PART I: GENERAL PROJECT INFORMATION

1. PROJECT DESCRIPTION

Cancer is one of the leading causes of morbidity and mortality in the world accounting for an estimated 9.6 million deaths, or one in six deaths, in 2018. Effective treatment for cancer is obtained when it is identified early, resulting in a higher probability of surviving. Currently, most radiologic procedures used in aid for cancer diagnosis and treatment only map the anatomy and morphology of tumors with little or no information about their metabolism. Metabolism plays an important role in the detection of early cancer detection.

With this, a Positron Emission Tomography-Computed Tomography (PET-CT) Machine will be a good addition to provide quality care to our patients. PET performed with fluorodeoxyglucose F-18 (FDG F-18) proved to be valuable in providing important tumor-related qualitative and quantitative metabolic information that is critical to diagnosis and follow-up. It can also aid in differentiation of malignant from benign lesions and in staging of malignancies.

Overall, the PET-CT provides both anatomic and metabolic information in one single examination. It has the ability to accurately localize increased FDG activity to specific normal or abnormal anatomic locations.

2. PROJECT TITLE: PROPOSED PET-CT SCANNER LABORATORY

3. LOCATION : GROUND FLOOR, CENTRAL BLOCK BUILDING, PHILIPPINE GENERAL HOSPITAL, TAFT AVENUE, MANILA

4. DEFINITION OF TERMS

4.1. UNIVERSITY shall mean the University of the Philippines (UP)
4.2. HOSPITAL shall mean the Philippine General Hospital (PGH)
4.3. END-USER shall mean the Nuclear Medicine Section and Radioisotope Laboratory, Department of Radiology of UP – PGH
4.4. MPLEMENTING AGENCY shall mean the Philippine General Hospital (PGH).
4.5. DESIGNER AND IMPLEMENTING OFFICE shall mean the Office of Engineering and Technical Services (OETS) who prepared the project plans, scope of work and specifications.
4.6. CONTRACT DOCUMENTS shall mean the agreements or CONTRACTs, including Plans, General Conditions and Special Conditions, as well as any and all documents which are referred to in the CONTRACTs as CONTRACT DOCUMENTS, or any modifications, revisions or alterations authorized by the HOSPITAL

4.7. CONSTRUCTION shall mean the delivery of all necessary architectural and engineering designs, materials, labor, and equipment in accordance with the HOSPITAL-approved Engineering/Architectural design brief, specifications and bill of quantities of the PROJECT, performed within a specified CONTRACT duration.

4.8. CONTRACTOR'S CONTRACT shall mean the written agreement entered into between the HOSPITAL and the contractor engaged for the construction of the PROJECT.

4.9. CONSTRUCTION CONTRACT DOCUMENTS shall mean the duly approved plans, specifications, estimates, bill of quantities and other documents that define the technical requirements of the PROJECT, as prepared by the DESIGNER.

4.10. CONTRACTOR shall mean the individual, sole proprietorship, partnership or corporation engaged by the HOSPITAL to execute the PROJECT through the delivery materials, labor and equipment in accordance with the HOSPITAL-approved plans, specifications and bill of quantities of the PROJECT, performed within a specified CONTRACT duration.

4.11. CONSTRUCTION PROJECT/WORK shall mean all the works/activities and/or scope of works to be performed and completed, as well as any revisions, alterations and any extra work ordered to be done by the HOSPITAL to the CONTRACTOR.

4.12. PROJECT SITE shall mean the place or area where the CONSTRUCTION WORK is or will be carried out.

5. General Description

This project covers the conversion of the old ECG Laboratory, Medical Oncology Office and portion of Pulmonary Clinic into a PET-CT Scanner Laboratory.

6. Project Components: The project shall have the following basic components:

6.1. Renovation of the proposed site in accordance with the architectural requirements of the supplier of the **Philips Brand Vereos PET/CT Scan Machine** Model No. (See Annex A).

6.1.1. Demolition of the existing interior CHB walls, including doors and door jamb and ceiling

6.1.2. Construction of new CHB walls

6.1.3. Construction of new reinforced concrete walls.

6.1.4. Construction of new wall footing with appropriate backfilling materials.

6.1.5. Construction of new ceiling, doors and windows

6.1.6. Surface preparation for repainting and re-tiling works

6.1.7. Installation of new toilet fixtures, plumbing and drainage system with re-piping

6.1.8. Electrical Works including Auxiliary Works:

6.1.8.1. Provision of adequate electrical supply and all necessary electrical devices and equipment necessary for complete installation.

6.1.9. Provision of adequate radiation shielding.

6.1.10. Provision of a "Hot Lab" including adequate radiation protection and a dedicated drainage system.

6.1.11. Medical Gas System

6.1.12. Provision of appropriate Fire Protection, Detection and Alarm System.

6.1.13. Airconditioning System and Ventilation System including moisture control in accordance with the manufacturer's requirements.

6.1.14. Provision of appropriate furniture, fixtures and other deliverables to furnish the PET/CT Facility.

6.1.15. Provision of supply and accessories not limited to office and reception items, PET/CT Auxiliary items, and pantry items, must be provided

6.1.16. Provision of supply and accessories not limited to office and reception items, PET/CT Auxiliary items, and pantry items, must be provided.
6.1.17. Provision of adequate signage.

This list is not exhaustive. Refer to the Civil and Engineering plans for the complete project scope.

7. APPROVED BUDGET AND PROJECT DURATION

7.1. The Approved Budget for the Contract (ABC) is **Fifteen Million Pesos (PHP 15,000,000.00)**
7.2. The Approved Period Construction **ONE HUNDRED FIFTY (150) CALENDAR DAYS**, seven days upon receipt of Notice to Proceed.

8. QUALIFICATIONS OF THE PROSPECTIVE CONTRACTOR

8.1.1. Must be PCAB Licensed with at least a category B License
8.1.2. Must have been in the construction business for at least 10 years.
8.1.3. The contractor must have at least Five (5) years of experience in PET/CT Center construction. A notarized list of previous projects with telephone number and email addresses of hospital contacts must be provided.
8.1.4. The contractor should have constructed at least Three (3) PET/CT Sites, with at least Three (3) operational sites in Luzon. Acceptance Certificates from previous projects must be provided.
8.1.5. The contractor must have demonstrated competence in PET/CT site preparation that complies with all applicable government regulation, including appropriate shielding. A copy of the FDA/PNRI License of previous contracts must be provided.
8.1.6. The contractor must be experienced in processing PNRI and FDA permit, as well as those required by local govt unit concerned and other govt agencies. A copy of the FDA/PNRI License of previous contracts must be provided.
8.1.7. The contractor must have a record in the proper installation and connection of PET/CT Facility to Hospital Electrical System. Certificate of Acceptance from previous projects must be submitted.

PART II. GENERAL REQUIREMENTS

1. GENERAL CONDITIONS

1.1. The Contractor shall furnish all the materials, labor, tools, equipment, and supervision for the completion of all the works of the Project as indicated on the plans, scope of works, technical specifications, and contract documents.

1.2. It shall be the responsibility of The Contractor to secure Building Permits, Occupancy Permits and other permits necessary for the construction and operation of the project and shoulder all the payments thereof including taxes.

1.3. The Contractor shall visit and carefully examine the site and check all the possible interference and conditions affecting the works.

1.4. Extra care must be observed during dismantling works to avoid damage on the existing facilities such as Telephone and Internet Lines, Paging System Accessories, Medical Gas Lines, Sewer and Water Lines, etc. Any damaged thereof

should be restored to its original status at the expense of the Contractor within two (2) weeks. Otherwise, construction activity will be stopped.

1.5. The Plans and Technical Specifications shall be interpreted only by a competent registered Engineer. The Contractor is enjoined to confer with the Project Engineer of OETS on drawing/items he failed to understand before submitting his bid. No excuses shall be entertained for misinterpretation on the Plans and Specifications after the award of the Contract. All work as deemed provided by the OETS shall be carried out properly by the Contractor.

1.6. The plans and specifications shall be considered as binding in all items of work mentioned in one but mentioned or indicated in the other or vice-versa, shall be considered as there are duly mentioned in both. Where no numerical indications appear on the plans, all drawings shall be carefully followed according to the plans and specifications indicated, but where numerical notations are indicated, such numerical notations shall be followed

1.7. Any inconsistency or discrepancy between the Plans and Specifications shall be brought immediately to the attention of the OETS Project Engineer/s who shall decide the correct version of the two.

1.8. No addition or alteration that will result in a change order from the contract shall be allowed without the approval of the PGH Administration. The Contractor shall bring the case to the OETS Project Engineer/s.

1.9. One set of the Plans, Specifications and Logbook shall always be kept at the jobsite to be available to the Project Inspector or his representative upon his request during the construction period.

1.10. Prior to the installation of any item or material the Contractor shall submit a sample with complete specifications to OETS for evaluation. In case of testing, the Contractor shall notify the OETS and End-user at least one week in advance of making the required tests so that the arrangements can be made for their presence to witness the tests. The necessary materials, labor, devices and all others required to conduct such tests at no additional cost the Owner.

1.11. The Contractor is solely responsible for the safety, protection, and security of his personnel, the works, equipment, installations, and the like. The Contractor shall adopt or apply the protective measures in accordance with the standards set by the Safety Organizations and the Department of Labor Standards.

2. SITE WORKS

2.1. Dismantling

2.1.1. The procedures proposed for the accomplishment of salvage and dismantling, or removal works shall be submitted for approval. The procedures shall provide for safe conduct of the work, removal and disposition of materials specified to be salvaged, protection of property which is to remain undisturbed, coordination with other work in progress and timely disconnection of utility services.

2.2. Extent of demolition/removal

2.2.1. Demolition of interior partitions indicated on the plan.

2.2.2. Chipping and hauling of slab on grade necessary for the construction of new wall footing as indicated on plans.
2.2.3. Dismantling of Ceiling.
2.2.4. Dismantling of Door, Door Jamb and Cabinets.
2.2.5. Removal of pipes and ducting inside the ceiling that are not connected/in operation to other areas.
2.2.6. Dismantling of plumbing fixture, pipes and fittings.
2.2.7. Disposition of dismantled materials.

Regular disposal of debris must be done to avoid accumulation. Cleanliness must be observed and maintained always. Dismantled materials that could still be recycled will be turn-over to OETS while the others will be for the disposal of the Contractor with the proper clearance of all concerned.

3. CONCRETE WORKS AND MASONRY WORKS

3.1. Concrete Works

3.1.1. All concrete works shall be done in accordance with Government Specifications for Concrete and or the latest edition of the ACI requirements for Reinforced Concrete.
3.1.2. The following proportions shall be used unless otherwise noted in the plan:
- 3.1.2.1. Class "A" (1:2:4) for suspended slab, column, and beams.
- 3.1.2.2. Class "B" (1:2:5) for footings and foundations.
- 3.1.2.3. Class "C" (1:3:6) for all slab on fill.

3.1.3. All slab not less than 0.10m in thickness. All slab reinforcement shall be 0.10m in thickness. All slab reinforcement shall be 0.02 m. clear from the bottom and 0.015m clear from the top of the slab

3.2. Masonry Works

3.2.1. For all exterior walls use 150mm thick Concrete Hollow Blocks (CHB) locally manufactured, machine vibrated with even edges. All CHB wall shall be reinforced with 10mm diameter vertical bars at every 0.60mm and 10mm diameter horizontal bars at every 0.60m. All 4" hollow blocks shall be reinforced with 10 mm diameter vertical bars at every 0.60 m and 10mm. diameter horizontal bars at every 0.60m
3.2.2. All cells and joints for reinforcements shall be filled with mortar. All cells and joints under the ground shall be filled.
3.2.3. Wedges units terminating against beam or slab soffits tightly with mortar and reinforcement properly secured to dowels.
3.2.4. Mortar shall be one (1) part Portland Cement, ASTM Designation C-150, Type I to two (2) part washed white sand.

3.3. Materials

3.3.1. Cement shall conform to ASTM standards. Use only one brand for the whole structural and masonry works.
3.3.2. Fine aggregates for concrete, mortar, grout, or plaster shall be washed sand, free from dusts, lumps soft or flaky particles, shale, alkali, loam or clay.
3.3.3. Coarse Aggregates: Gravel should be well- drained, clean and washed.

3.3.4. Steel reinforcements shall be Structural Grade Steel: with minimum Fy= 227.37 MPa. (33,000 Psi) Intermediate Grade Steel: with minimum Fy= 275.8 MPa (40,000 psi)

3.3.5. Tie wires shall be Ga. 16 galvanized iron (G.I.) at joints or laps of placed reinforcements as indicated in the plans. Refer to structural plans and general construction notes to conform the above values. Use steel conforming to ASTM standards, deformed, for concrete and masonry requirements.

3.3.6. Water shall be clean, free from injurious amount of oil, acids, alkali, organic materials, and other deleterious substance

3.4. Design Mix: The design mix shall have a strength of 3000Psi after 28 days.

3.5. Formworks: Construct all formworks complete with centering coarse molds conform to shape, form line grade, maintain rigid to prevent deformation under l load. Provide necessary camber.

4. CARPENTRY, WOOD WORKS AND RADIATION SHIELDING

4.1. Scope of Work

4.1.1. Reception Counter.
4.1.2. Counter and Hanging Cabinet at Hot Laboratory Room.
4.1.3. Working Table at Control Room.
4.1.4. Long Table and Records Cabinet at Staff Lounge and Reading Room.
4.1.5. Pantry Counter
4.1.6. Installation of appropriate radiation shielding on the walls at Imaging Room, Patient Toilet, Post-Imaging Waiting Room, Uptake Rooms 1, 2, 3, and 4.
4.1.7. Wall cladding on the lead shielded rooms.

4.2. Materials

4.2.1. Make all wood finish and millwork true to details, clean and sharply defined.
4.2.2. Use sound, treated, kiln-dried lumber.
4.2.3. Board: Class A "Marine" plywood.
4.2.4. Countertop Finishes: Refer to plan.
4.2.5. Cabinet: Glass Sliding Door, 6mm thick clear, on Aluminum Frame, Sliding Rails and "Caha".
4.2.6. Cabinet hardware shall be heavy duty such as metal drawer guide (fully extension), concealed hinge, metal handle and lock.
4.2.7. Wall Cladding shall be of the following materials
4.2.7.1. Stud: Light steel
4.2.7.2. Board: 6mm thick, Cement Board
4.2.8. Radiation Protection:
4.2.8.1. Lead Sheets, with a density of 11.36 g/cu.m., from floor to ceiling unless otherwise specified. Refer to the Plan "Table of Radiation Shielding Requirements". Lead sheets when installed must be overlap or be butt jointed with overlapping lead strips and should be glued onto the wall then shield with cement board.
4.2.8.2. Poured Concrete, with a density of 2.35 g/cu.m., from floor to ceiling from floor to ceiling unless otherwise specified. Refer to the Plan "Table of Radiation Shielding Requirements".

5. DOORS AND WINDOWS

5.1. Scope of Works

5.1.1. Supply and installation of New Doors and Jambs complete with hardware as shown on the plans.
5.1.2. Supply and installation of New Windows as shown on the plans.
5.1.3. Application/installation of radiation shielding of doors and jamb, refer to the Table/Schedule of Lead Shielding requirement.

5.2. Installation
5.2.1. Cut, trim and fit each door to its frame and hardware accurately.
5.2.2. Hollow Core Flush Door shall have a cross bonding and edgings. Make face veneer of first quality selected marine plywood. Provide lock blocks or size required for hardware used.
5.2.3. Install lead lining in one side of the door, facing inside the room.
5.2.4. All doors shall operate freely and all hardware shall be properly adjusted and functioning.

5.3. Materials
5.3.1. Doors and Windows - refer to the Doors and Windows Schedule on the Plan.
5.3.2. Door Jamb shall be Kiln-Dried, S4S.
5.3.3. Door Edging, Push Plates and Kick Plates shall be Ga. #18, Stainless Steel, hairline finish.
5.3.4. Hardware
5.3.4.1. Door Lockset: Lever Type, Hairline Finish, Heavy Duty.
5.3.4.2. Door Pull: Plate type, stainless steel, hairline finish
5.3.4.3. Hinges: Each panel of hinged door shall hung on Three (3),31/3" x 3-1/3", Loose Pin hinge for doors 1.80m or less in height and Four (4), 3-1/2" x 3-1/2" Loose Pin hinge for doors 2.10m in height or more.
5.3.4.4. Door Closer: Automatic, Hydraulic Type
5.3.4.5. Floor Hinge and Overhead Concealed Door Closer: for Double Swing Door, Heavy duty
5.3.4.6. Chain Bolt and Foot Bolt: for every double door, 6" length.
5.3.4.7. Door Stopper: Magnetic type.
5.3.4.8. Deadbolt: Stainless Steel, hairline finish, heavy duty.
5.3.4.9. Sliding Door Tract System: Install Head Track and Floor Guide in all sliding doors. Use heavy duty sliding door fittings that could carry a minimum of 160kg door weight capacity.

6. FINISHES

6.1. Walls
6.1.1. Scope of Works
6.1.1.1. Painting of all interior Rooms, Hallway, and adjacent rooms
6.1.1.2. Tiling of Toilets
6.1.1.3. Installation of railing and corner guard.

6.1.2. Schedule of Finishes:
6.1.2.1. Toilet; 600mm x 600mm Ceramic Tiles
6.1.2.2. All Rooms/Areas: Semi-Gloss paint except Toilets
6.1.2.3. Baseboard: 4" width PVC.
6.1.2.4. Handrail: shall be made from Aluminum (backing) and Impact-Resistant Plastics (front finish), PVC that withstand the impact from carts, beds and stretchers. Handrails shall be 125mm width, flat type. Termination shall have an end cap, fully installed on the wall as per manufacturing standards of installations.

6.1.2.5. Corner Guard: 51mm x 51 x 1.50m height, made of Aluminum (backing) and Impact Resistant Plastics (front finish), PVC that withstand the impact from carts, beds and stretchers.

6.2. Floor

6.2.1. Scope of Works

6.2.1.1. Installation of Vinyl Tiles.

6.2.1.2. Installation of Ceramic Tiles.

6.2.2. Schedule of Finishes and Specifications

6.2.2.1. *Examination Room, Corridor, Uptake Rooms, and Control Room* shall be 2mm thick Roll Vinyl Sheet, flexible, homogeneous, densely compact, anti-static with non-polychrome design, easy to clean, suitable for heavy traffic area and Hospitals with cove former, rubber filler and capping. Joint connection shall be welded with rubber weld rod.

6.2.2.2. *Staff Lounge, Pantry Room, Reception, Toilets and Waiting Area* shall be 600mm x 600mm Homogeneous Ceramic Tiles, Class "A".

6.2.2.3. *Electrical Room, UPS Room and adjacent room (to be restored)* shall be 300mm x 300mm x 2mm thick Vinyl Tile, class "A".

6.2.2.4. Use waterproof vinyl adhesives of superior bonding quality for the installation of vinyl flooring.

6.2.2.5. Use tile adhesive with superior bonding quality for the installation of ceramic tiles

6.2.2.6. Grout shall be of premium quality and resistant to molds.

6.2.3. **Installation of Roll Vinyl Sheet Flooring**

6.2.3.1. Apply leveling compound of 3mm in thickness and as per manufacturer recommendations.

6.2.3.2. Let it dry. Remove dust and particles before application of vinyl adhesive.

6.3. Ceiling

6.3.1. Scope of Works:

6.3.1.1. Installation of new ceiling

6.3.1.2. Repair of ceiling at the adjacent room that is affected during construction works

6.3.2. Materials:

6.3.2.1. Movable ceiling shall be 0.60m. x 0.60m. x 6mm thick Acoustic Board, Class "A", fire resistant, square edges panel on powder coated, aluminum T-runner.

6.3.2.2. Fixed ceiling shall be 6mm thick cement board on light steel furring. Framing shall consist of light steel channel, double furring, 19mm x 50mm x 0.40mm in thickness, suspended plumb from slab. Framing spacing shall be 0.40m x 0.50m on center both ways. Hangers spacing shall be 1.00m on center anchored to the structural slab.

6.3.2.3. Suspended Aluminum T-Runner shall have a minimum yield strength of 250Mpa. Minimum tensile strength is 330Mpa. Normal coating class is Z180. Surface condition is minimized spangle.

6.4. Painting

6.4.1. All painting works shall be done with the use of First Class or Class "A" quality paints. Before any painting is done all surfaces shall be cleaned,

smoothed and freed from dust, dirt, grease, mortar, rust and other foreign substances where paint shall be spread evenly and carefully

6.4.2. Schedule of Painting Works

6.4.2.1. Concrete wall surface: Alkyd type paint with tough and durable film, class "A" in three (3) coats

6.4.2.2. Ceiling: Flat Wall Enamel Paint, in three (3) coats

6.4.2.3. All wooden doors, jambs, moldings, counters, shelves and cabinets - QDE/Gloss Latex Paint in three (3) coats

6.4.2.4. Metal Surface: Primer paint, first coat; QDE Paint in two (2) for first and final coat

6.4.3. Other Finishes

6.4.3.1. Solid Surface Countertop, refers to the plan

6.4.3.2. Laminates shall be of Class "A"

7. PLUMBING WORKS

7.1. Scope of Works

7.1.1. New water pipelines.

7.1.2. New sewer and vent pipelines.

7.1.3. Supply and installation of Water Closets, Lavatories, Urinal, Counter Sinks, Shower Head and Knob, Faucets, Bidets, Floor Drains, Mirrors, Gate Valves and other plumbing fixtures and accessories to complete the system.

7.2. General: The project drawing shown in the general requirements as to sizes, arrangement, extent of piping, and location of the equipment. Unless otherwise indicated or specified herein, work shall be accomplished in accordance with the National Plumbing Code.

7.3. Standard Products: Materials and equipment furnished under this specification shall be standard products of manufacturer regularly engaged in the provision.

7.4. Materials

7.4.1. All pipes shall be installed as indicated on plans; any relocation required proper execution of other trades should be with prior approval of the Engineer.

7.4.2. Proposed sanitary utilities shall conform to the actual location depth and invert elevations of all existing pipes and structures as verified by the Contractor.

7.4.3. All slopes for horizontal drainage shall maintain 1% unless otherwise specified.

7.4.4. Sizes of water supply pipes to fixtures shall be in accordance with the manufacturer's instructions.

7.4.5. The Contractor shall verify all existing pipes at site and coordinate the works of the sewer line, effluent disposal point, and water service connecting point.

7.4.6. All pipe sizes are in millimeters and dimensions are in meters unless otherwise specified.

7.4.7. Water Line: Use Polypropylene Pipe and fittings (PPR), PN20. Resistance to Internal Pressure. Inspected and tested in conformance to ISO 15874: Plastics Piping Systems for Hot and Cold-Water Installation.

7.4.8. Sewer Line: Polyvinyl Chloride (PVC) orange pipes and fittings. ASTM D27729/PNS 1950

7.4.9. Vent Pipes: PVC pipes and fittings 50mm diameter.

7.4.10. Gate Valves: Conforms to ASTM 80-120, heavy duty.

7.4.11. Water Closet: Flush Valve Type, 6.0 lpf/1.6gpf, standard size, Color: White with heavy duty Tank fittings.
7.4.12. Lavatory: Semi-Pedestal Lavatory of standard size, Color: White.
7.4.13. Lavatory and Wash Sink Faucet: Heavy duty **with washer**.
7.4.14. Floor Drain: Use 100mm x 100mm brass top, CI body, SQ4.
7.4.15. Grab Bar shall be 50mm dia. stainless steel pipe on slip-on flanges, hairline finish.

8. ELECTRICAL WORKS

8.1. Scope of Works

8.1.1. Supply and installation of specified duplex convenience outlets, lighting fixtures with switches/dimmers including wirings, boxes, and conduit.
8.1.2. Supply and installation of hangers and supports for the electrical roughing ins.
8.1.3. Supply and installation of specified Circuit Breakers/Electrical Panels including wires/cables inside conduit as per Single-Line Riser Diagram.
8.1.4. Supply and installation of specified Grounding Rod.
8.1.5. Tapping of all Power Supply as per schedule.
8.1.6. Supply and installation of Telephone Outlets including coordination with OETS for the tapping point.
8.1.7. Testing, commissioning, and levelling of all connected Electrical Loads

8.2. Materials

8.2.1. Wires/Cables: THHN, Insulated, Stranded
8.2.2. Lighting Fixture: 6 inches, Pin light housing, recessed mounted, with LED bulb.
8.2.3. Emergency Exit Light: Rechargeable with battery pack and with 1-single outlet parallel slot, grounding type, 10A, 250V
8.2.4. Exhaust Fan: Ducted Ceiling Type and Wall Mounted, 12" x 12"
8.2.5. Exhaust Fan Ducting: 6" dia., PVC Conduit, S100.
8.2.6. Switches: "National" brand or approved equal
8.2.7. Duplex Convenience Outlets: Three (3) prong, Universal Type.
8.2.8. Conduits and Boxes: PVC pipes and fittings, conforms to the PNS 14.
8.2.9. Telephone Wire: Jacketed, 3#22 wire.
8.2.10. Circuit Breaker: With enclosure. Main: Molded Case, Industrial Type; Branches: Bolt-on Type
8.2.11. Internet Cable: UTP, CAT5e

9. MECHANICAL WORKS

9.1. **Airconditioning System**

9.1.1. Scope of Works:

9.1.1.1. Supply, delivery, installation, testing, and commissioning of Fifteen (15) New Split-Type Air-conditioning Units (ACU).
9.1.1.2. Supply and installation of outdoor unit framing and support with appropriate access for maintenance.

9.1.2. Materials

9.1.2.1. 2.5 HP, Split Type, 220 volts, Single Phase, 60Hz., Inverter Type, Wall-Mounted (Branded) Air-conditioning Unit
9.1.2.2. 3.0 TR, Split Type, 220 volts, Single Phase, 60Hz., Inverter Type, Ceiling-Mounted (Branded) Air-conditioning Unit
9.1.2.3. Refrigerant Accessories, Drains and Supports
9.1.2.3.1. Use high quality piping/conduits, control wires, supports, brackets, and other requirements for evaporator.

9.1.2.3.2. Refrigerant piping and fittings shall be L-hard drawn seamless

9.1.2.3.3. Piping lay-out exposed inside and outside the area of installation, inclusion of control wirings and refrigerant pipes must be embedded or cladded by Gauge 26 aluminum sheet or galvanized iron sheet for protection against deformation and must be blended seamlessly into the wall junctions, if not embedded.

9.1.2.3.4. Condensing unit shall be horizontal blow thru type, rest on metal supported platform

9.1.2.3.5. Using 1/4" x 1-1/2" x 1-1/2" angular bar, MS plate with rubber footings/pads Apply two (2) coats of red oxide primer paint and two (2) coats of silver paint on all metal brackets.

9.1.2.3.6. Condensate drainpipe shall be 3/4" diameter PVC pipe, insulated by 5/8" diameter rubber insulation, wrap by polyethylene tape and will be connected to the nearest drain line outside the building. Clean the drainpipe first using nitrogen to pump down all unnecessary obstacles inside the PVC pipe before connecting.

9.1.2.3.7. Applied rubber insulation on all refrigerant suction lines inside the ceiling. Rubber insulation must be 3/4" wall thickness for initial insulation, wrap with polyethylene tape for final insulation.

9.1.2.3.8. Use Liquid Tight flexible hose for wiring of condensing unit to circuit breaker.

9.1.2.3.9. Provide feeder line (power supply) for the unit.

9.1.3. **Guarantee and Service**

9.1.3.1. Provide operator's & service manuals to OETS upon delivery.

9.1.3.2. One (1) year warranty on parts in case of breakdown and services (*quarterly comprehensive preventive maintenance and general cleaning, and free installation of compressor*) after acceptance of the concerned end-user, which shall commence from the date of acceptance by the end-user after all works have been done based on contract.

9.1.3.3. Five (5) years warranty on compressors.

9.1.3.4. Compliance with the Republic Act No. 9184 and other applicable laws.

9.2. **Medical Gas System**

9.2.1. Scope of Works

9.2.1.1. Supply and installation of Two (2) sets Medical Gas Outlets (O2, Vac), at Uptake Rooms 3 and 4 including piping.

9.2.1.2. Supply and installation of shut-off valve including proper sealing of outlet.

9.2.1.3. Tapping to the nearest distribution line.

9.2.1.4. Pressure and leak testing

9.2.1.5. Testing and commissioning

9.2.2. Materials

9.2.2.1. Oxygen outlet (O2) shall be DISS connection, flush-type, with primary and secondary self-sealing valve.

9.2.2.2. Medical Vacuum (VAC) shall be DISS connection, flush-type, with primary and secondary self-sealing valve including suction bottle slide holder.

9.2.2.3. Suction Regulator shall be DISS connection with quick switch mode (Reg., Off, Full), Gauge: Clear analog display in 2-1/2 inches pressure gauge, 0-760mm hg with flexible transparent silicon tube, reusable suction bottle 2000cc, safety traps, plastic holder, and overflow protection

9.2.2.4. Medical Oxygen Flowmeter shall be DISS connection brass body, chrome plated, working/calibrated pressure: 50psi, flow rate: 0-15LPM complete with humidifier bottle

9.2.2.5. Isolation shut-off valve, 5/8 inch in diameter, Full Port, brass body, lever type.

9.2.2.6. Copper pipe, 5/8 inch in diameter x 20 feet, type K/L, Hardrawn, seamless.

9.2.3. Installation

9.2.3.1. The Contractor shall strictly follow the Standard Engineering practice in the installation of Medical Gas particularly centralized system, piping sizes, designed pressure, and suitable medical gas outlet assembly and installation methodology is a must.

9.2.3.2. All piping line (droppers) shall be embedded in the wall or protection.

9.2.3.3. Main and branches pipelines shall be painted color coded (Green: 02, Gray: VAC, Yellow: CA).

9.2.3.4. Each outlet shall be cleaned and 100% pressure tested. All pipes shall be cleaned and free from oil.

9.2.3.5. All tapping and inter-connecting to existing line shall be done carefully to avoid hazard of explosion and fire.

9.2.3.6. Hangers and brackets shall be at standard distance interval to be anchored to the concrete slab.

9.2.3.7. Leak test the system at 100psi pressure test using Nitrogen and shall be controlled by the newly installed Zone valve.

9.3. **Exhaust System**

9.3.1. Scope of Works

9.3.1.1. Supply, delivery, and installation of Ceiling Mounted Type Exhaust Fans.

9.3.1.2. Supply and installation of wall switch.

9.3.1.3. Lay-out and tapping of exhaust fan ducting

9.3.1.4. Supply and installation of support bracket

9.3.1.5. Provide end cap air vent with grill for Toilet near Staff lounge

9.3.2. Materials

9.3.2.1. Ceiling Mounted, Ducted Type Ventilating/Exhaust Fan, 220V, 1phase, 60hrz, 24W, 190CMH, 35dB. Installation space 240mm x 240mm, duct size: 100mm diameter with shutter.

9.3.2.2. Ceiling Mounted, Ducted Type Ventilating/Exhaust Fan, 220V, 1phase, 60hrz, 19W, 170CMH, 33dB. Installation space 240mm x 240mm, duct size: 100mm diameter with shutter.

9.3.2.3. Ceiling Mounted, Ducted Type Ventilating/Exhaust Fan, 220V, 1phase, 60hrz, 11W, 85CMH, 28dB. Installation space 117mm x 170mm, duct size: 100mm diameter with shutter.

9.3.2.4. Ducting shall be Polyvinyl Chloride (PVC) pipes and fittings

9.3.2.5. Air vent end cap shall be stainless steel with grill, 100mm diameter

9.3.3. Installation

9.3.3.1. Ducting shall be supported with brackets using full threaded road and angular steel anchored to the slab.

9.3.3.2. Steel shall be painted.

10. Terms of Payment:

10.1. Advance Payment

10.1.1. 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.

10.1.2. The advance payment shall be made only upon the submission to and acceptance by the Procuring Entity of an irrevocable standby letter of credit of equivalent value from a commercial bank, a bank guarantee or a surety bond callable upon demand, issued by a surety or insurance company duly licensed by the Insurance Commission and confirmed by the Procuring Entity.

10.1.3. The advance payment shall be repaid by the Contractor by an amount equal to the percentage of the total contract price used for the advance payment.

10.1.4. The contractor may reduce his standby letter of credit or guarantee instrument by the amounts refunded by the Monthly Certificates in the advance payment.

10.1.5. The Procuring Entity will provide an Advance Payment on the Contract Price as stipulated in the Conditions of Contract.

10.2. Progress Payments

10.2.1. The Contractor may submit a request for payment for Work accomplished. Such request 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.

10.2.2. The Procuring Entity shall deduct the following from the certified gross amounts to be paid to the contractor as progress payment:

10.2.2.1. Cumulative value of the work previously certified and paid for.

10.2.2.2. Portion of the advance payment to be recouped for the month.

10.2.2.3. Retention money in accordance with the condition of contract.

10.2.2.4. Amount to cover third party liabilities.

10.2.2.5. Amount to cover uncorrected discovered defects in the works.

10.2.3. Payments shall be adjusted by deducting therefrom the amounts for advance payments and retention. The Procuring Entity shall pay the Contractor the amounts certified by the Procuring Entity's Representative within twenty-eight (28) days from the date each certificate was issued. No payment of interest for delayed payments and adjustments shall be made by the Procuring Entity

10.2.4. The first progress payment may be paid by the Procuring Entity to the Contractor provided that at least twenty percent (20%) of the work has been accomplished as certified by the Procuring Entity's Representative.

10.2.5. Items of the Works for which a price of "0" (zero) has been entered will not be paid for by the Procuring Entity and shall be deemed covered by other rates and prices in the Contract.

10.3. Schedule of Payments:

10.3.1. Fifteen percent (15%) of the total contract price shall be paid as advance payment within fifteen (15) days from receipt by the CONTRACTOR of the Notice to Proceed with the work and proof of posting of an irrevocable standby letter of credit of equivalent value from a commercial bank, a bank guaranty or a surety bond callable upon demand, issued by a surety or insurance company duly licensed and confirmed by the Insurance Commission and confirmed by the Procuring Entity as prescribed under Clause 6 (Advance Payment), GCC.

10.3.2. Thirty percent (30%) of the total contract price shall be paid upon completion of thirty percent (30%) work minus four and a half percent (4.5%) of the fifteen percent (15%) Advance Payment;

10.3.3. Thirty percent (30%) of the total contract price shall be paid upon completion of sixty percent (60%) work minus four and a half percent (4.5%) of the fifteen percent (15%) Advance Payment;

10.3.4. Thirty percent (30%) of the total contract price shall be paid upon completion of ninety percent (90%) work minus four and a half percent (4.5%) of the fifteen percent (15%) Advance Payment;

10.3.5. The payment of the remaining ten percent (10%) of the total contract price minus one and a half percent (1.5%) of the fifteen percent (15%) Advance Payment shall be made upon completion of one hundred percent (100%) work, submission of "as built" drawings and presentation of the Certificate of Completion and Final Acceptance.

10.3.6. The foregoing progress payments are subject to retention of ten percent (10%) as retention money pursuant to Clause 3 Retention (Responsibilities of PGH).

10.3.7. Materials and equipment delivered on the site but not completely put in place shall not be included for payments.

10.4. Retention:

10.4.1. The Procuring Entity shall retain from each payment due to the Contractor an amount equal to a percentage thereof using the rate as specified above.

10.4.2. Progress payments are subject to retention of ten percent (10%), referred to as the "retention money." Such retention shall be based on the total amount due to the Contractor prior to any deduction and shall be retained from every progress payment until fifty percent (50%) of the value of Works, as determined by the Procuring Entity, are completed. If, after fifty percent (50%) completion, the Work is satisfactorily done and on schedule, no additional retention shall be made; otherwise, the ten percent (10%) retention shall again be imposed using the rate specified therefor.

10.4.3. The total "retention money" shall be due for release upon final acceptance of the Works. The Contractor may, however, request the substitution of the retention money for each progress billing with irrevocable standby letters of

credit from a commercial bank, bank guarantees or surety bonds callable on demand, of amounts equivalent to the retention money substituted for and acceptable to the Procuring Entity, provided that the project is on schedule and is satisfactorily undertaken. Otherwise, the ten (10%) percent retention shall be made. Said irrevocable standby letters of credit, bank guarantees and/or surety bonds, to be posted in favor of the Government shall be valid for a duration to be determined by the concerned implementing office/agency or procuring entity and will answer for the purpose for which the ten (10%) percent retention is intended, i.e., to cover uncorrected discovered defects and third party liabilities.

10.4.4. On completion of the whole Works, the Contractor may substitute retention money with an "on demand" Bank guarantee in a form acceptable to the Procuring Entity.

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