PICC
Philippine International Convention Center

BIDS AND AWARDS COMMITTEE

Invitation to Bid for the Supply and Installation of VRV/VRF Multi-Split, Packaged Air Conditioners at the following Summit Halls G & H, North Wing Hall, East Wing Hall and Pantry 1, 2, & 4

1. The *Philippine International Convention Center (PICC)*, through the *Approved Budget for CY 2021* intends to apply the sum of **EIGHTEEN MILLION FIVE HUNDRED TWENTY-NINE THOUSAND THREE HUNDRED EIGHTY PESOS AND SIXTY-FIVE CENTAVOS (Php18,529,380.65), VAT Inclusive,** being the Approved Budget for the Contract (ABC) to payments under the contract for the **Supply and Installation of VRV/VRF Multi-Split, Packaged Air Conditioners at the following Summit Halls G & H, North Wing Hall, East Wing Hall and Pantry 1, 2, & 4 (PICC APP No. 2021-24)** . Bids received in excess of ABC shall be automatically rejected at bid opening.

2. The *PICC* now invites bids for the above Procurement Project. Completion of the Works is required within ***One Hundred Eighty (180) CALENDAR DAYS***. Bidders should have completed a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II (Instructions to Bidders).

3. Bidding will be conducted through open competitive bidding procedures using non-discretionary "*pass/fail*" criterion as specified in the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.

4. Prospective Bidders may obtain further information from the *PICC-BAC* and inspect the Bidding Documents at the address given below during office hours.

5. A complete set of Bidding Documents may be acquired by prospective bidders starting July 9, 2021 from the given address and website/s below *and upon payment of a non-refundable fee, in the amount of Thirteen Thousand Seven Hundred Fifty Pesos (Php13,750.00)*. The PICC shall allow the bidder to present its proof of payment for the fee *by furnishing the PICC-BAC a copy of the Official Receipt.*

6. The *PICC-BAC* will hold a Pre-Bid Conference on July 19, 2021, *at 11:00 a.m., Meeting Room 10, 3rd Floor, Delegation Building, PICC* and/or through videoconferencing/webcasting *via Zoom,* which shall be open to prospective bidders.

7. Bids must be duly received by the BAC Secretariat through manual submission at the office address as indicated below, on or before August 2, 2021, *at 10:30 a.m.* Late bids shall not be accepted.

8. All bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 15.

9. Bid opening shall be on August 2, 2021 *at 11:00 a.m.* at the given address below. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

10. The *PICC* reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Sections 35.6 and 41 of the 2016 revised Implementing Rules and Regulations (IRR) of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.

11. For further information, please refer to:

    BIDS AND AWARDS COMMITTEE (BAC)
    PHILIPPINE INTERNATIONAL CONVENTION CENTER
    PICC Complex, Pasay City 1307
    87894759 and 87894760
    Telefax No. 87894761
    Email: procurement@picc.gov.ph

12. You may visit the following websites:

    For downloading of Bidding Documents: *www.picc.gov.ph*

[Date of Issue]

MELPIN A. GONZAGA
Chairman

PHILIPPINE INTERNATIONAL CONVENTION CENTER

BIDDING DOCUMENTS
(INFRASTRUCTURE PROJECTS)

PROJECT TITLE : **SUPPLY AND INSTALLATION OF VRV/VRF MULTI-SPLIT, PACKAGED AIR CONDITIONERS AT THE SUMMIT HALLS G & H, NORTH WING HALL, EAST WING HALL AND PANTRY 1, 2, & 4**

ABC : **Php18,529,380.65**

Reference : **PICC APP2021-24**

ITB-2021
July 5, 2021

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Glossary of Terms, Abbreviations, and Acronyms

ABC – Approved Budget for the Contract.

ARCC – Allowable Range of Contract Cost.

BAC – Bids and Awards Committee.

Bid – A signed offer or proposal to undertake a contract submitted by a bidder in response to and in consonance with the requirements of the bidding documents. Also referred to as *Proposal* and *Tender*. (2016 revised IRR, Section 5[c])

Bidder – Refers to a contractor, manufacturer, supplier, distributor and/or consultant who submits a bid in response to the requirements of the Bidding Documents. (2016 revised IRR, Section 5[d])

Bidding Documents – The documents issued by the Procuring Entity as the bases for bids, furnishing all information necessary for a prospective bidder to prepare a bid for the Goods, Infrastructure Projects, and/or Consulting Services required by the Procuring Entity. (2016 revised IRR, Section 5[e])

BIR – Bureau of Internal Revenue.

BSP – Bangko Sentral ng Pilipinas.

CDA – Cooperative Development Authority.

Consulting Services – Refer to services for Infrastructure Projects and other types of projects or activities of the GOP requiring adequate external technical and professional expertise that are beyond the capability and/or capacity of the GOP to undertake such as, but not limited to: (i) advisory and review services; (ii) pre-investment or feasibility studies; (iii) design; (iv) construction supervision; (v) management and related services; and (vi) other technical services or special studies. (2016 revised IRR, Section 5[i])

Contract – Refers to the agreement entered into between the Procuring Entity and the Supplier or Manufacturer or Distributor or Service Provider for procurement of Goods and Services; Contractor for Procurement of Infrastructure Projects; or Consultant or Consulting Firm for Procurement of Consulting Services; as the case may be, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

Contractor – is a natural or juridical entity whose proposal was accepted by the Procuring Entity and to whom the Contract to execute the Work was awarded. Contractor as used in these Bidding Documents may likewise refer to a supplier, distributor, manufacturer, or consultant.

CPI – Consumer Price Index.

DOLE – Department of Labor and Employment.

DTI – Department of Trade and Industry.

Foreign-funded Procurement or Foreign-Assisted Project – Refers to procurement whose funding source is from a foreign government, foreign or international financing institution as specified in the Treaty or International or Executive Agreement. (2016 revised IRR, Section 5[b]).

GFI – Government Financial Institution.

GOCC – Government-owned and/or –controlled corporation.

Goods – Refer to all items, supplies, materials and general support services, except Consulting Services and Infrastructure Projects, which may be needed in the transaction of public businesses or in the pursuit of any government undertaking, project or activity, whether in the nature of equipment, furniture, stationery, materials for construction, or personal property of any kind, including non-personal or contractual services such as the repair and maintenance of equipment and furniture, as well as trucking, hauling, janitorial, security, and related or analogous services, as well as procurement of materials and supplies provided by the Procuring Entity for such services. The term "related" or "analogous services" shall include, but is not limited to, lease or purchase of office space, media advertisements, health maintenance services, and other services essential to the operation of the Procuring Entity. (2016 revised IRR, Section 5[r])

GOP – Government of the Philippines.

Infrastructure Projects – Include the construction, improvement, rehabilitation, demolition, repair, restoration or maintenance of roads and bridges, railways, airports, seaports, communication facilities, civil works components of information technology projects, irrigation, flood control and drainage, water supply, sanitation, sewerage and solid waste management systems, shore protection, energy/power and electrification facilities, national buildings, school buildings, hospital buildings, and other related construction projects of the government. Also referred to as *civil works or works*. (2016 revised IRR, Section 5[u])

LGUs – Local Government Units.

NFCC – Net Financial Contracting Capacity.

NGA – National Government Agency.

PCAB – Philippine Contractors Accreditation Board.

PhilGEPS - Philippine Government Electronic Procurement System.

Procurement Project – refers to a specific or identified procurement covering goods, infrastructure project or consulting services. A Procurement Project shall be described, detailed, and scheduled in the Project Procurement Management Plan prepared by the agency which shall be consolidated in the procuring entity's Annual Procurement Plan. (GPPB Circular No. 06-2019 dated 17 July 2019)

PSA – Philippine Statistics Authority.

SEC – Securities and Exchange Commission.

SLCC – Single Largest Completed Contract.

UN – United Nations.

Section I. Invitation to Bid

Section II. Instructions to Bidders

1. Scope of Bid

The Procuring Entity, ***Philippine International Convention Center*** invites Bids for the **Supply and Installation of VRV/VRF Multi-Split, Packaged Air Conditioners at the following Summit Halls G & H, North Wing Hall, East Wing Hall and Pantry 1, 2, & 4**, with Project Identification Number PICC APP No. 2021-24.

The Procurement Project (referred to herein as "Project") is for the construction of Works, as described in Section VI (Specifications).

2. Funding Information

2.1. The GOP through the source of funding as indicated below for *2021* in the amount of Php 18,529,380.65.

2.2. The source of funding is:

a. GOCC and GFIs, the Corporate Operating Budget.

3. Bidding Requirements

The Bidding for the Project shall be governed by all the provisions of RA No. 9184 and its 2016 revised IRR, including its Generic Procurement Manual and associated policies, rules and regulations as the primary source thereof, while the herein clauses shall serve as the secondary source thereof.

Any amendments made to the IRR and other GPPB issuances shall be applicable only to the ongoing posting, advertisement, or invitation to bid by the BAC through the issuance of a supplemental or bid bulletin.

The Bidder, by the act of submitting its Bid, shall be deemed to have inspected the site, determined the general characteristics of the contracted Works and the conditions for this Project, such as the location and the nature of the work; (b) climatic conditions; (c) transportation facilities; (c) nature and condition of the terrain, geological conditions at the site communication facilities, requirements, location and availability of construction aggregates and other materials, labor, water, electric power and access roads; and (d) other factors that may affect the cost, duration and execution or implementation of the contract, project, or work and examine all instructions, forms, terms, and project requirements in the Bidding Documents.

4. Corrupt, Fraudulent, Collusive, Coercive, and Obstructive Practices

The Procuring Entity, as well as the Bidders and Contractors, shall observe the highest standard of ethics during the procurement and execution of the contract. They or through an agent shall not engage in corrupt, fraudulent, collusive, coercive, and

obstructive practices defined under Annex "I" of the 2016 revised IRR of RA No. 9184 or other integrity violations in competing for the Project.

5. Eligible Bidders

5.1. Only Bids of Bidders found to be legally, technically, and financially capable will be evaluated.

5.2. The Bidder must have an experience of having completed a Single Largest Completed Contract (SLCC) that is similar to this Project, equivalent to at least fifty percent (50%) of the ABC adjusted, if necessary, by the Bidder to current prices using the PSA's CPI, except under conditions provided for in Section 23.4.2.4 of the 2016 revised IRR of RA No. 9184.

A contract is considered to be "similar" to the contract to be bid if it has the major categories of work stated in the **BDS**.

5.3. For Foreign-funded Procurement, the Procuring Entity and the foreign government/foreign or international financing institution may agree on another track record requirement, as specified in the Bidding Document prepared for this purpose.

5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.2 of the 2016 IRR of RA No. 9184.

6. Origin of Associated Goods

There is no restriction on the origin of Goods other than those prohibited by a decision of the UN Security Council taken under Chapter VII of the Charter of the UN.

7. Subcontracts

7.1. The Bidder may subcontract portions of the Project to the extent allowed by the Procuring Entity as stated herein, but in no case more than fifty percent (50%) of the Project.

The Procuring Entity has prescribed that:

a. Subcontracting is not allowed.

7.1. *[If Procuring Entity has determined that subcontracting is allowed during the bidding , state:]* The Bidder must submit together with its Bid the documentary requirements of the subcontractor(s) complying with the eligibility criteria stated in **ITB** Clause 5 in accordance with Section 23.4 of the 2016 revised IRR of RA No. 9184 pursuant to Section 23.1 thereof.

7.2. *[If subcontracting is allowed during the contract implementation stage, state:]* The Supplier may identify its subcontractor during the contract implementation stage. Subcontractors identified during the bidding may be changed during the implementation of this Contract. Subcontractors must submit the documentary

requirements under Section 23.1 of the 2016 revised IRR of RA No. 9184 and comply with the eligibility criteria specified in **ITB** Clause 5 to the implementing or end-user unit.

7.3. Subcontracting of any portion of the Project does not relieve the Contractor of any liability or obligation under the Contract. The Supplier will be responsible for the acts, defaults, and negligence of any subcontractor, its agents, servants, or workmen as fully as if these were the Contractor's own acts, defaults, or negligence, or those of its agents, servants, or workmen.

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address and/or through videoconferencing/webcasting as indicated in paragraph 6 of the **IB.**

9. Clarification and Amendment of Bidding Documents

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the **IB**, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

10. Documents Comprising the Bid: Eligibility and Technical Components

10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.

10.2. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which shall be authenticated by the appropriate Philippine foreign service establishment, post, or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. For Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.

10.3. A valid PCAB License is required, and in case of joint ventures, a valid special PCAB License, and registration for the type and cost of the contract for this Project. Any additional type of Contractor license or permit shall be indicated in the **BDS**.

10.4. A List of Contractor's key personnel (e.g., Project Manager, Project Engineers, Materials Engineers, and Foremen) assigned to the contract to be bid, with their complete qualification and experience data shall be provided. These key personnel must meet the required minimum years of experience set in the **BDS**.

10.5. A List of Contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership, certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be, must meet the minimum requirements for the contract set in the **BDS**.

11. Documents Comprising the Bid: Financial Component

11.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.

11.2. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.

11.3. For Foreign-funded procurement, a ceiling may be applied to bid prices provided the conditions are met under Section 31.2 of the 2016 revised IRR of RA No. 9184.

12. Alternative Bids

Bidders shall submit offers that comply with the requirements of the Bidding Documents, including the basic technical design as indicated in the drawings and specifications. Unless there is a value engineering clause in the **BDS**, alternative Bids shall not be accepted.

13. Bid Prices

All bid prices for the given scope of work in the Project as awarded shall be considered as fixed prices, and therefore not subject to price escalation during contract implementation, except under extraordinary circumstances as determined by the NEDA and approved by the GPPB pursuant to the revised Guidelines for Contract Price Escalation guidelines.

14. Bid and Payment Currencies

14.1. Bid prices may be quoted in the local currency or tradeable currency accepted by the BSP at the discretion of the Bidder. However, for purposes of bid evaluation, Bids denominated in foreign currencies shall be converted to Philippine currency based on the exchange rate as published in the BSP reference rate bulletin on the day of the bid opening.

14.2. *Payment of the contract price shall be made in* Philippine Pesos.

15. Bid Security

15.1. The Bidder shall submit a Bid Securing Declaration or any form of Bid Security in the amount indicated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the schedule in the **BDS**.

15.2. The Bid and bid security shall be valid one hundred twenty (120) calendar days from the date of opening of bids. Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

16. Sealing and Marking of Bids

Each Bidder shall submit one copy of the first and second components of its Bid.

The Procuring Entity may request additional hard copies and/or electronic copies of the Bid. However, failure of the Bidders to comply with the said request shall not be a ground for disqualification.

If the Procuring Entity allows the submission of bids through online submission to the given website or any other electronic means, the Bidder shall submit an electronic copy of its Bid, which must be digitally signed. An electronic copy that cannot be opened or is corrupted shall be considered non-responsive and, thus, automatically disqualified.

17. Deadline for Submission of Bids

The Bidders shall submit on the specified date and time and either at its physical address or through online submission as indicated in paragraph 7 of the **IB.**

18. Opening and Preliminary Examination of Bids

18.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 9 of the **IB.** The Bidders' representatives who are present shall sign a register evidencing their attendance. In case videoconferencing, webcasting or other similar technologies will be used, attendance of participants shall likewise be recorded by the BAC Secretariat.

In case the Bids cannot be opened as scheduled due to justifiable reasons, the rescheduling requirements under Section 29 of the 2016 revised IRR of RA No. 9184 shall prevail.

18.2. The preliminary examination of Bids shall be governed by Section 30 of the 2016 revised IRR of RA No. 9184.

19. Detailed Evaluation and Comparison of Bids

19.1. The Procuring Entity's BAC shall immediately conduct a detailed evaluation of all Bids rated "*passed*" using non-discretionary pass/fail criteria. The BAC shall consider the conditions in the evaluation of Bids under Section 32.2 of 2016 revised IRR of RA No. 9184.

19.2. If the Project allows partial bids, all Bids and combinations of Bids as indicated in the **BDS** shall be received by the same deadline and opened and evaluated simultaneously so as to determine the Bid or combination of Bids offering the

lowest calculated cost to the Procuring Entity. Bid Security as required by **ITB** Clause 16 shall be submitted for each contract (lot) separately.

19.3. In all cases, the NFCC computation pursuant to Section 23.4.2.6 of the 2016 revised IRR of RA No. 9184 must be sufficient for the total of the ABCs for all the lots participated in by the prospective Bidder.

20. Post Qualification

Within a non-extendible period of five (5) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and Payment System (eFPS), and other appropriate licenses and permits required by law and stated in the **BDS**.

21. Signing of the Contract

The documents required in Section 37.2 of the 2016 revised IRR of RA No. 9184 shall form part of the Contract. Additional Contract documents are indicated in the **BDS**.

Section III. Bid Data Sheet

Bid Data Sheet

<table>
<tr><th>ITB Clause</th><th></th></tr>
<tr><td>5.2</td><td>The Bidder must have completed within three (3) years from the date of bidding, a single contract that is similar to this requirement, the amount of which shall be at least fifty percent (50%) of the ABC.

For this purpose, contracts similar to the Project refer to supply and installation or repair and maintenance of Packaged Air-conditioning Units (PACUs) or Multi-Split Variable Refrigerant Volume/Variable Refrigerant Flow (VRV/VRF) Inverter-type Packaged Air Conditioners.</td></tr>
<tr><td>7.1</td><td>Subcontracting is not allowed.</td></tr>
<tr><td>10.3</td><td>The Contractor shall be PCAB licensed with a classification of category "B" – with size range of at least Medium A in Air-conditioning and Refrigeration Works.</td></tr>
<tr><td>10.4</td><td>The key personnel must meet the required minimum years of experience set below:

<table>
<tr><th>Key Personnel</th><th>General Experience</th></tr>
<tr><td>Site Mechanical Engineer
Must be a licensed Mechanical Engineer</td><td>With at least 5 years work experience in HVAC installation, testing & commissioning</td></tr>
<tr><td>Site Mechanical Foreman
Mechanical or any Engineering Course undergraduate or Vocational Graduate of AC Technology</td><td>With at least 5 years work experience in supervising of HVAC installation, testing & commissioning</td></tr>
<tr><td>Site Mechanical Leadman
Vocational Graduate or Undergraduate of AC Technology</td><td>With at least 3 years work experience in supervising of HVAC installation, testing & commissioning</td></tr>
<tr><td>Safety Officer</td><td>Must have at least two (2) - years work experience as Safety Officer or has undergone at least forty (40) hours of Basic Occupational Safety and Health (BOSH)/Construction Occupational Safety and Health training by Occupational Safety and Health Authority (OSHA) and/or any DOLE-accredited Training Centers.</td></tr>
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<table>
<tr><td>10.5</td><td>The minimum major equipment requirements are the following:

<table>
<tr><th>Item No.</th><th>Number of units required</th><th>Description of Equipment</th></tr>
<tr><td>1</td><td>2</td><td>Welding Machine</td></tr>
<tr><td>2</td><td>2</td><td>Oxygen Tanks</td></tr>
<tr><td>3</td><td>2</td><td>Nitrogen Tanks</td></tr>
<tr><td>4</td><td>2</td><td>Oxy-acetylene cutting/welding outfits (complete set)</td></tr>
<tr><td>5</td><td>2</td><td>Acetylene tanks</td></tr>
<tr><td>6</td><td>3</td><td>Mapp Gas Torch</td></tr>
<tr><td>7</td><td>2</td><td>Air Vacuum Pump</td></tr>
<tr><td>8</td><td>2</td><td>Refrigerant Testing/Charging Gauge Manifolds</td></tr>
<tr><td>9</td><td>2</td><td>Refrigerant Weighing Scale</td></tr>
<tr><td>10</td><td>3</td><td>Drilling Machine (Power Tools)</td></tr>
<tr><td>11</td><td>3</td><td>Grinding Machine (Power Tools)</td></tr>
</table></td></tr>
<tr><td>12</td><td>Not applicable.</td></tr>
<tr><td>15.1</td><td>The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts:
a. The amount of not less than ₱370,587.61 if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit;
b. The amount of not less than ₱926,469.03, if bid security is in Surety Bond</td></tr>
<tr><td>15.2</td><td>The bid security shall be valid until One Hundred Twenty (120) calendar days from the date of submission and opening of bids.</td></tr>
<tr><td>16</td><td>Sealing and Marking of Bids

Each Bidder shall submit the original and one (1) copy of the first and second components of its Bid.</td></tr>
<tr><td>19.2</td><td>Not Applicable.</td></tr>
<tr><td>19.3</td><td>Total ABC is EIGHTEEN MILLION FIVE HUNDRED TWENTY-NINE THOUSAND THREE HUNDRED EIGHTY PESOS AND SIXTY-FIVE CENTAVOS (₱18,529,380.65), VAT Inclusive.</td></tr>
</table>

20	Within a non-extendible period of five (5) calendar days from receipt of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit the following; 1. 2020 Income and Business Tax returns filed and paid through Electronic Filing and Payment System (eFPS). 2. Sections III and V of the Bid Documents, signed on each and every page by the bidder's authorized representative; 3. Company profile with organizational chart and sketch of office location; 4. Resume of key personnel who will be assigned to the project; 5. Detailed Equipment Design Capacity and Distribution Plan (Schedule of Equipment) in tabulation format as shown in Table 1. Use standard long-size bond paper only; 6. Detailed Cluster System Design and Equipment Schedules (improve tabulation format based on Sample Table 2). Use standard long-size bond paper only; 7. Certificate of authorized distributorship and service contractor for at least two (2) years signed by equipment manufacturer or by exclusive/main distributor in the case of sub-dealer/distributor; 8. Certification from manufacturer that the equipment to be installed is compliant to environmental Directive for Restriction of Hazardous Substances (RoHS) both for electrical and electronic equipment and devices. Such certification shall be treated as compliant to RA 6969/DENR Administrative Oder No. 2005-05(Toxic Chemical Substances for Issuance of Chemical Control Orders, and; 9. Warranty Certificate for Compressors covering a five-year period; 10. Three (3) sets Installation plan and drawing using 30" by 40" size drawing sheet format – 1 set tracing paper and 2 sets blue prints; 11. Three (3) sets Electrical Layout (single-line)/drawing using 30" by 40" size drawing sheet format – 1 set tracing paper and 2 sets blue prints; 12. Certification from PICC' Mechanical Services Division that the participating bidder has conducted ocular inspection of the rooms, location of outdoor units and panel boards, source of power supply and vicinity.; and 13. Certificate of Satisfactory Completion & Acceptance of previous PICC projects undertaken within the last three (3) years, if any.

21	The following documents shall be submitted, together with the Performance Bond, within ten (10) calendar days after the receipt of the Notice of Award. Such documents shall form part of the contract; 1. Schedule of Works; 2. Manpower Schedule; 3. Installation Methodology; and 4. Safety and Health Program.

Section IV. General Conditions of Contract

1. Scope of Contract

This Contract shall include all such items, although not specifically mentioned, that can be reasonably inferred as being required for its completion as if such items were expressly mentioned herein. All the provisions of RA No. 9184 and its 2016 revised IRR, including the Generic Procurement Manual, and associated issuances, constitute the primary source for the terms and conditions of the Contract, and thus, applicable in contract implementation. Herein clauses shall serve as the secondary source for the terms and conditions of the Contract.

This is without prejudice to Sections 74.1 and 74.2 of the 2016 revised IRR of RA No. 9184 allowing the GPPB to amend the IRR, which shall be applied to all procurement activities, the advertisement, posting, or invitation of which were issued after the effectivity of the said amendment.

2. Sectional Completion of Works

If sectional completion is specified in the **Special Conditions of Contract (SCC)**, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date shall apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).

3. Possession of Site

3.1 The Procuring Entity shall give possession of all or parts of the Site to the Contractor based on the schedule of delivery indicated in the **SCC,** which corresponds to the execution of the Works. If the Contractor suffers delay or incurs cost from failure on the part of the Procuring Entity to give possession in accordance with the terms of this clause, the Procuring Entity's Representative shall give the Contractor a Contract Time Extension and certify such sum as fair to cover the cost incurred, which sum shall be paid by Procuring Entity.

3.2 If possession of a portion is not given by the above date, the Procuring Entity will be deemed to have delayed the start of the relevant activities. The resulting adjustments in contract time to address such delay may be addressed through contract extension provided under Annex "E" of the 2016 revised IRR of RA No. 9184.

4. The Contractor's Obligations

The Contractor shall employ the key personnel named in the Schedule of Key Personnel indicating their designation, in accordance with **ITB** Clause 10.3 and specified in the **BDS**, to carry out the supervision of the Works.

The Procuring Entity will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are equal to or better than those of the personnel listed in the Schedule.

5. Performance Security

5.1. Within ten (10) calendar days from receipt of the Notice of Award from the Procuring Entity but in no case later than the signing of the contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR.

5.2. The Contractor, by entering into the Contract with the Procuring Entity, acknowledges the right of the Procuring Entity to institute action pursuant to RA No. 3688 against any subcontractor be they an individual, firm, partnership, corporation, or association supplying the Contractor with labor, materials and/or equipment for the performance of this Contract.

6. Site Investigation Reports

The Contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to in the **SCC** supplemented by any information obtained by the Contractor.

7. Warranty

7.1. In case the Contractor fails to undertake the repair works under Section 62.2.2 of the 2016 revised IRR, the Procuring Entity shall forfeit its performance security, subject its property (ies) to attachment or garnishment proceedings, and perpetually disqualify it from participating in any public bidding. All payables of the GOP in his favor shall be offset to recover the costs.

7.2. The warranty against Structural Defects/Failures, except that occasioned-on force majeure, shall cover the period from the date of issuance of the Certificate of Final Acceptance by the Procuring Entity. Specific duration of the warranty is found in the **SCC**.

8. Liability of the Contractor

Subject to additional provisions, if any, set forth in the **SCC**, the Contractor's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

If the Contractor is a joint venture, all partners to the joint venture shall be jointly and severally liable to the Procuring Entity.

9. Termination for Other Causes

Contract termination shall be initiated in case it is determined *prima facie* by the Procuring Entity that the Contractor has engaged, before, or during the implementation of the contract, in unlawful deeds and behaviors relative to contract acquisition and implementation, such as, but not limited to corrupt, fraudulent, collusive, coercive, and obstructive practices as stated in **ITB** Clause 4.

10. Dayworks

Subject to the guidelines on Variation Order in Annex "E" of the 2016 revised IRR of RA No. 9184, and if applicable as indicated in the **SCC**, the Dayworks rates in the

Contractor's Bid shall be used for small additional amounts of work only when the Procuring Entity's Representative has given written instructions in advance for additional work to be paid for in that way.

11. Program of Work

11.1. The Contractor shall submit to the Procuring Entity's Representative for approval the said Program of Work showing the general methods, arrangements, order, and timing for all the activities in the Works. The submissions of the Program of Work are indicated in the **SCC.**

11.2. The Contractor shall submit to the Procuring Entity's Representative for approval an updated Program of Work at intervals no longer than the period stated in the **SCC.** If the Contractor does not submit an updated Program of Work within this period, the Procuring Entity's Representative may withhold the amount stated in the **SCC** from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program of Work has been submitted.

12. Instructions, Inspections and Audits

The Contractor shall permit the GOP or the Procuring Entity to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors of the GOP or the Procuring Entity, as may be required.

13. Advance Payment

The Procuring Entity shall, upon a written request of the Contractor which shall be submitted as a Contract document, make an advance payment to the Contractor in an amount not exceeding fifteen percent (15%) of the total contract price, to be made in lump sum, or at the most two installments according to a schedule specified in the **SCC**, subject to the requirements in Annex "E" of the 2016 revised IRR of RA No. 9184.

14. Progress Payments

The Contractor may submit a request for payment for Work accomplished. Such requests for payment shall be verified and certified by the Procuring Entity's Representative/Project Engineer. Except as otherwise stipulated in the **SCC**, materials and equipment delivered on the site but not completely put in place shall not be included for payment.

15. Operating and Maintenance Manuals

15.1. If required, the Contractor will provide "as built" Drawings and maintenance manuals as specified in the **SCC.**

15.2. If the Contractor does not provide the Drawings and/or manuals by the dates stated above, or they do not receive the Procuring Entity's Representative's approval, the Procuring Entity's Representative may withhold the amount stated in the **SCC** from payments due to the Contractor.

Section V. Special Conditions of Contract

Special Conditions of Contract

GCC Clause	
2	The schedule of Completion is within One Hundred Eighty (180) Calendar Days reckoned seven (7) calendar days after the receipt of the Notice to Proceed (NTP). The contractor shall be granted extension of completion time for additional work/s not covered herein due to any work delays attributable to PICC. In case of delay in the required completion time or delivery period, inclusive of duly granted time extensions if any, the Contractor shall be liable for damages for the delay and shall pay the PICC for liquidated damages an amount equivalent to 1/10th of one percent (1%) of the total value of the project for each day of delay until such time the project is finally completed and accepted by PICC. Said penalty on delay shall be charged to any amount due to the Contractor, or in the absence or insufficiency thereof, from the performance bond/security. In case of insufficiency of the bond, the Contractor shall pay the balance to PICC upon notice.
3.1	The site shall be available to the Contractor within seven (7) calendar days after issuance of NTP.
6	The **Site** is located at the Summit Hall G & H, North Wing Hall, East Wing Hall and Pantry 1, 2, and 4.
7.2	**WARRANTY:** The Air Conditioning Units shall be covered by: 1. One (1) year warranty on parts and labor. 2. Five (5) years warranty on compressor. Said warranties shall include travel time and expense and provision of on-site service and labor. The obligation for the warranty shall be covered by, at the Contractor's option, either retention money in an amount equivalent to ten percent (10%) of the Contract amount, or a bank guarantee certificate equivalent to ten percent (10%) of the total Contract amount (see details under payment). However, bank guarantee certificate shall not be accepted as substitute for ten percent (10%) retention money for progress billing except for the final payment stage. Note that PICC at its option may deduct retention money equivalent to ten percent (10%) for every progress billing/payment. Said warranty obligation shall be released only after the expiration of general warranty period of one (1) year, however, the same will be forfeited by PICC as part of payment for any damage of supplied equipment and surrounding equipment components/parts attributable to contractor's negligence or poor workmanship during the installation and/or test operation period. As part of the one-year general warranty, the contractor must conduct monthly check-up and servicing of the indoor and outdoor units with proper

	service records and reports for submission to PICC-Mechanical Services Division.
10	Dayworks are applicable at the rate shown in the Contractor's original Bid.
11.1	The Contractor shall submit the Program of Work to the Procuring Entity's Representative within ten (10) calendar days upon receipt of Notice of Award.
13	Not applicable
14	**Terms of Payments:** Payment shall be released in full within 3 to 4 weeks after final acceptance by PICC or its representative of the Contractor's completed work, and submission of billing and complete supporting documents by Contractor as follows: 1.) Equipment delivery receipts, and Certificate of Completion/Turn-over Report. 2.) Invoice. 3.) Copy of delivery receipts of spare parts on drain pumps, indoor printed circuit boards and outdoor printed circuit boards. 4.) Copy of delivery receipt for the return of replaced parts/materials, if any 5.) Bank guarantee certificate equivalent to 10 percent of the Contract amount. Note: Bank guarantee certificate is not necessary if the contractor chooses the warranty obligation in the form of 10 percent retention money. 6.) Two (2) sets of Equipment manuals as follows: 6.1. design manual, 6.2. installation manual, 6.3. operation and maintenance manual. 7.) Design software for specific load/capacity calculation of the units to be installed. 8.) Three (3) sets Detailed As-built installation plans and three (3) sets electrical layout. One of the three (3) sets of each plan is the original drawing using tracing paper, 30"x40" sheet format. 9.) Original copy of Certification from manufacturer that the equipment to be installed is environment- friendly compliant. 10.) Original copy of Certification from manufacturer that the equipment's electrical and electronic components are compliant to Directive for Restriction of Hazardous Substance both for electrical and electronic equipment and devices. 11.) Original Notarized copy of Five (5)-Year Warranty Certificate for all compressors supplied.

12.) Equipment/System Operation and Commissioning Test Data Report for each indoor and outdoor equipment as required under Conditions Item No. 9.

13.) Photocopy of Training Certificate issued by the Contractor.

14.) Contractor's Recommendation for:

a. Proper maintenance forms for observations, monitoring and recording operational data and trouble.
b. Proper periodic maintenance check-up activities and standard operating procedures on daily, weekly, monthly, quarterly and annual basis.
c. Training and development programs to improve technical knowledge and skills of PICC personnel.

Further, payments at the option of the Contractor may be released within the same number of weeks as stated above in accordance with the following progress payment schedules and requirements:

1. First payment -- Fifty percent (50%) of the total value of the project shall be released after complete delivery of all multi-split, inverter type indoor and outdoor units. Payment shall only be processed upon submission of billing statement, sales invoice, delivery receipts, confirmed/approved accomplishment report and the following manuals to verify compliance to specification:

1.1. One (1) set Original manufacturer's system design manual and brochure,

1.2. One (1) set Original manufacturer's installation manual,

1.3. One (1) set Original manufacturer's operation and maintenance manual for each indoor unit and outdoor unit.

1.4. Original copy of Certification from manufacturer that the equipment to be installed is environment-friendly compliant to Directive for Restriction of Hazardous Substance (RoHS) both for electrical and electronic equipment and devices

2. Second payment – Twenty five percent (25%) of the total value of the project shall be released after complete (100 percent) delivery and completion, and proper operation of both indoor and outdoor systems at Summit Halls G & H and North Wing Hall. Payment shall only be processed upon submission of billing statement, sales invoice, delivery receipts confirmed/approved accomplishment report and Equipment/System Operation and Commissioning Test Data Report for each indoor and outdoor equipment as required under Conditions Item No. 9.

3. Third and final payment – Twenty five percent (25%) of the total value of the project shall be released after complete (100 percent) delivery and completion, turn over, and acceptance of the whole project which

	includes the installation and commissioning of all units. Payment shall only be processed upon submission of: 3.1. Billing statement, sales invoice, equipment delivery receipts, waste material turnover receipts, warranty/guarantee bond; 3.2. Receiving copy of delivery receipts of spare parts on drain pumps, indoor printed circuit boards and outdoor printed circuit boards; 3.3. Two (2) sets of Equipment manuals as follows: 3.3.1. Original manufacturer's copy of system design manual and brochure, 3.3.2. Original manufacturer's copy of installation manual, 3.3.3. Original manufacturer's copy of operation and maintenance manual for each indoor unit and outdoor unit. 3.4. Design software for specific load/capacity calculation of the units to be installed; 3.5. Three (3) sets Detailed As-built installation plans and three (3) sets electrical layout. One of the three (3) sets of each plan is the original drawing using tracing paper, 30"x40" sheet format. Others are in blue prints. 3.6. Photocopy of Original copy of Certification from manufacturer that the equipment to be installed is environment-friendly compliant to Directive for Restriction of Hazardous Substance both for electrical and electronic equipment and devices, and; 3.7. Original Notarized copy of Five (5)-Year Warranty Certificate for all compressors supplied 3.8. Equipment/System Operation and Commissioning Test Data Report for each indoor and outdoor equipment following condition and data requirements as specified under Conditions Item No. 9. 3.9. Photocopy of Training Certificate issued by the Contractor. 3.10. Contractor's Recommendation for: a. Proper maintenance forms for observations, monitoring and recording operational data and trouble. b. Proper periodic maintenance check-up activities and standard operating procedures on daily, weekly, monthly, quarterly and annual basis. Failure to submit bank guarantee certificate shall mean deduction of ten percent (10%) retention money as guarantee obligation for one (1) year warranty period. However, only ten percent (10%) retention money is acceptable for guarantee for the first and second progress billing. Bank guarantee shall be applied only after total completion of the awarded project. Therefore, it shall be posted only for the final billing and payment in lieu of ten percent (10%) money for the whole project.
15.1	Not applicable

Section VI. Specifications

TERMS OF REFERENCE

Supply and Installation of VRV/VRF Multi-Split, Packaged Air Conditioners at the following Summit Halls G & H, North Wing Hall, East Wing Hall and Pantry 1, 2, & 4

I. SPECIFIC SCOPE OF WORKS:

Supply, delivery and installation of Multi-split, Variable Refrigerant Flow/Volume (VRF/VRV), Inverter-Type Packaged Air-conditioners at Summit Hall G, Summit Hall H, North Wing Hall, East Wing Hall and Pantry 1, 2 & 4.

A-1. SUMMIT HALL G

SPECIFIC SCOPE OF WORKS:

1. Supply and deliver the following minimum requirement multi-split, inverter-type packaged-type air conditioning units:

1.1. Three (3) units 11.2 to 11.5kW (4.0HP) Cooling Capacity Indoor Unit, Cassette-type ceiling concealed type, 4-way airflow/round airflow free-blow with very low or low noise/sound level – Low: 32-35dB(A), Medium: 36-40dB(A) and High: 41-43dB(A) measured at 1.5 meter below the center of the unit, 220-230 Volts, 1 phase, 60Hz using environment-friendly refrigerant, R410A; with fixed wired remote control on-off switch to be installed near the room's main door; each unit must be complete of necessary control devices, temperature and humidity sensors, air filter, drain pump, automatic refrigerant shut-off valves, piping, piping kit/branch joints/headers and accessories, with inverter-inverter or inverter-slave scroll compressor combination for outdoor units which should be available in the local market.

Note: Unit with slightly higher capacity in kilowatt or ton (TR) rating can be offered as alternative but never lower than specified. One (1) ton cooling capacity must be equal to 12,000 BTU/hour or equal to 3.517 kilowatt (kW).

Notes for all indoor units:

a. Electronics/electrical parts must be compliant with the directive for restriction of hazardous substance (RoHS) and and Republic Act (RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990/ DENR Administrative Oder No. 2005-05 (Toxic Chemical Substances for Issuance of Chemical Control Orders..

b. Alternative offer based on horsepower rating shall not be considered and accepted. Unit to be delivered and installed shall be based on the General Equipment Design Capacity and Distribution Plan for each room as provided by PICC under Specific Scope of Work Item No. 2 and the Cluster System Design Plan and Equipment Schedules for each room/area to be done by the bidding Contractor as required under Specific Scope of Works Item No. 4.

c. Unit with slightly higher capacity in kilowatt or ton (TR) rating can be offered as alternative but never lower than specified. One (1) ton cooling capacity must be equal to 12,000 BTU/hour or equal to 3.517 kilowatt (kW).

1.2. One (1) lot — Modular Outdoor Unit/s with cooling capacity appropriately-designed by participating contractor for the total capacity of above indoor units per cluster at the Summit Hall G at the Fourth Floor Delegation Building modular-type, 440-460 Volts, 3 phase, 60 Hz using environment-friendly refrigerant R410A and electronics/electrical parts compliant with the Directive for restriction of hazardous substance (RoHS), equipped with inverter-inverter combination of compressors or master/lead (1 inverter) and slave scroll compressors, equipped with automatic by-pass compressor operation system control – meaning, the air conditioning system operation shall continue even if one or two compressors break down, complete of necessary control devices, sensors, shut-off valves, piping, piping kits, and accessories for complete and normal operating condition with the indoor unit. Compressor (inverter and/or slave) should be available in the local market. If the outdoor unit is 220V-240V or 380V, the Contractor shall provide a step-down transformer.

The multi-split inverter system must have the following design and operational capabilities, features and specifications:

1.2.1. Inverter lead and inverter combination of compressor system or a master/lead (1 inverter) and slave scroll compressors system.

1.2.2. Cluster installation design and operational capacity combination ratio of indoor and outdoor units shall never be more than 10 percent or the total rated capacity of outdoor unit shall never be less than 90 percent of the total rated capacity of combination of indoor unit capacity. In addition, the outdoor system must be able to operate properly at 50 percent capacity or when the indoor units' capacity is reduced to 50 percent.

1.2.3. High system efficiency or coefficient of performance (COP) or the ratio of the cooling (capacity) provided over the electrical energy consumed ranging from 1.2219 (16HP) to 0.8617(50HP) or up to 0.8553 (54HP).

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1.2.4. Compliant with the low sound level requirements as follows:

1.2.4.1. Indoor unit – the specified sound level for each type and model for low, medium and high speed fan shall be the basis and strictly followed (refer to individual unit's specification as required in this bidding document).

1.2.4.2. Modular outdoor unit - 45 to 68 dB(A)

1.2.5. Automatic back up operation for multiple outdoor and/or single outdoor unit – meaning, the entire cluster system continues to operate automatically even if one or more compressor or outdoor units break down. The air conditioning system should continue to operate automatically with the remaining non-defective compressor or outdoor units.

1.2.6. Capacity increment of modular outdoor unit must be limited to 2Hp up to 8Hp.

1.2.7. Compliant with both (1.) environment-friendly refrigerant and (2.) directive for restriction of hazardous substance (RoHS) both for electrical and electronic equipment and devices. It is an international environment directive to regulate the use of designated chemical substances such as: lead, cadmium, hexavalent chromium, mercury, polybrominated biphenyls and polybrominated diphenylether in electronic and electrical equipment which is also in compliance with Republic Act (RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990.

1.2.8. Equipped with automatic test operation for system check and trouble shooting.

1.2.9. Currently certified air-con units or product by AHRI (Air-Conditioning, Heating, and Refrigeration Institute).

1.2.10. With controllers for zoning, interlocking of equipment and ready and compatible with building management system (BMS) connection.

1.2.11. Easy wiring for normal centralized address setting.

1.3. One (1) lot — Condensate drain pumps. One (1) extra or spare drain pump must be provided/delivered for each model of drain pump installed in each unit. It means, one (1) unit for 11.2 to 11.5kW capacity Indoor Units.

1.4. One (1) lot — Indoor Unit Printed Circuit Board (IU-PCB). One (1) extra or spare PCB must be provided/delivered for each model of PCB installed in each indoor unit. It means, one (1) unit for 11.2 to 11.5kW capacity Indoor Units.

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1.5. One (1) lot	Outdoor Unit printed circuit board (OU-PCB). One (1) extra or spare of complete set of PCB must be provided/delivered for each model of PCB installed in each different capacity outdoor units.
1.6. One (1) lot	Panel (front)/signal receiver, wired remote controller, branch piping header/joints or ref-net joints and other devices and accessories necessary for complete installation and accessories.
1.7. One (1) lot	Watt-hour meter, digital, 3 phase 3 wires, CT rated, 230 volts, with RS232 communication connection, panel mounted; complete with the required current transformers, compatible with building management system (BMS) connection for the proper monitoring of the total power consumption of the air-conditioning units/system to be installed. Provide and install one (1) unit for the main feeder line if the power of all indoor units and outdoor units is sourced/connected directly from one (1) power supply system.
1.8. One (1) lot	Hard-drawn copper tubes (type L) and fittings, clamps, supports and other materials necessary for the proper and complete installation of the above units.
1.9. One (1) lot	Closed-cell rubber insulation (Aeroflex or its approved equivalent), one (1)-inch thick or its approved equivalent.
1.10. One (1) lot	Condensate Drain Pipe (Neltex, Moldex, Atlanta or its approved equivalent), Polyvinyl Chloride (PVC) pipe and fittings, 1-inch thick closed-cell insulation wrapped with polyethylene blue tape and its hanger & support system.
1.11. One (1) lot	Electrical wires – THHN for main supply cables, feeder lines and control lines, steel conduits/IMC panel boards/enclosure – weather-proof, System outdoor and indoor units main circuit breakers and sub-breakers - Square D, G.E. or approved equivalent, magnetic starter with overload relay- Fujihaya or approved equivalent, controllers, and accessories for the power supply and control system of the above air conditioners. Each indoor unit shall be provided with circuit breaker for control and isolation purposes for safety and repair works.
1.12. One (1) lot	Environment-friendly system refrigerant R410A for the multi-split.
1.13. One (1) lot	Environment-friendly cleaning agent, R-141B for flushing.
1.14. One (1) lot	Nitrogen gas for flushing and cleaning the pipe line.
1.15. One (1) lot	Oxygen-acetylene gas for cutting and welding works.
1.16. One (1) lot	Silver rods and other miscellaneous materials and supplies.
1.17. One (1) lot	Angle bars, 3/16" thick for steel base of fan coil units, 1/8" thick for supports. Use only engineering standard thickness (no commercial standard)

1.18. One (1) lot — Epoxy primer, enamel paints and other parts and materials necessary for the completion of repair works.

1.19. One (1) lot — Ceiling board – Use the same materials and specifications as utilized in the Summit Hall G. Refer to actual material and specification at site.

1.20. One (1) lot — Dismantling works of all existing Airconditioning system serving Summit Hall G and its related Supply/Return Ducts.

1.21. One (1) lot — Miscellaneous materials and accessories necessary for the completion of works and other restoration works.

1.22. One (1) lot — Water proofing works for the concrete base – use existing materials, polyvinyl chloride membrane (verify at site).

Note: PICC shall provide 440 Volts power supply for VRF/VRV Equipment Installation

2. Design properly and appropriately the capacity of each set of cluster system based on the general design capacity and equipment schedule below and modular-type outdoor unit/s considering the capacity, type, and number of indoor units to be installed per set or per cluster system.

   Note:

   One (1) cluster system = one (1) set of outdoor unit plus two (2) or more indoor units; outdoor could be one or more units. Consider the maximum power and comfort cooling efficiency of the system at summer (April-May) condition in the proper design capacity and selection of the modular outdoor unit. Occupied room temperature shall be within 73 – 74 degrees Fahrenheit during summer (April-May) condition when outdoor/dry-bulb temperature reaches 97 to 100 degrees Fahrenheit. Total capacity of outdoor unit/system shall never be less than 90 percent the total capacity of the entire indoor rated capacity or the total capacity of indoor units shall never be more than 110 percent of the capacity of the outdoor unit even if the capability and capacity is up to 130 percent.

Table A-1: General Equipment Design Capacity and Distribution Plan (Schedule of Equipment)

Item No.	Area Served	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	Summit Hall G	116	3 units – 11.2 to 11.5kW (4.0HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required)

Note: Attached is the Floor Plan (size-long bond paper)

3. Make and submit a more detailed Equipment Design Capacity and Distribution Plan or Schedule of Equipment (long bond paper size only) for each room or area listing and showing the following:

   3.1. Quantity, type and model of each indoor unit serving the room or area,

   3.2. Cooling capacity of each indoor unit in kilowatt (kW) and the equivalent tonnage (1 ton equals 12, 000 BTU per Hour) and horsepower cooling capacity rating.

   3.3. Airflow rate/capacity of each indoor unit in cubic meter per second (CMS) and in equivalent cubic feet per minute (CFM).

   3.4. Sound level pressure of each type/model of indoor unit in decibels A-weighting (dBA) indicating/showing the sound level for the low fan speed, medium fan speed and high fan speed for 3-speed units or low fan speed and high fan speed for 2-speed units or low fan speed, 2 medium fan speeds and high fan speed for 4-speed units.

   3.5. Total capacity of each room or area based on the designed and rated capacity of each equipment to be installed in kilowatt (kW) and the equivalent tonnage (1 ton equals 12, 000 BTU per Hour) and horsepower cooling capacity rating.

   3.6. Power consumption or power input in kilowatt (kW)

   3.7. Power supply indicating the voltage, full-load ampere, phase and frequency

   3.8. Dimension – height, width and depth – in millimetre (mm) and weight in Kilogram

   3.9. Colour of indoor unit, and

   3.10. Other detailed specifications and features of indoor units. Refer to sample Table shown below.

Sample Table A-1-1: Equipment Design Capacity and Distribution Plan (Schedule of Equipment)

Item No.	Area Served	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	Summitt Hall G	116	3 units – 11.2 to 11.5kW (4.0HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required)

4. Make and submit a detailed Cluster System Design Plan and Schedule of Equipment (use long-bond paper size only) showing and listing the number (quantity), type, model, rated cooling capacity [(kW and tons (TR) as well as in horsepower], and the total and individual kilowatt input of indoor unit and outdoor unit for each cluster system for Summit Hall G. Refer to sample tabulation below for basic guideline:

   Sample Table A-1-2: Sample Basic Cluster System Design Plan and Equipment Schedule

Cluster No.	Area Served	Outdoor Units		Connected Indoor Units	
		Qty-Unit	Description	Qty-Unit	Description
1	Summit Hall G	1 set	___kW (14Hp) consisting of: 1 unit ___kW (6.0Hp) capacity, model _____ & 1 unit ___kW (8.0Hp) capacity, model _____	3 units	Ceiling Cassette-type, ___kW (4.0Hp), Model _____

5. Make and submit a more detailed installation plan and drawings using A3 size bond-paper showing all necessary details based on the PICC-supplied floor plan, list of indoor units, capacity design and distribution plan (equipment schedule), cluster/group system design plan, proposed location of outdoor unit/s, actual conditions observed, and other conditions.

6. Make and submit a detailed single-line electrical layout/drawing using A3 size bond-paper showing all necessary details for feeder lines, control wirings, control panels, circuit breakers with capacities, watt-hour meter and all other accessories for the whole and cluster design circuit.

7. Install the above-mentioned units, accessories and materials for their proper operation in Summit Hall G at the Fourth Floor of the Delegation Building. Install indoor units or fan coil units (FCU) at the ceiling of said area, following proper alignment and uniform distances for proper air distribution and aesthetics with appropriate hangers, vibration isolator, and supports bolted to the fifth floor slab. Use proper size support-base and frames to avoid waggling expansion bolts.

   Install the indoor units based on the capacity design plan, cluster design plan and layout as shown in Table A-1: General Equipment Capacity Design and Distribution Plan (Schedule of Equipment), Cluster/Group Design Plan (refer to Sample Table A-1-2) and Installation Plan/Drawing (size-30" x 40") and electrical layout (size-30" x 40") as part of submittals by the Contractor during implementation stage.

Dismantle properly/carefully any air duct and building accessories obstructing the proper installation of the unit. Any affected ceiling must also be restored as discussed in Item 10.

8. Install outdoor units outside and at the Roof Deck of the Delegation Building considering the best location for aesthetics for Multi-Split VRV/VRF Inverter-Type A/C System. Concrete footing/base shall be properly formed and cured atop the said existing water-proofed deck. Apply new water proofing membrane (same of the existing polyvinyl chloride membrane) on the concrete footing/base. Restore damaged areas affected by the contractor's works.

9. Re-route or relocate electrical conduits and other materials inside the ceiling obstructing the installation area of the indoor unit or fan coil unit (FCU). Free the installation area of any obstruction and restore the functionality of those re-routed facilities or building/system attachment.

10. Restore the ceiling using the same kind of ceiling wooden materials/frames and mechanism to jibe with the existing ceiling design and construction, and to suit the cassette type air conditioning units. Make a detailed plan on how to re-construct the affected ceiling for approval before implementation.

11. Install the above units using appropriate size hard-drawn copper tubing and fittings. All field connection must be soldered type to minimize refrigerant and oil leakage and system troubles.

12. Insulate the suction lines and other pipe lines required by manufacturer using one-inch (1") thick closed-cell rubber insulation, Aeroflex or approved equivalent and wrapped with polyethylene white tape (to be approved by PICC-MSD Assistant Director/TSD Director) complete with aluminum cladding.

13. Provide and install all electrical and control system requirements as well as accessories with capacities and specifications properly designed according to the best practices in the industry, Philippine Electrical Code, NEMA and other applicable local and international codes. All electrical/electronic system requirements shall include electrical wires – THHN for main supply cables, feeder lines and control lines, steel conduits/Intermediate Metal Conduit (IMC) or approved equal, panel boards/enclosure – weather-proof, transformer primary and secondary circuit breakers, Outdoor and indoor units main circuit breakers and sub-breakers - Square D, G.E. or approved equal, magnetic starter with overload relay- Fujihaya or approved equal (to be approved by PICC-MSD Assistant Director/TSD Director), controllers, and accessories for the power supply and control system of the above air conditioners.

14. Install Watt-hour meter/s, digital, 3 phase 3 wires, CT rated, 230 volts, with RS232 communication, panel mounted, complete with the required current transformers, compatible with building management system (BMS) connection for the proper monitoring and/or recording of the total power consumption of the air conditioning units/system to be installed at Summit Hall G at the Fourth Floor of the Delegation Building. Install one-unit watt-hour meter to monitor and record the total consumption of both the outdoor units and indoor units/system if all the aircon units are connected to one (1) source of power supply. However, if all the aircon units are connected to different sources of power supply, install multiple units watt-hour meter to monitor and record the total consumption of both the outdoor units and indoor units/system connected to all sources of power supply

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15. Paint all angle bars, conduit and other metallic component with two coat epoxy paint, cord or approved equal. Paint for electrical conduit shall be color orange and for angle bars shall be color gray.

16. Dismantle carefully the existing AC System and Supply/Return Ducts above the ceiling within Summit Hall G. Cut into smaller sections for easy hauling. Coordinate with PICC-MSD Project In-Charge for the proper duct length of the cut and for the location where the ceiling will be temporarily dismantled/opened for hauling down activity of the dismantled above ceiling ducts. Restore the affected ceiling after the dismantling works.

17. Always clean the working area on daily basis and haul the dismantled building or system accessories and components carefully to temporary designated area. All garbage shall be hauled outside the PICC premises at the Contractor's expense.

18. Conduct operation testing and commissioning of all indoor units and outdoor unit together with the PICC representative from Mechanical Services Division, and record all actual operating data as follows:

    18.1. Pre-cooling room temperature (Fahrenheit and Celsius) at 30 minutes and one (1) hour after start-up of all units operating at full or high speed.

    18.2. Ambient or atmospheric temperature (Fahrenheit and Celsius)

    18.3. Supply voltage and current (amperage) of every line/phase of each indoor unit and outdoor unit. Current (amperage) during operation should not be more than the rated full load amperage of each unit (indoor and outdoor). Otherwise, it should be treated as abnormal condition and will not be accepted until the unit is replaced with a new unit with good operating condition. Also, full payment will not be processed.

    18.4. Standing pressure of the refrigerant system prior to test operation.

    18.5. Suction and discharge pressure and temperature of the refrigerant system

    18.6. Sound pressure level (SPL A-weighting) of each unit (indoor and outdoor unit) in decibel (dBA) and the total sound pressure level of the room when all indoor units are operating at the same time. Actual sound pressure level of each fan speed of indoor unit shall be tested and recorded. SPL testing must be conducted during night time and when there is no other equipment/system operating at the same time to minimize ambient noise condition.

    Note: All sound pressure levels should conform with the requirement otherwise the unit will not be accepted and full payment will not be processed until the unit is replaced or the problem is corrected.

    18.7. Good operating condition of drain pump.

    18.8. Air Balancing Report

    18.9. Other actual operating parameters.

19. Turn-over all the air conditioning units and their accessories as well as other affected building attachment/facilities in good order/operating condition

A-2. SUMMIT HALL H

SPECIFIC SCOPE OF WORKS:

1. Supply and deliver the following minimum requirement multi-split, inverter-type packaged-type air conditioning units:

1.1. Two (2) units — 11.2 to 11.5kW (4.0HP) Cooling Capacity Indoor Unit, Cassette-type ceiling concealed type, 4-way airflow/round airflow free-blow with very low or low noise/sound level – Low: 32-35dB(A), Medium: 36-40dB(A) and High: 41-43dB(A) measured at 1.5 meter below the center of the unit, 220-230 Volts, 1 phase, 60Hz using environment-friendly refrigerant, R410A; with fixed wired remote control on-off switch to be installed near the room's main door; each unit must be complete of necessary control devices, temperature and humidity sensors, air filter, drain pump, automatic refrigerant shut-off valves, piping, piping kit/branch joints/headers and accessories, with inverter-inverter or inverter-slave scroll compressor combination for outdoor units which should be available in the local market.

Note: Unit with slightly higher capacity in kilowatt or ton (TR) rating can be offered as alternative but never lower than specified. One (1) ton cooling capacity must be equal to 12,000 BTU/hour or equal to 3.517 kilowatt (kW).

Notes for all indoor units:

a. Electronics/electrical parts must be compliant with the directive for restriction of hazardous substance (RoHS) and and Republic Act (RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990/ DENR Administrative Oder No. 2005-05 (Toxic Chemical Substances for Issuance of Chemical Control Orders..

b. Alternative offer based on horsepower rating shall not be considered and accepted. Unit to be delivered and installed shall be based on the General Equipment Design Capacity and Distribution Plan for each room as provided by PICC under Specific Scope of Work Item No. 2 and the Cluster System Design Plan and Equipment Schedules for each room/area to be done by the bidding Contractor as required under Specific Scope of Works Item No. 4.

c. Unit with slightly higher capacity in kilowatt or ton (TR) rating can be offered as alternative but never lower than specified. One (1) ton cooling capacity must be equal to 12,000 BTU/hour or equal to 3.517 kilowatt (kW).

H

1.2. One (1) lot — Modular Outdoor Unit/s with cooling capacity appropriately-designed by participating contractor for the total capacity of above indoor units per cluster at the Summit Hall H at the Fourth Floor Delegation Building, modular-type, 220- 230/240 Volts, 3 phase, 60 Hz using environment-friendly refrigerant R410A and electronics/electrical parts compliant with the Directive for restriction of hazardous substance (RoHS), equipped with inverter-inverter combination of compressors or master/lead (1 inverter) and slave scroll compressors, equipped with automatic by-pass compressor operation system control – meaning, the air conditioning system operation shall continue even if one or two compressors break down, complete of necessary control devices, sensors, shut-off valves, piping, piping kits, and accessories for complete and normal operating condition with the indoor unit. Compressor (inverter and/or slave) should be available in the local market. If the outdoor unit is 220V-240V or 380V, the Contractor shall provide a step-down transformer.

The multi-split inverter system must have the following design and operational capabilities, features and specifications:

1.2.1. Inverter lead and inverter combination of compressor system or a master/lead (1 inverter) and slave scroll compressors system.

1.2.2. Cluster installation design and operational capacity combination ratio of indoor and outdoor units shall never be more than 10 percent or the total rated capacity of outdoor unit shall never be less than 90 percent of the total rated capacity of combination of indoor unit capacity. In addition, the outdoor system must be able to operate properly at 50 percent capacity or when the indoor units' capacity is reduced to 50 percent.

1.2.3. High system efficiency or coefficient of performance (COP) or the ratio of the cooling (capacity) provided over the electrical energy consumed ranging from 1.2219 (16HP) to 0.8617(50HP) or up to 0.8553 (54HP).

1.2.4. Compliant with the low sound level requirements as follows:

1.2.4.1. Indoor unit – the specified sound level for each type and model for low, medium and high speed fan shall be the basis and strictly followed (refer to individual unit's specification as required in this bidding document).

1.2.4.2. Modular outdoor unit - 45 to 68 dB(A)

1.2.5. Automatic back up operation for multiple outdoor and/or single outdoor unit – meaning, the entire cluster system continues to operate automatically even if one or more compressor or outdoor units break down. The air conditioning system should continue to operate automatically with the remaining non-defective compressor or outdoor units.

1.2.6. Capacity increment of modular outdoor unit must be limited to 2Hp up to 8Hp.

1.2.7. Compliant with both (1.) environment-friendly refrigerant and (2.) directive for restriction of hazardous substance (RoHS) both for electrical and electronic equipment and devices. It is an international environment directive to regulate the use of designated chemical substances such as: lead, cadmium, hexavalent chromium, mercury, polybrominated biphenyls and polybrominated diphenylether in electronic and electrical equipment which is also in compliance with Republic Act (RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990.

1.2.8. Equipped with automatic test operation for system check and trouble shooting.

1.2.9. Currently certified air-con units or product by AHRI (Air-Conditioning, Heating, and Refrigeration Institute).

1.2.10. With controllers for zoning, interlocking of equipment and ready and compatible with building management system (BMS) connection.

1.2.11. Easy wiring for normal centralized address setting.

1.3. One (1) lot Condensate drain pumps. One (1) extra or spare drain pump must be provided/delivered for each model of drain pump installed in each unit. It means, one (1) unit for 11.2 to 11.5kW Capacity Indoor Units.

1.4. One (1) lot Indoor Unit printed circuit board (IU-PCB). One (1) extra or spare PCB must be provided/delivered for each model of PCB installed in each indoor unit. It means, one (1) unit for 11.2 to 11.5kW Capacity Indoor Units.

1.5. One (1) lot Outdoor Unit printed circuit board (OU-PCB). One (1) extra or spare of complete set of PCB must be provided/delivered for each model of PCB installed in each different outdoor door unit.

1.6. One (1) lot	Panel (front)/signal receiver, wired remote controller, branch piping header/joints or ref-net joints and other devices and accessories necessary for complete installation and accessories.
1.7. One (1) lot	Watt-hour meter, digital, 3 phase 3 wires, CT rated, 230 volts, with RS232 communication connection, panel mounted; complete with the required current transformers, compatible with building management system (BMS) connection for the proper monitoring of the total power consumption of the air-conditioning units/system to be installed. Provide and install one (1) unit for the main feeder line if the power of all indoor units and outdoor units is sourced/connected directly from one (1) power supply system.
1.8. One (1) lot	Hard-drawn copper tubes (type L) and fittings, clamps, supports and other materials necessary for the proper and complete installation of the above units.
1.9. One (1) lot	Closed-cell rubber insulation (Aeroflex or its approved equivalent), one (1)-inch thick or its approved equivalent.
1.10. One (1) lot	Condensate Drain Pipe (Neltex, Moldex, Atlanta or its approved equivalent), Polyvinyl Chloride (PVC) pipe and fittings, 1-inch thick closed-cell insulation wrapped with polyethylene blue tape and its hanger & support system.
1.11. One (1) lot	Electrical wires – THHN for main supply cables, feeder lines and control lines, steel conduits/IMC panel boards/enclosure – weather-proof, System outdoor and indoor units main circuit breakers and sub-breakers - Square D, G.E. or approved equivalent, magnetic starter with overload relay- Fujihaya or approved equivalent, controllers, and accessories for the power supply and control system of the above air conditioners. Each indoor unit shall be provided with circuit breaker for control and isolation purposes for safety and repair works.
1.12. One (1) lot	Environment-friendly system refrigerant R410A for the multi-split.
1.13. One (1) lot	Environment-friendly cleaning agent, R-141B for flushing.
1.14. One (1) lot	Nitrogen gas for flushing and cleaning the pipe line.
1.15. One (1) lot	Oxygen-acetylene gas for cutting and welding works.
1.16. One (1) lot	Silver rods and other miscellaneous materials and supplies.
1.17. One (1) lot	Angle bars, 3/16" thick for steel base of fan coil units, 1/8" thick for supports. Use only engineering standard thickness (no commercial standard)

1.18. One (1) lot — Epoxy primer, enamel paints and other parts and materials necessary for the completion of repair works.

1.19. One (1) lot — Ceiling board – Use the same materials and specifications as utilized in the Summit Hall H. Refer to actual material and specification at site.

1.20. One (1) lot — Dismantling works of all existing Airconditioning system serving Summit Hall H and its related Supply/Return Ducts.

1.21. One (1) lot — Miscellaneous materials and accessories necessary for the completion of works and other restoration works.

1.22. One (1) lot — Water proofing works for the concrete base – use existing materials, polyvinyl chloride membrane (verify at site).

Note: PICC shall provide 440 Volts power supply for VRF/VRV Equipment Installation

2. Design properly and appropriately the capacity of each set of cluster system based on the general design capacity and equipment schedule below and modular-type outdoor unit/s considering the capacity, type, and number of indoor units to be installed per set or per cluster system.

   Note:

   One (1) cluster system = one (1) set of outdoor unit plus two (2) or more indoor units; outdoor could be one or more units.

   Consider the maximum power and comfort cooling efficiency of the system at summer (April-May) condition in the proper design capacity and selection of the modular outdoor unit. Occupied room temperature shall be within 73 – 74 degrees Fahrenheit during summer (April-May) condition when outdoor/dry-bulb temperature reaches 97 to 100 degrees Fahrenheit. Total capacity of outdoor unit/system shall never be less than 90 percent the total capacity of the entire indoor rated capacity or the total capacity of indoor units shall never be more than 110 percent of the capacity of the outdoor unit even if the capability and capacity is up to 130 percent.

Table A-1: General Equipment Design Capacity and Distribution Plan (Schedule of Equipment)

Item No.	Area Served	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	Summit Hall H	55	2 units – 11.2 to 11.5kW (4.0HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required)

Note: Attached is the Floor Plan (size-long bond paper)

3. Make and submit a more detailed Equipment Design Capacity and Distribution Plan or Schedule of Equipment (long bond paper size only) for each room or area listing and showing the following:

   3.1. Quantity, type and model of each indoor unit serving the room or area,

   3.2. Cooling capacity of each indoor unit in kilowatt (kW) and the equivalent tonnage (1 ton equals 12, 000 BTU per Hour) and horsepower cooling capacity rating

   3.3. Airflow rate/capacity of each indoor unit in cubic meter per second (CMS) and in equivalent cubic feet per minute (CFM).

   3.4. Sound level pressure of each type/model of indoor unit in decibels A-weighting (dBA) indicating/showing the sound level for the low fan speed, medium fan speed and high fan speed for 3-speed units or low fan speed and high fan speed for 2-speed units or low fan speed, 2 medium fan speeds and high fan speed for 4-speed units.

   3.5. Total capacity of each room or area based on the designed and rated capacity of each equipment to be installed in kilowatt (kW) and the equivalent tonnage (1 ton equals 12, 000 BTU per Hour) and horsepower cooling capacity rating.

   3.6. Power consumption or power input in kilowatt (kW)

   3.7. Power supply indicating the voltage, full-load ampere, phase and frequency

   3.8. Dimension – height, width and depth – in millimetre (mm) and weight in Kilogram

   3.9. Colour of indoor unit, and

   3.10. Other detailed specifications and features of indoor units. Refer to sample Table shown below.

Sample Table A-1-1: Equipment Design Capacity and Distribution Plan (Schedule of Equipment)

Item No.	Area Served	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	Summit Hall H	55	2 units – 11.2 to 11.5kW (4.0HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required)

4. Make and submit a detailed Cluster System Design Plan and Schedule of Equipment (use long-bond paper size only) showing and listing the number (quantity), type, model, rated cooling capacity [(kW and tons (TR) as well as in horsepower], and the total and individual kilowatt input of indoor unit and outdoor unit for each cluster system for Summit Hall H at the Fourth Floor Delegation Building. Refer to sample tabulation below for basic guideline:

   Sample Table A-1-2: Sample Basic Cluster System Design Plan and Equipment Schedule

Cluster No.	Area Served	Outdoor Units		Connected Indoor Units	
		Qty-Unit	Description	Qty-Unit	Description
1	Summit Hall H	1 set	___kW (10Hp) consisting of: 1 unit ___kW (10.0Hp) capacity, model _____	2 units	Ceiling Cassette-type, ___kW (4.0Hp), Model ____

5. Make and submit a more detailed installation plan and drawings using A3 size bond-paper showing all necessary details based on the PICC-supplied floor plan, list of indoor units, capacity design and distribution plan (equipment schedule), cluster/group system design plan, proposed location of outdoor unit/s, actual conditions observed, and other conditions.

6. Make and submit a detailed single-line electrical layout/drawing using A3 size bond-paper showing all necessary details for feeder lines, control wirings, control panels, circuit breakers with capacities, watt-hour meter and all other accessories for the whole and cluster design circuit.

7. Install the above-mentioned units, accessories and materials for their proper operation in Summit Hall H at the Fourth Floor Delegation Building. Install indoor units or fan coil units (FCU) at the ceiling of said area, following proper alignment and uniform distances for proper air distribution and aesthetics with appropriate hangers, vibration isolator, and supports bolted to the fifth floor slab. Use proper size support-base and frames to avoid waggling expansion bolts.

   Install the indoor units based on the capacity design plan, cluster design plan and layout as shown in Table A-1: General Equipment Capacity Design and Distribution Plan (Schedule of Equipment), Cluster/Group Design Plan (refer to Sample Table A-1-2) and Installation Plan/Drawing (size-30" x 40") and electrical layout (size-30" x 40") as part of submittals by the Contractor during implementation stage.

   Dismantle properly/carefully any air duct and building accessories obstructing the proper installation of the unit. Any affected air duct should be repaired, covered and sealed properly for possible emergency use as the chilled water system shall still be on

stand-by until the same is disposed. Any affected ceiling must also be restored as discussed in Item 10.

8. Install outdoor units outside and at the Roof Deck of the Delegation Building considering the best location for aesthetics for Multi-split VRV/VRF Inverter-Type A/C System. Concrete footing/base shall be properly formed and cured atop the said existing water-proofed deck. Apply new water proofing membrane (same of the existing polyvinyl chloride membrane) on the concrete footing/base. Restore damaged areas affected by the contractor's works.
9. Re-route or relocate air duct, electrical conduits and other materials inside the ceiling obstructing the installation area of the indoor unit or fan coil unit (FCU). Free the installation area of any obstruction and restore the functionality of those re-routed facilities or building/system attachment.
10. Restore the ceiling using the same kind/model ceiling boards, frames and mechanism to jibe with the existing ceiling design and construction, and to suit the cassette type air conditioning units. Make a detailed plan on how to re-construct the affected ceiling for approval before implementation.
11. Install the above units using appropriate size hard-drawn copper tubing and fittings. All field connection must be soldered type to minimize refrigerant and oil leakage and system troubles.
12. Insulate the suction lines and other pipe lines required by manufacturer using one-inch (1") thick closed-cell rubber insulation, Aeroflex or approved equivalent (to be approved by PICC-MSD Assistant Director/TSD Director) complete with aluminium cladding.
13. Provide and install all electrical and control system requirements as well as accessories with capacities and specifications properly designed according to the best practices in the industry, Philippine Electrical Code, NEMA and other applicable local and international codes. All electrical/electronic system requirements shall include electrical wires – THHN for main supply cables, feeder lines and control lines, steel conduits/Intermediate Metal Conduit (IMC) or approved equal, panel boards/enclosure – weather-proof, transformer primary and secondary circuit breakers, Outdoor and indoor units main circuit breakers and sub-breakers - Square D, G.E. or approved equal, magnetic starter with overload relay- Fujihaya or approved equal (to be approved by PICC-MSD Assistant Director/TSD Director), controllers, and accessories for the power supply and control system of the above air conditioners.
14. Install Watt-hour meter/s, digital, 3 phase 3 wires, CT rated, 230 volts, with RS232 communication, panel mounted, complete with the required current transformers, compatible with building management system (BMS) connection for the proper monitoring and/or recording of the total power consumption of the air conditioning units/system to be installed at Summit Hall H at the Fourth Floor Delegation Building. Install one unit watt-hour meter to monitor and record the total consumption of both the outdoor units and indoor units/system if all the aircon units are connected to one (1) source of power supply. However, if all the aircon units are connected to different sources of power supply, install multiple units watt-hour meter to monitor and record the total consumption of both the outdoor units and indoor units/system connected to all sources of power supply

15. Paint all angle bars, conduit and other metallic component with two coat epoxy paint, cord or approved equal. Paint for electrical conduit shall be color orange and for angle bars shall be color gray.

16. Dismantle carefully the existing AC System and Supply/Return Ducts above the ceiling within Summit Hall H. Cut into smaller sections for easy hauling. Coordinate with PICC-MSD Project In-Charge for the proper duct length of the cut and for the location where the ceiling will be temporarily dismantled/opened for hauling down activity of the dismantled above ceiling ducts. Restore the affected ceiling after the dismantling works.

17. Always clean the working area on daily basis and haul the dismantled building or system accessories and components carefully to temporary designated area. All garbage shall be hauled outside the PICC premises at the Contractor's expense.

18. Conduct operation testing and commissioning of all indoor units and outdoor unit together with the PICC representative from Mechanical Services Division, and record all actual operating data as follows:

    18.1. Pre-cooling room temperature (Fahrenheit and Celsius) at 30 minutes and one (1) hour after start-up of all units operating at full or high speed.

    18.2. Ambient or atmospheric temperature (Fahrenheit and Celsius)

    18.3. Supply voltage and current (amperage) of every line/phase of each indoor unit and outdoor unit. Current (amperage) during operation should not be more than the rated full load amperage of each unit (indoor and outdoor). Otherwise, it should be treated as abnormal condition and will not be accepted until the unit is replaced with a new unit with good operating condition. Also, full payment will not be processed.

    18.4. Standing pressure of the refrigerant system prior to test operation.

    18.5. Suction and discharge pressure and temperature of the refrigerant system

    18.6. Sound pressure level (SPL A-weighting) of each unit (indoor and outdoor unit) in decibel (dBA) and the total sound pressure level of the room when all indoor units are operating at the same time. Actual sound pressure level of each fan speed of indoor unit shall be tested and recorded. SPL testing must be conducted during night time and when there is no other equipment/system operating at the same time to minimize ambient noise condition.

        Note: All sound pressure levels should conform with the requirement otherwise the unit will not be accepted and full payment will not be processed until the unit is replaced or the problem is corrected.

    18.7. Good operating condition of drain pump.

    18.8. Other actual operating parameters.

19. Turn-over all the air conditioning units and their accessories as well as other affected building attachment/facilities in good order/operating condition.

A-3. PANTRY ROOMS 1, 2 & 4

SPECIFIC SCOPE OF WORKS:

1. Supply and deliver the following minimum requirement multi-split, inverter-type packaged-type air conditioning units:

1.1 Two (2) units	16.0kW (5.5HP) Cooling Capacity Indoor Unit, Ducted-type Ceiling Concealed, with very low or low noise/sound level – Low: 35-37dB(A), Medium: 38-40dB(A) and High: 41-43dB(A) measured at 1.5 meter below the center of the unit, Airflow rate (H/M/L) 1,400-1,300cfm / 1,100-1,200 / 900-1,000cfm, 220-230 Volts, 1 phase, 60Hz using environment-friendly refrigerant, R410A; with fixed wired remote control on-off switch to be installed near the room's main door; each unit must be complete of necessary control devices, temperature and humidity sensors, air filter, drain pump, automatic refrigerant shut-off valves, piping, piping kit/branch joints/headers and accessories, with inverter-inverter or inverter-slave scroll compressor combination for outdoor units which should be available in the local market.
1.2 One (1) unit	28.0kW (9.65HP) Cooling Capacity Indoor Unit, Ducted-type Ceiling Concealed, with very low or low noise/sound level – Low: 43-45dB(A) and High: 46-48dB(A) measured at 1.5 meter below the center of the unit, Airflow rate (H/L) 2500-2600cfm / 2100-2200cfm, 220-230 Volts, 1 phase, 60Hz using environment-friendly refrigerant, R410A; with fixed wired remote control on-off switch to be installed near the room's main door; each unit must be complete of necessary control devices, temperature and humidity sensors, air filter, drain pump, automatic refrigerant shut-off valves, piping, piping kit/branch joints/headers and accessories, with inverter-inverter or inverter-slave scroll compressor combination for outdoor units which should be available in the local market.
	Note: Unit with slightly higher capacity in kilowatt or ton (TR) rating can be offered as alternative but never lower than specified. One (1) ton cooling capacity must be equal to 12,000 BTU/hour or equal to 3.517 kilowatt (kW).

Notes for all indoor units:

a. Electronics/electrical parts must be compliant with the directive for restriction of hazardous substance (RoHS) and and Republic Act (RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990/ DENR Administrative Oder No. 2005-05 (Toxic Chemical Substances for Issuance of Chemical Control Orders.

b. Alternative offer based on horsepower rating shall not be considered and accepted. Unit to be delivered and installed shall be based on the General Equipment Design Capacity and Distribution Plan for each room as provided by PICC under Specific Scope of Work Item No. 2 and the Cluster System Design Plan and Equipment Schedules for each room/area to be done by the bidding Contractor as required under Specific Scope of Works Item No. 4.

c. Unit with slightly higher capacity in kilowatt or ton (TR) rating can be offered as alternative but never lower than specified. One (1) ton cooling capacity must be equal to 12,000 BTU/hour or equal to 3.517 kilowatt (kW).

1.3. One (1) lot — Modular Outdoor Unit/s with cooling capacity appropriately-designed by participating contractor for the total capacity of above indoor units per cluster at the Pantry Rooms 1, 2 & 4 at the Fourth Floor and Fifth Floor Delegation Building modular-type, 440-460 Volts, 3 phase, 60 Hz using environment-friendly refrigerant R410A and electronics/electrical parts compliant with the Directive for restriction of hazardous substance (RoHS), equipped with inverter-inverter combination of compressors or master/lead (1 inverter) and slave scroll compressors, equipped with automatic by-pass compressor operation system control – meaning, the air conditioning system operation shall continue even if one or two compressors break down, complete of necessary control devices, sensors, shut-off valves, piping, piping kits, and accessories for complete and normal operating condition with the indoor unit. Compressor (inverter and/or slave) should be available in the local market. If the outdoor unit is 220V-240V or 380V, the Contractor shall provide a step-down transformer.

The multi-split inverter system must have the following design and operational capabilities, features and specifications:

1.3.1. Inverter lead and inverter combination of compressor system or a master/lead (1 inverter) and slave scroll compressors system.

1.3.2. Cluster installation design and operational capacity combination ratio of indoor and outdoor units shall never be more than 10 percent or the total rated capacity of outdoor unit shall never be less than 90 percent of the total rated capacity of combination of indoor unit capacity. In addition, the outdoor system must be able to operate properly at 50 percent capacity or when the indoor units' capacity is reduced to 50 percent.

1.3.3. High system efficiency or coefficient of performance (COP) or the ratio of the cooling (capacity) provided over the electrical energy consumed ranging from 1.2219 (16HP) to 0.8617(50HP) or up to 0.8553 (54HP).

1.3.4. Compliant with the low sound level requirements as follows:

1.3.4.1. Indoor unit – the specified sound level for each type and model for low, medium and high speed fan shall be the basis and strictly followed (refer to individual unit's specification as required in this bidding document).

1.3.4.2. Modular outdoor unit - 45 to 68 dB(A)

1.3.5. Automatic back up operation for multiple outdoor and/or single outdoor unit – meaning, the entire cluster system continues to operate automatically even if one or more compressor or outdoor units break down. The air conditioning system should continue to operate automatically with the remaining non-defective compressor or outdoor units.

1.3.6. Capacity increment of modular outdoor unit must be limited to 2Hp up to 8Hp.

1.3.7. Compliant with both (1.) environment-friendly refrigerant and (2.) directive for restriction of hazardous substance (RoHS) both for electrical and electronic equipment and devices. It is an international environment directive to regulate the use of designated chemical substances such as: lead, cadmium, hexavalent chromium, mercury, polybrominated biphenyls and polybrominated diphenylether in electronic and electrical equipment which is also in compliance with Republic Act (RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990.

1.3.8. Equipped with automatic test operation for system check and trouble shooting.

1.3.9. Currently certified air-con units or product by AHRI (Air-Conditioning, Heating, and Refrigeration Institute).

1.3.10. With controllers for zoning, interlocking of equipment and ready and compatible with building management system (BMS) connection.

1.3.11. Easy wiring for normal centralized address setting.

1.4. One (1) lot — Condensate drain pumps. One (1) extra or spare drain pump must be provided/delivered for each model of drain pump installed in each unit. It means, one (1) unit for 16.0kW capacity Indoor Unit and one (1) unit for 28.0kW capacity Indoor Unit.

1.5. One (1) lot	Indoor Unit Printed Circuit Board (IU-PCB). One (1) extra or spare PCB must be provided/delivered for each model of PCB installed in each indoor unit. It means, one (1) unit for 16.0kW capacity Indoor Unit and one (1) unit for 28.0kW capacity Indoor Unit.
1.6. One (1) lot	Outdoor Unit printed circuit board (OU-PCB). One (1) extra or spare of complete set of PCB must be provided/delivered for each model of PCB installed in each different capacity outdoor units.
1.7. One (1) lot	Panel (front)/signal receiver, wired remote controller, branch piping header/joints or ref-net joints and other devices and accessories necessary for complete installation and accessories.
1.8. One (1) lot	Watt-hour meter, digital, 3 phase 3 wires, CT rated, 230 volts, with RS232 communication connection, panel mounted; complete with the required current transformers, compatible with building management system (BMS) connection for the proper monitoring of the total power consumption of the air-conditioning units/system to be installed. Provide and install one (1) unit for the main feeder line if the power of all indoor units and outdoor units is sourced/connected directly from one (1) power supply system.
1.9. One (1) lot	Hard-drawn copper tubes (type L) and fittings, clamps, supports and other materials necessary for the proper and complete installation of the above units.
1.10. One (1) lot	Closed-cell rubber insulation (Aeroflex or its approved equivalent), one (1)-inch thick or its approved equivalent.
1.11. One (1) lot	Condensate Drain Pipe (Neltex, Moldex, Atlanta or its approved equivalent), Polyvinyl Chloride (PVC) pipe and fittings, 1-inch thick closed-cell insulation wrapped with polyethylene blue tape and its hanger & support system.
1.12. One (1) lot	Electrical wires – THHN for main supply cables, feeder lines and control lines, steel conduits/IMC panel boards/enclosure – weather-proof, System outdoor and indoor units main circuit breakers and sub-breakers - Square D, G.E. or approved equivalent, magnetic starter with overload relay- Fujihaya or approved equivalent, controllers, and accessories for the power supply and control system of the above air conditioners. Each indoor unit shall be provided with circuit breaker for control and isolation purposes for safety and repair works.
1.13. One (1) lot	Environment-friendly system refrigerant R410A for the multi-split.
1.14. One (1) lot	Environment-friendly cleaning agent, R-141B for flushing.
1.15. One (1) lot	Nitrogen gas for flushing and cleaning the pipe line.
1.16. One (1) lot	Oxygen-acetylene gas for cutting and welding works.
1.17. One (1) lot	Silver rods and other miscellaneous materials and supplies.

1.18. One (1) lot — Angle bars, 3/16" thick for steel base of fan coil units, 1/8" thick for supports. Use only engineering standard thickness (no commercial standard)

1.19. One (1) lot — Epoxy primer, enamel paints and other parts and materials necessary for the completion of repair works.

1.20. One (1) lot — Ceiling board – Use the same materials and specifications as utilized in the Pantry Rooms 1, 2 & 4. Refer to actual material and specification at site.

1.21. One (1) lot — Dismantling works for the existing Airconditioning Unit serving Pantry Rooms 1, 2 & 4.

1.22. One (1) lot — Miscellaneous materials and accessories necessary for the completion of works and other restoration works.

1.23. One (1) lot — Water proofing works for the concrete base – use existing materials, polyvinyl chloride membrane (verify at site).

1.24. One (1) lot — Duct and other related ductworks shall be of galvanized iron sheet in gages conforming American Society for Testing and Materials (ASTM) A527, coating G90 "Apo Galfan". Duct construction shall be in accordance with Sheet Metal and Air Conditioning Contractors National Association (SMACNA) low velocity duct manual and American Society of Heating, Refrigeration and Air-conditioning Engineers (ASHRAE) recommendation. Ductworks shall be insulated with (1 Side Foil, 1 Side Adhesive) 25mm-thick polyolefin insulation.

1.24.1. Volume control damper, turning vanes & split dampers at all branches of the supply/return air duct shall be provided even if not shown in the drawing for proper air balancing. Use semi-rigid flexible round duct.

1.24.2 Submit testing, adjusting, and balancing reports bearing the seal and signature of the Test and Balance Engineer.

1.24.3 At points where sheet metal connection are made to fan coil unit or where ducts of dissimilar metals be installed, flexible duct / flexible connections of approved non-combustible material conforming to ASTM Standard D 1571 shall be installed.

1.24.4 All duct penetrations passing through a fire rated walls and floors partitions shall be provided with Intumescent Firestopping compound that have been tested and approved in accordance with ASTM E-814 and *Underwriters Laboratories* (UL) 1479.

1.24.5 The width of the sheet metal ducts and stiffeners shall be as follows:

TABLE 1. WIDTH AND GAUGE FOR DUCT METAL

GI DUCT WIDTH	GI DUCT GAUGE
0 to 300mm	Ga. 26 (0.5 mm thick)
325mm to 750mm	Ga. 24 (0.60 mm thick)
775mm to 1350mm	Ga. 22 (0.80 mm thick)
1375mm to 2100mm	Ga. 20 (1.00 mm thick)
Over 2100mm	Ga. 18 (1.20 mm thick)

TABLE 2. STIFFENERS FOR DUCTS

GI DUCT WIDTH	SIZE OF DUCT STIFFENERS
Up to 450mm	1" x 1" x 1/8"
Over 475mm to 900mm	1" x 1" x 1/8"
Over 925mm to 1350mm	1 ¼" x 1 ¼" x 1/8"
Over 1375mm to 1800mm	1 ½" x 1 ½" x 3/16"
Over 1825mm to 2400mm	2" x 2" x 3/16"
Over 2425mm	2 ½" x 2 ½" x ¼"

Note: PICC shall provide 440 Volts power supply for VRF/VRV Equipment Installation

2. Design properly and appropriately the capacity of each set of cluster system based on the general design capacity and equipment schedule below and modular-type outdoor unit/s considering the capacity, type, and number of indoor units to be installed per set or per cluster system.

   Note:

   One (1) cluster system = one (1) set of outdoor unit plus two (2) or more indoor units; outdoor could be one or more units. Consider the maximum power and comfort cooling efficiency of the system at summer (April-May) condition in the proper design capacity and selection of the modular outdoor unit. Occupied room temperature shall be within 73 – 74 degrees Fahrenheit during summer (April-May) condition when outdoor/dry-bulb temperature reaches 97 to 100 degrees Fahrenheit. Total capacity of outdoor unit/system shall never be less than 90 percent the total capacity of the entire indoor rated capacity or the total capacity of indoor units shall never be more than 110 percent of the capacity of the outdoor unit even if the capability and capacity is up to 130 percent.

Table A-1: General Equipment Design Capacity and Distribution Plan (Schedule of Equipment)

Item No.	Area Served	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	Pantry Rooms 1, 2 & 4	92 40 44 176	1 unit – 28.0kW (9.65Hp) Ducted-type, Ceiling Concealed, other features (enumerate in details as required) 2 units – 16.0kW (5.5Hp) Ducted-type, Ceiling Concealed, other features (enumerate in details as required)

Note: Attached is the Floor Plan (size-long bond paper)

3. Make and submit a more detailed Equipment Design Capacity and Distribution Plan or Schedule of Equipment (long bond paper size only) for each room or area listing and showing the following:

   3.1. Quantity, type and model of each indoor unit serving the room or area,

   3.2. Cooling capacity of each indoor unit in kilowatt (kW) and the equivalent tonnage (1 ton equals 12, 000 BTU per Hour) and horsepower cooling capacity rating.

   3.3. Airflow rate/capacity of each indoor unit in cubic meter per second (CMS) and in equivalent cubic feet per minute (CFM).

   3.4. Sound level pressure of each type/model of indoor unit in decibels A-weighting (dBA) indicating/showing the sound level for the low fan speed, medium fan speed and high fan speed for 3-speed units or low fan speed and high fan speed for 2-speed units or low fan speed, 2 medium fan speeds and high fan speed for 4-speed units.

   3.5. Total capacity of each room or area based on the designed and rated capacity of each equipment to be installed in kilowatt (kW) and the equivalent tonnage (1 ton equals 12, 000 BTU per Hour) and horsepower cooling capacity rating.

   3.6. Power consumption or power input in kilowatt (kW)

   3.7. Power supply indicating the voltage, full-load ampere, phase and frequency

   3.8. Dimension – height, width and depth – in millimetre (mm) and weight in Kilogram

   3.9. Colour of indoor unit, and

3.10. Other detailed specifications and features of indoor units. Refer to sample Table shown below.

Sample Table A-1-1: Equipment Design Capacity and Distribution Plan (Schedule of Equipment)

Item No.	Area Served	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	Pantry Rooms 1, 2 & 4	92 40 44 176	1 unit – 28.0kW (9.65Hp) Ducted-type, Ceiling Concealed, other features (enumerate in details as required) 2 units – 16.0kW (5.5Hp) Ducted-type, Ceiling Concealed, other features (enumerate in details as required)

4. Make and submit a detailed Cluster System Design Plan and Schedule of Equipment (use long-bond paper size only) showing and listing the number (quantity), type, model, rated cooling capacity [(kW and tons (TR) as well as in horsepower], and the total and individual kilowatt input of indoor unit and outdoor unit for each cluster system for Pantry Room 1, 2 & 4. Refer to sample tabulation below for basic guideline:

Sample Table A-1-2: Sample Basic Cluster System Design Plan and Equipment Schedule

Cluster No.	Area Served	Outdoor Units		Connected Indoor Units	
		Qty-Unit	Description	Qty-Unit	Description
1	Pantry Rooms 1, 2 & 4	1 set	___kW (22.0Hp) consisting of: 1 unit ___kW (6.0Hp) capacity, model _____ & 2 units ___kW	1 unit	Ducted-type, Ceiling Concealed, 28.0kW (9.65Hp), Model ____ &

			(8.0Hp) capacity, model _____	2 units	Ducted-type, Ceiling Concealed, 16.0kW (5.5Hp), Model ____

5. Make and submit a more detailed installation plan and drawings using A3 size bond-paper showing all necessary details based on the PICC-supplied floor plan, list of indoor units, capacity design and distribution plan (equipment schedule), cluster/group system design plan, proposed location of outdoor unit/s, actual conditions observed, and other conditions.
6. Make and submit a detailed single-line electrical layout/drawing using A3 size bond-paper showing all necessary details for feeder lines, control wirings, control panels, circuit breakers with capacities, watt-hour meter and all other accessories for the whole and cluster design circuit.
7. Install the above-mentioned units, accessories and materials for their proper operation in Pantry Rooms 1, 2 & 4 at the Fourth Floor and Fifth Floor of the Delegation Building. Install indoor units or fan coil units (FCU) at the ceiling of said area, following proper alignment and uniform distances for proper air distribution and aesthetics with appropriate hangers, vibration isolator, and supports bolted to the $4^{th}/5^{th}$ floor slab respectively. Use proper size support-base and frames to avoid waggling expansion bolts.

   Install the indoor units based on the capacity design plan, cluster design plan and layout as shown in Table A-1: General Equipment Capacity Design and Distribution Plan (Schedule of Equipment), Cluster/Group Design Plan (refer to Sample Table A-1-2) and Installation Plan/Drawing (size-30" x 40") and electrical layout (size-30" x 40") as part of submittals by the Contractor during implementation stage.

   Dismantle properly/carefully any air duct and building accessories obstructing the proper installation of the unit. Any affected ceiling must also be restored as discussed in Item 10.
8. Install outdoor units outside and at the Roof Deck of the Delegation Building considering the best location for aesthetics for Multi-split VRV/VRF Inverter-Type A/C System. Concrete footing/base shall be properly formed and cured atop the said existing water-proofed deck. Apply new water proofing membrane (same of the existing polyvinyl chloride membrane) on the concrete footing/base. Restore damaged areas affected by the contractor's works.
9. Re-route or relocate electrical conduits and other materials inside the ceiling obstructing the installation area of the indoor unit or fan coil unit (FCU). Free the installation area of any obstruction and restore the functionality of those re-routed facilities or building/system attachment.

10. Restore the ceiling using the same kind of ceiling wooden materials/frames and mechanism to jibe with the existing ceiling design and construction, and to suit the cassette type air conditioning units. Make a detailed plan on how to re-construct the affected ceiling for approval before implementation.

11. Install the above units using appropriate size hard-drawn copper tubing and fittings. All field connection must be soldered type to minimize refrigerant and oil leakage and system troubles.

12. Insulate the suction lines and other pipe lines required by manufacturer using one-inch (1") thick closed-cell rubber insulation, Aeroflex or approved equivalent and wrapped with polyethylene white tape (to be approved by PICC-MSD Assistant Director/TSD Director) complete with aluminum cladding.

13. Provide and install all electrical and control system requirements as well as accessories with capacities and specifications properly designed according to the best practices in the industry, Philippine Electrical Code, NEMA and other applicable local and international codes. All electrical/electronic system requirements shall include electrical wires – THHN for main supply cables, feeder lines and control lines, steel conduits/Intermediate Metal Conduit (IMC) or approved equal, panel boards/enclosure – weather-proof, transformer primary and secondary circuit breakers, Outdoor and indoor units main circuit breakers and sub-breakers - Square D, G.E. or approved equal, magnetic starter with overload relay- Fujihaya or approved equal (to be approved by PICC-MSD Assistant Director/TSD Director), controllers, and accessories for the power supply and control system of the above air conditioners.

14. Install Watt-hour meter/s, digital, 3 phase 3 wires, CT rated, 230 volts, with RS232 communication, panel mounted, complete with the required current transformers, compatible with building management system (BMS) connection for the proper monitoring and/or recording of the total power consumption of the air conditioning units/system to be installed at Pantry Rooms 1, 2 & 4 at the Fourth Floor and Fifth Floor Delegation Building. Install one-unit watt-hour meter to monitor and record the total consumption of both the outdoor units and indoor units/system if all the aircon units are connected to one (1) source of power supply. However, if all the aircon units are connected to different sources of power supply, install multiple units watt-hour meter to monitor and record the total consumption of both the outdoor units and indoor units/system connected to all sources of power supply

15. Paint all angle bars, conduit and other metallic component with two coat epoxy paint, cord or approved equal. Paint for electrical conduit shall be color orange and for angle bars shall be color gray.

16. Dismantle carefully the existing AC System and Supply/Return Ducts above the ceiling within Pantry Rooms 1, 2 & 4. Cut into smaller sections for easy hauling. Coordinate with PICC-MSD Project In-Charge for the proper duct length of the cut and for the location where the ceiling will be temporarily dismantled/opened for hauling down activity of the dismantled above ceiling ducts. Restore the affected ceiling after the dismantling works.

17. Always clean the working area on daily basis and haul the dismantled building or system accessories and components carefully to temporary designated area. All garbage shall be hauled outside the PICC premises at the Contractor's expense.

18. Conduct operation testing and commissioning of all indoor units and outdoor unit together with the PICC representative from Mechanical Services Division, and record all actual operating data as follows:

    18.1. Pre-cooling room temperature (Fahrenheit and Celsius) at 30 minutes and one (1) hour after start-up of all units operating at full or high speed.

    18.2. Ambient or atmospheric temperature (Fahrenheit and Celsius)

    18.3. Supply voltage and current (amperage) of every line/phase of each indoor unit and outdoor unit. Current (amperage) during operation should not be more than the rated full load amperage of each unit (indoor and outdoor). Otherwise, it should be treated as abnormal condition and will not be accepted until the unit is replaced with a new unit with good operating condition. Also, full payment will not be processed.

    18.4. Standing pressure of the refrigerant system prior to test operation.

    18.5. Suction and discharge pressure and temperature of the refrigerant system

    18.6. Sound pressure level (SPL A-weighting) of each unit (indoor and outdoor unit) in decibel (dBA) and the total sound pressure level of the room when all indoor units are operating at the same time. Actual sound pressure level of each fan speed of indoor unit shall be tested and recorded. SPL testing must be conducted during night time and when there is no other equipment/system operating at the same time to minimize ambient noise condition.

    Note: All sound pressure levels should conform with the requirement otherwise the unit will not be accepted and full payment will not be processed until the unit is replaced or the problem is corrected.

    18.7. Good operating condition of drain pump.

    18.8. Air Balancing Report

    18.9. Other actual operating parameters.

19. Turn-over all the air conditioning units and their accessories as well as other affected building attachment/facilities in good order/operating condition

A-4. NORTH WING HALL

SPECIFIC SCOPE OF WORKS:

1. Supply and deliver the following minimum requirement multi-split, inverter-type packaged-type air conditioning units:

    1.1. Twenty-five (25) units 11.2 to 11.5kW (4.0HP) Cooling Capacity Indoor Unit, Cassette-type ceiling concealed type, 4-way airflow/round airflow free-blow with very low or low noise/sound level – Low:

32-35dB(A), Medium: 36-40dB(A) and High: 41-43dB(A) measured at 1.5 meter below the center of the unit, 220-230 Volts, 1 phase, 60Hz using environment-friendly refrigerant, R410A; with fixed wired remote control on-off switch to be installed near the room's main door; each unit must be complete of necessary control devices, temperature and humidity sensors, air filter, drain pump, automatic refrigerant shut-off valves, piping, piping kit/branch joints/headers and accessories, with inverter-inverter or inverter-slave scroll compressor combination for outdoor units which should be available in the local market.

1.2. Five (5) units — 7.1 to 7.3kW (2.5HP) Cooling Capacity Indoor Unit, Cassette-type ceiling concealed type, 4-way airflow/round airflow, free blow with very low or low noise level – Low: 27-28dB(A), Medium: 29-31dB(A) and High: 32-34dB(A) measured at 1.5 meter below the center of the unit, 220-230 Volts, 1 phase, 60 Hz using environment-friendly refrigerant R410A ; with fixed wired remote control on-off switch to be installed near the room's main door; each unit must be complete of necessary control devices, temperature and humidity sensors, air filter, drain pump, automatic refrigerant shut-off valves, piping, piping kit/branch joints/headers and accessories, with inverter-inverter or inverter-slave scroll compressor combination for outdoor units which should be available in the local market.

Note: Unit with slightly higher capacity in kilowatt or ton (TR) rating can be offered as alternative but never lower than specified. One (1) ton cooling capacity must be equal to 12,000 BTU/hour or equal to 3.517 kilowatt (kW).

Notes for all indoor units:

a. Electronics/electrical parts must be compliant with the directive for restriction of hazardous substance (RoHS) and and Republic Act (RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990/ DENR Administrative Oder No. 2005-05 (Toxic Chemical Substances for Issuance of Chemical Control Orders.

b. Alternative offer based on horsepower rating shall not be considered and accepted. Unit to be delivered and installed shall be based on the General Equipment Design Capacity and Distribution Plan for each room as provided by PICC under Specific Scope of Work Item No. 2 and the Cluster System Design Plan and Equipment Schedules for each room/area to be done by the bidding Contractor as required under Specific Scope of Works Item No. 4.

c. Unit with slightly higher capacity in kilowatt or ton (TR) rating can be offered as alternative but never lower than specified. One (1) ton cooling capacity must be equal to 12,000 BTU/hour or equal to 3.517 kilowatt (kW).

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1.3. One (1) lot Modular Outdoor Unit/s with cooling capacity appropriately-designed by participating contractor for the total capacity of above indoor units per cluster at the North Wing Hall modular-type, 440-460 Volts, 3 phase, 60 Hz using environment-friendly refrigerant R410A and electronics/electrical parts compliant with the Directive for restriction of hazardous substance (RoHS), equipped with inverter-inverter combination of compressors or master/lead (1 inverter) and slave scroll compressors, equipped with automatic by-pass compressor operation system control – meaning, the air conditioning system operation shall continue even if one or two compressors break down, complete of necessary control devices, sensors, shut-off valves, piping, piping kits, and accessories for complete and normal operating condition with the indoor unit. Compressor (inverter and/or slave) should be available in the local market. If the outdoor unit is 220V-240V or 380V, the Contractor shall provide a step-down transformer.

The multi-split inverter system must have the following design and operational capabilities, features and specifications:

1.3.1. Inverter lead and inverter combination of compressor system or a master/lead (1 inverter) and slave scroll compressors system.

1.3.2. Cluster installation design and operational capacity combination ratio of indoor and outdoor units shall never be more than 10 percent or the total rated capacity of outdoor unit shall never be less than 90 percent of the total rated capacity of combination of indoor unit capacity. In addition, the outdoor system must be able to operate properly at 50 percent capacity or when the indoor units' capacity is reduced to 50 percent.

1.3.3. High system efficiency or coefficient of performance (COP) or the ratio of the cooling (capacity) provided over the electrical energy consumed ranging from 1.2219 (16HP) to 0.8617(50HP) or up to 0.8553 (54HP).

1.3.4. Compliant with the low sound level requirements as follows:

1.3.4.1. Indoor unit – the specified sound level for each type and model for low, medium and high speed fan shall be the basis and strictly followed (refer to individual unit's specification as required in this bidding document).

1.3.4.2. Modular outdoor unit - 45 to 68 dB(A)

1.3.5. Automatic back up operation for multiple outdoor and/or single outdoor unit – meaning, the entire cluster system continues to operate automatically even if one or more compressor or outdoor units break down. The air conditioning system should continue to operate

automatically with the remaining non-defective compressor or outdoor units.

1.3.6. Capacity increment of modular outdoor unit must be limited to 2Hp up to 8Hp.

1.3.7. Compliant with both (1.) environment-friendly refrigerant and (2.) directive for restriction of hazardous substance (RoHS) both for electrical and electronic equipment and devices. It is an international environment directive to regulate the use of designated chemical substances such as: lead, cadmium, hexavalent chromium, mercury, polybrominated biphenyls and polybrominated diphenylether in electronic and electrical equipment which is also in compliance with Republic Act (RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990.

1.3.8. Equipped with automatic test operation for system check and trouble shooting.

1.3.9. Currently certified air-con units or product by AHRI (Air-Conditioning, Heating, and Refrigeration Institute).

1.3.10. With controllers for zoning, interlocking of equipment and ready and compatible with building management system (BMS) connection.

1.3.11. Easy wiring for normal centralized address setting.

1.4. One (1) lot — Condensate drain pumps. One (1) extra or spare drain pump must be provided/delivered for each model of drain pump installed in each unit. It means, one (1) unit for 11.2 to 11.5kW and one (1) unit for 7.1 to 7.3kW capacity Indoor Units.

1.5. One (1) lot — Indoor Unit Printed Circuit Board (IU-PCB). One (1) extra or spare PCB must be provided/delivered for each model of PCB installed in each indoor unit. It means, one (1) unit for 11.2 to 11.5kW and one (1) unit for 7.1 to 7.3kW capacity Indoor Units.

1.6. One (1) lot — Outdoor Unit printed circuit board (OU-PCB). One (1) extra or spare of complete set of PCB must be provided/delivered for each model of PCB installed in each different outdoor unit.

1.7. One (1) lot — Panel (front)/signal receiver, wired remote controller, branch piping header/joints or ref-net joints and other devices and accessories necessary for complete installation and accessories.

1.8. One (1) lot — Watt-hour meter, digital, 3 phase 3 wires, CT rated, 230 volts, with RS232 communication connection, panel mounted; complete with the required current transformers, compatible with building management system (BMS) connection for the proper

	monitoring of the total power consumption of the air-conditioning units/system to be installed. Provide and install one (1) unit for the main feeder line if the power of all indoor units and outdoor units is sourced/connected directly from one (1) power supply system.
1.9. One (1) lot	Hard-drawn copper tubes (type L) and fittings, clamps, supports and other materials necessary for the proper and complete installation of the above units.
1.10. One (1) lot	Closed-cell rubber insulation (Aeroflex or its approved equivalent), one (1)-inch thick or its approved equivalent.
1.11. One (1) lot	Condensate Drain Pipe (Neltex, Moldex, Atlanta or its approved equivalent), Polyvinyl Chloride (PVC) pipe and fittings, 1-inch thick closed-cell insulation wrapped with polyethylene blue tape and its hanger & support system.
1.12. One (1) lot	Electrical wires – THHN for main supply cables, feeder lines and control lines, steel conduits/IMC panel boards/enclosure – weather-proof, System outdoor and indoor units main circuit breakers and sub-breakers - Square D, G.E. or approved equivalent, magnetic starter with overload relay- Fujihaya or approved equivalent, controllers, and accessories for the power supply and control system of the above air conditioners. Each indoor unit shall be provided with circuit breaker for control and isolation purposes for safety and repair works.
1.13. One (1) lot	Environment-friendly system refrigerant R410A for the multi-split.
1.14. One (1) lot	Environment-friendly cleaning agent, R-141B for flushing.
1.15. One (1) lot	Nitrogen gas for flushing and cleaning the pipe line.
1.16. One (1) lot	Oxygen-acetylene gas for cutting and welding works.
1.17. One (1) lot	Silver rods and other miscellaneous materials and supplies.
1.18. One (1) lot	Angle bars, 3/16" thick for steel base of fan coil units, 1/8" thick for supports. Use only engineering standard thickness (no commercial standard)
1.19. One (1) lot	Epoxy primer, enamel paints and other parts and materials necessary for the completion of repair works.
1.20. One (1) lot	Ceiling board – Use the same materials and specifications as utilized in the North Wing Hall. Refer to actual material and specification at site.
1.21. One (1) lot	Dismantling works for the existing Airconditioning Units and Supply/Return Ducts above the ceiling within the North Wing Hall.
1.22. One (1) lot	Miscellaneous materials and accessories necessary for the completion of works and other restoration works.

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Note: PICC shall provide 440 Volts power supply for VRF/VRV Equipment Installation

2. Design properly and appropriately the capacity of each set of cluster system based on the general design capacity and equipment schedule below and modular-type outdoor unit/s considering the capacity, type, and number of indoor units to be installed per set or per cluster system.

   Note:

   One (1) cluster system = one (1) set of outdoor unit plus two (2) or more indoor units; outdoor could be one or more units. Consider the maximum power and comfort cooling efficiency of the system at summer (April-May) condition in the proper design capacity and selection of the modular outdoor unit. Occupied room temperature shall be within 73 – 74 degrees Fahrenheit during summer (April-May) condition when outdoor/dry-bulb temperature reaches 97 to 100 degrees Fahrenheit. Total capacity of outdoor unit/system shall never be less than 90 percent the total capacity of the entire indoor rated capacity or the total capacity of indoor units shall never be more than 110 percent of the capacity of the outdoor unit even if the capability and capacity is up to 130 percent.

Table A-1: General Equipment Design Capacity and Distribution Plan (Schedule of Equipment)

Item No.	Area Served	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	North Wing Hall	1,126 316 1,442	25 units – 11.2 to 11.5kW (4.0HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required) 5 units – 7.1 to 7.3kW (2.5HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required)

Note: Attached is the Floor Plan (size-long bond paper)

3. Make and submit a more detailed Equipment Design Capacity and Distribution Plan or Schedule of Equipment (long bond paper size only) for each room or area listing and showing the following:

   3.1. Quantity, type and model of each indoor unit serving the room or area,

3.2. Cooling capacity of each indoor unit in kilowatt (kW) and the equivalent tonnage (1 ton equals 12, 000 BTU per Hour) and horsepower cooling capacity rating

3.3. Airflow rate/capacity of each indoor unit in cubic meter per second (CMS) and in equivalent cubic feet per minute (CFM).

3.4. Sound level pressure of each type/model of indoor unit in decibels A-weighting (dBA) indicating/showing the sound level for the low fan speed, medium fan speed and high fan speed for 3-speed units or low fan speed and high fan speed for 2-speed units or low fan speed, 2 medium fan speeds and high fan speed for 4-speed units.

3.5. Total capacity of each room or area based on the designed and rated capacity of each equipment to be installed in kilowatt (kW) and the equivalent tonnage (1 ton equals 12, 000 BTU per Hour) and horsepower cooling capacity rating.

3.6. Power consumption or power input in kilowatt (kW)

3.7. Power supply indicating the voltage, full-load ampere, phase and frequency

3.8. Dimension – height, width and depth – in millimetre (mm) and weight in Kilogram

3.9. Colour of indoor unit, and

3.10. Other detailed specifications and features of indoor units. Refer to sample table shown below.

Sample Table A-1-1: Equipment Design Capacity and Distribution Plan (Schedule of Equipment)

Item No.	Area Served	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	North Wing Hall	1,126 316 1,442	25 units – 11.2 to 11.5kW (4.0HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required) 5 units – 7.1 to 7.3kW (2.5HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required)

4. Make and submit a detailed Cluster System Design Plan and Schedule of Equipment (use long-bond paper size only) showing and listing the number (quantity), type, model, rated cooling capacity [(kW and tons (TR) as well as in horsepower], and the total and

individual kilowatt input of indoor unit and outdoor unit for each cluster system for North Wing Hall. Refer to sample tabulation below for basic guideline:

Sample Table A-1-2: Sample Basic Cluster System Design Plan and Equipment Schedule

Cluster No.	Area Served	Outdoor Units		Connected Indoor Units	
		Qty-Unit	Description	Qty-Unit	Description
1	North Wing Hall		CLUSTER 1:		
		1 set	___kW (50Hp) consisting of:		
			2 units ___kW (16Hp) capacity, model _____ and	12 units	Cassette-type, ___kW(4.0Hp), Model ____
			1 unit ___kW (18Hp) capacity, model _____ and		
			CLUSTER 2:		
		1 set	___kW (50Hp) consisting of:		
			2 units ___kW (16Hp) capacity, model _____ and	12 units	Cassette-type, ___kW(4.0Hp), Model ____

		1 set	1 unit ___kW (18Hp) capacity, model _____ and CLUSTER 3: ___kW (18Hp) consisting of: 3 units ___kW (6Hp) capacity, model _____ and	1 unit 5 units	Cassette-type, ___kW(4.0Hp), Model ____ Cassette-type, ___kW(2.5Hp), Model ____

5. Make and submit a more detailed installation plan and drawings using A3 size bond-paper showing all necessary details based on the PICC-supplied floor plan, list of indoor units, capacity design and distribution plan (equipment schedule), cluster/group system design plan, proposed location of outdoor unit/s, actual conditions observed, and other conditions.
6. Make and submit a detailed single-line electrical layout/drawing using A3 size bond-paper showing all necessary details for feeder lines, control wirings, control panels, circuit breakers with capacities, watt-hour meter and all other accessories for the whole and cluster design circuit.
7. Install the above-mentioned units, accessories and materials for their proper operation in North Wing Hall. Install indoor units or fan coil units (FCU) at the ceiling of said area, following proper alignment and uniform distances for proper air distribution and aesthetics with appropriate hangers, vibration isolator, and supports bolted to the second floor slab. Use proper size support-base and frames to avoid waggling expansion bolts.

   Install the indoor units based on the capacity design plan, cluster design plan and layout as shown in Table A-1: General Equipment Capacity Design and Distribution Plan (Schedule of Equipment), Cluster/Group Design Plan (refer to Sample Table A-1-2) and Installation Plan/Drawing (size-30" x 40") and electrical layout (size-30" x 40") as part of submittals by the Contractor during implementation stage.

   Dismantle properly/carefully any air duct and building accessories obstructing the proper installation of the unit. Any affected air duct should be repaired, covered and sealed properly for possible emergency use as the chilled water system shall still be on stand-by until the same is disposed. Any affected ceiling must also be restored as discussed in Item 10.

8. Install outdoor units outside at the Roof Deck of the Banquet Halls 1, 2, 3 (verify at site) considering the best location for aesthetics for Multi-Split VRV/VRF Inverter-Type A/C System. Said ACCUs shall be installed with gauge no. 20, GI air deflector with louver enclosure as specified in Item 1.21. Fabricate angular metal (2inches x 2inches x 1/4 inches) base/stand and metal support brackets with footings embedded on a concrete base, 5ft (L) x 3 ft (W) x 5 inches (T), or as appropriately required per actual outdoor unit sizes. Concrete footing/base shall be properly formed and cured atop the said existing water-proofed deck. Restore damaged areas affected by the contractor's works.

9. Re-route or relocate air duct, electrical conduits and other materials inside the ceiling obstructing the installation area of the indoor unit or fan coil unit (FCU). Free the installation area of any obstruction and restore the functionality of those re-routed facilities or building/system attachment.

10. Restore the ceiling using the same kind/model ceiling boards, frames and mechanism to jibe with the existing ceiling design and construction, and to suit the cassette type air conditioning units. Make a detailed plan on how to re-construct the affected ceiling for approval before implementation.

11. Install the above units using appropriate size hard-drawn copper tubing and fittings. All field connection must be soldered type to minimize refrigerant and oil leakage and system troubles.

12. Insulate the suction lines and other pipe lines required by manufacturer using one-inch (1") thick closed-cell rubber insulation, Aeroflex or approved equivalent and wrapped with polyethylene white tape (to be approved by PICC-MSD Assistant Director/TSD Director) complete with aluminum cladding.

13. Provide and install all electrical and control system requirements as well as accessories with capacities and specifications properly designed according to the best practices in the industry, Philippine Electrical Code, NEMA and other applicable local and international codes. All electrical/electronic system requirements shall include electrical wires – THHN for main supply cables, feeder lines and control lines, steel conduits/Intermediate Metal Conduit (IMC) or approved equal, panel boards/enclosure – weather-proof, transformer primary and secondary circuit breakers, Outdoor and indoor units main circuit breakers and sub-breakers - Square D, G.E. or approved equal, magnetic starter with overload relay- Fujihaya or approved equal (to be approved by PICC-MSD Assistant Director/TSD Director), controllers, and accessories for the power supply and control system of the above air conditioners.

14. Install Watt-hour meter/s, digital, 3 phase 3 wires, CT rated, 230 volts, with RS232 communication, panel mounted, complete with the required current transformers, compatible with building management system (BMS) connection for the proper monitoring and/or recording of the total power consumption of the air conditioning units/system to be installed at North Wing Hall. Install one-unit watt-hour meter to monitor and record the total consumption of both the outdoor units and indoor units/system if all the aircon units are connected to one (1) source of power supply. However, if all the aircon units are connected to different sources of power supply, install multiple units watt-hour meter to monitor and record the total consumption of both the outdoor units and indoor units/system connected to all sources of power supply

15. Paint all angle bars, conduit and other metallic component with two coat epoxy paint, cord or approved equal. Paint for electrical conduit shall be color orange and for angle bars shall be color gray.

16. Dismantle carefully the existing Airconditioning Units and Supply/Return Ducts above the ceiling within the North Wing Hall. Cut into smaller sections for easy hauling. Coordinate with PICC-MSD Project In-Charge for the proper duct length of the cut and for the location where the ceiling will be temporarily dismantled/opened for hauling down activity of the dismantled above ceiling ducts. Restore the affected ceiling after the dismantling works.

17. Always clean the working area on daily basis and haul the dismantled building or system accessories and components carefully to temporary designated area. All garbage shall be hauled outside the PICC premises at the Contractor's expense.

18. Conduct operation testing and commissioning of all indoor units and outdoor unit together with the PICC representative from Mechanical Services Division, and record all actual operating data as follows:

    18.1. Pre-cooling room temperature (Fahrenheit and Celsius) at 30 minutes and one (1) hour after start-up of all units operating at full or high speed.

    18.2. Ambient or atmospheric temperature (Fahrenheit and Celsius)

    18.3. Supply voltage and current (amperage) of every line/phase of each indoor unit and outdoor unit. Current (amperage) during operation should not be more than the rated full load amperage of each unit (indoor and outdoor). Otherwise, it should be treated as abnormal condition and will not be accepted until the unit is replaced with a new unit with good operating condition. Also, full payment will not be processed.

    18.4. Standing pressure of the refrigerant system prior to test operation.

    18.5. Suction and discharge pressure and temperature of the refrigerant system

    18.6. Sound pressure level (SPL A-weighting) of each unit (indoor and outdoor unit) in decibel (dBA) and the total sound pressure level of the room when all indoor units are operating at the same time. Actual sound pressure level of each fan speed of indoor unit shall be tested and recorded. SPL testing must be conducted during night time and when there is no other equipment/system operating at the same time to minimize ambient noise condition.

    Note: All sound pressure levels should conform with the requirement otherwise the unit will not be accepted and full payment will not be processed until the unit is replaced or the problem is corrected.

    18.7. Good operating condition of drain pump.

    18.8. Other actual operating parameters.

19. Turn-over all the air conditioning units and their accessories as well as other affected building attachment/facilities in good order/operating condition.

A-5. EAST WING HALL

SPECIFIC SCOPE OF WORKS:

1. Supply and deliver the following minimum requirement multi-split, inverter-type packaged-type air conditioning units:

   1.1. Twenty (20) units 11.2 to 11.5kW (4.0HP) Cooling Capacity Indoor Unit, Cassette-type ceiling concealed type, 4-way airflow/round airflow free-blow with very low or low noise/sound level – Low: 32-35dB(A), Medium: 36-40dB(A) and High: 41-43dB(A) measured at 1.5 meter below the center of the unit, 220-230 Volts, 1 phase, 60Hz using environment-friendly refrigerant, R410A; with fixed wired remote control on-off switch to be installed near the room's main door; each unit must be complete of necessary control devices, temperature and humidity sensors, air filter, drain pump, automatic refrigerant shut-off valves, piping, piping kit/branch joints/headers and accessories, with inverter-inverter or inverter-slave scroll compressor combination for outdoor units which should be available in the local market.

   1.2. Four (4) units 5.6 to 5.8kW (2.0HP) Cooling Capacity Indoor Unit, Cassette-type ceiling concealed type, 4-way airflow/round airflow free-blow with very low or low noise/sound level – Low: 26-27dB(A), Medium: 28-30dB(A) and High: 31-33dB(A) measured at 1.5 meter below the center of the unit, 220-230 Volts, 1 phase, 60Hz using environment-friendly refrigerant, R410A; with fixed wired remote control on-off switch to be installed near the room's main door; each unit must be complete of necessary control devices, temperature and humidity sensors, air filter, drain pump, automatic refrigerant shut-off valves, piping, piping kit/branch joints/headers and accessories, with inverter-inverter or inverter-slave scroll compressor combination for outdoor units which should be available in the local market.

   Note: Unit with slightly higher capacity in kilowatt or ton (TR) rating can be offered as alternative but never lower than specified. One (1) ton cooling capacity must be equal to 12,000 BTU/hour or equal to 3.517 kilowatt (kW).

   Notes for all indoor units:

   a. Electronics/electrical parts must be compliant with the directive for restriction of hazardous substance (RoHS) and and Republic Act (RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990/ DENR Administrative Oder No. 2005-05 (Toxic Chemical Substances for Issuance of Chemical Control Orders.

   b. Alternative offer based on horsepower rating shall not be considered and accepted. Unit to be delivered and installed shall be based on the General Equipment Design Capacity and Distribution Plan for each room as provided by PICC under Specific Scope of Work Item No. 2 and the Cluster

System Design Plan and Equipment Schedules for each room/area to be done by the bidding Contractor as required under Specific Scope of Works Item No. 4.

c. Unit with slightly higher capacity in kilowatt or ton (TR) rating can be offered as alternative but never lower than specified. One (1) ton cooling capacity must be equal to 12,000 BTU/hour or equal to 3.517 kilowatt (kW).

1.3. One (1) lot Modular Outdoor Unit/s with cooling capacity appropriately-designed by participating contractor for the total capacity of above indoor units per cluster at the East Wing Hall modular-type, 440-460 Volts, 3 phase, 60 Hz using environment-friendly refrigerant R410A and electronics/electrical parts compliant with the Directive for restriction of hazardous substance (RoHS), equipped with inverter-inverter combination of compressors or master/lead (1 inverter) and slave scroll compressors, equipped with automatic by-pass compressor operation system control – meaning, the air conditioning system operation shall continue even if one or two compressors break down, complete of necessary control devices, sensors, shut-off valves, piping, piping kits, and accessories for complete and normal operating condition with the indoor unit. Compressor (inverter and/or slave) should be available in the local market. If the outdoor unit is 220V-240V or 380V, the Contractor shall provide a step-down transformer.

The multi-split inverter system must have the following design and operational capabilities, features and specifications:

1.3.1. Inverter lead and inverter combination of compressor system or a master/lead (1 inverter) and slave scroll compressors system.

1.3.2. Cluster installation design and operational capacity combination ratio of indoor and outdoor units shall never be more than 10 percent or the total rated capacity of outdoor unit shall never be less than 90 percent of the total rated capacity of combination of indoor unit capacity. In addition, the outdoor system must be able to operate properly at 50 percent capacity or when the indoor units' capacity is reduced to 50 percent.

1.3.3. High system efficiency or coefficient of performance (COP) or the ratio of the cooling (capacity) provided over the electrical energy consumed ranging from 1.2219 (16HP) to 0.8617(50HP) or up to 0.8553 (54HP).

1.3.4. Compliant with the low sound level requirements as follows:

1.3.4.1. Indoor unit – the specified sound level for each type and model for low, medium and high speed fan shall be the basis and strictly followed (refer to individual unit's specification as required in this bidding document).

1.3.4.2. Modular outdoor unit - 45 to 68 dB(A)

1.3.5. Automatic back up operation for multiple outdoor and/or single outdoor unit – meaning, the entire cluster system continues to operate automatically even if one or more compressor or outdoor units break down. The air conditioning system should continue to operate automatically with the remaining non-defective compressor or outdoor units.

1.3.6. Capacity increment of modular outdoor unit must be limited to 2Hp up to 8Hp.

1.3.7. Compliant with both (1.) environment-friendly refrigerant and (2.) directive for restriction of hazardous substance (RoHS) both for electrical and electronic equipment and devices. It is an international environment directive to regulate the use of designated chemical substances such as: lead, cadmium, hexavalent chromium, mercury, polybrominated biphenyls and polybrominated diphenylether in electronic and electrical equipment which is also in compliance with Republic Act (RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990.

1.3.8. Equipped with automatic test operation for system check and trouble shooting.

1.3.9. Currently certified air-con units or product by AHRI (Air-Conditioning, Heating, and Refrigeration Institute).

1.3.10. With controllers for zoning, interlocking of equipment and ready and compatible with building management system (BMS) connection.

1.3.11. Easy wiring for normal centralized address setting.

1.4. One (1) lot — Condensate drain pumps. One (1) extra or spare drain pump must be provided/delivered for each model of drain pump installed in each unit. It means, one (1) unit for 11.2 to 11.5kW and one (1) unit for 5.6 to 5.8kW capacity Indoor Units.

1.5. One (1) lot — Indoor Unit Printed Circuit Board (IU-PCB). One (1) extra or spare PCB must be provided/delivered for each model of PCB installed in each indoor unit. It means, one (1) unit for 11.2 to 11.5kW and one (1) unit for 5.6 to 5.8kW capacity Indoor Units.

1.6. One (1) lot — Outdoor Unit printed circuit board (OU-PCB). One (1) extra or spare of complete set of PCB must be provided/delivered for each model of PCB installed in each different outdoor unit.

1.7. One (1) lot — Panel (front)/signal receiver, wired remote controller, branch piping header/joints or ref-net joints and other devices and accessories necessary for complete installation and accessories.

1.8. One (1) lot	Watt-hour meter, digital, 3 phase 3 wires, CT rated, 230 volts, with RS232 communication connection, panel mounted; complete with the required current transformers, compatible with building management system (BMS) connection for the proper monitoring of the total power consumption of the air-conditioning units/system to be installed. Provide and install one (1) unit for the main feeder line if the power of all indoor units and outdoor units is sourced/connected directly from one (1) power supply system.
1.9. One (1) lot	Hard-drawn copper tubes (type L) and fittings, clamps, supports and other materials necessary for the proper and complete installation of the above units.
1.10. One (1) lot	Closed-cell rubber insulation (Aeroflex or its approved equivalent), one (1)-inch thick or its approved equivalent.
1.11. One (1) lot	Condensate Drain Pipe (Neltex, Moldex, Atlanta or its approved equivalent), Polyvinyl Chloride (PVC) pipe and fittings, 1-inch thick closed-cell insulation wrapped with polyethylene blue tape and its hanger & support system.
1.12. One (1) lot	Electrical wires – THHN for main supply cables, feeder lines and control lines, steel conduits/IMC panel boards/enclosure – weather-proof, System outdoor and indoor units main circuit breakers and sub-breakers - Square D, G.E. or approved equivalent, magnetic starter with overload relay- Fujihaya or approved equivalent, controllers, and accessories for the power supply and control system of the above air conditioners. Each indoor unit shall be provided with circuit breaker for control and isolation purposes for safety and repair works.
1.13. One (1) lot	Environment-friendly system refrigerant R410A for the multi-split.
1.14. One (1) lot	Environment-friendly cleaning agent, R-141B for flushing.
1.15. One (1) lot	Nitrogen gas for flushing and cleaning the pipe line.
1.16. One (1) lot	Oxygen-acetylene gas for cutting and welding works.
1.17. One (1) lot	Silver rods and other miscellaneous materials and supplies.
1.18. One (1) lot	Angle bars, 3/16" thick for steel base of fan coil units, 1/8" thick for supports. Use only engineering standard thickness (no commercial standard)
1.19. One (1) lot	Epoxy primer, enamel paints and other parts and materials necessary for the completion of repair works.
1.20. One (1) lot	Ceiling board – Use the same materials and specifications as utilized in the East Wing Hall. Refer to actual material and specification at site.
1.21. One (1) lot	Dismantling works for the existing Supply/Return Ducts above the ceiling within the East Wing Hall.

1.22. One (1) lot — Miscellaneous materials and accessories necessary for the completion of works and other restoration works.

Note: PICC shall provide 440 Volts power supply for VRF/VRV Equipment Installation

3. Design properly and appropriately the capacity of each set of cluster system based on the general design capacity and equipment schedule below and modular-type outdoor unit/s considering the capacity, type, and number of indoor units to be installed per set or per cluster system.

   Note:

   One (1) cluster system = one (1) set of outdoor unit plus two (2) or more indoor units; outdoor could be one or more units. Consider the maximum power and comfort cooling efficiency of the system at summer (April-May) condition in the proper design capacity and selection of the modular outdoor unit. Occupied room temperature shall be within 73 – 74 degrees Fahrenheit during summer (April-May) condition when outdoor/dry-bulb temperature reaches 97 to 100 degrees Fahrenheit. Total capacity of outdoor unit/system shall never be less than 90 percent the total capacity of the entire indoor rated capacity or the total capacity of indoor units shall never be more than 110 percent of the capacity of the outdoor unit even if the capability and capacity is up to 130 percent.

Table A-1: General Equipment Design Capacity and Distribution Plan (Schedule of Equipment)

Item No.	Area Served	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	East Wing Hall	1,816	20 units – 11.2 to 11.5kW (4.0HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required) 4 units – 5.6 to 5.8kW (2.0HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required)

Note: Attached is the Floor Plan (size-long bond paper)

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3. Make and submit a more detailed Equipment Design Capacity and Distribution Plan or Schedule of Equipment (long bond paper size only) for each room or area listing and showing the following:

   3.1. Quantity, type and model of each indoor unit serving the room or area,

   3.2. Cooling capacity of each indoor unit in kilowatt (kW) and the equivalent tonnage (1 ton equals 12, 000 BTU per Hour) and horsepower cooling capacity rating

   3.3. Airflow rate/capacity of each indoor unit in cubic meter per second (CMS) and in equivalent cubic feet per minute (CFM).

   3.4. Sound level pressure of each type/model of indoor unit in decibels A-weighting (dBA) indicating/showing the sound level for the low fan speed, medium fan speed and high fan speed for 3-speed units or low fan speed and high fan speed for 2-speed units or low fan speed, 2 medium fan speeds and high fan speed for 4-speed units.

   3.5. Total capacity of each room or area based on the designed and rated capacity of each equipment to be installed in kilowatt (kW) and the equivalent tonnage (1 ton equals 12, 000 BTU per Hour) and horsepower cooling capacity rating.

   3.6. Power consumption or power input in kilowatt (kW)

   3.7. Power supply indicating the voltage, full-load ampere, phase and frequency

   3.8. Dimension – height, width and depth – in millimetre (mm) and weight in Kilogram

   3.9. Colour of indoor unit, and

   3.10. Other detailed specifications and features of indoor units. Refer to sample table shown below.

Sample Table A-1-1: Equipment Design Capacity and Distribution Plan (Schedule of Equipment)

Item No.	Area Served	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	East Wing Hall	1,816	20 units – 11.2 to 11.5kW (4.0HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required) 4 units – 5.6 to 5.8kW (2.0HP) Cassette-type, round airflow or 4-way airflow, other features (enumerate in details as required)

4. Make and submit a detailed Cluster System Design Plan and Schedule of Equipment (use long-bond paper size only) showing and listing the number (quantity), type, model, rated cooling capacity [(kW and tons (TR) as well as in horsepower], and the total and individual kilowatt input of indoor unit and outdoor unit for each cluster system for East Wing Hall. Refer to sample tabulation below for basic guideline:

Sample Table A-1-2: Sample Basic Cluster System Design Plan and Equipment Schedule

Cluster No.	Area Served	Outdoor Units		Connected Indoor Units	
		Qty-Unit	Description	Qty-Unit	Description
1	East Wing Hall		CLUSTER 1:		
		1 set	___kW (42Hp) consisting of:		
			3 units ___kW (14Hp) capacity, model _____ and	8 units	Cassette-type, ___kW(4.0Hp), Model ____
				4 units	Cassette-type, ___kW(2.0Hp), Model ____
			CLUSTER 2:		
		1 set	___kW (50Hp) consisting of:		
			2 units ___kW (16Hp) capacity, model _____ and	12 units	Cassette-type, ___kW(4.0Hp), Model ____
			1 unit ___kW (18Hp) capacity, model _____ and		

5. Make and submit a more detailed installation plan and drawings using A3 size bond-paper showing all necessary details based on the PICC-supplied floor plan, list of indoor units, capacity design and distribution plan (equipment schedule), cluster/group system design plan, proposed location of outdoor unit/s, actual conditions observed, and other conditions.

6. Make and submit a detailed single-line electrical layout/drawing using A3 size bond-paper showing all necessary details for feeder lines, control wirings, control panels, circuit breakers with capacities, watt-hour meter and all other accessories for the whole and cluster design circuit.

7. Install the above-mentioned units, accessories and materials for their proper operation in East Wing Hall. Install indoor units or fan coil units (FCU) at the ceiling of said area, following proper alignment and uniform distances for proper air distribution and aesthetics with appropriate hangers, vibration isolator, and supports bolted to the second floor slab. Use proper size support-base and frames to avoid waggling expansion bolts.

   Install the indoor units based on the capacity design plan, cluster design plan and layout as shown in Table A-1: General Equipment Capacity Design and Distribution Plan (Schedule of Equipment), Cluster/Group Design Plan (refer to Sample Table A-1-2) and Installation Plan/Drawing (size-30" x 40") and electrical layout (size-30" x 40") as part of submittals by the Contractor during implementation stage.

   Dismantle properly/carefully any air duct and building accessories obstructing the proper installation of the unit. Any affected air duct should be repaired, covered and sealed properly for possible emergency use as the chilled water system shall still be on stand-by until the same is disposed. Any affected ceiling must also be restored as discussed in Item 10.

8. Install outdoor units outside at the Land Scape Area adjacent of Service Elevator serving Secretariat Building (verify at site) considering the best location for aesthetics for Multi-Split VRV/VRF Inverter-Type A/C System. Said ACCUs shall be installed with gauge no. 20, GI air deflector with louver enclosure as specified in Item 1.21. Fabricate angular metal (2inches x 2inches x 1/4 inches) base/stand and metal support brackets with footings embedded on a concrete base, 5ft (L) x 3 ft (W) x 5 inches (T), or as appropriately required per actual outdoor unit sizes. Concrete footing/base shall be properly formed and cured atop the said existing water-proofed deck. Restore damaged areas affected by the contractor's works.

9. Re-route or relocate air duct, electrical conduits and other materials inside the ceiling obstructing the installation area of the indoor unit or fan coil unit (FCU). Free the installation area of any obstruction and restore the functionality of those re-routed facilities or building/system attachment.

10. Restore the ceiling using the same kind/model ceiling boards, frames and mechanism to jibe with the existing ceiling design and construction, and to suit the cassette type air conditioning units. Make a detailed plan on how to re-construct the affected ceiling for approval before implementation.

11. Install the above units using appropriate size hard-drawn copper tubing and fittings. All field connection must be soldered type to minimize refrigerant and oil leakage and system troubles.

12. Insulate the suction lines and other pipe lines required by manufacturer using one-inch (1") thick closed-cell rubber insulation, Aeroflex or approved equivalent and wrapped with polyethylene white tape (to be approved by PICC-MSD Assistant Director/TSD Director) complete with aluminum cladding.

13. Provide and install all electrical and control system requirements as well as accessories with capacities and specifications properly designed according to the best practices in the industry, Philippine Electrical Code, NEMA and other applicable local and international codes. All electrical/electronic system requirements shall include electrical wires – THHN for main supply cables, feeder lines and control lines, steel conduits/Intermediate Metal Conduit (IMC) or approved equal, panel boards/enclosure – weather-proof, transformer primary and secondary circuit breakers, Outdoor and indoor units main circuit breakers and sub-breakers - Square D, G.E. or approved equal, magnetic starter with overload relay- Fujihaya or approved equal (to be approved by PICC-MSD Assistant Director/TSD Director), controllers, and accessories for the power supply and control system of the above air conditioners.

14. Install Watt-hour meter/s, digital, 3 phase 3 wires, CT rated, 230 volts, with RS232 communication, panel mounted, complete with the required current transformers, compatible with building management system (BMS) connection for the proper monitoring and/or recording of the total power consumption of the air conditioning units/system to be installed at East Wing Hall. Install one-unit watt-hour meter to monitor and record the total consumption of both the outdoor units and indoor units/system if all the aircon units are connected to one (1) source of power supply. However, if all the aircon units are connected to different sources of power supply, install multiple units watt-hour meter to monitor and record the total consumption of both the outdoor units and indoor units/system connected to all sources of power supply

15. Paint all angle bars, conduit and other metallic component with two coat epoxy paint, cord or approved equal. Paint for electrical conduit shall be color orange and for angle bars shall be color gray.

16. Dismantle carefully the existing Supply/Return Ducts and FCU's above the ceiling/flooring within the East Wing Hall/inner room. Cut into smaller sections for easy hauling. Coordinate with PICC-MSD Project In-Charge for the proper duct length of the cut and for the location where the ceiling will be temporarily dismantled/opened for hauling down activity of the dismantled above ceiling ducts. Restore the affected ceiling after the dismantling works.

17. Dismantling the existing ACCU's (16 units) after evacuation of refrigerant contents. Haul and store the said ACCU's/FCU's at the PICC designated area.

18. Always clean the working area on daily basis and haul the dismantled building or system accessories and components carefully to temporary designated area. All garbage shall be hauled outside the PICC premises at the Contractor's expense.

19. Conduct operation testing and commissioning of all indoor units and outdoor unit together with the PICC representative from Mechanical Services Division, and record all actual operating data as follows:

    19.1. Pre-cooling room temperature (Fahrenheit and Celsius) at 30 minutes and one (1) hour after start-up of all units operating at full or high speed.

    19.2. Ambient or atmospheric temperature (Fahrenheit and Celsius)

19.3. Supply voltage and current (amperage) of every line/phase of each indoor unit and outdoor unit. Current (amperage) during operation should not be more than the rated full load amperage of each unit (indoor and outdoor). Otherwise, it should be treated as abnormal condition and will not be accepted until the unit is replaced with a new unit with good operating condition. Also, full payment will not be processed.

19.4. Standing pressure of the refrigerant system prior to test operation.

19.5. Suction and discharge pressure and temperature of the refrigerant system

19.6. Sound pressure level (SPL A-weighting) of each unit (indoor and outdoor unit) in decibel (dBA) and the total sound pressure level of the room when all indoor units are operating at the same time. Actual sound pressure level of each fan speed of indoor unit shall be tested and recorded. SPL testing must be conducted during night time and when there is no other equipment/system operating at the same time to minimize ambient noise condition.

Note: All sound pressure levels should conform with the requirement otherwise the unit will not be accepted and full payment will not be processed until the unit is replaced or the problem is corrected.

19.7. Good operating condition of drain pump.

19.8. Other actual operating parameters.

20. Turn-over all the air conditioning units and their accessories as well as other affected building attachment/facilities in good order/operating condition.

II. SPECIAL/OTHER CONDITIONS OF THE CONTRACT:

1. The contractor must conduct site survey and inspection.

2. Upon the receipt of letter of award, the Contractor shall post a performance security in favor of PICC. Said security shall be equivalent to five percent (5%) of total contract price if in the form of cash, cashier's check or manager's check, or ten percent (10%) if in the form of bank guarantee, or thirty percent (30%) of total contract price if in the form of surety bond (callable upon demand) issued by any reputable surety or insurance company accredited by PICC. Said performance security will be released only after the final work acceptance by PICC. However, this will be forfeited by PICC as payment or part of the payment (if it will not suffice) for any damage/s done as a result of negligence or poor workmanship of the Contractor.

3. Any work that may affect the operation and security measures of PICC shall be coordinated properly and shall be done in accordance with the PICC' approved schedule.

4. Welding works or any "hot work" requirement of the project must be coordinated with the project-in-Charge and seek approval from the TSD Director prior to implementation.

5. All ceiling cassette indoor units must be installed at the ceiling with rigid metal support using angle bars with ¼" thick (engineering standard and not commercial standard).
6. Pipe runs must have a support post or brackets.
7. All electrical works, size of wires, circuit breakers, wirings, safety gadgets and controllers must conform with the standard practice in the industry and in accordance with the Electrical Code of the Philippines, NEMA and other applicable local and international codes for safety.
8. All units/system must be in full charge of appropriate compressor oil and refrigerant 410A to ensure long life and continuous reliability of equipment/system operation.
9. The contractor after final testing of the equipment must submit the equipment test operation result for each equipment as specified below as part of attachment for second and/or final payment.
    9.1 Pre-cooling room temperature (Fahrenheit and Celsius) at 30 minutes and one(1) hour after start-up of all units operating at full or high speed.
    9.2. Ambient or atmospheric temperature (Fahrenheit and Celsius)
    9.3. Supply voltage and current (amperage) of every line/phase of each indoor unit and outdoor unit. Current (amperage) during operation should not be more than the rated full load amperage of each unit (indoor and outdoor). Otherwise, it should be treated as abnormal condition and will not be accepted until the unit is replaced with a new unit with good operating condition. Also, full payment will not be processed.
    9.4. Standing pressure of the refrigerant system prior to test operation.
    9.5. Suction and discharge pressure and temperature of the refrigerant system
    9.6. Sound pressure level (SPL A-weighting) of each unit (indoor and outdoor unit) in decibel (dBA) and the total sound pressure level of the room when all indoor units are operating at the same time. Actual sound pressure level of each fan speed of indoor unit shall be tested and recorded. SPL testing must be conducted during night time and when there is no other equipment/system operating at the same time to minimize ambient noise condition. Note: All sound pressure levels should conform to the requirement otherwise the unit will not be accepted and full payment will not be processed until the unit is replaced or the problem is corrected.
    9.7. Good operating condition of drain pump.
    9.8. Other actual operating parameters.
10. All metal supports, hangers, brackets, clamps and bases of the A/C units/equipment must be painted with epoxy primer gray, one (1) coat and two (2) coats epoxy paint gray finish.
11. The contractor shall report to PICC on or before the bidding, any perceived or evident condition that would prevent him from performing first class work.
12. The Contractor shall ensure that its assigned personnel and/or representatives shall comply with, and submit themselves to, the rules and regulations of the PICC on security, sanitation, environmental compliance, safety and health/Covid-19 protocols and other regulations.

13. The Contractor must submit NBI/Police Clearance and RT-PCR test certification of negative result in Covid-19 infection of each assigned personnel to be assigned at the PICC.
14. The Contractor's personnel should wear its company uniform/ID and facemask and practice social distancing at all times in the PICC premises.
15. The Contractor should free the PICC and its personnel from and against all liabilities arising from injuries or liabilities to persons or damages to property occasioned by any act or omissions by the Contractor including any and all expenses, legal or otherwise which may be incurred by PICC and its personnel in the defence of any claim, action or suit.

III. TRAINING:

The winning contractor must conduct seminar and training sessions for the transfer of technology and technical know-how for the proper installation, operation, maintenance, and repair of VRV/VRF units/system before and after the installation and commissioning. Also, it must conduct seminar on the proper use of design software in the proper designing of VRV/VRF system for the future requirement of the Center.

As part of the training program, the contractor should allow any assigned personnel of PICC-Mechanical Services Division for on-the-job training during installation and commissioning and monthly check-up and servicing for a one-year warranty period.

IV. EVALUATION OF EQUIPMENT/SYSTEM COMPLIANCE

Evaluation of offer, and compliance to requirements and qualification shall be based on "Pass or Fail" criteria. Compliance Evaluation for equipment and system specification shall be based on the following criteria/guidelines:

Guidelines on the Evaluation of Offered Equipment/System

Item No.	**Minimum Required Specifications and Features for Compliance**									
A.	Indoor Unit									
1	Capacity, kW	14 – 14.5	11.2-11.6	9 – 9.3	7.1 – 7.3	5.6-5.8	4.5-4.7	3.6-3.7	2.8-2.9	2.2-2.3
	Cap.-HP	5HP	4HP	3.2HP	2.5HP	2HP	1.6HP	1.25HP	1HP	
2	Type	Ceiling Cassette								
	Type					Wall-mounted/Ceiling-Concealed Ducted				

3	Airflow Distribution	Round/4-way	Round/4-way	Round/4-way	Round/4-way	Round/4-way for ceiling cassette; standard vaned free-blow for wall-mounted or better				Ducted
4	Sound Pressure Level*, dB(A)	Low: 33-35 Medium: 38-41 High: 43-45	Low: 32-34 Medium: 37-39 High: 40-43	Low: 30-31 Medium: 32-35 High: 36-37	Low: 27-28 Medium: 29-31 High: 32-34	Low: 27-28 Medium: 28-30 High: 31-32	Low: 26-27 Medium: 28-30 High: 31-32	Low: 26-27 Medium: 28-30 High: 31-32	Low: 26-28 Medium: 28-31 High: 30-32	Low: 28-30 Medium : 30-32 High: 32-34
5	Power Supply (AC) – Alternating current	220-230V, 1phase, 60Hz	220-230V, 1phase, 60Hz	220-230V, 1phase, 60Hz	220-230V, 1phase, 60Hz	220-230V, 1phase, 60Hz	220-230V, 1phase, 60Hz	220-230V, 1phase, 60Hz	220-230V, 1phase, 60Hz	220-230V, 1phase, 60Hz
6	Colour – panel/casing	White/ fresh white	White/ fresh white	White/ fresh white	White/ fresh white	White/ fresh white	White/ fresh white	White/ fresh white	White/ fresh white	White/ fresh white
7	Environmental compliance on Refrigerant	Environment-friendly Refrigerant®410A –compliant with Republic Act(RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990.								
8	Environmental Compliance with restriction on hazardous substances	Electrical and electronics parts must be compliant with the Restriction on Hazardous Substances (RoHS)/Republic Act(RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990. **Restricted chemical substances**: lead, cadmium, hexavalent chromium, mercury, polybrominated biphenyls and polybrominated diphenylether in electronic and electrical equipment								
B.	Outdoor Unit									
1	Compressor system combination	Inverter and inverter type combination of compressor system or a inverter master/lead type and slave scroll compressors system.								
2	Power supply	220-230Volts (V), 3phase, 60Hertz (Hz) or 440-460V, 3phase, 60Hz								
3	Type of Design and installation	Modular type for easy operation, maintenance and repair works and to minimize delay of operation and shutdown during emergency.								
4	Cluster design and operational capacity combination ratio	Cluster system design and operational capacity combination ratio of indoor and outdoor units must never be more than 10 percent or the total rated capacity of outdoor unit must never be less than 90 percent of the total rated capacity of combination of indoor unit capacity.								
5	System efficiency or coefficient of performance (COP)	High system efficiency or coefficient of performance (COP) or the ratio of the cooling (capacity) provided over the electrical energy consumed ranging from 1.2219 (16HP) to 0.8617(50HP) or up to 0.8553 (54HP).								
6	Sound level	45 to 68 dB(A) measured at a point 1 meter (m) in front of the unit at aheight of 1.5 meter (m)								

7	Automatic back up operation for multiple outdoor and single outdoor unit	It means that the entire cluster system continues to operate automatically (without human intervention) even if one or more compressor or outdoor units break down. In other words, the air conditioning system should continue to operate automatically with the remaining non-defective compressor or outdoor units.
8	Capacity increment	Capacity increment of modular outdoor unit must be limited to 2 up to 5Hp/8Hp.
9	Environmental compliance on Refrigerant	Environment-friendly Refrigerant®410A –compliant with Republic Act(RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990.
10	Environmental Compliance with restriction on hazardous substances	Electrical and electronics parts must be compliant with the Restriction on Hazardous Substances Directive (RoHS) and Republic Act(RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990/DENR Administrative Oder No. 2005-05(Toxic Chemical Substances for Issuance of Chemical Control Orders . **Restricted chemical substances**: lead, cadmium, hexavalent chromium, mercury, polybrominated biphenyls and polybrominated diphenylether in electronic and electrical equipment
11	Automatic test operation and trouble shooting	Must be equipped with button and device for automatic test operation for system check and trouble shooting
12	BMS-ready	Ready and compatible with building management system (BMS) connection. The system should be equipped already with controllers for BMS connection and operation as well as zoning, interlocking of equipment.
13	Colour – panel/casing	White/Ivory white/Gray(no dark gray)
		Notes: 1) * - sound pressure level of indoor unit that is lower than the specified range is acceptable.
C.	Notes for Environmental Compliance	Only branded units that are compliant to Restriction on Hazardous Substances (RoHS) and Republic Act(RA) 6969 known as the Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990 shall be accepted. **For it to pass, the bidder/contractor must submit as part of technical document the Certification of compliance to Restriction on Hazardous Substances (RoHS).** This certification shall be considered as compliance to RA 6969/DENR AO 2005-05.

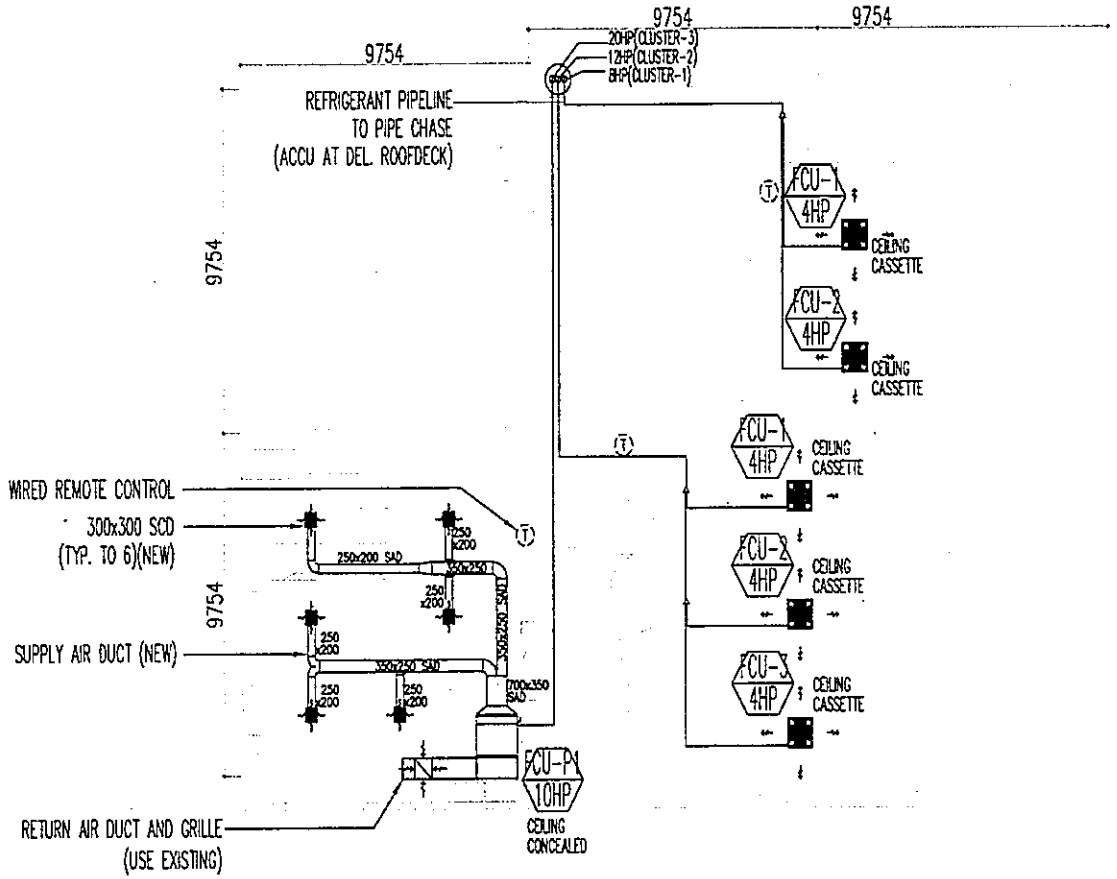
Section VII. Drawings

EQUIPMENT SCHEDULE :
VRF TYPE AIR-CONDITIONING UNITS

UNIT	QTY.	CAPACITY KW (HP)	LEVEL	ROOMS SERVED/ AREA (m2)	REFRIGERANT	INDOOR UNIT DATA										OUTDOOR UNIT DATA							
						FCU	QTY	KW	TYPE	AIR FLOW (CMH)	MOTOR OUTPUT (KW)	ELECTRICAL DATA V	PH	HZ	WEIGHT (KG)	AIR FLOW (CMH)	TYPE	MOTOR (KW)	DRIVE	COMPRESSOR (KW OUTPUT)	ELECTRICAL DATA V	PH	HZ	WEIGHT (KG)
ACCU-OL1 8HP	1	21.10 (8.00)	DEL BLDG 4TH FLR	SUMMIT HALL-H (54.30m2)	R-410A	FCU 4HP	2	10.55	CEILING CASSETTE (ROUND FLOW)	2,040.8	0.120	220	1	60	25	9,420	PROPELLER	0.55	DIRECT	3.4	380	3	60	185
ACCU-OL2 12HP	1	31.95 (12.00)	DEL BLDG 4TH FLR	SUMMIT HALL-G (116.30m2)	R-410A	FCU 4HP	3	10.55	CEILING CASSETTE (ROUND FLOW)	2,040.8	0.120	220	1	60	25	14,280	PROPELLER	1.10	DIRECT	4.8	380	3	60	370
ACCU-OL3 20HP	1	52.75 (20.00)	DEL BLDG 4TH FLR	PANTRY-1 (91.60m2)	R-410A	FCU 10HP	1	26.38	CEILING CONCEALED DUCTED	5,102	0.760	220	1	60	137	23,700	PROPELLER	1.65	DIRECT	8.2	380	3	60	555
			DEL BLDG 4TH FLR	PANTRY-4 (40.00m2)		FCU 5HP	1	13.18	CEILING CONCEALED DUCTED	2548	0.35	220	1	60	46									
			DEL BLDG 5TH FLR	PANTRY-2 (43.40m2)		FCU 5HP	1	13.18	CEILING CONCEALED DUCTED	2548	0.35	220	1	60	46									
ACCU-OL4 48HP	1	126.57 (48.00)	SEC BLDG GRD FLR	NORTH WING HALL CUBICLE WORKSTATION (1,126.00m2)	R-410A	FCU 4HP	12	10.55	CEILING CASSETTE (ROUND FLOW)	2,040.8	0.120	220	1	60	25	41,940	PROPELLER	4.5	DIRECT	23	380	3	60	855
ACCU-OL5 48HP	1	126.57 (48.00)	SEC BLDG GRD FLR		R-410A	FCU 4HP	12	10.55	CEILING CASSETTE (ROUND FLOW)	2,040.8	0.120	220	1	60	25	41,940	PROPELLER	4.5	DIRECT	23	380	3	60	855
ACCU-OL6 18HP	1	44.80 (16.00)	SEC BLDG GRD FLR	NORTH WING HALLWAY (316.90m2)	R-410A	FCU 2.5HP	5	6.60	CEILING CASSETTE (ROUND FLOW)	1,275.5	0.055	220	1	60	5.5	21,420	PROPELLER	1.65	DIRECT	7.2	380	3	60	555
						FCU 4HP	1	10.55	CEILING CASSETTE (ROUND FLOW)	2,040	0.120	220	1	60	25									
ACCU-OL7 40HP	1	105.51 (40.00)	SEC BLDG GRD FLR	EAST WING HALL PRAYER ROOM 1&2 (40.21m2)	R-410A	FCU 2HP	2	5.28	CEILING CASSETTE (ROUND FLOW)	1,020	0.055	220	1	60	19.5	38,640	PROPELLER	3.55	DIRECT	17.6	380	3	60	765
				EAST WING HALL ROOM 1&2 (37.00m2)		FCU 2HP	2	5.28	CEILING CASSETTE (ROUND FLOW)	1,020	0.055	220	1	60	19.5									
				EAST WING HALL CUBICLE WORKSTATION (850.00m2)		FCU 4HP	8	10.55	CEILING CASSETTE (ROUND FLOW)	2,040	0.120	220	1	60	25									
ACCU-OL8 48HP	1	126.57 (48.00)	SEC BLDG GRD FLR	EAST WING HALL CUBICLE WORKSTATION (850.00m2)	R-410A	FCU 4HP	11	10.55	CEILING CASSETTE (ROUND FLOW)	2,040	0.120	220	1	60	25	41,940	PROPELLER	4.5	DIRECT	23	380	3	60	855
				EAST WING HALL ROOM 3 (39.21m2)		FCU 4HP	1	10.55	CEILING CASSETTE (ROUND FLOW)	2,040	0.120	220	1	60	25									

1 EQUIPMENT SCHEDULE
M SCALE: NTS

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED A/C SYSTEM AT VARIOUS AREAS	01-20-2021	ROSEANN S. SALADO SHIFT SUPERVISORY TECHNICIAN, MSD	ENGR. WILSON B. DELOS REYES DIRECTOR, TSD	ATTY. [illegible] CADILLA GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARICOR MACANA ASSISTANT DIRECTOR, MSD		



SUMMIT HALL H - CLUSTER 1
SUMMIT HALL G - CLUSTER 2
PANTRY 1 - CLUSTER 3

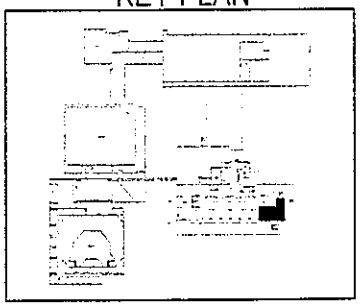
2 M **PROPOSED AIRCONDITIONING LAYOUT**

SCALE: 1:200

GENERAL NOTES:

1. POWER SUPPLY TAPPING POINT FOR ACCU IS AT 4/F DEL BLDG. AHU ROOM.
2. PICC SHALL PROVIDE 440-460V POWER SUPPLY FOR THE INSTALLATION OF VRV/VRF AIR-CONDITIONING UNITS, MULTI-SPLIT INVERTER TYPE.
3. CONTRACTOR TO PROVIDE STEP DOWN POWER TRANSFORMER AND ITS PROTECTION HOUSING FOR 220-240V/ 380V SUPPLIED EQUIPMENT. REFER TO TECHNICAL SPECIFICATION.
4. CONTRACTOR TO PROVIDE 1-LOT ELECTRIC WATT-HOUR METER FOR MONITORING OF ELECTRIC POWER CONSUMPTION AT THE ROOM. REFER TO TECHNICAL SPECIFICATION.
5. TO INSTALL ACCU AT ROOF-DECK OF THE DELEGATION BUILDING (VERIFY AT SITE).
6. ACTUAL LOCATION OF FCU AND ACCU MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION.
7. CONTRACTOR TO VERIFY AT SITE ALL LOCATION OF EQUIPMENT, POWER SUPPLY TAPPING POINTS, PIPE ROUTINGS, ETC. SUBMIT SHOP DRAWING TO TSD-MSD PRIOR TO ACTUAL INSTALLATION.
8. CONDENSATE DRAIN TO BE TAPPED TO NEAREST DRAIN LINE OR APPROVED LOCATION.
9. ACTUAL LOCATION OF WIRED REMOTE CONTROLLER, TRANSFORMER, POWER SUPPLY TAPPING POINT MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION (VERIFY AT SITE).

KEY PLAN



LOCATION: FOURTH FLOOR DELEGATION BLDG

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED A/C SYSTEM AT VARIOUS AREAS	01-20-2021	R[illegible] SHIFT SUPERVISOR, TECHN'L OPN. MSD	ENGR. WILSON B. DELOS REYES DIRECTOR, TSD	ATTY. R[illegible] S. PADILLA GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARIO T. MACANAS ASSISTANT DIRECTOR, MSD		

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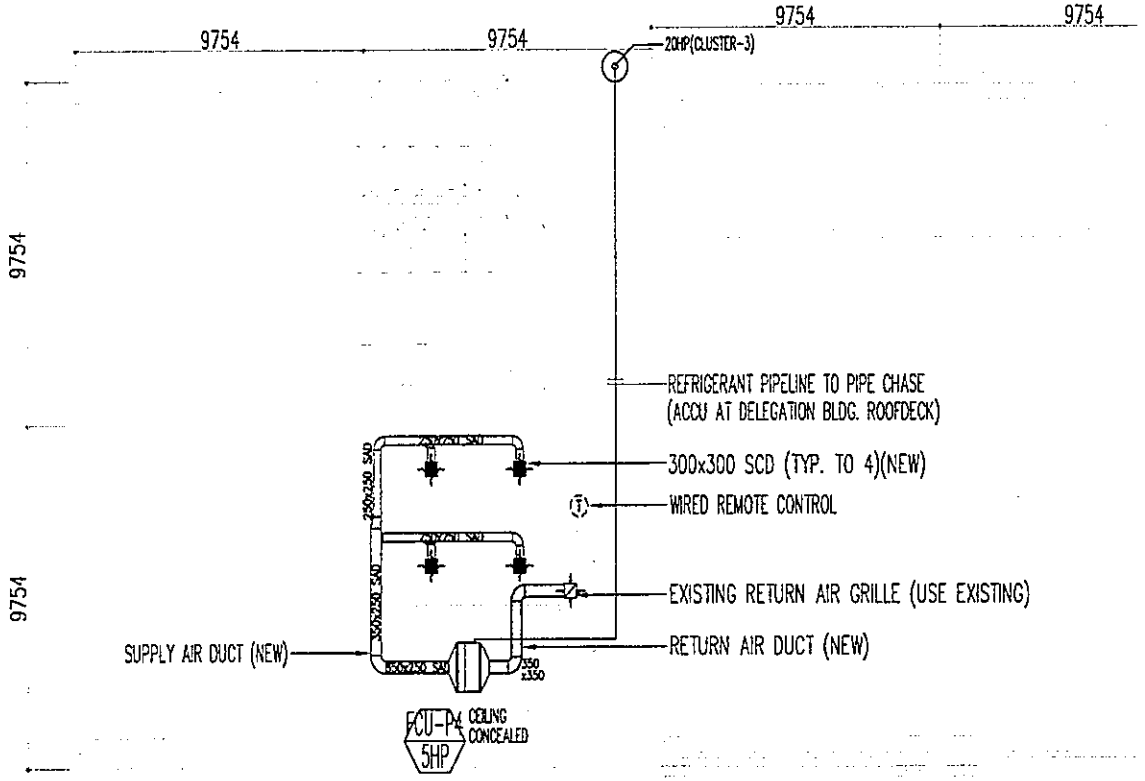


PANTRY 4 - CLUSTER 3

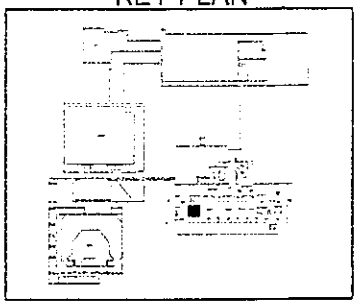
3 PROPOSED AIRCONDITIONING LAYOUT

M SCALE: 1:200

GENERAL NOTES:

1. POWER SUPPLY TAPPING POINT FOR ACCU IS AT 4/F DEL. BLDG. AHU ROOM.
2. PICC SHALL PROVIDE 440-460V POWER SUPPLY FOR THE INSTALLATION OF VRV/VRF AIR-CONDITIONING UNITS, MULTI-SPLIT INVERTER TYPE.
3. CONTRACTOR TO PROVIDE STEP DOWN POWER TRANSFORMER AND ITS PROTECTION HOUSING FOR 220-240V/ 380V SUPPLIED EQUIPMENT. REFER TO TECHNICAL SPECIFICATION.
4. CONTRACTOR TO PROVIDE 1-LOT ELECTRIC WATT-HOUR METER FOR MONITORING OF ELECTRIC POWER CONSUMPTION AT THE ROOM. REFER TO TECHNICAL SPECIFICATION.
5. TO INSTALL ACCU AT ROOF-DECK OF THE DELEGATION BUILDING (VERIFY AT SITE).
6. ACTUAL LOCATION OF FCU AND ACCU MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION.
7. CONTRACTOR TO VERIFY AT SITE ALL LOCATION OF EQUIPMENT, POWER SUPPLY TAPPING POINTS, PIPE ROUTINGS, ETC. SUBMIT SHOP DRAWING TO TSD-MSD PRIOR TO ACTUAL INSTALLATION.
8. CONDENSATE DRAIN TO BE TAPPED TO NEAREST DRAIN LINE OR APPROVED LOCATION.
9. ACTUAL LOCATION OF WIRED REMOTE CONTROLLER. TRANSFORMER, POWER SUPPLY TAPPING POINT MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION (VERIFY AT SITE).

KEY PLAN



LOCATION: FOURTH FLOOR DELEGATION BLDG.

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED A/C SYSTEM AT VARIOUS AREAS	01-20-2021	ROLANDO SOLEDO, SHIFT SUPERVISOR TECHNICAL, MSD	ENGR. WILSON B. DELOS REYES, DIRECTOR, TSD	ATTY. RENATO B. PADILLA, GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARIO B. MACANAS, ASSISTANT DIRECTOR, MSD		

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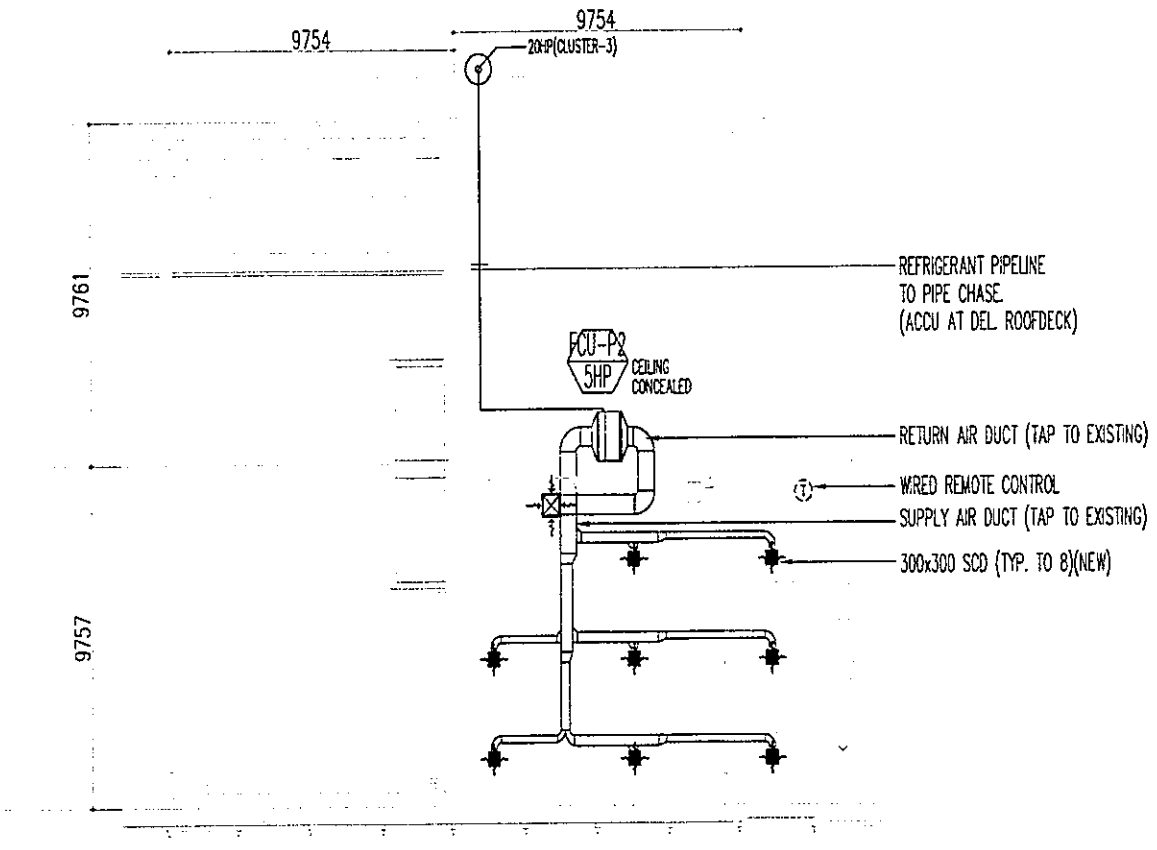


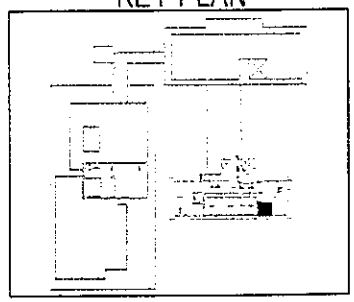
PANTRY 2 - CLUSTER 3
PROPOSED AIRCONDITIONING LAYOUT

4 M SCALE: 1:200

GENERAL NOTES:

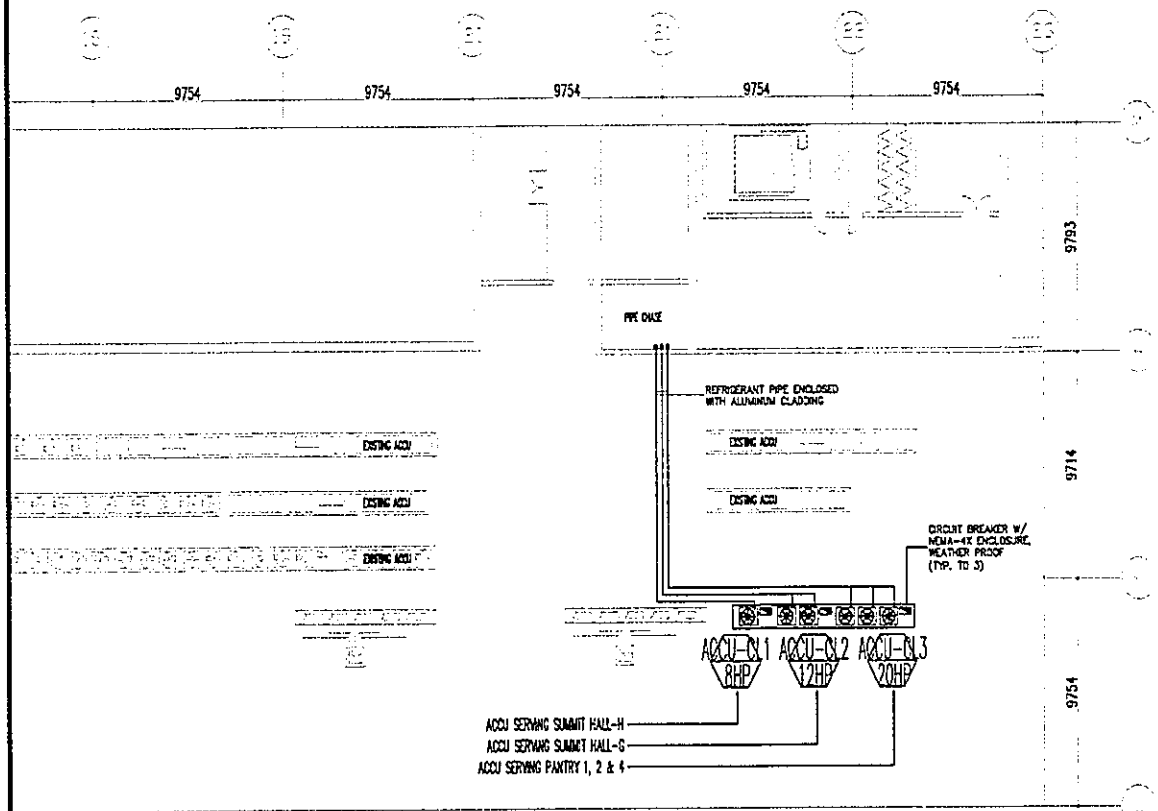
1. POWER SUPPLY TAPPING POINT FOR ACCU IS AT 4/F DEL. BLDG. AHU ROOM.
2. PICC SHALL PROVIDE 440-460V POWER SUPPLY FOR THE INSTALLATION OF VRV/VRF AIRCONDITIONING UNITS, MULTI-SPLIT INVERTER TYPE.
3. CONTRACTOR TO PROVIDE STEP DOWN POWER TRANSFORMER AND ITS PROTECTION HOUSING FOR 220-240V/ 380V SUPPLIED EQUIPMENT. REFER TO TECHNICAL SPECIFICATION.
4. CONTRACTOR TO PROVIDE 1-LOT ELECTRIC WATT-HOUR METER FOR MONITORING OF ELECTRIC POWER CONSUMPTION AT THE ROOM. REFER TO TECHNICAL SPECIFICATION.
5. TO INSTALL ACCU AT ROOF-DECK OF THE DELEGATION BUILDING (VERIFY AT SITE).
6. ACTUAL LOCATION OF FCU AND ACCU MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION.
7. CONTRACTOR TO VERIFY AT SITE ALL LOCATION OF EQUIPMENT, POWER SUPPLY TAPPING POINTS, PIPE ROUTINGS, ETC. SUBMIT SHOP DRAWING TO TSD-MSD PRIOR TO ACTUAL INSTALLATION.
8. CONDENSATE DRAIN TO BE TAPPED TO NEAREST DRAIN LINE OR APPROVED LOCATION.
9. ACTUAL LOCATION OF WIRED REMOTE CONTROLLER, TRANSFORMER, POWER SUPPLY TAPPING POINT MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION (VERIFY AT SITE).

KEY PLAN



LOCATION: FIFTH FLOOR DELEGATION BLDG

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED A/C SYSTEM AT VARIOUS AREAS	01-20-2021	ROLDAN V. DELADO, SHIFT SUPERVISOR/TECHNICIAN, MSD	ENGR. WILSON B. DELOS REYES, DIRECTOR, TSD	ATTY. RENATO S. PADILLA, GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARVIN D. MACANAS, ASSISTANT DIRECTOR, MSD		



SUMMIT HALL H - CLUSTER 1
SUMMIT HALL G - CLUSTER 2
PANTRY 1, 2 & 4 - CLUSTER 3

5 M PROPOSED AIRCONDITIONING LAYOUT

SCALE: 1:300

GENERAL NOTES:

1. POWER SUPPLY TAPPING POINT FOR ACCU IS AT 4/F DEL BLDG. AHU ROOM.
2. PICC SHALL PROVIDE 440-460V POWER SUPPLY FOR THE INSTALLATION OF VRV/VRF AIRCONDITIONING UNITS, MULTI-SPLIT INVERTER TYPE.
3. CONTRACTOR TO PROVIDE STEP DOWN POWER TRANSFORMER AND ITS PROTECTION HOUSING FOR 220-240V/ 380V SUPPLIED EQUIPMENT. REFER TO TECHNICAL SPECIFICATION.
4. CONTRACTOR TO PROVIDE 1-LOT ELECTRIC WATT-HOUR METER FOR MONITORING OF ELECTRIC POWER CONSUMPTION AT THE ROOM. REFER TO TECHNICAL SPECIFICATION.
5. TO INSTALL ACCU AT ROOF-DECK OF THE DELEGATION BUILDING (VERIFY AT SITE).
6. ACTUAL LOCATION OF FCU AND ACCU MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION.
7. CONTRACTOR TO VERIFY AT SITE ALL LOCATION OF EQUIPMENT, POWER SUPPLY TAPPING POINTS, PIPE ROUTINGS, ETC. SUBMIT SHOP DRAWING TO TSD-MSD PRIOR TO ACTUAL INSTALLATION.
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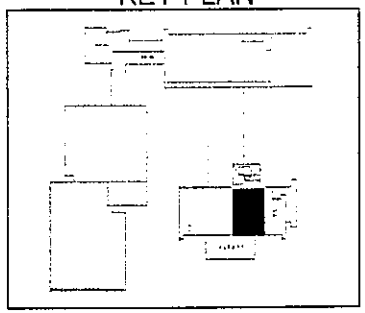
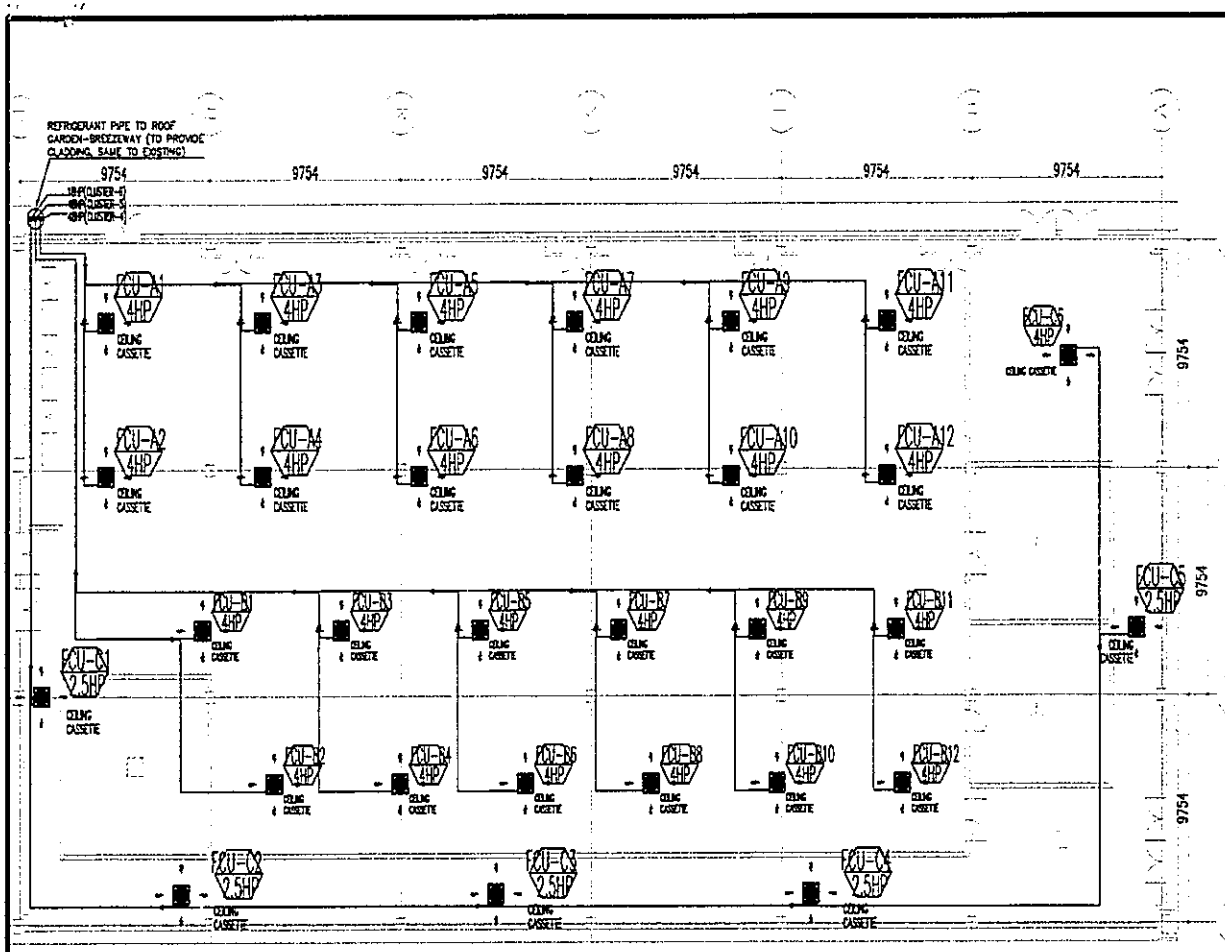
KEY PLAN



LOCATION: ROOF DECK - DELEGATION BLDG.

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED AIR-CONDITIONING SYSTEM	01-20-2021	[illegible] SHIFT SUPERVISING TECHNICIAN, MSD	ENGR. WILSON B. DELOS REYES DIRECTOR, TSD	ATTY. RENATO B. PADILLA GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARC[illegible] B. MACANAS ASSISTANT DIRECTOR, MSD		

06



NORTH WING HALL - CLUSTER 4, 5 & 6
PROPOSED AIRCONDITIONING LAYOUT

6 M SCALE: 1:300

GENERAL NOTES:

1. POWER SUPPLY TAPPING POINT FOR ACCU IS AT 3/F DEL. BLDG. AHU ROOM D-31.
2. PICC SHALL PROVIDE 440-460V POWER SUPPLY FOR THE INSTALLATION OF VRV/VRF AIRCONDITIONING UNITS, MULTI-SPLIT INVERTER TYPE.
3. CONTRACTOR TO PROVIDE STEP DOWN POWER TRANSFORMER AND ITS PROTECTION HOUSING FOR 220-240V/ 380V SUPPLIED EQUIPMENT. REFER TO TECHNICAL SPECIFICATION.
4. CONTRACTOR TO PROVIDE 1-LOT ELECTRIC WATT-HOUR METER FOR MONITORING OF ELECTRIC POWER CONSUMPTION AT THE ROOM. REFER TO TECHNICAL SPECIFICATION.
5. TO INSTALL ACCU AT ROOF GARDEN-BREEZEWAY OF THE SECRETARIAT BUILDING (VERIFY AT SITE).
6. ACTUAL LOCATION OF FCU AND ACCU MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION.
7. CONTRACTOR TO VERIFY AT SITE ALL LOCATION OF EQUIPMENT, POWER SUPPLY TAPPING POINTS, PIPE ROUTINGS, ETC. SUBMIT SHOP DRAWING TO TSD-MSD PRIOR TO ACTUAL INSTALLATION.
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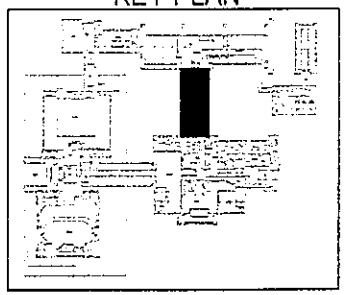
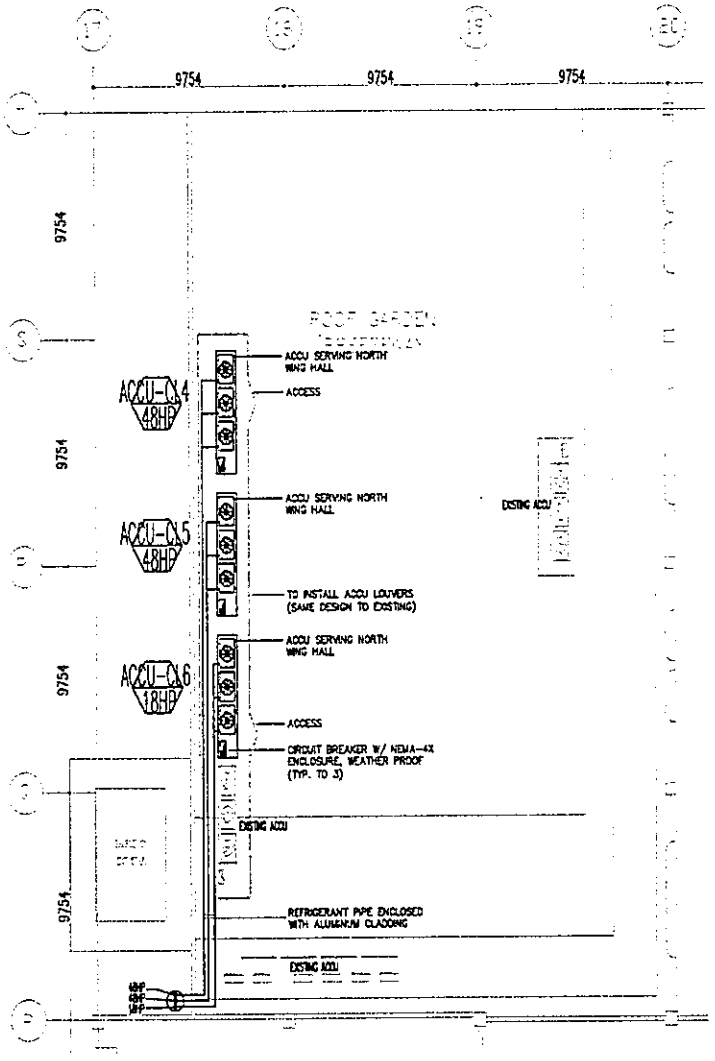
9. ACTUAL LOCATION OF WIRED REMOTE CONTROLLER, TRANSFORMER, POWER SUPPLY TAPPING POINT MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION (VERIFY AT SITE).

KEY PLAN



LOCATION: GROUND FLOOR SECRETARIAT BLDG

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED A/C SYSTEM AT VARIOUS AREAS	01-20-2021	ROLDAN H. JUSTADO, SHIFT SUPERVISING TECHNICIAN, MSD	ENGR. WILSON B. DELOS REYES, DIRECTOR, TSD	ATTY. RENATO M. PADILLA, GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARLO B. MACANAS, ASSISTANT DIRECTOR, MSD		



GENERAL NOTES:

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2. PICC SHALL PROVIDE 440-460V POWER SUPPLY FOR THE INSTALLATION OF VRV/VRF AIRCONDITIONING UNITS, MULTI-SPLIT INVERTER TYPE.
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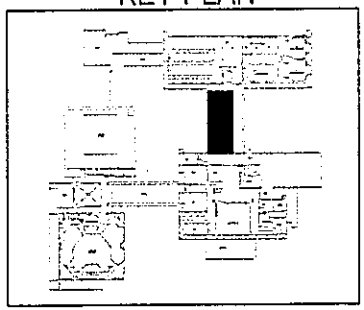
4. CONTRACTOR TO PROVIDE 1-LOT ELECTRIC WATT-HOUR METER FOR MONITORING OF ELECTRIC POWER CONSUMPTION AT THE ROOM. REFER TO TECHNICAL SPECIFICATION.
5. TO INSTALL ACCU AT ROOF GARDEN-BREEZEWAY OF THE SECRETARIAT BUILDING (VERIFY AT SITE).
6. ACTUAL LOCATION OF FCU AND ACCU MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION.
7. CONTRACTOR TO VERIFY AT SITE ALL LOCATION OF EQUIPMENT, POWER SUPPLY TAPPING POINTS, PIPE ROUTINGS, ETC. SUBMIT SHOP DRAWING TO TSD-MSD PRIOR TO ACTUAL INSTALLATION.
8. CONDENSATE DRAIN TO BE TAPPED TO NEAREST DRAIN LINE OR APPROVED LOCATION.
9. ACTUAL LOCATION OF WIRED REMOTE CONTROLLER, TRANSFORMER, POWER SUPPLY TAPPING POINT MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION (VERIFY AT SITE).

KEY PLAN



LOCATION: THIRD FLOOR SECRETARIAT BLDG.

NORTH WING HALL - CLUSTER 4, 5 & 6

7 PROPOSED AIRCONDITIONING LAYOUT

M SCALE: 1:300

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED AIR-CONDITIONING SYSTEM	01-20-2021	ROLDAN F. JUBILADO, SHIFT SUPERVISING TECHNICIAN, MSD	ENGR. WILSON B. DELOS REYES, DIRECTOR, TSD	ATTY. RENATO B. PADILLA, GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARIO P. MACANAS, ASSISTANT DIRECTOR, MSD		

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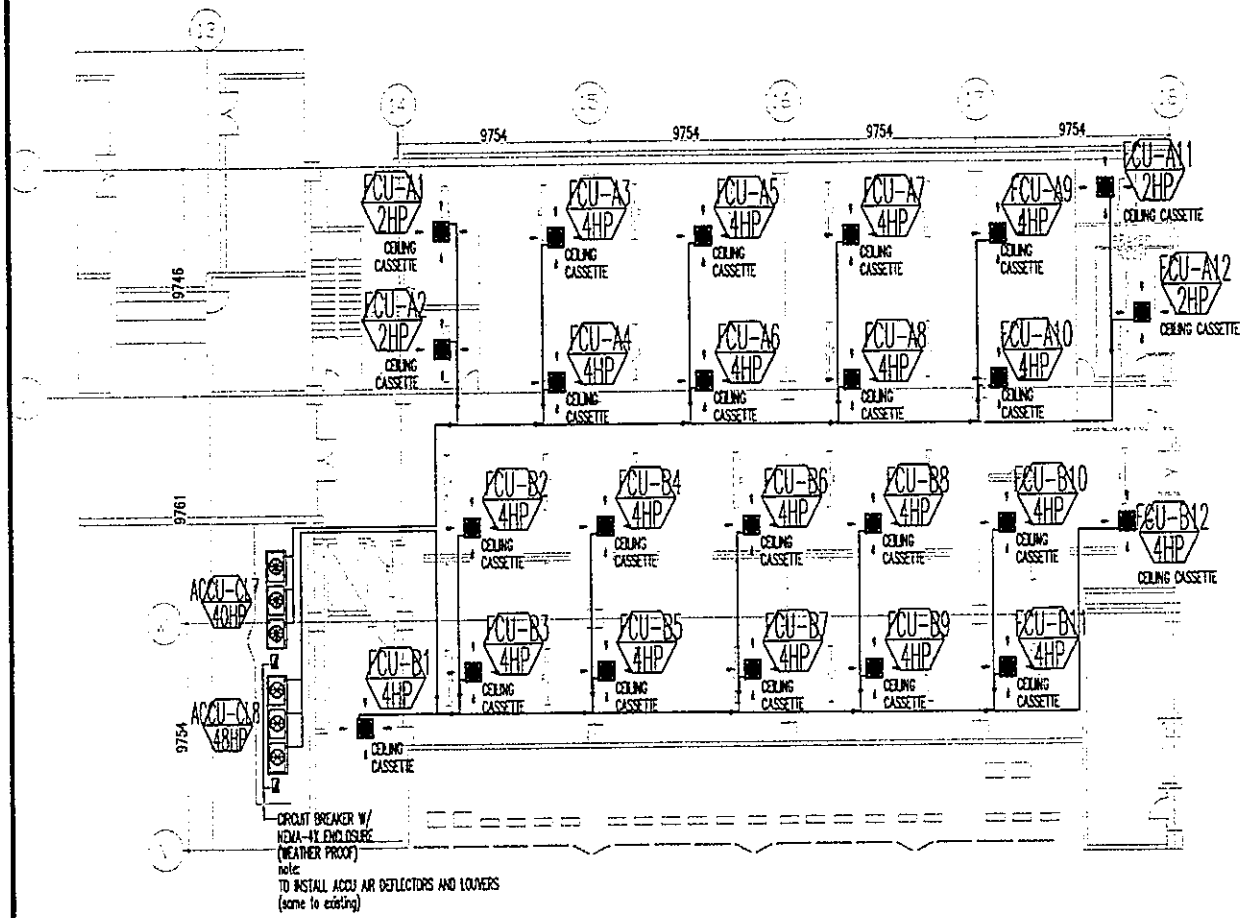


EAST WING HALL - CLUSTER 7 & 8

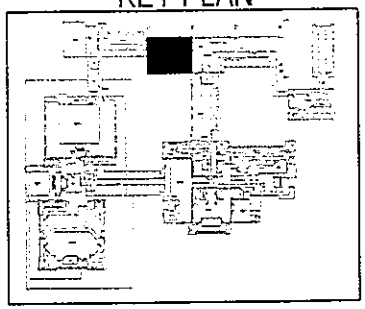
8 M PROPOSED AIRCONDITIONING LAYOUT

SCALE: 1:300

GENERAL NOTES:

1. POWER SUPPLY TAPPING POINT FOR ACCU IS AT G/F SECRETARIAT BLDG. AHU ROOM 5-11.
2. PICC SHALL PROVIDE 440-460V POWER SUPPLY FOR THE INSTALLATION OF VRV/VRF AIRCONDITIONING UNITS, MULTI-SPLIT INVERTER TYPE.
3. CONTRACTOR TO PROVIDE STEP DOWN POWER TRANSFORMER AND ITS PROTECTION HOUSING FOR 220-240V/ 380V SUPPLIED EQUIPMENT. REFER TO TECHNICAL SPECIFICATION.
4. CONTRACTOR TO PROVIDE 1-LOT ELECTRIC WATT-HOUR METER FOR MONITORING OF ELECTRIC POWER CONSUMPTION AT THE ROOM. REFER TO TECHNICAL SPECIFICATION.
5. TO INSTALL ACCU AT G/F OF THE SECRETARIAT BUILDING (VERIFY AT SITE).
6. ACTUAL LOCATION OF FCU AND ACCU MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION.
7. CONTRACTOR TO VERIFY AT SITE ALL LOCATION OF EQUIPMENT, POWER SUPPLY TAPPING POINTS, PIPE ROUTINGS, ETC. SUBMIT SHOP DRAWING TO TSD-MSD PRIOR TO ACTUAL INSTALLATION.
8. CONDENSATE DRAIN TO BE TAPPED TO NEAREST DRAIN LINE OR APPROVED LOCATION.
9. ACTUAL LOCATION OF WIRED REMOTE CONTROLLER, TRANSFORMER, POWER SUPPLY TAPPING POINT MAY ADJUST ACCORDING TO ACTUAL SITE CONDITION (VERIFY AT SITE).

KEY PLAN



LOCATION: GROUND FLOOR SECRETARIAT BLDG.

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED A/C SYSTEM AT VARIOUS AREAS	01-20-2021	ROLDAN H. JUBILADO, SHIFT SUPERVISING ELECTRICIAN, MSD	ENGR. WILSON B. DELOS REYES, DIRECTOR, TSD	ATTY. RENATO S. PADILLA, GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARIO B. MACANAS, ASSISTANT DIRECTOR, MSD		

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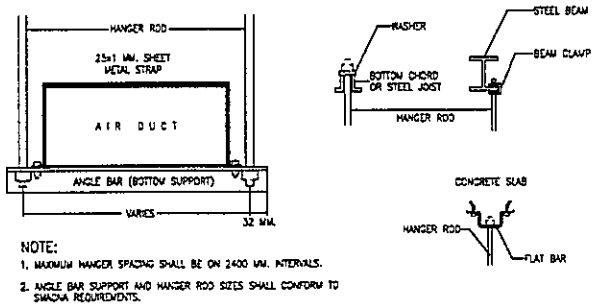
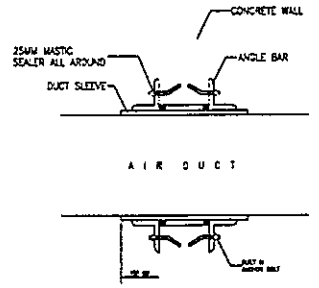
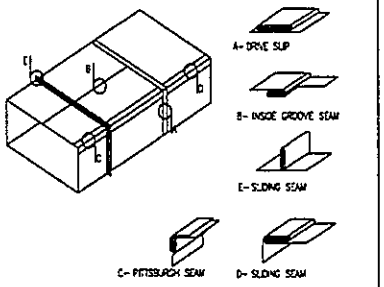


NOTE:
1. MAXIMUM HANGER SPACING SHALL BE ON 2400 MM. INTERVALS.
2. ANGLE BAR SUPPORT AND HANGER ROD SIZES SHALL CONFORM TO SMACNA REQUIREMENTS.

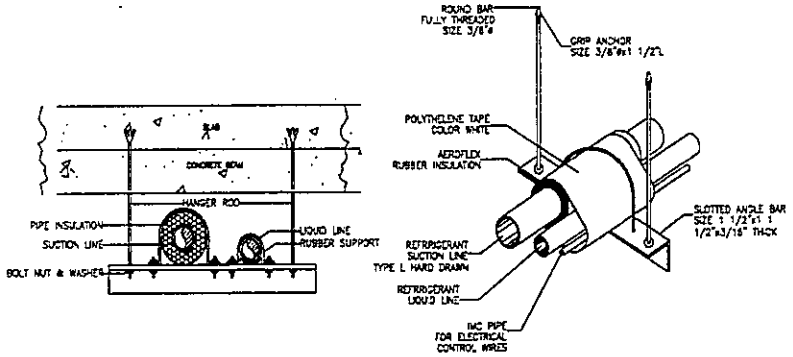
DUCT HANGER DETAIL



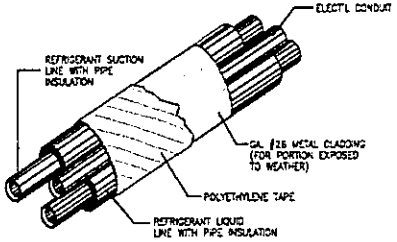
DUCT SLEEVE DETAIL



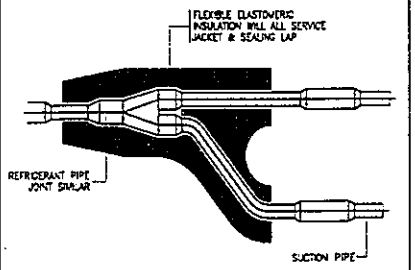
DUCT JOINT CONNECTION DETAIL



REFRIGERANT PIPES HANGER & SUPPORT DETAIL



REFRIGERANT PIPING DETAIL



VRV REFRIGERANT PIPES CONNECTION DETAIL

9 DETAILED DRAWINGS
M SCALE: NTS

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED A/C SYSTEM AT VARIOUS AREAS	01-20-2021	ROLDAN V. SUBILADO SHIFT SUPERVISOR/TECHNICIAN, MSD	ENGR. WILSON B. DELOS REYES DIRECTOR, ISD	ATTY. RENATO B. PADILLA GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARIO B. MACANAS ASSISTANT DIRECTOR, MSD		

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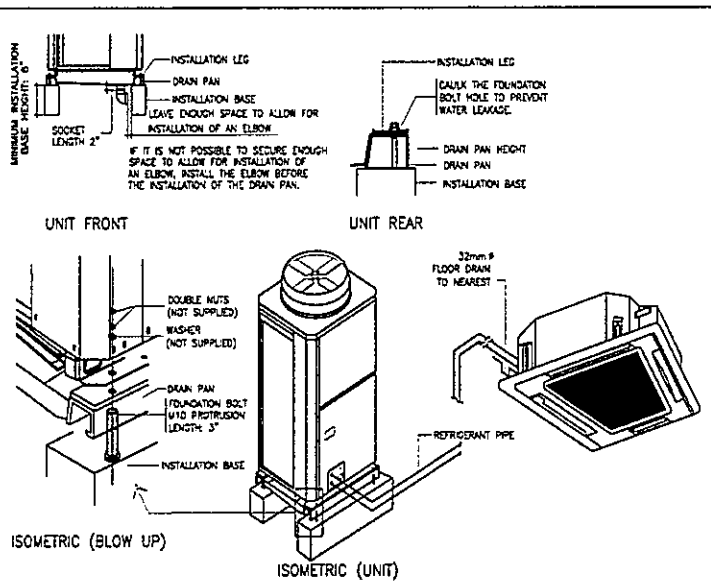
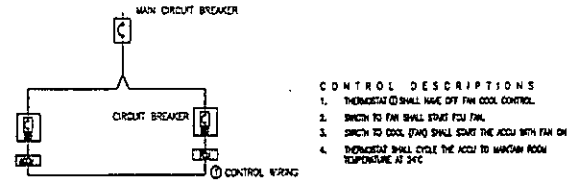


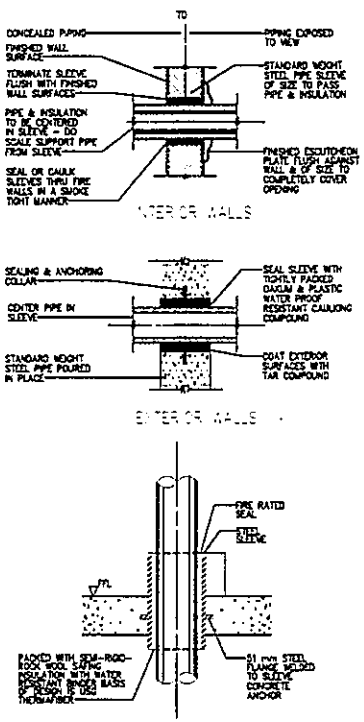
FCU / ACCU INSTALLATION DETAIL



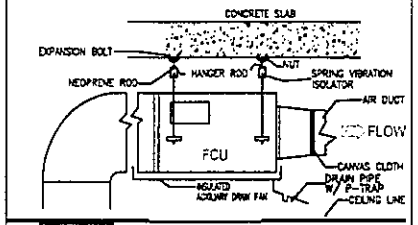
CONTROL DESCRIPTIONS

1. THERMOSTAT ⓣ SHALL HAVE OFF FAN COOL CONTROL.
2. SWITCH TO FAN SHALL START FCU FAN.
3. SWITCH TO COOL (FAN) SHALL START THE ACCU WITH FAN ON
4. THERMOSTAT SHALL CYCLE THE ACCU TO MAINTAIN ROOM TEMPERATURE AT 24°C

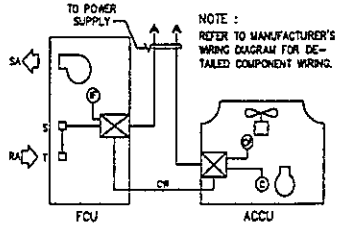
ELECTRICAL SCHEMATIC DIAGRAM



PIPE SLEEVE DETAIL



FCU MOUNTING DETAIL



NOTE : REFER TO MANUFACTURER'S WIRING DIAGRAM FOR DETAILED COMPONENT WIRING.

SEQUENCE OF OPERATION:

1. WHEN SELECTOR SWITCH IS IN 'OFF' POSITION POWER TO FCU, ACCU AND CONTROL SHALL BE DE-ENERGIZED.
2. WHEN SELECTOR SWITCH IS IN 'FAN' POSITION FCU SHALL START TO OPERATE.
3. WHEN SELECTOR SWITCH IS IN 'COOL' POSITION FCU AND ACCU CONTROL SYSTEM SHALL BE ENERGIZED.
4. THERMOSTAT 'T' SHALL MAINTAIN THE DESIRED ROOM AIR CONDITION BY CONTROLLING THE OPERATION OF THE COMPRESSOR.

CONTROL WIRING DIAGRAM

10 M **DETAILED DRAWINGS**

SCALE: NTS

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED A/C SYSTEM AT VARIOUS AREAS	01-20-2021	ROLDAN H. SOSLADO, SHIFT SUPERVISING ENGINEER/PHYSICIAN, MSD	ENGR. WILSON B. DELOS REYES, DIRECTOR, TED	ATTY. RENATO D. PADILLA, GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARIO B. MACANAS, ASSISTANT DIRECTOR, MSD		

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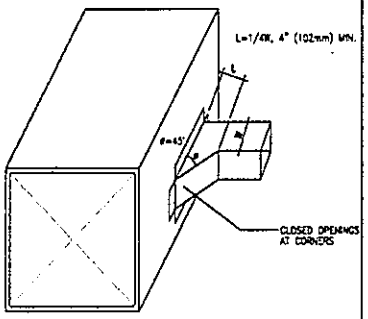
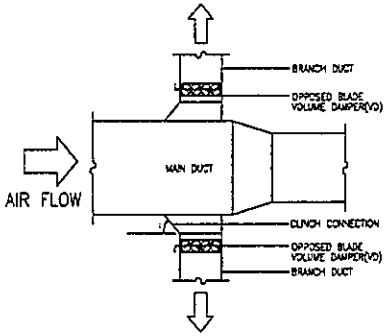
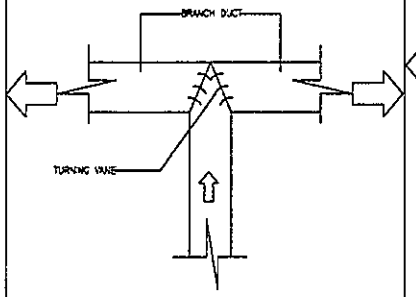


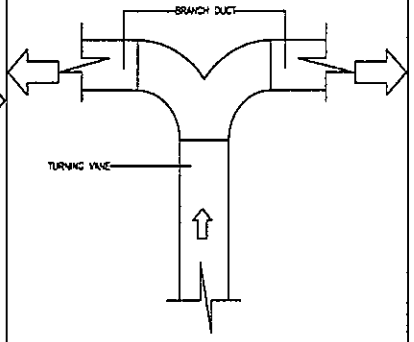
BRANCH DUCT CONNECTION DETAIL



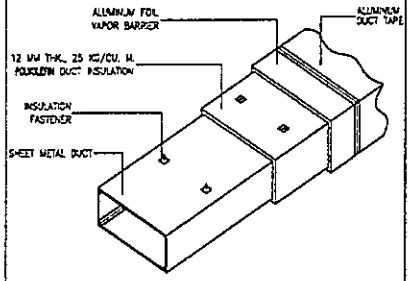
BRANCH DUCT TAKE OFF DETAIL



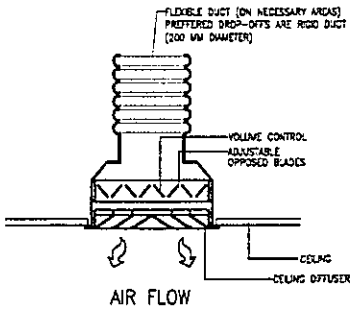
BRANCH DUCT TEE CONNECTION DETAIL



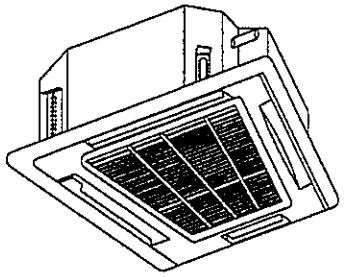
BRANCH DUCT CONNECTION DETAIL



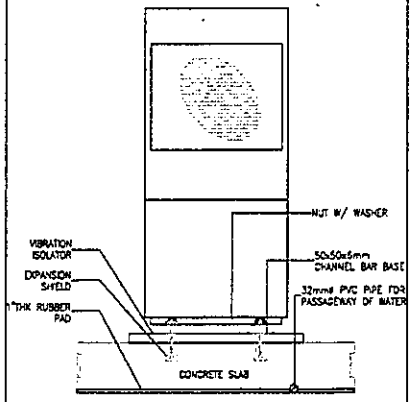
DUCT INSULATION DETAIL



DIFFUSER DETAIL



CEILING CASSETTE (ROUND FLOW TYPE)



ACCU MOUNTING DETAIL

11 M **DETAILED DRAWINGS**

SCALE: NTS

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED A/C SYSTEM AT VARIOUS AREAS	01-20-2021	EDILOA M. SABLADO, SHIFT SUPERVISING TECHNICIAN, MSD	ENGR. WILSON B. DELOS REYES, DIRECTOR, TSD	ATTY. RENATO S. VILLA, GENERAL MANAGER
	LOCATION	REVISION	CHECKED BY		
	PICC COMPLEX, PASAY CITY	00	ENGR. MARIO V. MACANAS, ASSISTANT DIRECTOR, MSD		

MECHANICAL LEGENDS & ABBREVIATIONS

FCU	FAN COIL UNIT	VRF	VARIABLE REFRIGERANT FLOW
ACCU	AIR COOLED CONDENSING UNIT	CFM	CUBIC FEET PER MINUTE
CL	CLUSTER	CMH	CUBIC METER PER HOUR
HP	HORSEPOWER		FLEXIBLE CONNECTION
TR	TONS OF REFRIGERATION		DUCT
QTY.	QUANTITY	SAD	SUPPLY AIR DUCT
TYP.	TYPICAL	SLAG	SUPPLY LINEAR AIR GRILLE
INV.	INVERTER-TYPE A/C	SAG	SUPPLY AIR GRILLE
(T)	WIRED REMOTE CONTROL	RAD	RETURN AIR DUCT
KW	KILOWATT	RAR	RETURN AIR REGISTER
V	VOLTS	RAG	RETURN AIR GRILLE
PH	PHASE	SCD	SUPPLY CEILING DIFFUSER
HZ	HERTZ		VOLUME DAMPER
KG.	KILOGRAM		300x300 SUPPLY CEILING DIFFUSER
VRV	VARIABLE REFRIGERANT VOLUME		CIRCUIT BREAKERS

12 M **LEGENDS & ABBREVIATIONS**

SCALE: NTS

	TITLE	DATE	PREPARED BY	RECOMMENDING FOR APPROVAL	APPROVED BY
PICC Philippine International Convention Center	PROPOSED VRV/VRF PACKAGED A/C SYSTEM AT VARIOUS AREAS	01-20-2021	ROLDAN H. SUBILADO, SHIFT SUPERVISING TECHNICIAN, MSD	ENGR. WILSON B. DELOS REYES, DIRECTOR, TSD	ATTY. RENATO B. PADILLA, GENERAL MANAGER
	LOCATION: PICC COMPLEX, PASAY CITY	REVISION: 00	CHECKED BY: ENGR. MARIO B. MACANAS, ASSISTANT DIRECTOR, MSD		

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Section VIII. Bill of Quantities

PHILIPPINE INTERNATIONAL CONVENTION CENTER
Technical Services Department
Mechanical Services Department

BILL OF QUANTITIES

Project Title : Supply, Delivery & Installation of VRV/VRF Multi-split, Inverter-type, Packaged Airconditioners
Location : EAST WING HALL **Date:**

ITEM NO.	ITEM DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
	MECHANICAL WORKS				
1.0	Direct Cost				
1.1	4Hp Ceiling Cassette, 4way Indoor Unit	20	unit/s		
1.2	2.5Hp Ceiling Cassette, 4way Indoor Unit	4	unit/s		
1.3	Inverter Outdoor Units, 380V/60Hz/3P (VRV-X)	1	lot		
1.4	Panel(front)/signal reciever for 4Hp Ceiling Cassette	20	unit/s		
1.5	Panel(front)/signal reciever for 2.5Hp Ceiling Cassette	4	unit/s		
1.6	Wired Remote Controller for 4Hp Ceiling Cassette	20	unit/s		
1.7	Wired Remote Controller for 2.5Hp Ceiling Cassette	4	unit/s		
1.8	Drain Pumps for 4Hp Ceiling Cassette	1	unit/s		
1.9	Drain Pumps for 2.5Hp Ceiling Cassette	1	unit/s		
1.10	Spare Indoor Printed Circuit Board for 4Hp Ceiling Cassette	1	unit/s		
1.11	Spare Indoor Printed Circuit Board for 2.5Hp Ceiling Cassette	1	unit/s		
1.12	Spare Outdoor Printed Circuit Assembly Board #1 for 12Hp Ceiling Suspended	1	unit/s		
1.13	Spare Outdoor Printed Circuit Assembly Board #2 for 12Hp Ceiling Suspended	1	unit/s		
1.14	Spare Outdoor Printed Circuit Inverter Assembly Board for 12Hp Ceiling Suspended	1	unit/s		
1.15	Spare Outdoor Printed Circuit Assembly Board #1 for 18Hp Ceiling Suspended	1	unit/s		
1.16	Spare Outdoor Printed Circuit Assembly Board #2 for 18Hp Ceiling Suspended	1	unit/s		
1.17	Spare Outdoor Printed Circuit Inverter Assembly Board for 18Hp Ceiling Suspended	1	unit/s		
1.18	Spare Outdoor Printed Circuit Assembly Board #1 for 20Hp Ceiling Suspended	1	unit/s		
1.19	Spare Outdoor Printed Circuit Assembly Board #2 for 20Hp Ceiling Suspended	1	unit/s		
1.20	Spare Outdoor Printed Circuit Inverter Assembly Board for 20Hp Ceiling Suspended	1	unit/s		
1.21	Branch piping header / piping joint/refnet	1	lot		
1.22	Watt-hour Meter	1	unit/s		
1.23	Hard drawn copper pipes (Type L)	1	lot		
1.24	Close-cell rubber insulation	1	lot		
1.25	Condensate Drain Pipes w/ insulation	1	lot		
1.26	Electrical Wires and related items	1	lot		
1.27	Refrigerant R410A	1	lot		
1.28	Environment-friendly cleaning agent R-141B	1	lot		
1.29	Nitrogen gas for flushing and cleaning of pipes	1	lot		
1.30	Oxygen-acetylene gas for cutting and welding works	1	lot		
1.31	Silver rods and other miscellaneous materials	1	lot		
1.32	Angle bar, 3/16" thk for base of fcu 1/8" for supports	1	lot		
1.33	Epoxy primer, enamel paints and other parts materials	1	lot		
1.34	Transformer and other related accessories	1	lot		
1.35	Aircon dismantling works and other related dismantling works	1	lot		
1.36	Restoration Works Affected by Installation / Miscellaneous	1	lot		
1.37	Testing & Commissioning	1	lot		
	Total Direct Cost				
2.0	Indirect Cost				
2.1	Labor Cost				
	Total Indirect Cost				
	Total (Supply & Installation of Multi-split VRF/VRV PACU)				

Prepared by:
Company Name _____

_____
Name / Signature
Position

PHILIPPINE INTERNATIONAL CONVENTION CENTER
Technical Services Department
Mechanical Services Department

BILL OF QUANTITIES

Project Title : Supply, Delivery & Installation of VRV/VRF Multi-split, Inverter-type, Packaged Airconditioners
Location : NORTH WING HALL Date:

ITEM NO.	ITEM	QTY	UNIT	UNIT COST	TOTAL
	MECHANICAL WORKS				
1.0	Direct Cost				
1.1	4Hp Ceiling Cassette, 4way Indoor Unit	25	unit/s		
1.2	2.5Hp Ceiling Cassette, 4way Indoor Unit	5	unit/s		
1.3	Inverter Outdoor Units, 380V/60Hz/3P (VRV-X)	1	lot		
1.4	Panel(front)/signal reciever for 4Hp Ceiling Cassette	25	unit/s		
1.5	Panel(front)/signal reciever for 2.5Hp Ceiling Cassette	5	unit/s		
1.6	Wired Remote Controller for 4Hp Ceiling Cassette	25	unit/s		
1.7	Wired Remote Controller for 2.5Hp Ceiling Cassette	5	unit/s		
1.8	Drain Pumps for 4Hp Ceiling Cassette	1	unit/s		
1.9	Drain Pumps for 2.5Hp Ceiling Cassette	1	unit/s		
1.10	Spare Indoor Printed Circuit Board for 4Hp Ceiling Cassette	1	unit/s		
1.11	Spare Indoor Printed Circuit Board for 2.5Hp Ceiling Cassette	1	unit/s		
1.12	Spare Outdoor Printed Circuit Assembly Board #1 for 12Hp Ceiling Suspended	1	unit/s		
1.13	Spare Outdoor Printed Circuit Assembly Board #2 for 12Hp Ceiling Suspended	1	unit/s		
1.14	Spare Outdoor Printed Circuit Inverter Assembly Board for 12Hp Ceiling Suspended	1	unit/s		
1.15	Spare Outdoor Printed Circuit Assembly Board #1 for 18Hp Ceiling Suspended	1	unit/s		
1.16	Spare Outdoor Printed Circuit Assembly Board #2 for 18Hp Ceiling Suspended	1	unit/s		
1.17	Spare Outdoor Printed Circuit Inverter Assembly Board for 18Hp Ceiling Suspended	1	unit/s		
1.18	Spare Outdoor Printed Circuit Assembly Board #1 for 20Hp Ceiling Suspended	1	unit/s		
1.19	Spare Outdoor Printed Circuit Assembly Board #2 for 20Hp Ceiling Suspended	1	unit/s		
1.20	Spare Outdoor Printed Circuit Inverter Assembly Board for 20Hp Ceiling Suspended	1	unit/s		
1.21	Branch piping header / piping joint/refnet	1	lot		
1.22	Watt-hour Meter	1	unit/s		
1.23	Hard drawn copper pipes (Type L)	1	lot		
1.24	Close-cell rubber insulation	1	lot		
1.25	Condensate Drain Pipes w/ insulation	1	lot		
1.26	Electrical Wires and related items	1	lot		
1.27	Refrigerant R410A	1	lot		
1.28	Environment-friendly cleaning agent R-141B	1	lot		
1.29	Nitrogen gas for flushing and cleaning of pipes	1	lot		
1.30	Oxygen-acetylene gas for cutting and welding works	1	lot		
1.31	Silver rods and other miscellaneous materials	1	lot		
1.32	Angle bar, 3/16" thk for base of fcu 1/8" for supports	1	lot		
1.33	Epoxy primer, enamel paints and other parts materials	1	lot		
1.34	Transformer and other related accessories	1	lot		
1.35	Aircon dismantling works and other related dismantling works	1	lot		
1.36	Restoration Works Affected by Installation / Miscellaneous	1	lot		
1.37	Testing & Commissioning	1	lot		
	Total Direct Cost				
2.0	Indirect Cost				
2.1	Labor Cost	1	lot		
	Total Indirect Cost				
	Total (Supply & Installation of Multi-split VRF/VRV PACU)				

Prepared by:
Company Name _____

_____
Name / Signature
Position

PHILIPPINE INTERNATIONAL CONVENTION CENTER
Technical Services Department
Mechanical Services Department

BILL OF QUANTITIES

Project Title : Supply, Delivery & Installation of VRV/VRF Multi-split, Inverter-type, Packaged Airconditioners
Location : SUMMIT HALL H **Date:**

ITEM NO.	ITEM	QTY	UNIT	UNIT COST	TOTAL
	MECHANICAL WORKS				
1.0	Direct Cost				
1.1	4Hp Ceiling Cassette, 4way Indoor Unit	2	unit/s		
1.2	Inverter Outdoor Units, 380V/60Hz/3P (VRV-X)	1	lot		
1.3	Panel(front)/signal reciever for 4Hp Ceiling Cassette	2	unit/s		
1.4	Wired Remote Controller for 4Hp Ceiling Cassette	2	unit/s		
1.5	Spare Drain Pumps for 4Hp Ceiling Cassette	1	unit/s		
1.6	Spare Indoor Printed Circuit Board for 4Hp Ceiling Cassette	1	unit/s		
1.7	Spare Outdoor Printed Circuit Assembly Board #1 for 8Hp Ceiling Cassette	1	unit/s		
1.8	Spare Outdoor Printed Circuit Assembly Board #2 for 8Hp Ceiling Cassette	1	unit/s		
1.9	Spare Outdoor Printed Circuit Inverter Assembly Board for 8Hp Ceiling Cassette	1	unit/s		
1.10	Branch piping header / piping joint/refnet	1	lot		
1.11	Watt-hour Meter	1	unit/s		
1.12	Hard drawn copper pipes (Type L)	1	lot		
1.13	Close-cell rubber insulation	1	lot		
1.14	Condensate Drain Pipes w/ Insulation	1	lot		
1.15	Electrical Wires and related items	1	lot		
1.16	Refrigerant R410A	1	lot		
1.17	Environment-friendly cleaning agent R-141B	1	lot		
1.18	Nitrogen gas for flushing and cleaning of pipes	1	lot		
1.19	Oxygen-acetylene gas for cutting and welding works	1	lot		
1.20	Silver rods and other miscellaneous materials	1	lot		
1.21	Angle bar, 3/16" thk for base of fcu 1/8" for supports	1	lot		
1.22	Epoxy primer, enamel paints and other parts materials	1	lot		
1.23	Transformer and other related accessories	1	lot		
1.24	Aircon dismantling works and other related dismantling works	1	lot		
1.25	Restoration Works Affected by Installation / Miscellaneous	1	lot		
1.26	Testing & Commissioning	1	lot		
	Total Direct Cost				
2.0	Indirect Cost				
2.1	Labor Cost	1	lot		
	Total Indirect Cost				
	Total (Supply & Installation of Multi-split VRF/VRV PACU)				

Prepared by:
Company Name _____

_____
Name / Signature
Position

PHILIPPINE INTERNATIONAL CONVENTION CENTER
Technical Services Department
Mechanical Services Department

BILL OF QUANTITIES

Project Title : Supply, Delivery & Installation of VRV/VRF Multi-split, Inverter-type, Packaged Airconditioners
Location : SUMMIT HALL G **Date:**

ITEM NO.	ITEM	QTY	UNIT	UNIT COST	TOTAL
	MECHANICAL WORKS				
1.0	Direct Cost				
1.1	4Hp Ceiling Cassette, 4way Indoor Unit	3	unit/s		
1.2	Inverter Outdoor Units, 380V/60Hz/3P (VRV-X)	1	lot		
1.3	Panel(front)/signal reciever for 4Hp Ceiling Cassette	3	unit/s		
1.4	Wired Remote Controller for 4Hp Ceiling Cassette	3	unit/s		
1.5	Spare Drain Pumps for 4Hp Ceiling Cassette	1	unit/s		
1.6	Spare Indoor Printed Circuit Board for 4Hp Ceiling Cassette	1	unit/s		
1.7	Spare Outdoor Printed Circuit Assembly Board #1 for 12Hp Ceiling Cassette	1	unit/s		
1.8	Spare Outdoor Printed Circuit Assembly Board #2 for 12Hp Ceiling Cassette	1	unit/s		
1.9	Spare Outdoor Printed Circuit Inverter Assembly Board for 12Hp Ceiling Cassette	1	unit/s		
1.10	Branch piping header / piping joint/refnet	1	lot		
1.11	Watt-hour Meter	1	unit/s		
1.12	Hard drawn copper pipes (Type L)	1	lot		
1.13	Close-cell rubber insulation	1	lot		
1.14	Condensate Drain Pipes w/ insulation	1	lot		
1.15	Electrical Wires and related items	1	lot		
1.16	Refrigerant R410A	1	lot		
1.17	Environment-friendly cleaning agent R-141B	1	lot		
1.18	Nitrogen gas for flushing and cleaning of pipes	1	lot		
1.19	Oxygen-acetylene gas for cutting and welding works	1	lot		
1.20	Silver rods and other miscellaneous materials	1	lot		
1.21	Angle bar, 3/16" thk for base of fcu 1/8" for supports	1	lot		
1.22	Epoxy primer, enamel paints and other parts materials	1	lot		
1.23	Transformer and other related accessories	1	lot		
1.24	Aircon dismantling works and other related dismantling works	1	lot		
1.25	Restoration Works Affected by Installation / Miscellaneous	1	lot		
1.26	Testing & Commissioning	1	lot		
	Total Direct Cost				
2.0	Indirect Cost				
2.1	Labor Cost	1	lot		
	Total Indirect Cost				
	Total (Supply & Installation of Multi-split VRF/VRV PACU)				

Prepared by:
Company Name _____

_____
Name / Signature
Position

PHILIPPINE INTERNATIONAL CONVENTION CENTER
Technical Services Department
Mechanical Services Department

BILL OF QUANTITIES

Project Title : Supply, Delivery & Installation of VRV/VRF Multi-split, Inverter-type, Packaged Airconditioners
Location : PANTRY 1, 2 & 4 Date:

ITEM NO.	ITEM	QTY	UNIT	UNIT COST	TOTAL
	MECHANICAL WORKS				
1.0	Direct Cost				
1.1	9.65Hp Ceiling Suspended, Indoor Unit	1	unit/s		
1.2	5.5Hp Ceiling Suspended, Indoor Unit	2	unit/s		
1.3	Inverter Outdoor Units, 380V/60Hz/3P (VRV-X)	1	lot		
1.4	Wired Remote Controller for 9.65Hp Ceiling Suspended	1	unit/s		
1.5	Wired Remote Controller for 5.5Hp Ceiling Suspended	2	unit/s		
1.6	Indoor Printed Circuit Board for 9.65Hp Ceiling Suspended	1	unit/s		
1.7	Indoor Printed Circuit Board for 5.5Hp Ceiling Suspended	1	unit/s		
1.8	Spare Outdoor Printed Circuit Assembly Board #1 for 10Hp Ceiling Cassette	1	unit/s		
1.9	Spare Outdoor Printed Circuit Assembly Board #2 for 10Hp Ceiling Cassette	1	unit/s		
1.10	Spare Outdoor Printed Circuit Inverter Assembly Board for 10Hp Ceiling Cassette	1	unit/s		
1.11	Spare Outdoor Printed Circuit Assembly Board #1 for 12Hp Ceiling Cassette	1	unit/s		
1.12	Spare Outdoor Printed Circuit Assembly Board #2 for 12Hp Ceiling Cassette	1	unit/s		
1.13	Spare Outdoor Printed Circuit Inverter Assembly Board for 12Hp Ceiling Cassette	1	unit/s		
1.14	Ductworks and related dismantling works	1	lot		
1.15	Branch piping header / piping joint/refnet	1	lot		
1.16	Watt-hour Meter	1	unit/s		
1.17	Hard drawn copper pipes (Type L)	1	lot		
1.18	Close-cell rubber insulation	1	lot		
1.19	Condensate Drain Pipes w/ insulation	1	lot		
1.20	Electrical Wires and related items	1	lot		
1.21	Refrigerant R410A	1	lot		
1.22	Environment-friendly cleaning agent R-141B	1	lot		
1.23	Nitrogen gas for flushing and cleaning of pipes	1	lot		
1.24	Oxygen-acelylene gas for cutting and welding works	1	lot		
1.25	Silver rods and other miscellaneous materials	1	lot		
1.26	Angle bar, 3/16" thk for base of fcu 1/8" for supports	1	lot		
1.27	Epoxy primer, enamel paints and other parts materials	1	lot		
1.28	Transformer and other related accessories	1	lot		
1.29	Restoration Works Affected by Installation / Miscellaneous	1	lot		
1.30	Testing & Commissioning	1	lot		
	Total Direct Cost				
2.0	Indirect Cost				
2.1	Labor Cost	1	lot		
	Total Indirect Cost				
	Total (Supply & Installation of Multi-split VRF/VRV PACU)				

Prepared by:
Company Name _____

_____
Name / Signature
Position

Section IX. Checklist of Technical and Financial Documents

BID FORM

Date : _____

Project Identification No. : _____

To: [name and address of Procuring Entity]

Having examined the Philippine Bidding Documents (PBDs) including the Supplemental or Bid Bulletin Numbers *[insert numbers]*, the receipt of which is hereby duly acknowledged, we, the undersigned, declare that:

a. We have no reservation to the PBDs, including the Supplemental or Bid Bulletins, for the Procurement Project: Supply and Installation of VRV/VRF Multi-Split, Packaged Air Conditioners at the following Summit Halls G & H, North Wing Hall, East Wing Hall and Pantry 1, 2, and 4

b. We offer to execute the Works for this Contract in accordance with the PBDs;

c. The total price of our Bid in words and figures, excluding any discounts offered below is:

_____

d. The discounts offered and the methodology for their application are: *[insert information]*;

e. The total bid price includes the cost of all taxes, such as, but not limited to: *[specify the applicable taxes, e.g. (i) value added tax (VAT), (ii) income tax, (iii) local taxes, and (iv) other fiscal levies and duties]*, which are itemized herein and reflected in the detailed estimates,

f. Our Bid shall be valid within the a period stated in the PBDs, and it shall remain binding upon us at any time before the expiration of that period;

g. If our Bid is accepted, we commit to obtain a Performance Security in the amount of *[insert percentage amount]* percent of the Contract Price for the due performance of the Contract, or a Performance Securing Declaration in lieu of the allowable forms of Performance Security, subject to the terms and conditions of issued GPPB guidelines[12] for this purpose;

h. We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents;

i. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed; and

j. We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.

---

k. We likewise certify/confirm that the undersigned, is the duly authorized representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing

contract for the [Name of Project] of the [Name of the Procuring Entity/.

l. We acknowledge that failure to sign each and every page of this Bid Form, including the Bill of Quantities, shall be a ground for the rejection of our bid.

Name:_____

Legal Capacity: _____

Signature:_____

Duly authorized to sign the Bid for and behalf of: _____

Date: _____

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class "A" Documents

Legal Documents

☐ (a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages);
If any of the documents mentioned in Annex "A" is not current, the new document should be submitted
Or in case of expired PhilGEPS Registration Certificate (Platinum Membership)

☐ (b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document;
and

☐ (c) Mayor's or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas;
and

☐ (e) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).

Provided, that the current PhilGEPS Registration Certificate (Platinum Membership) shall be part of the post-qualification documents to be submitted by the Lowest Calculated Bidder

Technical Documents

☐ (f) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; **and**

☐ (g) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided under the rules; **and**

☐ (h) Philippine Contractors Accreditation Board (PCAB) License;
or
Special PCAB License in case of Joint Ventures;
and registration for the type and cost of the contract to be bid; **and**

☐ (i) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission;
Or
Original copy of Notarized Bid Securing Declaration; **and**

(j) Fully accomplished Section VI (Specifications) duly signed or initialed in each and every page by the bidder's authorized representative; and
Project Requirements, which shall include the following:

☐ a. Organizational chart for the contract to be bid;

☐ b. List of contractor's key personnel (*e.g.*, Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the

contract to be bid, with their complete qualification and experience data;

☐ c. List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be; **and**

☐ (k) Original duly signed Omnibus Sworn Statement (OSS);
and if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.

Financial Documents

☐ (l) The prospective bidder's audited financial statements, showing, among others, the prospective bidder's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; **and**

☐ (m) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).

Class "B" Documents

☐ (n) If applicable, duly signed joint venture agreement (JVA) in accordance with RA No. 4566 and its IRR in case the joint venture is already in existence;
or
duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.

II. FINANCIAL COMPONENT ENVELOPE

☐ (o) Original of duly signed and accomplished Financial Bid Form and Original of duly signed Bill of Quantities

ANNEX "A"

LIST OF ALL ON-GOING GOVERNMENT & PRIVATE CONTRACTS INCLUDING CONTRACTS AWARDED BUT NOT YET STARTED

Business Name: _____

Business Address: _____

Name of Project / Project Cost	a. Owner's Name b. Address c. Telephone Nos.	Nature of Work	Bidder's Role		a. Date Awarded b. Date Started c. Date Completion	% of Accomplishment		Value of Outstanding Works / Undelivered Portion
			Description	%		Planned	Actual	
Government:								
Private:								

Submitted by: _____

(Printed Name & Signature)

Designation: _____

Date: _____

ANNEX "B"

SINGLE LARGEST COMPLETED CONTRACT

WHICH IS SIMILAR TO THE CONTRACT TO BE BID

Business Name:

Business Address:

Name of Contract	a. Owner' Name b. Address c. Telephone Nos.	Nature of Item/Service	a. Amount of Award b. Amount at Completion c. Duration	a. Date Awarded b. Contract Effectivity c. Date Completed

Note: This statement shall be supported with:

1. Contract
2. Certificate of Completion and Acceptance or Official Receipt/s or Sales Invoice issued for the contract

Note: The Single Largest Completed Contract shall be completed within the last three (3) years from the date of submission and receipt of bids, that is similar to the contract to be bid, the amount of which shall be at least fifty percent (50%) of the ABC.

Submitted by: _____

(Printed Name & Signature)

Designation: _____

Date: _____

Name of the Project: Supply and Installation of VRV/VRF Multi-Split, Packaged Air Conditioners at the following Summit Halls G & H, North Wing Hall, East Wing Hall and Pantry 1, 2, & 4

FINANCIAL DOCUMENTS FOR ELIGIBILITY CHECK

A. Summary of the Applicant Supplier's/Distributor's/Manufacturer's assets and liabilities on the basis of the attached Income Tax Return and Audited Financial Statement, stamped "RECEIVED" by the Bureau of Internal Revenue or BIR authorized collecting agent, for the immediately preceding year and a certified copy of Schedule of Fixed Assets particularly the list of construction equipment.

		Year 20___
1.	Total Assets	
2.	Current Assets	
3.	Total Liabilities	
4.	Current Liabilities	
5.	Net Worth (1-3)	
6.	Net Working Capital (2-4)	
7	Value of all outstanding or uncompleted portions of the project under ongoing contracts, including awarded contracts yet to be started coinciding with contract to be bid.	

B. The Net Financial Contracting Capacity (NFCC) based on the above data is computed as follows:

NFCC = [(Current assets minus current liabilities) (15)] minus value of all outstanding or uncompleted portions of the project under ongoing contracts, including awarded contracts yet to be started coinciding with contract to be bid.

NFCC = P_____

The values of the bidder's current assets and current liabilities shall be based on the data submitted to the BIR.

or

A committed Line of Credit, in an amount to at least ten percent (10%) of the ABC, issued by a Universal of Commercial Bank.

Submitted by:

_____
Name of Supplier / Distributor / Manufacturer

_____
Signature of Authorized Representative
Date: _____

Note:

1. If Partnership or Joint Venture, each Partner or Member Firm of Joint Venture shall submit the above requirements.

BID SECURING DECLARATION FORM

REPUBLIC OF THE PHILIPPINES)

CITY OF _____) S.S.

x----------x

BID SECURING DECLARATION

Invitation to Bid: *[Insert Reference number]*.

To: *[Insert name and address of the Procuring Entity]*

I/We[1], the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid-Securing Declaration.

2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of the written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1(f), of the IRR of RA 9184; without prejudice to other legal action the government may undertake.

3. I/We understand that this Bid Securing Declaration shall cease to be valid on the following circumstances:

   (a) Upon expiration of the bid validity period, or any extension thereof pursuant to your request;

   (b) I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right;

---

[1] *Select one and delete the other. Adopt the same instruction for similar terms throughout the document.*

(c) I am/we are declared the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

IN WITNESS WHEREOF, I/We have hereunto set my/our hand/s this ____ day of *[month] [year]* at *[place of execution]*.

[Insert NAME OF BIDDER'S AUTHORIZED

REPRESENTATIVE]

[Insert Signatory's Legal Capacity]

Affiant

SUBSCRIBED AND SWORN to before me this ___ day of *[month] [year]* at *[place of execution]*, Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her [insert type of government identification card used], with his/her photograph and signature appearing thereon, with no. _____ and his/her Community Tax Certificate No. _____ issued on ____ at _____.

Witness my hand and seal this ___ day of *[month] [year]*.

NAME OF NOTARY PUBLIC
Serial No. of Commission _____
Notary Public for _____ until _____
Roll of Attorneys No. _____
PTR No. _____ *[date,issued], [place issued]*
IBP No. _____ *[date issued], [place issued]*

Doc. No. _____
Page No. _____
Book No. _____
Series of _____

Omnibus Sworn Statement (Revised)

[shall be submitted with the Bid]

REPUBLIC OF THE PHILIPPINES)
CITY/MUNICIPALITY OF

_____) S.S.

AFFIDAVIT

I, [Name of Affiant], of legal age, [Civil Status], [Nationality], and residing at [Address of Affiant], after having been duly sworn in accordance with law, do hereby depose and state that:

1. *[Select one, delete the other:]*

   [If a sole proprietorship:] I am the sole proprietor or authorized representative of [Name of Bidder] with office address at [address of Bidder];

   [If a partnership, corporation, cooperative, or joint venture:] I am the duly authorized and designated representative of [Name of Bidder] with office address at [address of Bidder];

2. *[Select one, delete the other:]*

   [If a sole proprietorship:] As the owner and sole proprietor, or authorized representative of [Name of Bidder], I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached duly notarized Special Power of Attorney;

   [If a partnership, corporation, cooperative, or joint venture:] I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached [state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable;)];

3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government

Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, **by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;**

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. *[Select one, delete the rest:]*

   [If a sole proprietorship:] The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

   [If a partnership or cooperative:] None of the officers and members of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

   [If a corporation or joint venture:] None of the officers, directors, and controlling stockholders of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. *[Name of Bidder]* complies with existing labor laws and standards; and

8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:

   a. Carefully examining all of the Bidding Documents;
   b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
   c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
   d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.

9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

10. **In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.**

IN WITNESS WHEREOF, I have hereunto set my hand this__day of_____, 20 _____at

_____, Philippines.

[Insert NAME OF BIDDER OR ITS AUTHORIZED REPRESENTATIVE]

[Insert signatory's legal capacity]

Affiant

[Jurat]

[Format shall be based on the latest Rules on Notarial Practice]