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BIDS AND AWARDS COMMITTEE

SPECIFICATIONS

Solicitation No. RSU-2022-10-088
ABC: PhP15,000,000.00
QTY: 1 Lot

Design and Build Scheme Infrastructure Project for the Proposed Construction of Two-Storey Data Center of Romblon State University-Main Campus

ITEM	SPECIFICATION	STATEMENT OF COMPLIANCE
A	**Construction Requirements** **General Requirements** Buildings proposed for construction shall comply with all the regulations and specifications herein, governing quality, characteristics and properties of materials, methods of design and construction, type of occupancy, and classification. All other matters relative to the structural design of all buildings and other structures not provided shall conform with the provisions of the National Structural Code of Buildings, as adopted and promulgated by the Board of Civil Engineering pursuant to RA 544, as amended, otherwise known as the "Civil Engineering Law". **Construction Type** **Type IV** – The building shall be steel, iron, concrete, or masonry construction. The walls, ceilings, and permanent partitions shall be incombustible **2-fire – resistive construction**. Except for that, permanent non-bearing partitions of one-hour fire-resistive construction may use fire-retardant-treated wood within the framing assembly. **Category of Construction** Category 1 Essential Facilities – Public School Building. **Changes in Types** No revision in the type of construction shall be made. This revision would place the building in a different sub-type or type of construction unless such structure is made to comply with such sub-type of construction requirements. Except for that, the Building Official approves the changes upon showing that the new or proposed construction is less hazardous, based on the life and fire risk than the existing construction. **Construction Method** 1. Technical personnel assigned to the project should be knowledgeable and responsible enough. 2. Shall establish the Project Supervision and hierarchy first. 3. Shall do Construction methods for each work indicated in	

the design.
4. The material shall pass the required specification.
5. Should do quality control on all work items as construction progresses.
6. Shall use Proper equipment for each work item.
7. Materials quantity shall be well provided. Scarcity of one material can be the basis of delay for each work that may affect other items' schedules.

Quality Control
Quality control works consist of all work elements carried out by the manager or those in his organization, which contribute to the quality of the organization's output. Quality Control procedures include:

Selection of Materials. Information regarding the source of the materials to the incorporated into the work may be represented by the following:
• Raw materials such as soil, sand, and bank or river gravel (with little or no processing)
• Materials that are processed without changing their properties, such as washed/manufactured sand, crushed rock, gravel, etc.
• Combination of materials that may be partly or totally manufactured (e.g., Bituminous and Portland cement concrete)

Handling and Storage of Materials. Materials should be placed in a safe place protected from contamination or the action of water to avoid damages. Protection of materials is significant and should be accessible to the project site.

Sampling Testing of Materials. All material for testing requires proper sampling. These are indicated in AASHTO and ASTM. Quality control also required proper testing, construction method, and workmanship.

Contractor's Material Engineer
Department Order 11 Series of 2017 requires the Contractor to provide minimum testing equipment in the technical component of the bid. The Materials Engineer must secure this, and his Contractor shall provide it.
Department Order 13, Series of 1987 states that the Material Engineer shall be in-charge in sampling the testing of the materials. He shall accompany him in the actual testing by the Government Materials Engineer or a representative of the implementing office who will witness their assurance.
Department Order 213, Series of 2004 states that the materials shall be tested prior to incorporating the works. The materials engineer shall ensure that the materials conform to the

specifications and requirements of DPWH and should be used.

Primary Duties and Responsibilities of Contractor's Material Engineer

1. Responsible for the sampling, testing inspection, and submission of quality control report data.
2. Prepare design mixes for concrete.
3. Accomplish, update, and keep the test report records such as materials logbook.
4. Ensure that the samples are properly cured according to standard procedures.
5. Ensure that the field tests are adequately equipped so that the process of work will not be impeded by laboratory testing, and non-performance of the test should not be the cause of delay in project implementation.
6. Recommended whether the quality of materials used in the project is acceptable and passes the requirement of DPWH standard Specifications (Volumes 2 and 3).
7. Recommended corrective and remedial measures to improve the quality and correct the unsatisfactory condition of materials.
8. Recommended corrective measures to improve the quality of completed works.
9. Recommend the acceptance of the completed works as well as advise the Project Engineer (Government or Contractor's side)

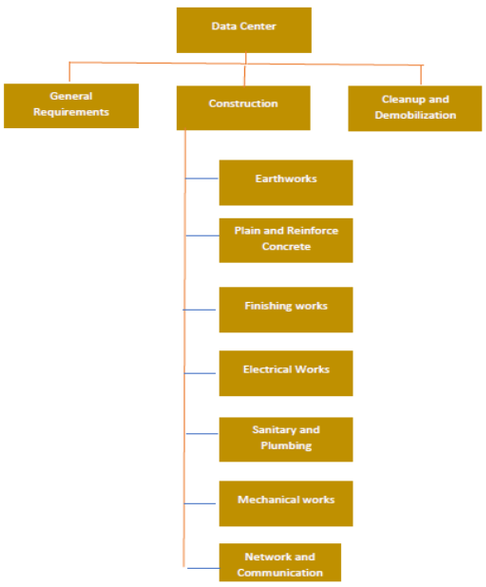
Fire – Resistive Requirements in Construction

All materials of construction and assemblies or combinations therefor shall be classified according to their fire-retardant or flame-spread ratings as determined by generally accepted testing methods.

Fire – resistive time rating is the length of time a material can withstand burning: one hour; two – hours, three hours, four hours, etc.

All materials need to submit a fire testing certificate.

Work Breakdown Structure



Part 1 General Requirements

1. *Mobilization/Demobilization, (including Bonds, Permits, (Fine) & Clearances*. Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site, including the disassembly, removal, and site cleanup of offices, building, and other facilities assembled on the site specifically for this contract.
2. *Temporary Facilities, Warehouse, Boards*. The temporary buildings for housing workers or the erection of tents or other forms of protection will be permitted only at such places as the owner shall designated. If no particular area is selected, the contractor may use his discretion in determining such areas in consultation with the owner. The sanitary condition of the project site shall always be maintained in a manner satisfactory to the owner.
3. *PPE*. The equipment worn to minimize hazards that cause serious workplace injuries and illnesses.
4. *Signages*. Workplace safety signage is a requirement on all construction sites. Highly visible safety signs can help prevent injuries and ensure that all staff and visitors are aware of any dangerous hazards.
5. *Fences*. These shall be built of an approved material, not less than 2.40 meters in height above grade, and placed on the side of the walkway nearest to the building site. Fences shall enclose the building site entirely. Openings in such barriers shall be provided with doors and kept closed at all times.
6. *Canopies*. The protective canopy shall have a clear height of 2.40 meters above the railway and shall be structurally safe. Every canopy shall have a solid fence build along its entire

length on the construction site. If materials are stored, or work is done on top of the canopy, the edge along the street shall be protected by a tight curb board not less than 30 millimeters high. The entire structure shall be designed to carry the loads imposed upon it. Provided that the live load shall be not less than 600 kilograms per square meter.

7. *Maintenance and Removal of Protective Devices*. All protective devices shall be adequately maintained in placed and kept in good order for the entire length of time pedestrians may be endangered.

8. *Removal*. Every protective fence or canopy shall be removed within 30 days after the protection is no longer required as determined by the Building official.

9. *Minimum Testing Requirements*. Quantity stated in the program of works is the basis of the minimum testing requirements for each project. The requirements specify the kind and number of tests for each item and size; this would indicate only the minimum and shall not be the basis of several trials. When a government representative inspected a project, and there is a doubt in the test, he can do another testing immediately.

Part II: Civil, Electrical, Sanitary/Plumbing, & Mechanical Works

1. Earthworks

2. Site Preparation Works, Demolition/Clearing

3. Excavation Works.

a. Excavation or fills for building or structures shall be constructed or protected not to endanger life or property.

b. When the excavation would affect the stability of the lateral and subjacent support of the adjoining property or existing structure, the person undertaking or causing the excavation shall be responsible for the expense of underpinning or extending the foundation or footing of the property, as mentioned earlier.

c. Excavation and other similar disturbances made on public property shall, unless otherwise excluded by the Building Official, be restored immediately to its former condition within 48 hours from the start of such excavation and disturbances by whosoever caused such excavation or disturbance.

- Backfilling Works, ABC
- Boulders 6
- Gravel Bedding, G1
- Soil Poisoning

	• Plain and Reinforced Concrete Works (Class A, 28 days) • Steel Reinforcement Works (Grade 40 & 60) • Steel Decking Works (Gauge 50) • Forms & Scaffolding Works • Finishing Works • Masonry Works • Plastering Works • Carpentry Works, Ceiling, CR Ceiling & Phenolic boards CR Partition • Welding Works, Stair handrail & Fire exit ladder all levels two sides • Mill Works (Doors and Windows) with a complete glass and glazing hinges & locksets • Tiles work, beads, and moldings on all levels, including corridors • Painting works, preparation, treatment, and surface correction up to complete coatings • Water Proofing Works, all wet areas with concrete toppings 2 thick. • Ceiling all levels, Gypsum board, T runner • Electrical Works, pipes, wires, and fixtures • Sanitary/Plumbing Works, pipes to fixture • Elevated Water S/S 3200 liters w/pipelines from deep well w/pressure tank & motor • Deep Well Drilling Works, 5 O B1 Pipes with motor 1.5 HP & pipelines from well up to elevated tanks • Septic Tank & Cistern Tank • Fire Protection: Dry stand pipelines, firehose on cabinets, fire extinguisher, fire alarm bell, the smoke detector on all levels, Jockey Pumps, Booster pump, and Sprinkler system. **4. The enclosure of Vertical Openings** General. Vertical openings shall be enclosed be depending upon the fire resistive requirements of a particular type of construction as outlined in this Code. **Part III General Requirements, Cleanup, and Demobilization**	
B	**DESIGN PARAMETERS** **ARCHITECTURAL DESIGN PARAMETERS** • Shall provide accessibility for the disabled in the design of the	

	building. • The design of the building shall incorporate provision to maximize energy efficiency and conservation (natural lighting). • The building shall be oriented appropriately considering sun, wind, site water run down, and specifically typhoon wind direction. • The building shall be in an open area beside the Main Library • The building shall adhere to architectural principles of beauty, strength, and utility. • The building shall be designed considering the ease of maintenance, including durability, function. • Must include the provision for fire escape in the design of the building under the new fire code of the Philippines. • Shall observe the design requirements of the national building code of the Philippines (PD 1096), B.P. 344 Accessibility Law, Fire Code of the Philippines. • Building design should follow the Latest NSCP requirements, up to magnitude 8.4 for those near the seismic source type A. • Other considerations shall be access road, lighting provision, and building information. • Consider HGDG Standards. 1.1 General • All drawings shall be computer – drafted. These shall be submitted both in printed and electronic copies. • Keep the same orientation for all plans. It shall indicate the north orientation in all architectural floor plans. The orientation of the architectural plans shall be consistent with all the engineering plans. • Existing buildings and new works shall be indicated and labeled in the site plans. • Detailed plans shall have a scale not smaller than 1:50 meters. • Spot detailed plans, elevations, and sections shall have a scale not smaller than 1:10 meters. • Avoid notes such as “see architectural detail” or “see structural”. Always refer with a callout to the specific detail drawing and number. 1.2 Site Plans • The site plans shall have a scale not smaller than 1:400 meters. 1.3 Floor Plans • All plans shall have a scale not smaller than 1:200 meters. The contractor shall use the same scale for the rest of the architectural, structural, sanitary, plumbing, electrical, and mechanical plans, except for each trade’s site plan, detailed plans, and spot details.	

	• He shall indicate the elevation callouts on the floor plans and be consistent with the elevation drawing. • Section line callouts on the floor plans shall be consistent with the section drawing. • Floor plans shall be indicated with boxed room callout numbers, including the callout for floor finishes and wall finishes. • He shall indicate the floor elevations in the floor plans. The elevation shall be in reference to the natural grade line or the established finished floor lines of the adjoining existing buildings. • He shall indicate the location of mechanical equipment, e.g., air conditioning, in the floor plans. It shall be consistent with the mechanical and electrical plans. • Door callouts shall be in circles with the proper numbering, e.g., D-01. • Windows callouts shall be hexagons with the proper numbering. e.g., W-01. • Indicate the column grid lines in the plan. 1.4 Elevations and Sections • Finish floor lines and roof lines shall be consistent in all the elevations, sections, structural plans, and details. • Architectural annotation or exterior finishes proper label in the drawing. 1.5 Reflected Ceiling Plans • Reflected ceiling plans shall be indicated with boxed room callout numbers, including the callout for ceiling finishes and lighting fixtures. • The Contractor shall include the Ceiling height relative to the finish floor line in the reflected ceiling plans in each room with boxed dimensions. • The description and locations of the fixtures, e.g., lighting, smoke detectors, air conditioning vents, exhaust fans, in the reflected ceiling plans shall be consistent with the electrical and mechanical plans. • Indicate the drawing a point used for setting out the ceiling. 1.6 Doors and Windows • Door and window schedules shall indicate the type of door or window, the number of sets, the location/s of the door and window, the materials and accessories included, and other special specifications, e.g., color or finish. • Provide the dimension of the doors and windows and the height of the window sill from the finish floor level. (PLEASE INDICATE DETAILED SPECS FOR MECH DOOR FOR SERVER ROOM)	

	1.7 Details • Provide a minimum of one (1) bay section of a scale not smaller than 1:50 meters for each major building, preferably cut along the area with a special construction design. • Provide spot detail plans, elevations, and sections of a scale not smaller than 1:10 meters for special designs with aesthetic treatment and ornamentation. • Provide spot detailed plans of a scale not smaller than 1:50 for all areas needing tile pattern, e.g., corridor, entrance walk, showing the position and pattern of tiles. • The Contractor shall indicate the centerline location of plumbing fixtures in detailed plans with lines of reference and its corresponding dimensions to show the exact areas of the plumbing/sanitary roughing-ins. 1.8 Building Architectural Works Floor Plans 1. The structural, sanitary, plumbing, electrical, and mechanical designs must refer to the architectural plans and specifications in case of discrepancies. 2. The architectural and engineering plans shall be consistent throughput in terms of dimensions and locations of columns, beams, walls, roofline, conduits, ducts, pipes, and fixtures, among others. Column and beam gridlines shall also be consistent in all the architectural and engineering plans. 3. Verify and coordinate floor plans with the mechanical, electrical, and sanitary design concerning mechanical rooms, electrical rooms, pipe chase, and other engineering requirements. 4. Public toilets shall have provisions and fixtures for person with disability as required by BP 344. If enough space allows toilets specially made and designated for persons with disabilities are preferable. Walls 1. Exterior walls shall be 200 mm thick, while interior walls shall be 150 mm thick. The finished wall thickness includes plastering and tile works. 2. All wall tiles' layout and work must be aligned, plumb, level, and square. 3. All toilet tiles' edges, corners, and intersections, including topmost tile not reaching ceiling, shall be provided with polyvinyl chloride tile trims. 4. All concrete-finished walls are painted with appropriate colors. The color and design shall be approved first before installation. 5. Plaster works shall be finished level, plumb, square and true to line within the tolerance of 3mm in 3.0 meters. Plaster walls are without cracks, waves, blisters, pits, discoloration	

projections, and other imperfections.

Floors

1. Suppose floor tiles in two adjacent rooms with different materials, colors, or designs meet at the door opening. In that case, the contractor can use a threshold at the door to have a good termination between different materials. Provide floor pattern design showing the tile setting out point.
2. Floor to floor elevation shall be 3.80 m.
3. Floor at the openings of toilets for PWD shall be sloping. Indicate the plans and sections.
4. The size of the toilet floor tiles shall be 300 mm x 300 mm. Indicate the pattern. Submit material approval providing sample or product description.
5. The size of floor tiles of the offices shall be 600mm x 600mm, or more considerable depending on the proportion to the size of the room. Indicate the tile pattern. Submit material approval providing sample or product description.
6. The size of the floor tiles of the lobby and receptionist shall be 600mm x 600mm, Indicate the pattern. Submit material approval providing sample or product description.
7. The size of the floor tiles outdoor entrance walk shall be 600mm x 600mm. Indicate the pattern. Submit material approval providing sample or product description.
8. All exterior tiles are in matt finish and provide a setting out plan for approval.
9. All stairway steps are provided with anti-slip nosing, tiles with built- in anti-slip features, aluminum or brass metal nosing.
10. The layout and work on the wall and floor tiles must be aligned, plumb, level and square.
11. Tile color and design shall be approved first before installation.

Doors and Windows

1. Server room that requires security shall have sturdy doors, e.g., Solid Mechanical Door.
2. Main entrance door, Network Operation Center access door shall be see-through, e.g., Glass Door.
3. Toilet Doors shall be wood door.
4. Pantry Door shall be wood and seamless through the wall design of the receptionist.
5. Fire escape door should be provided with panic hardware and door closers and shall conform to the requirements of the Fire Code of the Philippines.
6. The door finish and color shall be approved first before application.
7. Toilet window sills shall be slightly sloped outwards to prevent damage to windows and paint due to water seepage.

	Section details shall be required to show this slope. 8. Main entrance door shall swing outwards and as required by the Fire Code of the Philippines. 9. All door jamb width is same as the width of the plastered wall and encases with an architrave on both sides. Provide details. 10. All Doors and windows shall have reinforced concrete lintel beams. Provide details. Stair and Ramps 1. Ramps for persons with disabilities shall have a slope not higher than 1:12. Stainless Steel Handrails and clearances shall conform to the requirements of BP 344. 2. Regular stairs have risers at 180mm high and thread at 300 mm wide. Fire exit stairs could have minimum riser at 150mm high and thread at 300mm. handrails shall be 1100mm high. 3. Clearance shall conform to the requirements of the Fire Code of the Philippines. 4. Exit door shall conform to the requirements of the Fire Code of the Philippines. Fixtures and Accessories 1. Three-way electrical light switches shall be provided at the foot and the top of the stairs per floor. 2. Electrical light switches shall be located by the knob side of the door. 3. Electrical switches and outlets shall be installed plumb and level. 4. Public toilet shall always be provided with stainless handrails in conformity to the requirements of BP 344. All plumbing fixtures must be submitted for approval. Roofing Works 1. Provide membrane-type waterproofing for the roof deck, toilets, and other wet areas. Submit details of water-proofing. Submit material sample or product supplier and on-site mock-up for approval if required. 2. Parapets, designed for roof protection from winds, must be designed to satisfy the preceding parameters. 3. Submit material sample or product supplier and on on-site mock-up for approval if required. Painting 1. The painted ceiling shall be flat latex. 2. Painted interior walls shall be in semi-gloss finish. 3. Painted exterior walls shall be in moisture-resistant/water-repellent solvent-based paint finish, textured or smooth unless otherwise specified. 4. Paint color and shade shall be approved first before	

application.
5. Submit a schedule of rooms for painting applications, including walls and ceilings. Start with surface preparation to finish the application. Need a material approval submission.

1.9 Specific Requirements
Provide spot detail plans and sections of the following:
1. Eaves and parapet
2. Ceiling cover light, special connections, design, mouldings.
3. Stairs-handrail, and baluster design.
4. Ramps – handrail design and floor pattern
5. Doors, windows and gates – grille works,
6. Special architectural treatment and design, e.g., façade design, special window, and door.
7. Special Carpentry Works, e.g., partitions, cabinet
8. Details of roof drain
9. Other information as may be required.

1.10 Summary of Materials
• Materials to be used shall be fire-resistant, non-toxic, moisture-resistant, and termite-resistant, e.g., fiber cement board, light-gauge steel frame, polyvinyl chloride ceiling panels, metal spar.
• Wet areas, e.g., toilets, and kitchens, shall use non-skid/ non-slip vitrified ceramic floor tiles.
• Ramps and stairs shall use non-skid/non-slip floor tiles materials as specified.
• Aluminum T-runners shall be powder coated.
• Metal rod hangers with adjustable clips and not galvanized iron wires shall support and suspend the aluminum T-runners and light gauge metal furrings.

Structural Design
• The Designer shall prepare the necessary structural analysis/calculation and design of the structural members (Foundation, Columns, Girders, Beams, Slabs, and others) under the
National Building Code of the Philippines with its referral code such as the National Structural
Code of the Philippines. The Designer must design the roof slab considering the loads for future office use. The Design of the structure shall take into account, among other things, the seismic requirements of the area to determine the optimum safety of the whole structure and to minimize possible earthquake damage. The Design must consider the occurrence of flooding in the site and the Typhoon strength for the MIMAROPA Region.
• The Designer shall perform Site Investigations, topographical/engineering, soil investigation, a survey of

	existing site conditions, the seismic requirements of the area, and other investigation required to obtain the data necessary to ensure safety of the structure. • The seismicity of the location belongs to zone 4. The Two (2) Storey Data Center with Roof Slab(considering loads for 3rd floor area for future office use) should be design using seismic importance factor of 1.5 for the occupancy Category I (Essential Facilities) – Public School). Buildings should be designated in accordance with the NSCP requirements up to Magnitude 8.4 for those near seismic source Type A. Seismic gaps between buildings (old and new) should be appropriately observe. Its structural system or Lateral – Resisting System Description shall be based on Special – Moment Resisting Frame (SMRF) • The structural Designer must verify the distance of the proposed Two (2) Storey Data Center with Roof Slab to the nearest active fault lines from the PHILVOLCS and DENR geo-hazard mapping. • The Building should also be design using a wind importance factor of 1.0, a basic wind speed of 300kph, and at Exposure B. • All Structural Steel works shall be according with latest AISC specifications in so far as they do not conflict with local building requirement. • It is required that the interpretation and evaluation of the results of the foundation investigation upon completion shall be made by the registered civil engineer, experienced and knowledgeable in the field of geotechnical engineering. Soil classification shall be based on observation and any necessary tests of the materials disclosed by borings or excavation made in appropriate location. Allowable Bearing Capacity shall be found on the Boring Test at the building site. (Refer to ANNEX E: PRELIMINARY INVESTIGATIONS (FOUNDATION DESIGN AND RECOMMENDATIONS)) • The structural designer is encouraged to use fire-resistive and non-toxic materials. • The Dead Loads to be considered in the design must conform to the Section 204 of NSCP 2015 and must include the equipment to be installed in the building. • The live loads to be considered in the design must conform to Section 205 of NSCP 2015 that are not limited to the following: i) Ground Floor – Office use, Exit facilities, Rest Rooms ii) Second Floor – (5 racks) data cabinets with estimated weight of 1000kg per rack, control room iii) Roof Slab with Bituminous Water Proofing Membrane and future provision of office use • During construction the contractor shall poured first a lean concrete equal to the thickness of the concrete cover of the	

	foundation prior to fabrication of steel reinforcement of all reinforced structural concrete that will rest in the ground. 2.1 Details – the following shall provided: • Connection details of foundations, columns and beams following the requirements of NSCP on confined areas. • Detailing Requirements in seismic Zone 4 shall include the provision of confinement/hoops proportioned to resist earthquake-induced shear force. • All welds types, sizes lengths and strengths. • All bolt sizes, locations, quantities and grades. • All plate and angle sizes, thicknesses, dimensions and grades. • All work point locations and related information. 2.2 Summary of Materials • All Concrete shall use Portland cement and conform to ASTM Specifications C150, Type I to Type II and shall develop a minimum compressive strength at 28 days of 4000Psi. • Coarse Aggregates shall consist of washed gravel, crashed stone and rock, or a combination thereof to ASTM C33. • Concrete Hallow blocks shall be a standard product of recognized manufacturers conforming to PNS 16 with 400Psi minimum compressive strength for non-load bearing while 750Psi minimum compressive strength for load bearing blocks. • Reinforcing Steel bar shall conform to ASTM 615 Grade 60 for 16mm diameter and above and Grade 40 for 12mm diameter and below. Mill Certificate of the reinforcement shall be submitted for review of the structural engineer. • Structural steel shall conform with ASTM A36/A36M • Bolt and Studs shall conform with ASTM A325 • All welding of reinforcement shall be conformed to the provisions of the structural Welding code reinforcing steel AWS and electrodes shall be E60 or E70. • Columns and Beams shall use I-beams/H beams as steel reinforcement with ties and pouredwith concrete conforming to the standards. (Composite Columns and Beams) • Slab shall design using steel decking with reinforcement steel bar. **Sanitary and Plumbing Works Design** • The designer shall carry out a detailed design for the building's water supply, drainage, and sewer system. The design should base in the results of the hydrological study and the drainage survey taking into consideration the general and problems such as the source and the volume of water supply, water consumption, piping network, drainage discharge area, and conveyance and treatment of sewer flow, in accordance	

	with the applicable laws, rules, and regulations governing health safety and sanitation. • All Plumbing Works included shall be executed according to the provision of The National Plumbing Code of the Philippines and Local Rules and Regulation. • All vertical piping shall be supported at every one (1) meter interval • All horizontal piping shall be supported by stiff metal backing hangers in its entire length for small size tubing up to 38mm diameter and without backing but with spaced metal hangers at approved for larger-size tubing. • Plumbing fixtures shall be manufactured of dense, durable, non- sorbent materials and have smooth, impervious surfaces, free from unnecessary concealed fouling surfaces, except as permitted elsewhere in this code, all fixtures shall conform in quality and national recognized applicable standards. • Water supply will be sourced from the University or Local Water sources. • Water outlets should be provided in convenient locations for the cleaning / flushing. • All valves which are concealed and or installed in the ceiling shall be provided with access manhole. • Main water tapping point is clearly identified on the plan. (gate valve, y-strainer, water meter, check valve) 3.1 Building facilities Sanitary/Plumbing System Sewer line and Vent System • Provide complete Sewer line and vent System from all plumbing fixtures and floor drains; laid by gravity flow leading to the Septic Tank. • Waste water lines shall use Unplasticized Polyvinyl Chloride (UPVC) Series 1000 brown/orange pipes and fittings. • All ACCU units located at the right side of the Powerhouse shall be provided with sufficient drains. • All FCU drains are tapped at storm/drain pipes. • Change in direction of drainage piping shall be made by the appropriate use of approved fittings. • For Drainage Fixtures Units, refer to Chapter 7, Table &-2, NPCP. • Septic tank shall be made of 200mm thick reinforce concrete wall with water proofing and covered of reinforced concrete slab with manhole provision. • The septic tank dimensions shall be design based on computation stated in the NPCP. • The septic tank shall be composed of (3) three chambers such as (1) digestive chambers with concrete flooring, (1) leaching chamber with rubbles flooring, (1) cleansing chamber with charcoal flooring. The septic tank cover and outlet pipes shall be elevated from the finish floor line minimum of 1 ft.	

Water line System
• Provide complete cold water supply pipes to all plumbing fixtures. From the main water source and the water shall be stored in a concrete base tank and shall pumped by electric water pump to the stainless water tank located roof deck and conveyed to the fixtures by a gravity system.
• Water Supply lines shall use Polypropylene random Co-Polymer Type 3 Pipes, gate valves and fittings.
• Water tank shall be made of 200mm thick reinforce concrete wall with water proofing and covered of reinforced concrete slab with manhole provision.
• Water storage tanks size shall be calculated based on the standards.
Storm Drainage System
• Complete Storm Drainage System shall be provided for the roof deck, canopies, and balconies, including drains laid for gravity flow connected to a leader/pipeline leading to the natural Ground level storm drainage network.
• Provision shall be made for the future installation of rainwater collection systems in compliance with R.A. No. 6716.

Water line System
Provide complete cold water supply pipes to all plumbing fixtures. From the main water source and the water shall be stored in a concrete base tank and shall pumped by electric water pump to the located roof deck and conveyed to the fixtures.

Storm Drainage System
Complete Storm Drainage System shall be provided for the roof deck, canopies, and balconies, including drains laid for gravity flow connected to a leader/pipeline leading to the natural Ground level storm drainage network.
Provision shall be made for the future installation of rainwater collection systems in compliance with R.A. No. 6716.

Electrical Works Design
• The Designer shall prepare a design for the building's electrical and power supply system following the Philippine Electrical Code, Fire Code of the Philippines, and the National Building Code of the Philippines
• The Designer shall prepare a design for the electrical and power supply system considering ease of maintenance and preventing illegal connections.
• The Designer shall Private Poles and shall be tapped in the existing TIELCO primary line 3 phase 13.kV, 60Hz
• Private pole must have a Load Break Switch, Power Fuses, Lighting Arrester, CT's, PT's for metering system with complete

	pole accessories. • The Main Transformer shall be fed by underground cable via concrete pedestal and duct bank. • The main transformer shall be 250kVA, 3 phase, 13.2kV/400V (wye secondary), 60Hz pad mounted and must be placed inside the Power House • Generating unit, Changeover switch are excluded (by others) see drawings details • Supply and installation of cables and raceway from transformer to changeover switch are included. • The secondary system voltage shall be 3-phase 4 wire, 400V, 60Hz • Neutral Side must be bonded in the grounding system. • The Electrical System must have grounding system with the earth resistance below 5 Ohms • Office room illumination and ventilation shall pass the illumination and ventilation standards/requirements • Provisions for emergency lighting systems **Mechanical Works Design** • The Designer shall prepare a design for the Automatic Fire Sprinkler System, Ventilation, Air Conditioning System and Temperature Monitoring System inside the Server Room in accordance with the National Building Code of the Philippines and its new IRR, Fire Code of the Philippines, and Mechanical Engineering Code of the Philippines (ME Code) and Design Standards of a Data Center. 5.1 Fire Detection • The Fire Detection and Alarm System shall be composed of multiplex, microprocessor-controlled addressable or semi-addressable, zonal conventional fire detection, alarm, and communication systems. • The alarm system shall be on every floor level. • The system shall consist of full integration automatic fire detection, voice alarm communication, and a fire-fighter's telephone system. • The system shall monitor the status of flow switches and supervisory switches installed at the sprinkler system risers. These monitoring points are also addressable or the conventional zone in the same way the detectors make them easily recognizable at the control panel. • Occupant notification shall be accomplished automatically. Notification is a general, audible alarm type complying with the appropriate sectioned NFPA – Standard for Portable Fire Extinguishers (1 unit of portable fire extinguishers per room/office). • The system shall be installed with provisions for future connection to the nearest fire service station in the locality.	

	• Installation of Class III Fire Cabinet and Cistern tank with pump. 5.2 Automatic Fire Sprinkler System • The Fire Sprinkler System for all of the spaces except the Server and Control room shall be Firewater system. • The Fire Sprinkler System for the Server Room and Control Room shall be CO2 fire suppression system. The automatic fire sprinkler system shall be composed of complete plans and drawings of the following: • Site Development Plan and Vicinity Map (e.g., location of the buildings, firewater reserved tank, firewater line, yard loop, and private fire hydrant) • General Notes, Legends, and Symbols including Schematic Diagram of the Fire Sprinkler System and Schematic Diagram of Alarm Monitoring System. • Floor Layout and Isometric Layout of the Automatic Fire Sprinkler System (e.g., pipe sizes, location of the pipes, valves, sprinkler heads, riser nipples, fire hose cabinets, main sprinkler riser, drainpipes, cross mains, branch lines, inspector's test connections, hangers, and sway braces) • Equipment Schedule • Detail drawings (Architectural, Structural, Electrical, and Plumbing drawings of the Firewater Tank and Pump House) o An automatic fire sprinkler shall be provided. o Hazard Classification shall be Light Hazard Occupancy. o The protection area per sprinkler head shall be 20 square meters at 2.2 meters minimum distance between sprinklers and 4.2 meters maximum spacing. o All floor control valves shall be equipped with a supervisory switch, water flow detector, and drain system. o Minimum number of fire pump and jockey pump must be 2. o Provide sequence of operation for FP1 and FP2. o Show the location of fire pump and jockey pump control panel at fire pump room. o Fire pump with concrete accessories. (Vertical turbine for negative suction or horizontal split-case for positive suction.) o Controller shall monitor pump running, loss of phase or line power, low reservoir, level alarms shall be individually displayed in front of panel by lighting of visual lamps. o Jockey pump with complete accessories. (Submersible jockey pump for negative suction of vertical multi-stage pump for positive suction.) o Firewater reserve tanks shall be ground-level monolithic concrete tank size for a minimum of 1 hour. o Hydraulic calculations report shall be based on NFPA-13 format. 5.3 Ventilation and Air Conditioning System	

	• The ventilation and air conditioning system shall be composed of complete plans and drawings of the following: • General Notes, Legends, and Symbols including Schematic Diagram of the Ventilation and Air Conditioning System. • The floor layout of the ventilation and air-conditioning system indicates the capacity and location of the air conditioners and fans. • Refrigerant piping layout (e.g., pipe sizes, location of valves, hangers, and sway braces) • Equipment Schedule and Details drawings of Air conditioners and Ventilating Systems. • Cooling Load Calculations report shall be a manual or computer-generated, hourly analysis program that includes heat transmission coefficients, solar heat gain factors, and corrected cooling load temperature different calculations. • Split-type air conditioners shall be used in areas with exterior wall exposures. • Ceiling cassette-type exhaust fans with integral air diffusers shall be provided in all toilets. • Air conditioning systems shall be Inverter Type Spit-Type in the offices spaces. • VRF Systems should use R-410A refrigerant or any approved equal as the heat transfer fluid and the working fluid to achieve minimum energy efficiency ratio (EER) of 13. N**etwork and Communication Works Design Parameters** The Designer shall design the entire building's network cabling system, FDAS, and CCTV system. The design shall be composed of complete plans and drawings like • General Notes, Legends, and Symbols, including Schematic Diagrams. • Floor Layout of the System indicating the capacity and location.	

Item No.	Description	QTY	FLOOR AREA (sqm)	TOTAL FLOOR AREA (sqm)	STATEMENT OF COMPLIANCE
Ground Floor Level					
1	PWD Ramp	1	19.5	19.5	
2	Entrance Walk	1	17.375	17.375	

3	Lobby	1	35.55	35.55	
4	Receptionist	1	25.075	25.075	
5	Public Common Toilet Room	1	3.6432	3.6432	
6	Pantry	1	12.10618	12.10618	
7	Staff Common Toilet Room	1	5.02205	5.02205	
8	Network Operation Center with Main Staircase	1	27.85	27.85	
9	Void (under the Emergency Exit Stairs)	1	13.40388	13.40388	
Second Floor Level					
10	Working Station	1	52.10163		
11	Control Room	1	19.325		
12	Server Room	1	41.76563		
13	Emergency Exit Stairs	1	13.40388	52.10163	
Separated Powerhouse					
14	Powerhouse	1	36	13.40388	

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Name and Signature of the Bidder/Authorized Representative

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Name of the Company