

TERMS OF REFERENCE

FOR THE PROCUREMENT AND IMPLEMENTATION OF THE DESIGN AND BUILD SCHEME INFRASTRUCTURE PROJECT FOR THE **CONSTRUCTION OF ELEVATED WATER TANK WITH MAIN WATER NETWORK**

PHILIPPINE SCIENCE HIGH SCHOOL - MIMAROPA REGION CAMPUS
BARANGAY RIZAL, ODIONGAN, ROMBLON

I. BACKGROUND

The **PHILIPPINE SCIENCE HIGH SCHOOL-MIMAROPA Region Campus (PSHS-MRC)** through the approved allocation for capital outlays under General Appropriations Act 2018 intends to apply the sum of **NINETEEN MILLION SEVEN-HUNDRED THOUSAND PESOS (P19,700,000.00)** being the approved budget for the procurement and implementation of the project **CONSTRUCTION OF ELEVATED WATER TANK WITH MAIN WATER NETWORK** utilizing the **design and build scheme** with the project duration of **Two-Hundred Ninety (290) Calendar Days**.

II. PROJECT DESCRIPTION AND LOCATION

The project will involve the Design and Build Scheme leading to the **CONSTRUCTION OF ELEVATED WATER TANK WITH MAIN WATER NETWORK** of Philippine Science High School - MIMAROPA Region Campus, Rizal, Odiongan, Romblon pursuant to the technical specifications indicated in this Terms of Reference, and the PSHS System Building Standards and Specifications, enclosed herein.

The Facility will be located within the PSHS-MRC compound particularly at the middle part of the campus. The **MAIN WATER NETWORK** will start at the main source located at the upper part of Brgy. Progreso Este, lot owned by Mr. and Mrs. Jun Fernando. From source one, Station 0+000, elevation of 301.23 meters above sea level with coordinates North 15,656.838 and East 26,997.452. Source number two, Station of 0+500 have an elevation of 210.381 above sea level, coordinates North 15,745.72 and East 26,654.68. There will be a proposed reservoir near the water source with Station of 0+500, elevation of 200.71 meters above sea level, coordinates North 15,759.13, East 26,578.02 going to Romblon Provincial Convention Center Water Tank, Station of 3+019.72 with elevation of 162.008 meters above sea level, coordinates North 15,745.72 and East 26,645.68 and up to the Cistern Tank with Station of 3+760 with elevation of 94.805 meters above sea level, coordinates North 15,685.24 and East 23,866.7 located at permanent site near the Elevated Water Tank and Proposed Admin Building where water is pumped-up to the elevated water tank which supplies the sufficient volume of water to the buildings through the distribution lines. The **ELEVATED WATER TANK, WITH MAIN WATER NETWORK** will be a 1-Pedestal Structure which will sit on a frontage area indicated in the campus master plan (Please refer to the TOR drawings).

The project will have an Approved Budget for the Contract (ABC) of **NINETEEN MILLION SEVEN-HUNDRED THOUSAND PESOS (P19,700,000.00)** including all taxes and applicable permits, licenses and clearances, for the project mentioned above.

The amount shall include all taxes and applicable permits, licenses and clearances, for the **CONSTRUCTION OF ELEVATED WATER TANK WITH MAIN WATER NETWORK** in which a **maximum of 3% shall be allocated for the Design** and the balance for the Civil Works.

III. CONCEPTUAL DESIGN

The Construction Project - Design and Build Scheme

A. Construction of Elevated Water Tank with Main Water Network

The Facility design shall conform to the provisions of the National Building Code of the Philippines (PD 1096), Accessibility Law (BP 344), National Structural Code of the Philippines, Electrical Engineering Law (RA 7920), Mechanical Engineering Law (RA 5336), Plumbing Code (RA 1378, 1993-1994 Revisions), Fire Code (RA 9514) and other laws and regulations covering environmental concerns and local ordinances and regulations.

The proposed **Construction of Elevated Water Tank with Main Water Network** shall start at the station 0+000, elevation of 301.23 meters above sea level with coordinates North 15,656.838 and East 26,997.452 and Source number two, Station of 0+500 have an elevation of 210.381 meters above sea level, coordinates North 15,745.72 and East 26,654.68 where the construction of Main Water Storage will be located. The main pipeline will be tapped to the main storage tank and will be laid out along the location contour properly installed and supported. The water carried out from the main storage tank will be stored in the existing tank located near the **Romblon Provincial Convention Center** and then deliver the specific volume of water through the secondary pipelines to the Cistern Tank of permanent site.

From the underground Cistern Tank of the Main Site Station 3+750, it has an elevation of 95.3 meters above sea level and with the coordinates North 15686.26 and East 23,876.7. The water will be pumped-up to the Elevated Water Tank by the supply pumps properly sized-up and backed-up in case of future maintenance services. The elevated water tank will provide by gravity, the sufficient quantity of water to individual dwellings through distribution lines that will be installed accordingly based on plumbing standards and practices. Every building shall be provided with one "stub-out" for each supply of water. The potable supply of water will be treated first at the Water Treatment Room where the Reverse Osmosis system is located to ensure the quality and drinkability of the delivered water and should be laid and supported properly as much as possible the main pipes in parallel with the main distribution pipelines. (Please refer to the TOR Drawings)

Furthermore, the Elevated Water Tank shall be a 1-Pedestal Structure with a non-corrosive metal platform for viewing deck provided with safety screen at all sides that will be constructed for phase-2 project. The access into the top deck will be a steel stair with standard railings properly coated with paints. There will be equipment shaft along with the stairs inside the main structure that will serves as the entry of all equipment, tools and materials for the future works and services. All tanks shall be provided with standard manholes and access ladder for maintenance purposes. All costs for application permits and other permits shall be included in the contract cost.

The Lobby shall be furnished with gloss paints provided with Telecom system, Alarm system, Paging System, AC units and will be used as orientation area relative to the engineering structure of elevated water tank and its room. Fire rated door and glass windows shall be installed accordingly. (Please refer to the TOR Drawings)

The accuracy of the design calculation and installation workmanship of the systems mentioned above will be the key to system's future operations.

The dimensions, space/ areas and lengths are consistent with the PSHS Building Standards and Specifications, enclosed herein.

No.	STORAGE ROOM	Qty.	Floor Area (m ²)
1	Porch	1	4.6
2	Lounge / lobby	1	38.8
3	Stair	1	5.0
4	Mechanical Room	1	20.3
5	Water treatment room	1	12.6
6	Cistern	1	9.0
7	Maintenance Quarter	1	14.5
8	Storage Room/ Roof Deck	1	100.0
		Total	204.8

No.	CISTERN TANK	Qty.	Floor Area (m ²)
1	CISTERN (40,000 Li)	1	13.26
2	Sum Pit	1	0.85
3	Baffle Wall	1	1.9
		Total	20.99

No.	ELEVATED TANK AND PLATFORM	Qty.	Floor Area (m ²)
1	Elevated Water Tank (36,000 Li)	1	17
2	Non-corrosive metal platform -1 (viewing deck)	1	29.2
3	Non-corrosive metal platform - 1 (viewing deck at the top of elevated tank)	1	19.6

		Total	68.4
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No.	MAIN SUPPLY WATER STORAGE TANK	Qty.	Floor Area (m ²)
1	Water Storage Tank (54,000 Li)	1	18
2	Baffle wall	1	2.5
3	Concrete splash pan	1	1
4	Manhole and Access Ladder	1	22.86
		Total	21.5

No.	MAIN SUPPLY PIPELINE	Qty.	Length (m)
1	Main Supply Pipeline (Flexible)	1	4,500
2	Water Distribution Lines (Utilities)	1	565
3	Potable Water Supply pipeline	1	543
		Total	5,608

The construction of Elevated Water Tank with Main Water Network must be finished and functional. Its design must feature Epoxy paints for floor and painted finish for exterior and interior walls (Please refer to architectural Design Concept).

STORAGE ROOM were the main entrance located enclosed the stairwell, pump room, water treatment room and maintenance quarter.

WATER STORAGE TANK is a water reservoir use to stored water before to transfer by gravity type into the existing Romblon Provincial Convention Center Water Tank.

CISTERN TANK is an underground water reservoir use to stored water before to transfer by the motorized pump into the elevated water tank.

ELEVATED TANK is an enclosed structurally elevated storage designed specifically for storing water, purposely to supply the adequate quantity of water by gravity to the buildings.

PLATFORM is a non-corrosive metallic viewing deck used for space observation of the PSHS-Community and guests at the same time a resting area before to go up or down.

MECHANICAL ROOM a room for the transfer pump and fire pump.

WATER TREATMENT ROOM is an area for the Reverse Osmosis Machine.

LADDER - A non-corrosive steel ladder located at the center of reinforced concrete pedestal used to go up stair to elevated water tank and to the viewing deck.

STEEL STAIRS - A non-corrosive metallic spiral stair located outside the pedestal to go up stair at the viewing deck and the elevated water tank (Please refer to architectural plan and details).

A. **Detailed Design** - This will be submitted by the prospective bidder.

1. Preparation of the following Detailed Design Drawings (see PSHS-MRC Checklist of Drawings Requirements) based on the approved Design Development Drawings and Design Parameters including any revisions and refinements as approved and required by PSHS-MRC:

a. Detailed Architectural Plans (refer to Checklist of Drawings Requirements and Design Parameters). **Note: The prospective bidder must present their Design based on our concept. The Design of the Procuring Entity is for reference purpose only.**

b. Detailed Structural Plans (refer to Checklist of Drawings Requirements and Design Parameters). **Note: The prospective bidder must present their Design based on our concept. The Design of the Procuring Entity is for reference purpose only.**

c. Detailed Electrical Plans (refer to Checklist of Drawings Requirements and Design Parameters). **Note: The prospective bidder must present their Design based on our concept. The Design of the Procuring Entity is for reference purpose only.**

d. Detailed Audio/system Plans (refer to Checklist of Drawings Requirements and Design Parameters). **Note: The prospective bidder must present their Design based on our concept. The Design of the Procuring Entity is for reference purpose only.**

e. Detailed Storm Drain, Sanitary and Plumbing Plans (refer to Checklist of Drawings Requirements and Design Parameters). **Note: The prospective bidder must present their Design based on our concept. The Design of the Procuring Entity is for reference purpose only.**

f. Detailed Design Calculation of mechanical systems mentioned above and Mechanical Plans (refer to Checklist of Drawings Requirements and Design Parameters).

g. Structural Computations, including Soil Boring Test Results and Seismic Analysis and Electrical Design Computations.

h. General Notes and Technical Specifications describing type and quality of materials and equipment to be used, manner of construction and the general conditions under which the project is to be constructed.

- i. Detailed Bill of Quantities, Cost Estimates including a summary sheet indicating the unit prices of construction materials, labor rates and equipment rentals.
- j. Summary of Works

CHECKLIST OF DRAWINGS REQUIREMENTS AND DESIGN PARAMETERS

A. ARCHITECTURAL DESIGN PARAMETERS

I. Codes and Standards

The Architectural Works shall be in accordance with the following Philippine laws, Codes and Standards.

- Laws and Codes:
 1. National Building Code of the Philippines and its Latest and Amended IRR
 2. RA 9266 or Architectural Law and its Latest and Amended IRR
 3. BP 344 or Accessibility Law and its Latest and amended IRR
 4. AO 35, s. 1994 or, AO Pertaining to the Control of Radiation Hazards
 5. RA 9514 New Fire Code of the Philippines
 6. Existing Local Codes and Ordinances.
 7. And other Laws that applies to the projects
- Standards:
 1. Bureau of Product Standards (BPS)
 2. Underwriters Laboratory (UL)

II. Proposal should include the following:

- Perspective, Site Development Plan, Vicinity Map/Location Plan
- Floor Plans (scale 1:100 minimum) including proposed furniture layout
- Roof Plan/s showing downspouts (scale 1:100 minimum), including detail of gutter downspout, etc.
- Reflected ceiling plan/s (scale 1:100 minimum), including details
- Details of Stairs, fire escapes/exits, accessible ramps, ladders etc., in the forms of plans evaluation/section
- Details of Toilets (1:50m) including accessible toilets in the form of plans, evaluation/section
- Details of specialized design features (scale 1:50m) such as partitions
- Details of rooms (1:50m) in the form from floor to roof (scale 1:50m)
- Schedule of doors, gates emergency exits, etc., (scale 1:50m), including specifications for materials and hardware
- Schedule of windows (scale 1:50m) including specifications for materials and hardware
- Schedule of finishes for interior and exterior floors, walls ceilings

- Architectural Interior Design Technical Specifications
- Architectural Interior Design Scope of Works
- Architectural Interior Design Bill of Quantities
- Cost Analysis

B. STRUCTURAL/CIVIL WORKS DESIGN PARAMETERS

I. Codes and Standards

The Civil/Structural Design shall be in accordance with the following Philippine laws, Codes and Standards.

- Codes
 1. National Structural Code the Philippines (NSCP) 2010
 2. National Building Code of the Philippines and its revised IRR
 3. Accessibility Law
 4. Local Codes and Ordinances
- Standards
 1. Bureau of Product Standards (BPS)
 2. Philippine National Standards (PNS)
 3. DPWH Blue Book
 4. American Concrete Institute (ACI)
 5. American Society for Testing Materials (ASTM)
 6. American Welding Society (AWS)
 7. Other Standards that applies

II. Proposal should include the following:

- General Notes and construction Standards
- Site Development Plan
- Foundation Plan/s (scale 1:100m minimum)
- Floor Framing Plan/s (scale 1:100m minimum)
- Roof Framing Plan/s (scale 1:100m minimum)
- Schedule and Detail of Footings and Columns
- Schedule and Detail of Beams and Floor Slabs
- Details of Flatform
- Details of Stairs, Ramps, Fire Exits
- Details of Main Supply Water Storage Tank
- Details of Cistern Tank
- Details of Elevated Water Tank
- Detailed Design calculation and analysis of Pipe supports
- Structural Analysis and Design Calculation of Main Structure pedestal
- Seismic Analysis
- Geotechnical Analysis
- Structural and technical specifications
- Structural Scope of Works

- Structural Bill of Quantities
- Cost Analysis

C. SANITARY/PLUMBING DESIGN

I. Codes and Standards

The Sanitary/Plumbing Design shall be in accordance with the following Philippine laws, Codes and Standards.

- Codes:
 1. National Building Code of the Philippines and its New IRR
 2. Fire Code of the Philippines
 3. National Plumbing Code of the Philippines (NPCP)
 4. Sanitation Code of the Philippines
 5. Existing Local Codes and Ordinances
 6. Water Code of the Philippines
- Standards:
 1. Bureau of Product Standards (BPS)
 2. Philippine National Standards for Drinking-Water
 3. Underwriters Laboratory (UL)
 4. DOH National/Laboratory (NRL)
 5. DOH Health Care Waste Management Manual
 6. National Water Resources Board (NWRB)
 7. National Plumbers Association of the Philippines (NAMPAP)
 8. Philippine Society of Sanitary Engineers, Inc., (PSSE)
 9. Occupational Safety and Health Standards

II. Proposal should include the following:

- General Notes and Legends
- Location and Site Plan
- Storm Drainage Layout (scale 1:100m minimum) including actual length of tapping line to Main Drainage line
- Water line Layout (scale 1:100m minimum) including actual length of tapping line from main water source when applicable
- Sewer line Layout (scale 1:100m minimum) including actual length of tapping line to septic tank or existing sewer line
- Isometric Layout, showing waterline, sewer line and drainage line
- Details of connections catch basins, downspouts, etc.
- Plumbing Design Calculation and Analysis
- Sanitary Technical Specifications
- Sanitary Scope of Works
- Sanitary Bill of Quantities
- Cost Analysis

D. MECHANICAL WORKS DESIGN

I. Codes and Standards

The Mechanical Design shall be in accordance with the following Philippine laws, Codes and Standards.

- Codes:
 1. National Building Code of the Philippines and its New IRR
 2. New Fire Code the Philippines
 3. Mechanical Engineering Code of the Philippines (ME Code)
 4. Existing Local Government Codes and Ordinances
- Standards:
 1. Bureau of Product Standards (BPS)
 2. Philippine National Standards (PNS)
 3. Underwriters Laboratory (UL) and Factory Mutual (FM)
 4. International Electro-Technical Commission (IEC) 1988
 5. National Fire Protection Association (NFPA)
 6. National Fire Protection Association (NFPA) 99 Standard for Health Care Facilities.
 7. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).
 8. Center for Disease Control and Prevention (CDC) Manual.
 9. American Society for Testing Materials (ASTM)
 10. Occupational Safety and Health Standards

II. Proposal should include the following:

- General Notes and Legends, Site Development Plan, Location Plans
- Detailed Plans/Isometric Drawings (scale 1:100m minimum) of Main Supply and Distribution Lines.
- Details of Main Supply Water Storage Tank
- Details of Elevated Water Storage Tank that can sustain One thousand (1000 to 2000) persons per day, Flow Diagram (scale 1:50m)
- Details of Pump Foundation
- Details of Transfer pumps
- Details of Water Treatment System (scale 1:50m)
- Details of Water Supply and Distribution System
- Design Calculation and Technical Specifications of Tanks, Pumps, pipelines and other mechanical systems mentioned above.
- Mechanical Equipment Installation and support details
- Detailed Fabrication Plans/Shop drawings
- Cooling Load Calculation for AC system
- Detailed Mechanical Scope of Works
- Mechanical Bill of Quantities

- Cost Analysis

E. ELECTRICAL DESIGN PARAMETERS

I. Codes and Standards

The Electrical System Design Parameters shall be in accordance with the following Philippine laws, Codes and Standards.

- Codes:
 1. Philippine Electrical Code`
 2. National Electrical Code
 3. New Fire Code of the Philippines
 4. National Building Code of the Philippines and Its new IRR
 5. Existing Local Codes and Ordinances
- Standards:
 1. Bureau of Product Standards (BPS)
 2. Underwriters Laboratory (UL)
 3. National Fire Protection Association
 4. International Electro Technical Commission (IEC)
 5. Illumination Engineering Society (IES)
 6. National Electrical Manufacturer's Association (NEMA)

II. Proposal should include the following:

- General Notes and Legends
- Location and Site Plan
- Lighting Layout (scale 1:100m minimum) including details
- Power Layout (scale 1:100m minimum) including details
- Auxiliary System Layout (scale 1:100m minimum) including details (Telephone System with Intercom, WAN and LAN System, Alarm System, Audio, Video and others)
- Schedule and Details of Loads
- Riser Diagram
- Electrical Computation
- Design Analysis
- Electrical Technical Specifications
- Electrical Scope of Works
- Electrical Bill of Quantities
- Cost Analysis
- Other Details

F. AUDIO DESIGN (SOUND SYSTEM)

Codes and Standards

Audio/Sound system Design shall be in accordance with the Philippine laws, Codes and Standards.

IV. SELECTION OF DESIGN AND BUILD CONTRACTOR

The procurement and implementation of the project using the “Design and Build” scheme shall be in accordance with the provisions of RA 9184, specifically, its Annex G. Bidding process shall be conducted by the Bids and Awards Committee (BAC) to be assisted by the TWG. The campus director of PSHS-MRC shall create the Design and Build Committee (DBC) to be composed of highly technical personnel in the field of architecture and engineering/construction. The DBC and TWG shall prepare the design brief and performance specifications and parameters, review the detailed engineering design, and assist the BAC in the evaluation of technical and financial proposals in accordance with the criteria set.

A. Eligibility Requirements

The eligibility requirements in the Design and Build for infrastructure projects shall comply with the applicable provisions of Section 23-24 of the IRR of RA 9184.

a. Eligibility Documents

Class “A” Documents

- i. PhilGEPs Registration
- ii. Registration from the Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives;
- iii. Mayor’s permit issued by the city or municipality where the principal of business of the prospective bidders is located;
- iv. Statement of all its on-going and completed government and private contracts within ten (10) years from the submission of bids
 - a. CPES rating or
 - b. Certificate of Completion
- v. SLCC
- vi. PCAB licenses and registration for the type and cost of the contract for this project (Medium A - License Category B) and contractor’s registration certificate from DPWH;
- vii. Audited financial statement, stamped “received” by the BIR for the preceding calendar year;
- viii. Tax Clearance
- ix. NFCC computation.

Class “ B “ Documents

- a. Joint Venture Agreement, if applicable.
- b. Technical Documents
 - i. Bid Security (in any form)
 - ii. Project Requirements
 - ii1. Design and Construction Method

- ii2. Value engineering analysis of design and construction method. Prospective bidders shall prepare a value engineering analysis report of their proposed design and construction method to be applied for the PROJECT. Importance shall be made on the following criteria:
 - Cost-saving, measured on a per square meter average figure
 - Time-saving in design and construction duration, measured using the HOPE approved PERTCPM of the project.
 - Operational efficiency to take advantage of natural lighting and ventilation in some areas and use of efficient toilet.
- ii3. Organizational Chart
- ii4. List of Contractor's Personnel with complete qualification and experience data
- ii5. List of Contractor's Equipment units, which are owned, leased, and/or under purchase agreements, supported by certification of availability of equipment from the equipment lessor/vendor for the duration of the project.
- ii6. Manpower Schedule
- ii7. Equipment Utilization Schedule
- ii8. Bar Chart and S-curve
- ii9. Construction Safety and Health Program
- ii10. PERT-CPM
- ii11. Omnibus Sworn Statement
- ii12. Drawing will be placed in an A3 paper included in the eligibility & technical docs

c. Financial Component

- i. Financial Bid Form
- ii. Bill of Quantities
- iii. Detailed Cost Estimates
- iv. Summary Sheet indicating the unit prices of materials, labor rates and equipment rental
- v. Payment schedule

d. Additional Requirements

Authorized Representative must present;

1. Authorization letter / Special Power of Attorney
2. Letter of Intent

Note: Non-compliance of the additional requirements shall not be subjected for the failure or disqualification of the Prospective bidder. These requirements are for the compliance for the statutory and regulatory documents.

B. Eligibility Criteria

- a) The eligibility of design and build contractors shall be based on the legal, technical and financial requirements above-mentioned. In the technical requirements, the design and build contractor (as solo or in joint venture/consortia) should be able to comply with the experience requirements

under the IRR of RA 9184, where one of the parties (in a joint venture/consortia) should have at least one similar project, both in design and construction, with at least 50% of the cost of the Approved Budget for the Contract (ABC).

- b) If the bidder has no experience in design and build projects on its own, it may enter into subcontracting, partnerships or joint venture with design or engineering firms for the design portion of the contract.
- c) The relevant provisions under Section 23.5.2 of the IRR of RA 9184 on eligibility requirements shall be observed.

v. FOR DESIGN PERSONNEL

The key professionals and the respective qualifications of the DESIGN PERSONNEL shall be as follows:

A. Design Architect

The Design Architect must be duly-licensed with at least ten (10) years of experience in the design of residential, academic or institutional facilities, and shall preferably be knowledgeable in the application of Green Design Technology in school construction.

B. Structural Engineer

The Structural Engineer must be a duly-licensed Civil Engineer with at least ten (10) years of experience in structural design and shall preferably be knowledgeable in the application of Green Design Technology in school construction.

C. Electrical Engineer

The Electrical Engineer must be a registered Professional Electrical Engineer with at least ten (10) years of experience in the design of lighting, power distribution and preferably knowledgeable in developments in emergent efficient lighting technologies and energy management.

D. Mechanical Engineer

The Mechanical Engineer must be a Professional Mechanical Engineer with at least ten (10) years of experience in HVAC and fire protection systems and preferably knowledgeable in emergent, alternative energy-efficient HVAC technologies.

E. Sanitary Engineer

The Sanitary Engineer must be duly-licensed with at least ten (10) years of experience in the design of building water supply and distribution, plumbing, and preferably knowledgeable in waste water management/treatment, and emergent, alternative effluent collection and treatment systems, and DENR AO 36 s. 2004 (DAO 92-29 "Hazardous Waste Management).

The key professionals listed are required. **The DESIGN & BUILD CONTRACTOR** may, as needed and at its own expense, add additional professionals and/or support personnel for the optimal performance of all Architectural and Engineering Design Services, as stipulated in these Terms of Reference for the PROJECT. Prospective bidders shall attach each individual's resume and PRC license of the (professional) staff.

VI. CONSTRUCTION PERSONNEL

The key professionals and the respective qualifications of the **CONSTRUCTION PERSONNEL** shall be as follows:

A. Project Manager

The Project Manager shall be a licensed architect or engineer with at least ten (10) years relevant experience on similar and comparable projects in different locations. The Project Manager should have a proven record of managerial capability through the directing/managing of major civil engineering works, including projects of a similar magnitude.

B. Project Engineer/ Architect

The Project Engineer/Architect shall be a licensed architect or engineer with at least ten (10) years of experience in similar and comparable projects and shall preferably be knowledgeable in the application of rapid construction technologies.

C. Electrical Engineer

The Electrical Engineer must be a registered Professional Electrical Engineer with at least ten (10) years of experience in the design of lighting, power distribution and preferably knowledgeable in developments in emergent efficient lighting technologies and energy management.

D. Mechanical Engineer

The Mechanical Engineer must be duly-licensed with at least ten (10) years of experience in similar and comparable projects in the installation of HVAC and fire protection.

E. Sanitary Engineer

The Sanitary Engineer must be duly-licensed with at least ten (10) years of experience in similar and comparable projects in the installation of building water supply and distribution, plumbing.

F. Master Plumber

The Master Plumber must be duly-licensed with at least ten (10) years of experience in similar and comparable projects and shall preferably be knowledgeable in supervision and implementation for the installation of plumbing works for the project.

G. Foreman

The Foreman must have at least ten (10) years of experience in similar and comparable projects and shall preferably be knowledgeable in the application of Green Building technologies.

H. Safety Officer

The safety officer must be an accredited safety practitioner by the Department of Labor and Employment (DOLE) and has undergone the prescribed 40-hour Construction Safety and Health Training (COSH).

The above key personnel listed are required. The **DESIGN & BUILD CONTRACTOR** may, as needed and at its own expense, add additional professionals and/or support

personnel for the optimal performance of all Construction Services, as stipulated in these Terms of Reference, for the PROJECT. Prospective bidders shall attach each individual's resume and PRC license of the (professional) staff, proof of qualifications, and related documents as necessary.

VII. PRELIMINARY DESIGN AND CONSTRUCTION STUDIES

No bidding and award of design and build contracts shall be made unless the required preliminary design and construction studies have been sufficiently carried out and duly approved by the Head of the Procuring Entity that shall include, among others, the following:

- i. Project Description
- ii. Conceptual Design
- iii. Performance Specifications and Parameters
- iv. Preliminary Survey and Mapping
- v. Preliminary Investigations
- vi. Utility Locations
- vii. Approved Budget for the Contract
- viii. Proposed Design and Construction Schedule
- ix. Minimum requirements for a Construction Safety and Health Program for the project being considered
- x. Tender/Bidding Documents, including Instructions to Bidders and Conditions of Contract

The above data are for reference only. The procuring entity does not guarantee that these data are fully correct, up to date, and applicable to the project at hand. The contractor is responsible for the accuracy and applicability of all data, including the above, that it will use in its design and build proposal and services.

The acquisition of right-of-way and the conduct of eminent domain proceedings shall still be the responsibility of the procuring entity, which shall include a preliminary budget for this purpose.

VIII. DETAILED ENGINEERING REQUIREMENT

1. Upon award of the design and build contract within a period of 30 Calendar Days, the winning bidder shall be responsible for the preparation and submission of all necessary detailed engineering investigations, surveys and designs in accordance with the provisions of Annex "A" of this IRR (with the exception of the Bidding Documents and the ABC).
2. The procuring entity shall ensure that all the necessary schedules with regard to the submission, confirmation and approval of the detailed engineering design and the details of the construction methods and procedures shall be included in the contract documents.
3. The procuring entity shall review, order rectification, and approve or disapprove - for implementation only - the submitted plans within these schedules. All instructions for rectification shall be in writing stating the reasons for such

rectification. The design and build contractor shall be solely responsible for the integrity of the detailed engineering design and the performance of the structure irrespective of the approval/confirmation by the procuring entity.

IX. SCOPE OF WORKS AND PROJECT IMPLEMENTATION

A. Design

The Philippine Science High School - MIMAROPA Region Campus, through the PSHS System Design and Build Committee for Design and Build Scheme, shall provide the design brief description of the project in accordance to RA9184 Annex G Sec. 11.

In compliance with the design and build Terms of Reference, the DESIGN AND BUILD CONTRACTOR shall submit a detailed program of work within thirty (30) calendar days after the issuance of the Notice to proceed for approval by the procuring entity that shall include, among others:

- a. The order in which it intends to carry out the work including anticipated timing for each stage of design/detailed engineering and construction;
- b. Periods for review of specific outputs and any other submissions and approvals;
- c. Sequence of timing for inspections and tests as specified in the contract documents;
- d. General description of the design and construction methods to be adopted;
- e. Number and names of personnel to be assigned for each stage of the work;
- f. List of equipment required on site for each major stage of the work;
- g. Description of the quality control system to be utilized for the project
- h. Utilize the existing geotechnical/soil investigation report as basis for the computation of structural analysis of the building.
- i. From the approved schematic design documents, prepare the complete construction drawings and detailed technical specifications, cost estimates and the bill of quantities, setting forth in detail the work required for the architectural, structural, civil, landscape architecture, electrical, plumbing/sanitary, mechanical and other service-connected equipment, utilities, site planning aspects and related works, electronic and communications and the site development plan of the PROJECT's immediate environs.
- j. Prepare layouts, specifications and estimates of all furniture and equipment required for the fit-out of the buildings, specifically items that are owner-furnished materials.
- k. Prepare the scope of work for construction based on the prepared bill of quantities and cost estimates while fitting within the approved budget.
- l. Provide value engineering analysis on all prepared construction documents.
- m. Coordinate with all offices and agencies concerned, within and outside the Campus regarding utility connections, permits and other requirements needed.
- n. Periodically coordinates and presents the status of the design phase to the Head of Procuring Entity and the PSHS Design & Build Committee.

All drawings included in the contract documents should be drawn using **CAD software** and plotted on 20"x 30" sheets and A3 size (7 Copies). All other textual submittals shall be printed and ring-bound on A4-sized sheets.

Where required, design components shall be designed in coordination with the agencies concerned (e.g., coordinate with electric company for power lines and concerned company/agency for water and sewage lines).

Partial and earlier submission of the construction drawings, such as those affecting the preliminary stages of construction (site works, foundation works, etc.) shall be allowed. The DESIGN & BUILD CONTRACTOR may only proceed with the CONSTRUCTION PHASE after the approval of the PSHS-MRC Design and Build (D&B) Committee including drawings, designs, and bill of estimates as recommended by the Technical Working Group (TWG) and upon accomplishing all necessary PRE-CONSTRUCTION tasks.

B. Pre-Construction

- a) Secures all necessary building permits prior to construction. All incidental fees shall be included in the cost estimate of the building.
- b) Prepares the PERT-CPM of the construction phase.
- c) Provides all other necessary documents that shall be required by B&D Committee

C. Construction Phase

- a) Implements all works indicated in the approved construction drawings and documents. All revisions and deviation from the approved plans, especially if it shall impact the overall cost of the project, shall be subject for approval.
- b) Provides soil filling, grading and other soil protection measures of the building and other elements of the site, in response to the results of soil and materials testing.
- c) Constructs the buildings and other necessary structures, complete with utilities and finishes, resulting in operable and usable structures.
- d) Provides protection or relocation of existing trees indigenous to the area, and proper removal and replacement of all introduced trees and vegetation affected by the construction.
- e) Layouts piping, conduits, manholes, boxes and other lines for utilities including tapping to existing utility lines. Facilitate the connection of all utilities (power, water, sewer, structured cabling and telephone) with their corresponding utility companies. All application fees shall be included in the project cost.
- f) Installs fire protection systems and fixtures, fire extinguishers, emergency lights and lighted fire exit signs.
- g) Prepares shop-drawings for approval.
- h) Coordinates with the B&D Committee regarding scheduling of delivery and installation of all owner-furnished materials and equipment during construction.
- i) Conducts all necessary tests (to be required by B&D Committee) and issue reports of results.
- j) Rectifies punch-listing works to be inspected and issued by the B&D Committee and/or the End-user.
- k) Complies with the DOLE-OSH requirements and submit periodic reports concerning occupational safety and health.

- l) Provides all other necessary documents that shall be required by the B&D Committee.

D. Post Construction Phase

- a) Prepares of as-built plans
- b) Turn-overs of all manuals, certificates and warranties of installed items.
- c) Secures building certificate of occupancy and fire safety inspection certificate

E. Variation Orders

Any errors, omissions, inconsistencies, inadequacies or failure submitted by the contractor that do not comply with the requirements shall be rectified, resubmitted and reviewed at the contractor's cost. If the Contractor wishes to modify any design or document which has been previously submitted, reviewed and approved, the contractor shall notify the procuring entity within a reasonable period of time and shall shoulder the cost of such changes.

- a. As a rule, changes in design and construction requirements shall be limited only to those that have not been anticipated in the contract documents prior to contract signing and approval. The following guidelines shall govern approval for change or variation orders:
 - i. Change Orders resulting from design errors, omissions or non-conformance with the performance specifications and parameters and the contract documents by the contractor shall be implemented by the contractor at no additional cost to the procuring entity.
 - ii. Provided that the contractor suffers delay and/or incurs costs due to changes or errors in the procuring entity's performance specifications and parameters, he shall be entitled to either one of the following:
 - a. an extension of time for any such delays under Section 10 of Annex "E";
or
 - b. Payment for such costs as specified in the contract documents, provided, that the cumulative amount of the variation order does not exceed ten percent (10%) of the original contract

F. DEFECTS AND LIABILITY

- a. All design and build projects shall have a minimum Defects Liability Period of one (1) year after contract completion or as provided for in the contract documents. This is without prejudice, however, to the liabilities imposed upon the engineer/architect who drew up the plans and specification for a building sanctioned under Section 1723 of the New Civil Code of the Philippines.
- b. The contractor shall be held liable for design and structural defects and/or failure of the completed project within the warranty periods specified in Section 62.2.3.217 of the IRR.

X. OVERALL PROJECT TIME SCHEDULE

The DESIGN & BUILD CONTRACTOR shall propose the most reasonable time schedule for the completion of the project. It is expected that this period will not exceed **Two-Hundred Ninety (290) calendar days** from the date of the issuance of the Notice to Proceed (NTP): **Thirty (30) calendar days** for the Design Phase and **Two-Hundred Sixty (260) calendar days** for the Construction Phase.

XI. THE IMPLEMENTING AGENCY'S GENERAL RESPONSIBILITY

The implementing agency for the project is the Campus Director of PSHS-MRC with final approval for all decisions and actions from the PSHS System Office of the Executive Director through the Build and Design Committee. The B&D Committee shall:

- a) Prepare the design brief for the project in accordance with PSHS Systems 'policies, existing codes, traditions, standards, and the conditions and design criteria enumerated in the Terms of Reference.
- b) Coordinate with DESIGN & BUILD CONTRACTOR and the Campus Director of PSHS-MRC with regards to the design and implementation of the project.
- c) Assist in the coordination of the DESIGN & BUILD CONTRACTOR with various utility agencies during the detailed design and implementation phases of the project.
- d) Conduct regular coordination meetings between the DESIGN & BUILD CONTRACTOR and PSHS-MRC to facilitate the implementation of the project.

XII. THE DESIGN & BUILD CONTRACTOR'S GENERAL RESPONSIBILITY

- a) The DESIGN & BUILD CONTRACTOR shall certify that he has, at his own expense, inspected and examined the proposed project site, its surroundings and existing infrastructure and facilities related to the execution of the work and has obtained all the pieces of information that are considered necessary for the proper execution of the work covered under these Terms of Reference.
- b) The DESIGN & BUILD CONTRACTOR shall ensure that all works at the stages of design, construction, restoration of affected areas, and testing and commissioning shall be carried out efficiently and effectively.
- c) The DESIGN & BUILD CONTRACTOR shall provide PSHS-MRC with complete reports such as technical analysis, maps and details regarding the existing conditions and proposed improvements within the site.
- d) The DESIGN & BUILD CONTRACTOR shall consider the academic calendar and critical dates and occasions within PSHS-MRC, in order to align his work schedule with the academic calendar of the school to avoid unnecessary disruption of school activities due to construction activities such as closure of water and power supply and non-usage of the existing roads.
- e) The DESIGN & BUILD CONTRACTOR shall inform PSHS-MRC of critical events during construction, especially when such events can potentially disrupt school activities.
- f) The DESIGN & BUILD CONTRACTOR shall be PCAB accredited and shall have a Construction Safety and Health Program approved by DOLE and designed specifically for the CONSTRUCTION OF DORMITORY BUILDING I.

- g) The DESIGN & BUILD CONTRACTOR will be held accountable for accidents that might occur during the execution of the project. The DESIGN & BUILD CONTRACTOR is required to install warning signs and barriers for the safety of the general public and the avoidance of any accidents and provide appropriate and approved type personal protective equipment for their construction personnel.
- h) The DESIGN & BUILD CONTRACTOR shall be professionally liable for the design and shall submit a signed and sealed copy of the approved construction documents to form part of the Contract Documents.
- i) Only the plans approved by the Head of Procuring Entity (HOPE) shall be signed and sealed by the DESIGN & BUILD CONTRACTOR, and thereafter shall be the plans used for construction.
- j) All works designed and constructed should be guaranteed to seamlessly fit into the overall system general design standards of the PSHS System.

XIII. PROJECTED SUBMITTALS DURING THE PROJECT

The following submittals and accomplished documents shall be duly completed and turned-over by the DESIGN & BUILD CONTRACTOR for the project:

A. FOR THE DESIGN PHASE

- a) Construction plans (signed and sealed) that include Architectural, Civil, Structural, Electrical, Structured Cabling, Mechanical, Fire Protection and Plumbing plans (7 sets hard copy and soft copy)
- b) Technical specifications (7 sets hard copy and soft copy)
- c) Detailed cost estimate (7 sets hard copy and soft copy)
- d) Bill of quantities (7 sets hard copy and soft copy)
- e) Site survey, topographic survey, survey of existing trees and all other pertinent data related to the conditions of the project site
- f) Documents required for securing the Building Permit
- g) Drawings and reports that the B&D Committee may require for the periodic update concerning the status of the design phase.

B. FOR THE CONSTRUCTION PHASE (7 copies each)

- a) As-built plans (hard copy and soft copy)
- b) All necessary permits (Fees shall be included in the contract)
- c) Shop drawings (hard copy and soft copy)
- d) PERT-CPM
- e) Test results
- f) Guarantees, warranties and other certificates
- g) Fire and Life Safety Assessment Report 2 and 3 (FALAR 2 and 3)

C. FOR THE POST-CONSTRUCTION PHASE (7 copies each)

- a) Certificate of Occupancy
- b) Fire Safety Inspection Certificate
- c) All other necessary documents to be required by B&D Committee

xiv. CODES AND STANDARDS

The project shall be designed, engineered, installed, tested, commissioned and handed over in conformity with the Building and Design Standards of the PSHS System and with the latest editions of the National Building Code of the Philippines, the National Structural Code of the Philippines, the Philippine Electrical Code, Philippine Mechanical Code, the National Plumbing Code of the Philippines, National Fire Code of the Philippines and other relevant codes and standards.

xv. INSTALLATION AND WORKMANSHIP

Personnel of the DESIGN & BUILD CONTRACTOR should be specialists highly skilled in their respective trades, performing all labor according to first-class standards. A full time Project Engineer/Architect and Construction Safety Engineer shall be assigned by the DESIGN & BUILD CONTRACTOR at the job site during the construction of the project.

All work to be subcontracted shall be declared by the DESIGN & BUILD CONTRACTOR and shall be approved by the Campus Director of PSHS-MRC and its respective technical offices. However, subcontracting of any portion shall not relieve the design and build contractor from any liability or obligation that may arise from the contract for this project.

Tapping for utilities such as power supply, water supply and sewage drainage shall be coordinated with their respective utilities/ service provider/ companies, and all works involved, including access to utilities tapping point, excavation, removal of obstructions, concrete breaking, backfilling and restoration of affected areas, shall be coordinated and included in the scope of work and cost of the project.

Any errors, omissions, inconsistencies, inadequacies or failure submitted by the DESIGN & BUILD CONTRACTOR that do not comply with the requirements shall be rectified, resubmitted and reviewed at the DESIGN & BUILD CONTRACTOR'S cost. If the DESIGN & BUILD CONTRACTOR wishes to modify any design or document which has been previously submitted, reviewed and approved, the DESIGN & BUILD CONTRACTOR shall notify the procuring entity within a reasonable period of time and shall shoulder the cost of such changes.

xvi. MATERIALS

All materials and equipment shall be standard products of manufacturers engaged in the production of such materials and equipment and shall be the manufacturer's latest standard design.

The materials and workmanship supplied shall be of the best grade and constructed and/ or installed in a practical and first-class manner. It will be completed in operation, nothing being omitted in the way of labor and materials required and it will be delivered and turned over in good condition, complete and perfect in every respect.

Materials and systems for structured cabling shall be in accordance with standards set by the PSHS System.

All materials shall be in conformance with the latest standards and with inspection and approval from B&D Committee.

xvii. MODE OF PAYMENT

- a) The PSHS-MRC shall pay the winning DESIGN & BUILD CONTRACTOR progress payments based on billings for actual works accomplished, as certified by B&D Committee of the PSHS System. In no case shall progress billing be made more than once every **Thirty (30) calendar days**. Materials or equipment delivered on the site but not completely put in place or used in the project shall not be included for payment.
- b) All progress payment shall be subject to retention of ten percent (10%) based on the amount due to the winning DESIGN & BUILD CONTRACTOR prior to any deduction. The total retention money shall be released only upon Final Acceptance of the Project. The winning DESIGN & BUILD CONTRACTOR may, however, request for its release prior to Final Acceptance subject to the guidelines set forth in R.A. 9184 and its Implementing Rules and Regulations.
- c) The DESIGN & BUILD CONTRACTOR may request in writing which must be submitted to form part of the Contract Documents, for an advanced payment equivalent to fifteen percent (15%) of the total Contract Price. The advance payment shall be made once the DESIGN & BUILD CONTRACTOR issues its irrevocable standby letter of credit from a reputable bank acceptable to the PSHS System, or GSIS Surety Bond of equivalent value, within **Fifteen (15) days** from the signing of the Contract Agreement to cover said advanced payment.
- d) First Payment/Billing shall have an accomplishment of at least 20% of the construction phase.
- e) The following documents must be submitted to the B&D Committee before processing of payments to the DESIGN & BUILD CONTRACTOR can be made:
 - i. Progress Billing
 - ii. Detailed Statement of Work Accomplished (SWA)
 - iii. Request for payment by the DESIGN & BUILD CONTRACTOR
 - iv. Pictures/photographs of original site conditions (for Billing)
 - v. Pictures/photographs of work accomplished with date attach during the actual.
 - vi. Payment of utilities (power and water consumption)
 - vii. DESIGN & BUILD CONTRACTOR's affidavit

Note: The DESIGN & BUILD CONTRACTOR can bill the PSHS-MRC of up to a maximum of 90% accomplishment.

Prepared by:

DESIGN AND BUILD COMMITTEE:



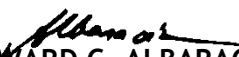
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Engr. BRYAN F. MANZANO
Member


Engr. JOSEPH G. BANTANG
Member


Arch. Jofito G. Tan
Member

Concurred:


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