



## **TERMS OF SPECIFICATIONS FOR THE PROCUREMENT AND IMPLEMENTATION OF K-12 PROGRAM (MITHI-ICT INFRASTRUCTURE)**

### **I. RATIONALE**

The Philippine Science High School – Zamboanga Peninsula Region Campus (PSHS-ZRC), being one of the fastest-growing campus in the PSHS System and racing towards the top producers of globally competitive Filipino Science and Technology leaders and professionals, continues to grow, improve and expand. Facing yet another challenge to provide a better-quality service, it is on track to bring its scholars closer to the internet by using their faster and more secured ICT facilities.

To respond to this, PSHS-ZRC has embarked on the acquisition of a new and responsive cabling infrastructure which will replace the old network connectivity, install new network equipment, install outdoor and indoor close circuit television (CCTV) cameras, install PBX System. Likewise, it is also imperative for PSHS-ZRC to renovate its existing Server Rooms and relocation of Intermediate Distribution Frame (IDF) which will house the active equipment adhering with the new connectivity standards and best practices. This will also ensure reliability and improve longevity of the network, all its servers and attached devices and equipment.

Through the allocation in the National Expenditure Plan (NEP) for the capital outlays for the General Appropriations Act 2022, PSHS-ZRC intends to apply the sum of **FOUR MILLION SIX HUNDRED TWENTY-FIVE THOUSAND SIX HUNDRED PESOS (P4,625,600.00)** to be Approved Budget for the Contract (ABC) for the **PROCUREMENT AND IMPLEMENTATION OF K-12 PROGRAM (MITHI-ICT INFRASTRUCTURE)** for PSHS-ZRC inter-building communication system. This is an Early Procurement Activity for 2022.

### **II. OBJECTIVES**

The project aims to (a) Design and install fiber optic cables in laboratories and facilities in Academic Building I (b) Design and install CCTV cameras (c) Design and install PBX Systems (d) Design and renovate the existing Server Rooms/IDF and (e) Relocated Intermediate Distribution Frame (IDF) (f) Install copper structured cabling and wireless connectivity in existing buildings of PSHS-ZRC.

The structured cabling system and communication facility shall:

The new structured cabling system shall:

1. Provide user friendly environment with efficient, less technical support and open to performance upgrade/future expansion and can accommodate efficiently all data transmission service to the workstations;
2. Facilitate efficient communication;
3. Provide high-speed network connectivity to academic buildings, dorms, activity center, and laboratories;
4. Install PBX system to provide efficient telephone switching system;
5. Provide Indoor and Outdoor Close Circuit Television (CCTV);

The Server Room renovation shall:

1. Align the PSHS-ZRC server room with global standards and best practices and should specifically address the following:



**a. Perimeter Security**

- i. PSHS-ZRC Server Room should have walls which extend from ceiling to floor specially the exterior wall.

**b. Structural Considerations**

- i. PSHS-ZRC Server room's equipment layout/arrangement should provide for adequate clearance around computing racks (about 3-4 inches).
- ii. Door frame size should be sufficient to allow for easy introduction and removal of equipment

**c. Power**

- i. The server room should have sufficient dedicated circuits for all equipment (at least 10), plus one or more additional circuits, as needed for flexibility in the event a circuit fails.
- ii. All systems must be properly grounded.
- iii. General power shutdown feature should be installed
- iv. There should be an emergency lighting system to provide for life safety in the event of a power outage
- v. A transfer switch should be installed for easy switching from utility power to back up generator power in case of power cut off.
- vi. The new server room should also have provisions for at least five power outlet for future expansion.

**d. Temperature Control**

- i. PSHS-ZRC server room must have sufficient temperature control to maintain temperatures within the operational limits defined for the hardware located in the room (between 15 and 21 degrees Celsius).
- ii. The server room should have dedicated, redundant air conditioning sufficient to maintain temperatures between 15 and 21 degrees

**e. Safety**

- i. The server room must have some form of fire detection and suppression, adequately maintained and routinely tested.

**2. Meet PSHS-ZRC's communication facilities requirements**

The engagement shall also meet the required technical training/briefing for the operations, troubleshooting and maintenance of structured cabling on the safety rules and management of Server Room within 120 calendar days from receipt of the Notice to Proceed, under the duration of Project implementation.

**III. QUALIFICATION REQUIREMENTS**

- a.) The Bidder should have at least two (2) years experience in System Integration or in similar project. **Must attach proof of experience.**
- b.) Should have personnel who have valid licenses or certifications relevant for the implementation of the project, issued by authorized licensing or training agency/authority. A registered electrical or electronics/electronics and communication engineer, and a fiber optic licensed technician shall sign on the "As Built" cabling plan. **Must attached certification.**
- c.) Should have own equipment and tools to be used in the project.

Other documentary requirements to be submitted by bidder:

1. List of professional or trained employees to implement the project and their licenses or certifications relevant for the implementation of the project, issued by authorized licensing or training





agency/authority, i.e., licensed for registered electrical or electronics/electronics and communication engineer, a fiber optic licensed technician, and a certified engineer.

2. Brochures or Technical Data Sheet or equivalent document for the following items/equipment showing compliance with the required Technical Specifications:
  - LAN Switches
  - Fiber Cable
  - UTP Cable
  - HD IP Cameras (indoor & outdoor)
  - HD Analog Cameras
  - Network Video Recorder
  - PBX
3. Proposed cabling plan and design for fiber cabling of laboratories and facilities, Wi-Fi system, CCTV, and PBX system, and implementation schedule for the Project covering the whole period. Prospective Bidders are required to conduct site inspection. This is to ensure the reliability, security and efficiency of the required services that the contractor shall perform. Timeframe should be specified for each activity to be done and shall include Gantt Chart Summary.
4. Documentation (for both components)
  - Final Cabling Plan as built for Fiber Optic Cabling for laboratories
  - Final Cabling Plan as built plan for Wi-Fi System
  - Final Plan as built for Network/Structured Cabling and Electrical Layout of Server Rooms/IDF
  - Final Plan as built for CCTV
  - Final Topology and Design as built for PBX System.

Documents mentioned in “1” to “3” are to be submitted as part of the Technical Documents requirement. Documents mentioned in “4” shall be submitted upon completion of the project.

The Contractor shall complete the delivery and installation of work within One Hundred Twenty (120) calendar days from the date of receipt of Notice to Proceed.

The completion schedule provided shall be considered extended under the following:

1. Delays caused by force majeure events;
2. In all cases, the period or number of days of extension shall be agreed upon with the PSHS-ZRC in writing;
3. Claims for time extension of the contract period due to force majeure shall be subject to approval by the PSHS-ZRC. Force majeure includes events such as Earthquake, Flood, Typhoon, Cyclone, Revolution, War and other cataclysmic phenomena of nature and misfortune which are beyond human prudence and foresight.
4. The Contractor shall guarantee that the entire structured cabling and networks are free from all defective workmanship and materials, and will remain so for the period of:
  - 20 Years of Product Warranty from the Cabling Manufacturer of the Product Offered (for fiber optics) and 3 years for CAT 6 cable.
  - Minimum One (1) year warranty on workmanship.
  - 2 Years Warranty on the entire hardware products.
  - The Contractor shall provide warranty service within the warranty period. Provision of upgrades and patches to be installed free of charge during the warranty period. The contractor shall be responsible for all the cost related to the warranty period for hardware products.

#### IV. DUTIES AND RESPONSIBILITIES OF THE CONTRACTOR



## **A. Scope of Work and Activities**

The contractor shall furnish all labor, materials, tools and equipment, and perform all operations necessary to complete the supply, delivery, installation, testing and commissioning of Fiber Optic Cabling, Structured Cabling (integrated voice and data) and Network Switches and Renovation of PSHS-ZRC Server Rooms/IDF. The contractor must provide demonstration and training for IT Personnel for the Network Equipment/switches, CCTV operation, basic trouble shooting for the Structured. The Contractor shall provide warranty service within the warranty period. Provision of upgrades and patches to be installed free of charge during the warranty period. Bidder shall be responsible for all the cost related to the warranty period for hardware products.

### **A.1 Detailed Scope of Work: Structured Cabling, Indoor/Outdoor Camera, and PBX System.**

- 1) Supply of materials, labor, delivery, installation, and configuration of Fiber Optic Cabling, Structured Cabling, Wi-Fi System, CCTV System, and PBX System.
- 3) Conduct of site survey and provisions of appropriate site specifications for the supplied equipment.
- 4) Submission of the Bill of Materials for the project including software and hardware and its related network architecture.
- 5) Provision of the in-house wiring, including the Telco lines, from the cable entrance to the network rack where the modem, routers and switches are located.
- 6) Supply delivery and pulling of Category 6A UTP cable and Fiber optic cable
- 7) Supply, delivery and installation of CCTV posts.
- 8) Supply, delivery and installation of metal support for Cable Gutter, PVC conduits and other consumables
- 9) Supply, delivery and installation of CCTV cameras (outdoor and indoor)
- 10) Submission of Project Management Plan
- 11) Provision of Technical documentation
- 12) Continuity Testing
- 13) End to end Tagging and Labelling
- 14) Coordinate with the Resident Engineers in PSHS-ZRC for the Engineering works.

### **A.2 Renovation of Server Room: Scope of Work and Technical Specifications**

- 1.) Provision of Floor Plans, Electrical Plan and Working Drawings  
The proponent shall submit a blue print of General Perspective that includes other working drawings such as Floor Plan, Equipment Arrangement, Electrical Computation design for review and evaluation if the existing electrical system will suffice.
- 2.) Supply, delivery, installation, set-up and commissioning of the following equipment and materials:
  - Cable tray
  - Required Cables and other materials/accessories
  - Cabinets & Fixtures
  - Switches
  - PBX Server, Content Management Server, ENS Server Appliance, NTP Server, Time Driven Clocks
  - Electrical Circuit Components which include but not limited to the following:
    - Circuit Breakers
    - Power Transfer Switch
    - Power Outlets
    - PVC conduits
    - Power Outlets for Server/ Computers, Air Conditioner, Emergency Lights and;
    - Other electrical components needed for the renovation
  - Split Type Air Conditioning Unit
  - Fire Alarm System Equipment Components and accessories



**3.) Carpentry/Masonry works**

- Covering of exterior windows with concrete blocks.
- Ceiling Works.
- Finishing and paint works

**4.) Other Supply and Assembly**

- Modular Table and Chair
- Racks/Cabinets & Fixtures
- Existing power and cooling facilities shall be considered but contractor shall automatically provide power and cooling requirements computation and recommend for augmentation of existing electrical and cooling system design.

**B. Pre-installation**

- a.) Submit Work Plan within five (5) working days upon receipt of Notice to Proceed

**C. Installation**

- a.) Supply, deliver and install the required components as specified in the Work Plan duly approved by PSHS-ZRC and with the following Technical Specifications of this TOS.

**D. Post-Installation**

- Restore damages to property caused by excavation, installation, maintenance and/or removal of cabling equipment and other procedures conducted by the contractor to accomplish the project.
- Conduct free training for IT personnel of PSHS-ZRC on the basic maintenance and operational requirements of structured cabling and the equipment.
- Provide at least one (1) copy of the technical manual/documentation (English) in printed hard copy and electronic (soft copy) formats. The documents include Cabling and equipment installation, operation, configuration and testing.
- Render support services to PSHS-ZRC within the warranty period as follow:
  - (a) Technical support will be provided through phone calls or email within regular working hours from Monday to Friday, 8:00AM to 5:00PM
  - (b) If the supplied equipment is found defective and need to be pulled-out, the contractor shall provide replacement with the same or higher specifications.
  - (c) Rectify and or/replace any part that fail to pass any test/inspection or make alteration necessary to meet the specification.
  - (d) Responsible and accountable for any damage caused solely by the Contractor or its agent to the PSHS-ZRC Building as a direct result of the installation maintenance, and removal of any cabling components and devices.

**V. DUTIES AND RESPONSIBILITIES OF PSHS-ZRC**

- a) Assist prospective bidders during the conduct of site Survey
- b) Review and approve the work plan submitted by Contractor within five (5) working days.
- c) Grant the contractor and its authorized representatives access to its premises and facilities located therein to perform the works. It shall assign personnel to accompany the contractor and/or its representatives, if needed.
- d) Recommend to the contractor any action for a unit or part thereof that fails to pass any test and/or inspection or do not conform to specifications.
- e) Issue a Certification of Inspection and Acceptance upon determination by the PSHS -ZRC Inspectorate Team that the delivered and installed equipment and components are usable and in good working condition.



- f) Pay the Contractor after completion including the training and documentation and acceptance of the project.



### TECHNICAL SPECIFICATIONS

ITEM NO.	DESCRIPTION	QUANTITY
<b>1</b>	<b>FIBER OPTIC CABLING SYSTEM FOR LABORATORIES AND FACILITIES</b>	
	Design and Installation of fiber optic Cabling. The Cabling System must be end- to-end solution and must satisfy or exceed the fiber cabling requirements for data.	
	<b>A. Supply, Delivery, Installation of the following Materials:</b>	
	1. FOC 6-core Single mode	500 meters
	2. Messenger	10 meters
	3. FDU 6 core	1 pc
	4. Pigtail for FDU	10 pcs
	5. Patch cord	100 pcs
	6. FOC Closure	1 pc
	7. SFP Transceiver Module	6 pcs
	8. Time and Frequency Generator/Server	1 unit
	9. NTP Driven Clock	3 units
	10. Digital Clock	Unit
	11. PVC Pipe PNS 2"	Pcs
	12. PVC long elbow 2"	Pcs
	13. PVCC Clamp 2"	5 pcs
	14. AR5 Clip	1 pack
	15. Kim wipes	1 lot
	16. U bolt	1 lot
	17. Other materials needed to complete the item	1 lot
<b>2</b>	<b>STRUCTURED CABLING</b>	
	<b>A. Supply, Delivery, Installation of the following Materials:</b>	
	1. Unshielded Twisted Pair (UTP) CAT-6 cables	6100 meters
	2. CAT -6 RJ45 connector	120 pcs
	3. Rubber boots for CAT-6 connectors	120 pcs
	4. Information Outlet (CAT-6)	10 pcs
	5. Face Plates	10 pcs
	6. 24-port Patch panel	10 units
	7. Patch cords	60 pcs
	8. Cable manager 2RU	10 units
	9. PVC pipes	30 pcs
	10. Plastic moldings	30 pcs
	11. Other materials needed to complete the item	1 lot
	<b>B. Labor</b>	1 lot
<b>3</b>	<b>INSTALLATION OF ACCESS POINTS</b>	
	1. Indoor Access Point	26 units
	2. Outdoor Access Point	4 units
<b>4</b>	<b>INSTALLATION OF PBX</b>	
	<b>A. Supply, Delivery, Installation of the following Materials:</b>	
	1. PBX Server (Digital IP-PBX Server 30 Ports or Higher)	1 unit
	2. Back up Battery/UPS (up to 6 hours back up time)	1 unit
	3. Digital Terminal Phone	7 units



	1. Masonry work for covering exterior window	1 lot
	2. Finishing and paint works	1 lot
	3. Supply, Delivery, Installation of the following:	
	• Modular table and chair	5 sets
	• Fixture with keyboard Trays(27"x120"x27")	5 unit
	• Fire Alarm System including fire extinguishers specific to electronic components	5 unit
	• Split Type Air Conditioner	6 units
	• Electrical Circuits/Wiring/System	5 unit
	• Emergency Lights	10 units
<b>6</b>	<b>SUPPLY AND INSTALLATION OF CLOSED CIRCUIT TELEVISION (CCTV)</b>	
	<b>A. Supply, Delivery, Installation/Setup and Configuration of the following:</b>	
	1. IP-Based Indoor Camera (PTZ)	7 units
	2. Analog Indoor Camera (Fixed)	16 units
	3. IP-Based Indoor Camera (Fixed)	13 units
	4. IP-Based Outdoor Camera (PTZ)	8 units
	5. IP-Based Outdoor Camera (Fixed)	8 units
	6. Smart TV 55" (Compatible for networking)	3 units
	7. P o E Switch	5 units
	8. CCTV Core Switch	1 unit
	9. Network Video Recorder (NVR)	1 unit
	10. Other materials needed to complete the item	1 lot
<b>7</b>	<b>RELOCATION OF INTERMEDIATE DISTRIBUTION FRAME</b>	1 lot
<b>8</b>	<b>INSTALLATION AND ENGINEERING WORKS</b>	1 lot
	A. Backfilling & Excavation	
	B. Testing & Commissioning	
	C. Restoration of building damage due to construction, if any	
	D. Other Procedures necessary to complete the project	
	E. Labor	





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