

SUPPLEMENTAL BID BULLETIN

**Republic of the Philippines
PHILIPPINE INTERNATIONAL CONVENTION CENTER
PICC Complex, 1307 Pasay City
BIDS AND AWARDS COMMITTEE (BAC)**

October 6, 2025

**SUPPLY AND INSTALLATION OF VRV/VRF MULTI-SPLIT, PACKAGED
AIRCONDITIONER AT THE BALCONY OF MEETING ROOM 1 (RE-BID)**

ADDENDUM NO. 01

This Addendum is issued to amend/revise certain provisions of the Bid Documents for the above-captioned procurement. Said amendments are as follows:

I. Section I- Invitation to Bid has been revised to read as:

- ITB Clause 17.1

- The place of bid

BAC CONFERENCE ROOM

D-100, Ground Floor, **Delegation** Building
PICC Complex, 1307 Pasay City

The date and time of bid opening is October **15**, 2025 at
10:00 a.m.

- ITB Clause 20.2

- Item "f"- **Certification from the manufacturer attesting that the equipment to be installed is compliant with the Environmental Directive on the Restriction of Hazardous Substances (RoHS) applicable to electrical and electronic equipment and devices. Such certification shall be recognized as compliance with RA 6969 and DENR Administrative Order No. 2005-05 (Toxic Chemical Substances for Issuance of Chemical Control Orders). The certification must be an original document or a certified true copy.**

II. Section V- Special Conditions of the Contract have been revised to read as:

- GCC Clause 2.2

- Payment
 - **Items 9 and 10 are hereby deleted, and the remaining items shall be renumbered sequentially.**

- GCC Clause 5

- 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 warranty obligation shall be secured, at the option of the Contractor, by retention money, by an amount equivalent to five percent (5%) of the Contract amount, or by a bank guarantee certificate equivalent to five percent (5%) of the total Contract amount (see details under Payment). The release of said warranty obligation shall be made only after the lapse of the one (1) year general warranty period, less any valid claims of PICC, if any, for damages incurred and attributable to the Contractor/Supplier due to negligence or poor workmanship during installation and/or test operation, in which case the corresponding amount shall be set off by PICC against the cost of such damages.

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.

III. Section VII- Technical Specifications have been revised to read as:

- **I. SCOPE OF WORKS:**

- Supply, delivery and installation of Inverter – **VRV/VRF Multi-Split** Type Package Air Handling Unit, with a minimum requirement of design, engineering, fabrication, assembly fabrication, air balancing, duct connection, testing and commissioning, and make the equipment operational. All works herewith shall include but not limited to the following:
- Note: PICC shall provide 440-480Volts power supply for **VRV/VRF Multi-Split Type AHU Equipment Installation**
- Please be advised that Item 4 shall be renumbered as Item 3, and all succeeding items shall be renumbered accordingly. This



adjustment shall form part of the official bid documents and shall prevail over any inconsistent provision therein.

The corrected copies are attached. These changes are effective immediately and incorporated into all relevant sections of this bidding document. Bidders are advised to replace their original copies with the corrected copies.

For guidance and information of all concerned.



MELAN M. ESPÉLA
Chairperson

Received by:

(Signature over printed name)

Telephone/Fax No. _____

Date: _____

Name of Company: _____

14.1	<p>The bid security shall be in the form of a Bid Securing Declaration, or any of the following forms and amounts:</p> <ul style="list-style-type: none"> a. In the amount of not less than ₱63,039.26, or Cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; b. Surety Bond in the amount of not less than ₱157,598.15.
15	<p>Sealing and Marking of Bids</p> <p>Each Bidder shall submit the original and one (1) copy of the first and second components of its Bid. Technical and Financial documents must be placed in separate envelopes properly marked and sealed (please see attached Illustrations)</p>
16.1	<p>The address for submission of bids is:</p> <p style="text-align: center;">PICC-Bids and Awards Committee (BAC) Secretariat Ground floor, Delegation Building PICC Complex, 1307 Pasay City</p> <p>The deadline for submission of bids is October 15, 2025 at 9:30 a.m.</p>
17.1	<p>The place of bid</p> <p style="text-align: center;">BAC CONFERENCE ROOM D-100, Ground Floor, Delegation Building PICC Complex, 1307 Pasay City</p> <p>The date and time of bid opening is October 15, 2025 at 10:00 a.m.</p> <p>In the event that the Bids cannot be opened as scheduled due to justifiable reasons, and in the absence of prior BAC activities, the BAC will take custody of the submitted Bids, with the opening deferred to the next working day at the same time and venue. The BAC will issue a formal Notice to Bidders by posting it on the BAC Secretariat/Procurement Unit electronic bulletin board and the PICC website, providing the revised schedule.</p>
19.3	<p>Total ABC is THREE MILLION ONE HUNDRED FIFTY-ONE THOUSAND NINE HUNDRED SIXTY-THREE PESOS (₱3,151,963.00), VAT Inclusive.</p>
20.2	<p>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 LCB, the Bidder shall submit the following documentary requirements:</p> <ul style="list-style-type: none"> a. CY 2024 Income and Business Tax Returns with proof of payment; b. Sections III and V of the bid documents, signed on each and every page by the bidder's authorized representative; c. Detailed Equipment Design Capacity and Distribution Plan (Schedule of Equipment) in tabulation format as shown in Table A-1-1. Use standard long-size bond paper only.

	<ul style="list-style-type: none"> d. Detailed Cluster System Design and Equipment Schedules (improve tabulation format based on Sample Table A-1-2). Use standard long-size bond paper only. e. Certificate of authorized distributorship and service contractor for at least three (3) years signed by equipment manufacturer or by exclusive/main distributor in the case of sub-dealer/distributor f. Certification from the manufacturer attesting that the equipment to be installed is compliant with the Environmental Directive on the Restriction of Hazardous Substances (RoHS) applicable to electrical and electronic equipment and devices. Such certification shall be recognized as compliance with RA 6969 and DENR Administrative Order No. 2005-05 (Toxic Chemical Substances for Issuance of Chemical Control Orders). The certification must be an original document or a certified true copy; g. Warranty Certificate for Compressors covering a five-year period h. 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. i. Three (3) sets Installation plan and drawing using 30" by 40" size drawing sheet format – 1 set tracing paper and 2 sets blue prints. j. 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. k. Certificate of Satisfactory Completion & Acceptance of previous PICC or BSP projects undertaken within the last three (3) years, if any.
21.2	No additional requirement

Special Conditions of Contract

GCC Clause	
1	The Procuring Entity is <i>The Philippine International Convention Center (PICC)</i>
2.2	<p>Payment</p> <p>Payment shall be released in full 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:</p> <ol style="list-style-type: none"> 1. Equipment delivery receipts, and Certificate of Completion/Turn-over Report. 2. Invoice. 3. Valid Tax Clearance 4. Copy of delivery receipts of spare parts on drain pumps, indoor printed circuit boards and outdoor printed circuit boards. 5. Copy of delivery receipt for the return of replaced parts/materials, if any 6. Two (2) sets of Equipment manuals as follows: <ol style="list-style-type: none"> 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 Notarized copy of Five (5)-Year Warranty Certificate for all compressors supplied. 10. Equipment/System Operation and Commissioning Test Data Report for each indoor and outdoor equipment as required under Conditions Item No. 8 11. Photocopy of Training Certificate issued by the Contractor. 12. Contractor's Recommendation for: <ol style="list-style-type: none"> 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. <p>Payment shall be subject to retention money equivalent to five percent (5%) of the contract amount.</p>

3	<p>Performance Security</p> <p>Within ten (10) calendar days from receipt of the Notice of Award, 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 following forms:</p> <table border="1" data-bbox="368 331 1374 824"> <thead> <tr> <th data-bbox="368 331 903 432">Form of Performance Security</th> <th data-bbox="903 331 1374 432">Amount of Performance Security (Equal to Percentage of the Total Contract Price)</th> </tr> </thead> <tbody> <tr> <td data-bbox="368 432 903 533">Cash or Cashier's/Manager's Check issued by a Universal or Commercial Bank.</td> <td data-bbox="903 432 1374 533">Five percent (5%)</td> </tr> <tr> <td data-bbox="368 533 903 633">Bank draft/guarantee issued by a Universal or Commercial Bank</td> <td data-bbox="903 533 1374 633">Five percent (5%)</td> </tr> <tr> <td data-bbox="368 633 903 824">Surety bond callable upon demand issued by a surety or insurance company duly certified by the Insurance Commission as authorized to issue such security.</td> <td data-bbox="903 633 1374 824">Thirty percent (30%)</td> </tr> </tbody> </table>	Form of Performance Security	Amount of Performance Security (Equal to Percentage of the Total Contract Price)	Cash or Cashier's/Manager's Check issued by a Universal or Commercial Bank.	Five percent (5%)	Bank draft/guarantee issued by a Universal or Commercial Bank	Five percent (5%)	Surety bond callable upon demand issued by a surety or insurance company duly certified by the Insurance Commission as authorized to issue such security.	Thirty percent (30%)
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5	<p>Warranty</p> <p>The Air Conditioning Units shall be covered by:</p> <ol style="list-style-type: none"> 1. One (1) year warranty on parts and labor. 2. Five (5) years warranty on compressor. <p>Said warranties shall include travel time and expense and provision of on-site service and labor.</p> <p>The warranty obligation shall be secured, at the option of the Contractor, by retention money, by an amount equivalent to five percent (5%) of the Contract amount, or by a bank guarantee certificate equivalent to five percent (5%) of the total Contract amount (see details under Payment). The release of said warranty obligation shall be made only after the lapse of the one (1) year general warranty period, less any valid claims of PICC, if any, for damages incurred and attributable to the Contractor/Supplier due to negligence or poor workmanship during installation and/or test operation, in which case the corresponding amount shall be set off by PICC against the cost of such damages.</p> <p>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.</p>								
6	<p>The period for correction of defects is seven (7) calendar days upon receipt of notice from PICC project-in-charge.</p>								

Technical Specifications

Supply and Installation of VRV / VRF Multi-Split, Packaged Air-Conditioner at the Balcony of Meeting Room 1

Specification	Statement of Compliance
<p>I. SCOPE OF WORKS:</p> <p>Supply, delivery and installation of Inverter – VRV/VRF Multi-Split Type Package Air Handling Unit, with a minimum requirement of design, engineering, fabrication, assembly fabrication, air balancing, duct connection, testing and commissioning, and make the equipment operational. All works herewith shall include but not limited to the following:</p> <p>1.1 Six (6) units – 16kW (5.5Hp) Cooling Capacity, Fan Coil Unit (FCU), Floor Standing, horizontal free-blow with very low or low noise/sound level – Low: 43-45dB(A), Medium: 48-50dB(A) and High: 53-55dB(A) measured at 1.5 meter away from the unit, Airflow rate – Low: 900-950cfm, Medium: 1000-1050cfm, High: 1250-1,300cfm, 220-230 Volts, 1-Phase, 60Hz using environment-friendly refrigerant, R-410A or R32; with fixed wired remote control on-off switch. The fixed remote control on-off switch shall be installed to the body of the Fan Coil Unit accessible to the operator at all times; 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.</p> <p>1.2 One (1) lot – Modular Air Cooled Condensing Units (ACCUs) with cooling capacity appropriately-designed by participating contractor for the total capacity of above indoor units per cluster and with extra/stand-by modular unit, modular-type, 440-460 Volts, 3 phase, 60 Hz using environment-friendly refrigerant R410A or R32 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. Outdoor unit shall operate at maximum 48°C ambient operational condition. If the outdoor unit is 380V or 220-230V, the Contractor shall provide a step-down transformer.</p> <p style="text-align: center;">Note: PICC shall provide 440-480Volts power supply for VRV/VRF Multi-Split Type AHU Equipment Installation</p> <p>1.2.1 Inverter lead and inverter combination of compressor system or a master/lead (1 inverter) and slave scroll compressors system.</p> <p>1.2.2. Installation design and operational capacity combination ratio of AHU/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.</p>	

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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 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 aircon 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 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.

1.4. 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 16kW (5.5HP) Capacity Indoor Units.

1.5. One (1) lot Branch piping header/joints or ref-net joints and other devices and accessories necessary for complete installation and accessories.

- 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.
- 1.6. 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.
- 1.7. One (1) lot Hard-drawn copper tubes (type L), PVC condensate drain pipe and fittings, clamps, supports and other materials necessary for the proper and complete installation of the above units.
- 1.8. One (1) lot Close-cell rubber insulation (Aeroflex or its approved equivalent), one (1)-inch thick or its approved equivalent.
- 1.9. One (1) lot Electrical wires – Thermoplastic High Heat Nylon (THHN) for main supply cables, feeder lines and control lines, steel conduits/IMC panel boards/enclosure – weather-proof, System outdoor and indoor unit 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.
- 1.10. One (1) lot Environment-friendly system refrigerant R410A or R32.
- 1.11. One (1) lot Environment-friendly cleaning agent, R-141B for flushing.
- 1.12. One (1) lot Nitrogen gas for flushing and cleaning the pipe line.
- 1.13. One (1) lot Oxygen-acetylene gas for cutting and welding works.
- 1.14. One (1) lot Silver rods and other miscellaneous materials and supplies.
- 1.15. 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)
- 1.16. One (1) lot Epoxy primer, enamel paints and other parts and materials necessary for the completion of repair works.
- 1.17. One (1) lot Miscellaneous materials and accessories necessary for the completion of works and other restoration works such as roof deck water proofing restoration.
- 2.0 Design properly and appropriately the capacity of each set of inverter, Floor Standing-type, Fan Coil Units 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.

Note:

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

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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 AHU/indoor rated capacity or the total capacity of AHU/indoor unit 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/	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	Balcony of Meeting Room 1	242 m ²	6 units – 16kW (5.5HP) Inverter-type, Floor Standing-type, Fan Coil Units, 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 AHU/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 & frequency
- 3.8. Dimension – height, width and depth – in millimeter (mm) and weight in Kilogram
- 3.9. Colour of indoor unit, and
- 3.10. Other detailed specifications and features of AHU/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/	Area in Sq.M.	Detailed Specifications (Quantity, Capacity, Type of Units, Sound Level (dBA), etc...)
1	Balcony of Meeting Room 1	242 m ²	6 units – 16kW (5.5HP) Inverter-type, Floor Standing-type, Fan

Coil Units, other features (enumerate in details as required)

4. Make and submit a detailed 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 the Balcony of Meeting Room 1. Refer to sample tabulation below for basic guideline:

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

Cluster No.	Area Served	Outdoor Units		Connected Indoor Units	
		Qty-Unit	Description	Qty-Unit	Description
1	Balcony of Meeting Room 1	1 lot	___kW 25.5TR (34HP) consisting of: 1 unit ___kW (16 HP capacity), model ___ & 1 units ___kW (18 HP capacity), model ___	1 unit	6 units - 16kW (5.5HP) Inverter-type, Floor Standing-type, Fan Coil Units, other features (enumerate in details as required)

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), 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.
7. Install the above-mentioned units, accessories and materials for their proper operation in Balcony of Meeting Room 1 at the new AHU Room indicated in the approved drawing, following proper alignment and uniform distances for proper air distribution and aesthetics with appropriate hangers, vibration isolator, and supports bolted to the floor slab. Use proper size support-base and frames to avoid wagging expansion bolts. Install the AHU/indoor units based on the capacity design plan and layout as shown in Table A-1: General Equipment Capacity Design and Distribution Plan (Schedule of Equipment), Basic System 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.
8. Install outdoor units at the Roof Deck of Delegation Building considering the best location for aesthetics for Air-Cooled Condensing Units (ACCUs). Said ACCUs shall be installed with gauge no. 20, GI air deflector with louver enclosure as specified in Item 1.20. 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 obstructing the installation area of the indoor unit/refrigerant pipes. Free the installation area of any

obstruction and restore the functionality of those re-routed facilities or building/system attachment.

- 10.** Restore the affected water proofing during installation of outdoor units at roof deck using same kind/type of waterproofing materials. Make a detailed plan prior for the restoration of the affected area 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, condensate drain pipes 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 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 Meeting Room 1. 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.** 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.
- 17.** 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:
 - 17.1.** 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.
 - 17.2.** Ambient or atmospheric temperature (Fahrenheit and Celsius)
 - 17.3.** 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.
 - 17.4.** Standing pressure of the refrigerant system prior to test operation.
 - 17.5.** Suction and discharge pressure and temperature of the refrigerant system

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17.6. 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.

17.7. Good operating condition of drain pump.

17.8. Other actual operating parameters.

18. Turn-over the air conditioning unit and its accessories as well as other affected building attachment/facilities in good order condition.

V. 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 multi-split packaged air-conditioning 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 said VRV/VRF PACU 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.

The contractor must recommend:

1. Proper maintenance forms for observations, monitoring and recording operational data and trouble.
2. Proper periodic maintenance check-up activities and standard operating procedures on daily, weekly, monthly, quarterly and annual basis.