5	10,498	10,154	1.3	1.3	226.601	8.6	1.49	5.4	11.77
ACU 3	Wall Mounted split Type Variable Frequency Drive Type (Inverter)	Office As shown	1	2.0	4,500	7,272	0.0	0.6	226.601	3.4	0.75	4.7	9.60

2 SCHEDULE OF EQUIPMENT

LEGEND:

- OUTDOOR UNIT (ACCU)
- INDOOR UNIT (FCU)

ABBREVIATION AND UNIT TAG

- ACU AIRCON UNIT
- FCU FAN COIL UNIT
- ACCU AIR-COLLED CONDENSING UNIT

NOTES

1. UNIT INSTALLATION MUST CONFORM TO THE MANUFACTURERS RECOMMENDATION AND ALL ENGINEERING/ARCHITECTURAL DESIGN REQUIRED BY NMBU.
2. REFRIGERANT AND CONDENSATE DRAINS TIPOU WALL MUST BE PROVIDED WITH SLEEVE OR SILICON/RUBBER PROTECTION.
3. CONDENSATE LINES FROM THE INDOOR UNITS MUST BE PROVIDED WITH MAIN DRAIN.
4. REFRIGERANT LINE MUST BE INSULATED WITH NO LESS 1" THICK RUBBER INSULATION. LIKEWISE, DRAINS MUST BE PROPERLY INSULATED.
5. INSTALLATION MUST CONFORM TO THE CODE AND THE NATIONAL BUILDING CODE. A MECHANICAL PERMIT SHOULD BE SECURED PRIOR TO INSTALLATION.
6. AIRCON INSTALLERS MUST BE DEALERS ACCREDITED TECHNICIANS TO INCLUDE ONE (1) YEAR MAINTENANCE.

COOLING LOAD, VENTILATION & INFILTRATION CALCULATION NOTES:

Design Consideration

[DATA FROM 2017 ASHRAE HANDBOOK FUNDAMENTALS]  
 MONTH = JANUARY - DECEMBER  
 TIME OF DAY = 0:00 am to 5:00 pm [Typical Office Operating Time]  
 LOCATION: LAGAO CITY, PHILIPPINES  
 16.178° NORTH LATITUDE,  
 120.632° EAST LONGITUDE  
 ELEVATION = 8.00m  
 STANDARD AIR PRESSURE = 101.33 KPa  
 AVERAGE ANNUAL WIND SPEED = 2.7 m/s  
 NUMBER OF ZONE: 4  
 SPACE / ZONE DESIGN CONDITION = 24°C DB @ 50% RH AND 0.0074 kg moisture / kg dry air

BUILDING TYPE = NON RESIDENTIAL  
 Wall Coefficient of Heat Transfer U<sub>Wall</sub>

U<sub>Wall</sub> = 1" PLASTER + 6" CMH + 1" PLASTER  
 $R_{wall} = 0.038 \text{ m}^2 \text{K/W} + 0.145 \text{ m}^2 \text{K/W} + 0.038 \text{ m}^2 \text{K/W} = 0.221 \text{ m}^2 \text{K/W}$   
 Consider outside air and inside air resistance:  
 $RO = 0.04 \text{ m}^2 \text{K/W}$  [outside air resistance]  
 $RI = 0.13 \text{ m}^2 \text{K/W}$  [inside air resistance]  
 Total R<sub>Wall</sub> = 0.04 + 0.221 + 0.13 = 0.391 m<sup>2</sup> K/W  
 U<sub>Wall</sub> = 1 / R<sub>Wall</sub> = 1 / 0.391 m<sup>2</sup> K/W = 2.56 W / m<sup>2</sup> K

Roof Coefficient of Heat Transfer U<sub>Roof</sub>  
 U<sub>Roof</sub> = RIBBED TYPE WITH 25mm INSULATION + 4" Cement BOARD or HARDENED

Roof = 0.92 m<sup>2</sup> K/W + 0.08 m<sup>2</sup> K/W = 0.80 m<sup>2</sup> K/W  
 Consider outside air, inside air and air space resistance:  
 $RO = 0.04 \text{ m}^2 \text{K/W}$  [outside air resistance]  
 $RS = 0.22 \text{ m}^2 \text{K/W}$  [air space resistance]  
 $RI = 0.13 \text{ m}^2 \text{K/W}$  [inside air resistance]  
 Total R<sub>Roof</sub> = 0.04 + 0.22 + 0.08 + 0.13 = 1.37 m<sup>2</sup> K/W  
 U<sub>Roof</sub> = 1 / R<sub>Roof</sub> = 1 / 1.37 m<sup>2</sup> K/W = 0.73 W / m<sup>2</sup> K

Door Coefficient of Heat Transfer U<sub>Door</sub>

U<sub>Door</sub> = 2" WOODEN HARD DOOR  
 $R_{door} = 0.316 \text{ m}^2 \text{K/W}$   
 Total R<sub>Door</sub> = 0.04 + 0.316 + 0.13 = 0.486 m<sup>2</sup> K/W  
 U<sub>Door</sub> = 1 / R<sub>Door</sub> = 1 / 0.486 = 2.06 W / m<sup>2</sup> K

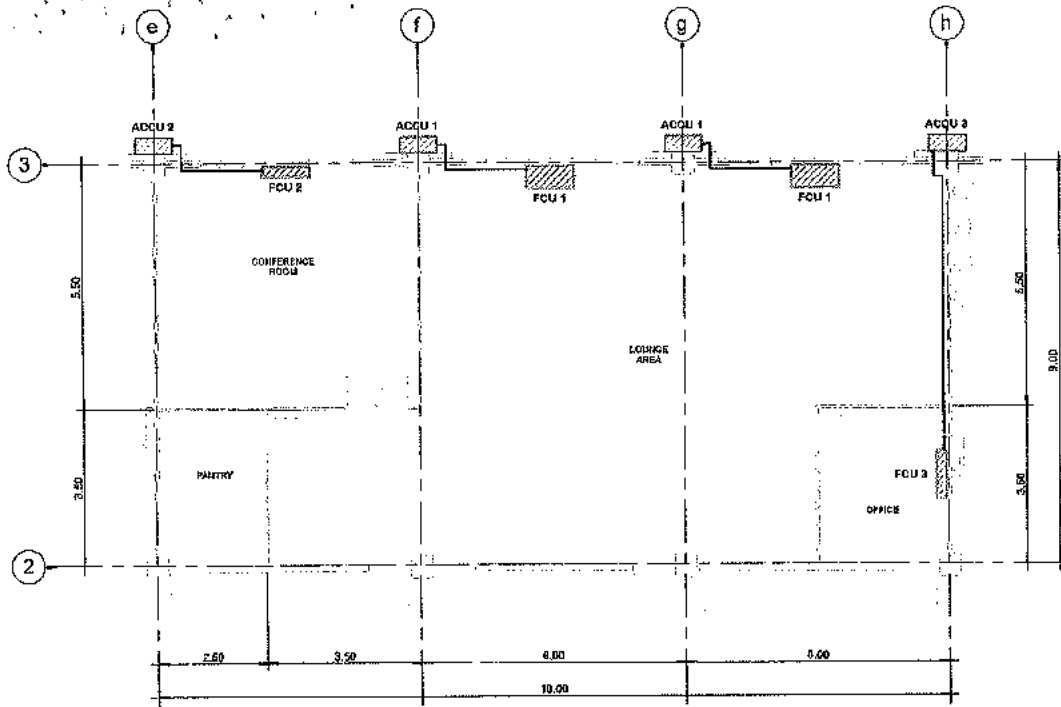
Window Glass Coefficient of Heat Transfer U<sub>glass</sub>

U<sub>glass</sub> = SINGLE GLASS, NO BIFORM GLASS, LOW EMITTANCE COATING, WITH INDOOR SHADE  
 $U_{glass} = 5.906 \text{ W/m}^2 \text{K}$  [no storm sash, no shade]  
 $U_{glass} = 4.998 \text{ W/m}^2 \text{K}$  [no storm sash, indoor shade]  
 Shading Coefficient = 0.23  
 COLOR ADJUSTMENT FACTOR = 1.0  
 F-YA<sub>UV</sub> = -1.0

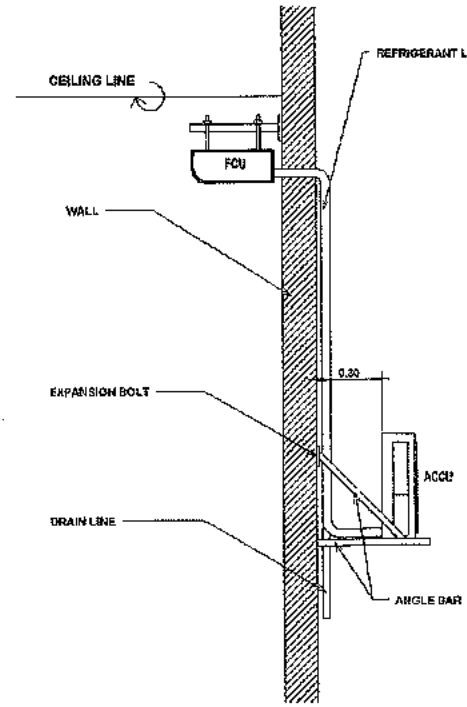
INFILTRATION AND VENTILATION  
 INFILTRATION RATE WAS BASED FROM THE AIR EXCHANGE RATE FOR RESIDENTIAL BUILDING, INFILTRATION RATE CAN BE NEGLECTED IF THIS SPACE IS ALWAYS POSITIVE PRESSURE AND FAN IS ALWAYS ON.  
 INFILTRATION AND LEAKAGE IS HIGH IF THE BUILDING IS CLD AT THE SAME TIME OUTSIDE WIND VELOCITY IS HIGH.  
 VENTILATION RATE WAS BASED FROM ASHRAE STANDARD 62-2010 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY. COOLING LOAD DUE TO VENTILATION WAS NEGLECTED SINCE THERE IS NO OUTSIDE AIR INTRODUCED TO THE ZONES.

3 GENERAL NOTES

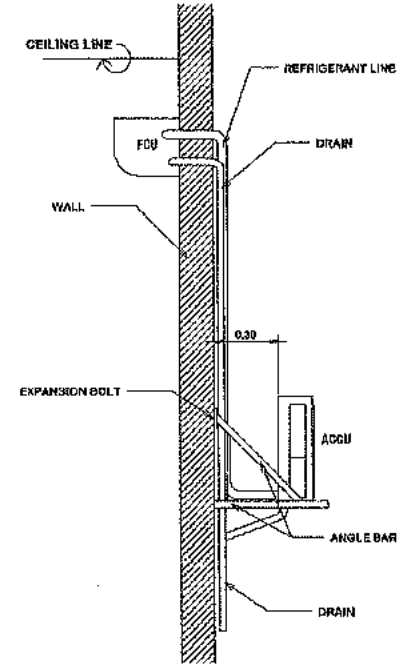
	FROM THE OFFICE:	DRAWN BY:	DESIGNED & CHECKED BY:	PROJECT TITLE:	COMPILED BY:	APPROVED BY:	SHEET CONTENTS:	SHEET NO.:
	<b>PHYSICAL PLANNING AND DEVELOPMENT OFFICE</b> <small>2F 278 10th Street corner of 41st Avenue, Quezon City, Metro Manila          CITY OF LAGAO, QUEZON PROVINCE          TEL: (02) 11791111</small>	 PREPARED BY: <b>ERIN S. ALDABLANO</b> <small>MECHANICAL ENGINEER</small>	 DESIGNED & CHECKED BY: <b>PROFESSOR/ARCHITECT/ENGINEER</b>	<b>CTE TYPED BUILDING CENTER FOR FLEXIBLE LEARNING HUB</b>	 COMPILED BY: <b>REYNOLD DELIBRADO</b> <small>CONTRACTOR</small>	 APPROVED BY: <b>REYNOLD DELIBRADO</b> <small>CONTRACTOR</small>	LOCATION MAP SCHEDULE OF EQUIPMENT GENERAL NOTES	M-1 1   2
PROJECT TITLE: <b>CTE TYPED BUILDING CENTER FOR FLEXIBLE LEARNING HUB</b>				LOCATION: <b>NMBU-CIE - LAGAO CITY, QUEZON PROVINCE</b>		SHEET CONTENTS:		



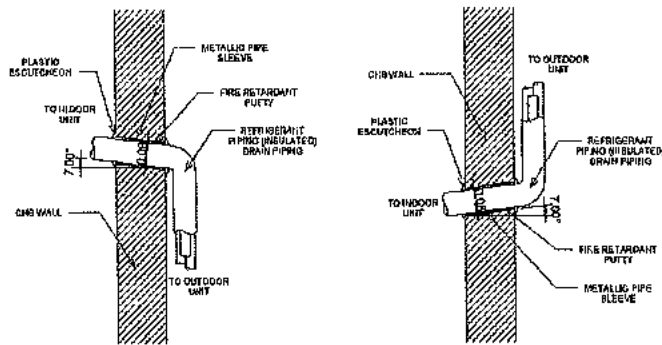
1 ACU LAYOUT PLAN  
1 : 75 meters



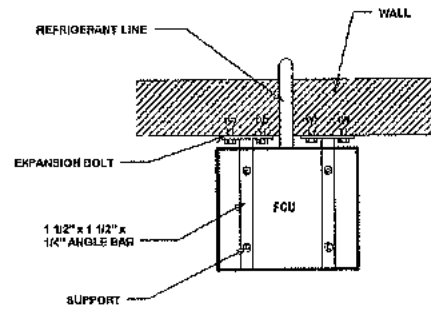
SIDE VIEW



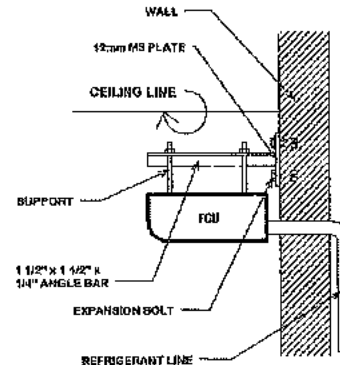
SIDE VIEW



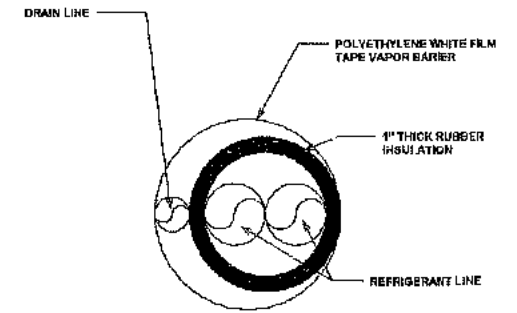
2 PIPE THROUGH WALL INSTALLTION  
N T S



PLAN VIEW



SECTION VIEW



REFRIGERANT LINE DETAILS

3 ACU DETAIL  
N T S



FROM THE OFFICE:  
**PHYSICAL PLANNING AND DEVELOPMENT OFFICE**  
BY: [Signature]  
PREPARED BY: [Signature]  
DESIGNED BY: [Signature]

DRAWN BY:  
[Signature]  
CHECKED BY: [Signature]

SIGNED & SEALED BY:  
[Signature]  
PROFESSIONAL MECHANICAL ENGINEER  
P.M.E.C.  
P.R.  
P.L.V. (S) (S)

PROJECT TITLE:  
**CTE TYPED BUILDING CENTER FOR FLEXIBLE LEARNING HUB**  
LOCATION: [Address]

CONFORM TO:  
[Signature]  
RECOMMENDED APPROVAL:  
[Signature]

APPROVED BY:  
[Signature]

SHEET CONTENTS:  
ACU LAYOUT PLAN  
PIPE THROUGH WALL INSTALLTION  
ACU DETAIL

SHEET NO:  
M-2  
2/2