



**UP Mindanao's
DETAILED ARCHITECTURAL
ENGINEERING DESIGN FOR THE
LACTIC ACID PILOT PLANT
PROJECT**

UP Mindanao Campus, Mintal,
Tugbok District, Davao City

JUNE 2023

PROJECT MANUAL
Volume 1

TERMS OF REFERENCE
- Design Consulting Services -

Campus Planning and Development Office
OFFICE OF THE CHANCELLOR
UNIVERSITY OF THE PHILIPPINES MINDANAO



Prepared By:


ENGR. ISAAC T. MUNCADA
Senior Engineering Assistant
Campus Planning & Development

Checked by:


AR. OLIVER D. TELMO
Campus Architect
Campus Planning & Development

Reviewed by:


AR. JEAN MARIE VILLAMOR - JUANGA
Assistant Vice Chancellor for Administration Campus
Planning & Development

Noted by:


LYNDA A. BUENAOBRA
End-User

Recommending Approval:


PROF. LEO MANUEL B. ESTAÑA
Vice Chancellor for Administration

Approved by:


PROF. LYRE ANNI E. MURAO, Ph.D.
Chancellor

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UNIVERSITY OF THE PHILIPPINES MINDANAO
 PROJECT MANUAL
 VOLUME 2
TERMS OF REFERENCE

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PART I GENERAL PROJECT INFORMATION

1.0 PROJECT DESCRIPTION

1.1 PROJECT TITLE

UP Mindanao's Detailed Architectural Engineering Design for the Lactic Acid Pilot Plant Project.

1.2 GENERAL DESCRIPTION

The project shall cover the design of the UP Mindanao Lactic Acid Pilot Plant.

The project site is located on a parcel of land with an approximate area of 6,500 square meters and with the Project Site Development Area of roughly 2,000 sq.m. only. It is a corner lot bounded by Mandaya Road along south, Tasaday Road along east, and by the Proposed Indigenous Materials Development Testing Laboratory along north. The site is within the designated Academic Support (Acad-2) Zone in the approved-UP Mindanao Campus Land Use Plan of 2016.

The Lactic Acid Pilot Plant is a pre-commercial testing facility intended to study the commercial feasibility of biotechnologies, especially the Lactic Acid Technology, developed through research and development (R&D) in a laboratory. It is a system that is capable of providing relevant information as to the material and energy balance, system design and capacity, process simulation, equipment requirement, and determining the associated costs. It will be primarily used to test the scalability of the Lactic Acid Technology and to develop, optimize, and validate the production process before it can be deployed in a larger industrial production plant. The pilot plant will provide a functional model as the basis for the design of a full-scale commercial plant. It will house scientific instruments and process equipment with around ten to a hundred times the size of the equivalent laboratory scale equipment. The pilot plant will also integrate a laboratory to provide a facility for continuous research and development of the Lactic Acid Technology including research on the polymerization of lactic acid to produce polylactic acid (PLA). The Lactic Acid Pilot Plant shall abide by the standard minimum requirements set by the National Building Code of the Philippines and other generally-accepted design standards for such facility.

The University-approved Conceptual Design and Plans shall merely be guides/reference in formulating and coming up with the final design that is compliant to the general site development and building design specifications as prescribed

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in this Terms of Reference (TOR) and is conformed to the Harmonized Gender & Development Guidelines (HGDG) requirements. It shall promote inclusivity and access to all regardless of sex, SOGIESC and status. The project subject of this TOR is UP Mindanao's Detailed Architectural Engineering Design for the Lactic Acid Pilot Plant Project which has a total floor area of approximately **One thousand three hundred sixty eight (1,368 sq. m.) inclusive of the mezzanine and catwalks.**

1.3 PROJECT COMPONENTS

The project includes the following basic components:

- (a) ***Completed Architectural and Engineering (A&E) Plans and Detailed Designs, Technical Specifications, Bill of Quantities, and Design Reports for the Lactic Acid Pilot Plant, including Structural, Electrical, Auxiliary, Sanitary and Mechanical Facilities.***

The Conceptual Design and Plans prepared and issued by the UP Mindanao Campus Planning and Development Office (CPDO) as part of this TOR shall only serve as the basis and reference for the Schematic Design (SD), Design Development (DD), and the Contract Documents (CD) phases of the design, which shall continue after the bid is awarded. Such plans and designs, specifications, bill of quantities, and design reports shall be subject to review and approval by the University through the CPDO.

In addition, the design shall undergo HGDG review based on HGDG Checklist attached herewith as Annex G and be compliant to their guidelines.

- (b) Aside from the A&E professional design fees, other incidental expenses that are also to the account of the winning bidder shall include:
- i Preliminary Survey and Mapping of the Project Site Development Area of approximately 2,000 sq.m. which shall determine boundaries and provide stationing along control lines to establish feature and design criteria location, and identify existing future right-of-way limits and construction easements associated with the University's Conceptual Design and Plans.
 - ii Preliminary Investigations of the buildable area including, among others,
 - 1. geodetic and topographic survey of the project lot,
 - 2. information on the soil and geotechnical investigations,
 - 3. environmental conditions of the site,
 - 4. other design and construction requirements.

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- (c) Compliance with all applicable permits/licensing and documentary requirements including the submission and facilitation of the application for Environmental Compliance Certificate (ECC) or Certificate of Non Compliance CNC as the case may be.
- (d) Site Visits at least once a month during the construction phase to monitor design compliance, approve shop drawings and respond to requests for information regarding the design.

2.0 BACKGROUND AND LEGAL BASIS

Technology readiness levels (TRLs) are used as a tool for evaluating and communicating a technology's maturity. The nine conventional TRLs for the chemical industry are described as idea, concept, proof of concept, preliminary process development, detailed process development, pilot trials, demonstration and full-scale engineering, commissioning, and production. TRLs can be categorized into three phases, the research phase, development phase, and deployment phase. The specified TRLs facilitate evaluation and communication of a technology's maturity and substantially improve the basis for data availability-based assessment. The proposed pilot plant will further improve the TRL of biotechnologies, particularly the Lactic Acid Technology and will provide relevant information regarding the technology's scalability and commercial feasibility. This is necessary to complete the development phase and facilitate the technology's transition towards the deployment stage. The results of the pilot testing will help industry partners, potential investors, and technology adopters assess the commercial potential and the commercial value of the Lactic Acid Technology and all other similar technologies. The pilot plant will also help in the evaluation of the technology and identification of further research objectives to solve any challenges and technical problems related to plant systems design. This facility will provide the much-needed support to the Technology Transfer and Business Development Office (TTBDO) in assessing and evaluating the commercial feasibility and scalability of the research and development outputs of UP Mindanao in the field of biotechnology.

To emphasize, the establishment of a Lactic Acid Pilot Plant will provide several advantages to the University:

1. **Research and Innovation.** It will enable UP Mindanao to conduct cutting-edge research and innovation in the field of lactic acid production and similar technologies. It will a practical platform for faculty, researchers, and students to develop and test new processes, technologies, and formulations related to lactic acid production. This will promote advancements in the field and contribute to scientific knowledge.
2. **Education and Training.** It will open valuable educational opportunities for students, allowing them to gain hands-on experience in lactic acid production,

process optimization, and quality control. Students can learn about various aspects of pilot-scale operations, equipment handling, troubleshooting, and safety protocols. This practical exposure can enhance their understanding of industrial processes and prepare them for future careers in the chemical or biotechnology industry.

3. **Collaboration with Industry.** It will facilitate collaboration between the University and industry. Industries involved in lactic acid production and related technologies may be interested in partnering with UP Mindanao to leverage their expertise, facilities, and research capabilities. Such collaborations can lead to joint research projects, technology transfers, and the development of commercial applications. The pilot plant will act as a catalyst for these collaborations, benefiting both the academic community and the industry.
4. **Technology Validation.** The pilot plant will allow for the validation of UP Mindanao's Lactic Acid Technology before scaling it up to industrial levels. It will provide a controlled environment to test and optimize different process parameters, evaluate the performance of equipment, and assess the quality of the produced lactic acid. This validation stage will reduce the risk and uncertainties associated with scaling up the technology, ensuring its feasibility and commercial viability.
5. **Demonstration and Outreach.** A pilot plant can serve as a demonstration facility to showcase the process of lactic acid production to visitors, including industry representatives, policymakers, and the general public. It will create awareness about the potential of lactic acid as a renewable and sustainable resource and will highlight the university's expertise in the field. This outreach can help promote the university's reputation and fosters public engagement in science and technology.
6. **Sustainable Initiatives.** Lactic acid production from renewable resources aligns with sustainability goals. Having a pilot plant on campus allows UP Mindanao to promote and demonstrate sustainable practices in the production of value-added chemicals. It supports research and development efforts focused on improving the efficiency of lactic acid production, exploring alternative feedstocks, reducing waste generation, and optimizing energy consumption. These sustainable initiatives contribute to environmental stewardship and provide valuable insights for the industry.

While the establishment of the pilot plant offers the above-mentioned benefits, there are potential environmental impacts associated with its operation that must be considered. This includes the following:

1. **Energy Consumption.** Lactic acid production processes typically require significant energy inputs for fermentation, separation, purification, and other unit operations. Depending on the energy sources used, such as fossil fuels or electricity from non-renewable sources, the pilot plant's carbon footprint and environmental impact can increase

2. **Waste Generation.** The pilot plant is expected to generate various types of waste, such as spent biomass, fermentation residues, and wastewater containing organic compounds. These waste streams can have environmental implications if not properly managed.
3. **Chemical Usage.** Lactic acid production processes may involve the use of chemicals, such as nutrients, buffers, or acids, to facilitate fermentation or downstream processing.
4. **Water Consumption.** Lactic acid production typically requires a significant amount of water for various purposes, such as cooling, cleaning, and fermentation. The extraction and utilization of large volumes of water can strain local water resources.

It is expected that the output of the Detailed Architectural and Engineering Design (DAED) will address these issues, as indicated in the Terms of Reference for Design Consulting Services, particularly in Part II. Detailed Project Reference, Section 2 - Architectural and Engineering Design Parameters, which requires the designer to factor in and incorporate comprehensive A&E concepts such as:

1. Sustainable building and green architecture and engineering concepts.
2. Energy savings concepts through day lighting, electric lighting, power consumption monitoring and evaporative cooling technology.

Sec. 22 (*Land Grants and Other Real Properties of the University*) of Republic Act No. 9500, "An Act to Strengthen the University of the Philippines as the National University", signed into law on 29 April 2008, provides that the UP Land Grants, or "parcels of land ceded by law, decree or presidential issuance to the University of the Philippines are...declared to be reserved for the purposes intended." RA 9500 confirms "the absolute ownership of the national university over these landholdings, including those covered by original and transfer certificates of title in the name of the University of the Philippines and their future derivatives..." Sec. 22 states that: "The Board may plan, design, approve and/or cause the implementation of land leases: *Provided*, That such mechanisms and arrangements shall sustain and protect the environment in accordance with law, and be exclusive of the academic core zone of the campuses of the University of the Philippines: *Provided, further*, That such mechanisms and arrangements shall not conflict with the academic mission of the national university." Sec. 23 (*Safeguards on Assets Disposition*) provides that "the preservation of the value of the assets of the national university shall be of primordial consideration," and that "the sale of any existing real property of the national university shall be prohibited: *provided*, that the Board may alienate real property donated after the effectivity of [RA 9500] if the terms of the donation specifically allow it."

3.0 PROCUREMENT OVERVIEW

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- 3.1 The procurement of this project will be conducted through open and competitive bidding in adherence to the declared policies of the 2016 Revised Implementing Rules and Regulations of Republic Act (RA) No. 9184, otherwise known as the Government Procurement Reform Act.
- 3.2 Eligibility requirements shall be subject to Section 23 and Section 24, Rule VIII, RA 9184 and in compliance with the requirements enumerated under the Instruction to Bidders (ITB) and in the forms prescribed by the Government Procurement Policy Board (GPPB) for this type of procurement.
- 3.3 The determination of award to the winning bidder shall be subject to compliance with the minimum qualification requirements for this contract and through a series of pre-determined evaluation processes and procedures as enumerated under this Terms of Reference (TOR) and in accordance with the provisions of the 2016 Revised IRR of RA 9184 and other pertinent laws, circulars and orders.
- 3.4 UP shall accept the bid proposal determined to be most advantageous to the University and consider award of the contract on a best value for money basis.
- 3.5 UP reserves the right to accept or reject any bid, to annul the bidding process, and to reject all bids at any time prior to contract award without thereby incurring any liability to the affected party/parties.

4.0 PROCUREMENT MODE

- 4.1 The *Design Consultancy* scheme of procurement was recommended, endorsed, and adopted pursuant to the guidelines provided in Annex "A", Annex "B" and Annex "F", Contract Implementation Guidelines for the Procurement of Consulting Services, of the IRR of RA 9184.

5.0 PROCUREMENT OBJECTIVES

- 5.1 To design and prepare complete A&E Plans and related documents for the construction of a Lactic Acid Pilot Plant facility requirements that:
 - (a) Provides optimal benefits for all stakeholders, which include the procuring entity, the direct users, and the UP Mindanao community, regardless of sex, SOGIESC and status yet at a reasonable cost and/or within the working budget;
 - (b) Presents market, financial and economic viability balanced with social and environmental responsibility;

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- (c) Factors-in comprehensive A&E concepts enumerated under **2.2.b, Use of Appropriate Building Design and Technology in Part II, Detailed Project Reference** of this TOR;
 - (d) ***Where applicable, complies with local and international standards on laboratory design and biosafety, including publications, manuals, and guidelines by the World Health Organization, Center for Disease Control and Prevention, and National Institutes of Health;***
 - (e) Helps achieve sustainability and is responsive to environmental issues;
 - (f) Minimizes cleaning and maintenance requirements; and
 - (g) Conforms to relevant laws, design standards, and legal procedures.
- 5.2 To implement a project closure procedure in accordance with **Part V, Project Construction Phase, Completion and Acceptance.**

6.0 GENERAL SCOPE OF WORK

The winning Consultant must coordinate all their activities with UP Mindanao through the Campus Planning and Development Office (CPDO). The winning Consultant shall be required to set up a coordinating office or satellite office in Davao City located within 30 km. from UP Mindanao to ensure smooth and efficient coordination and project implementation.

The winning Consultant must secure necessary permits and clearances (e.g., security concerns) and also to be apprised of other on-going projects simultaneously being implemented in the area prior to conducting any activity. He/She must comply with all applicable permits/licensing and documentary requirements. He/She should also facilitate the documentation, application and approval of the ECC/CNC permit as required. Further, all related costs under this Scope of Works shall be to the account of the winning Consultant.

Each design phase submission shall be checked for completeness prior to acceptance. This will then be reviewed by the Design Review Team and approved to the satisfaction of the End-User before a Notice to Proceed is issued to signal the start of the next design phase. Refer to Item 7.0 Page 11 of 13 Part 1 for the Deliverables per Design Phase.

6.1 SCHEMATIC DESIGN PHASE

- (a) Conduct preliminary site visits and complete data gathering to verify the existing facilities and environment necessary for the design of the facility including the appropriate treatment/disposal of laboratory waste.

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- (b) Meet with client/End-user for further development and finalization of the schematic designs.
- (c) Submit final design schematics for approval by UP Mindanao.

6.2 DESIGN PHASE

- (a) Results of Preliminary Survey and Mapping
- (b) Results of the following Preliminary Investigations, including but not limited to
 - (i) Geodetic and Topographic Survey
 - (ii) Geotechnical Investigation
 - (iii) Environmental Conditions Investigation
- (c) Location and Invert Elevations of Existing Utilities
- (d) Architectural and Engineering Design Reports
- (e) Site Development Plans—landscaping, hardscapes, softscapes, parking, pedestrian paths, bike lanes, street lighting, signages
- (f) Architectural & Engineering (A&E) Design Development Plans, Elevations and Sections setting forth in detail the work to be executed and as required for building permit application
- (g) Detailed Architectural Interior Designs and Plans with Sample Boards
 - (i) Detailed Laboratory Planning and Equipment Plans, including sections and details.
 - (ii) Sheet series showing the following:
 - (iii) Locations of special laboratories which shall be tested for room integrity and relative pressurization to meet the standards of work in laboratories
 - (iv) Large laboratory equipment (including those to be procured by the University, such as biosafety cabinets and autoclaves, for which the Contractor shall provide and coordinate the necessary utilities) which require depressed slabs, dedicated building utilities, and special design details
 - (v) Details for penetrations in walls, ceilings and floors by lighting, plumbing, exhaust and decontamination devices.
 - (vi) Sections through the laboratories to show coordination with the work of other trades
 - (vii) Components of parts and schedules of laboratory equipment and casework
- (h) Detailed Furnishing Plans, indicating casework, cabinet and millwork including base building equipment that shall be Contractor Furnished/Contractor Installed (CFCI)

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- (i) Detailed Engineering Designs and Plans (All sheets must be marked “For Review”)
 - (i) Detailed Structural Plans
 - (ii) Detailed Plumbing and Sanitary Plans, including Rainwater and Storm Water Retention and Use Plans
 - (iii) Detailed Electrical Plans
 - 1. Emergency Power
 - 2. Power and Lighting
 - 3. Service Entrance
 - (iv) Detailed Electrical Auxiliary Plans
 - 1. Telephone System
 - 2. Fire Detection and Alarm System
 - 3. Data Communication and Networking System
 - 4. Security Systems: Closed Circuit Television (CCTV) System, Controlled Access System
 - (v) Detailed Mechanical Plans
 - 1. Air-Conditioning and Condensing System
 - 2. Fire Suppression System
 - 3. Air changing or Air Cleaning System for Laboratory Room
- (j) Scope of Works, Technical Specifications, and other Requirements
 - 1. Bill of Quantities with Detailed Unit Price Analysis
 - 2. Walk-through Presentation of 3D Model
 - 3. Proposed Construction Schedule
 - 4. **Occupational Health and Safety Program for the Construction Phase**
 - 5. **Construction Methodology – particularly on specialized features**

6.4 CONTRACT DOCUMENT PHASE

- (a) Final and approved Architectural Design Plans Elevations and Sections setting forth in detail the work to be executed and as required for construction purposes. (All sheets must be marked “For Construction”)
- (b) Final and approved Schedule of Finishes and Sample Material Boards
- (c) Final and approved Site Development Plans—landscaping, hardscapes, softscapes, parking, pedestrian paths, bike lanes, street lighting, sign-ages. (All sheets must be marked “For Construction”)
- (d) Final and approved Detailed Interior Designs and Plans with Sample Material Boards. (All sheets must be marked “For Construction”)

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- (e) Final and approved Detailed Data Server Room and Equipment Plans, including sections and details. (All sheets must be marked "For Construction")
- (f) Final and approved Detailed Furnishing Plans, indicating casework and base building equipment that shall be Contractor Furnished/Contractor Installed (CFCI such as cabinetries, millworks, etc.) (All sheets must be marked "For Construction")
- (g) Final and approved Building Engineering Designs and Plans. (All sheets must be marked "For Construction")
 - i. Detailed Structural Plans
 - ii. Detailed Plumbing and Sanitary Plans, including Rainwater and Storm Water Retention and Use Plans
 - iii. Detailed Electrical Plans
 - 1. Emergency Power
 - 2. Power and Lighting
 - 3. Service Entrance
 - iv. Detailed Electrical Auxiliary Plans
 - 1. Telephone System
 - 2. Fire Detection and Alarm System
 - 3. Data Communication and Networking System
 - 4. Cable or Master Antennae Television (CATV/MATV) System
 - 5. Security Systems: Closed Circuit Television (CCTV) System, Controlled Access System
 - v. Final and approved Detailed Mechanical Plans
 - 1. Air-Conditioning and Condensing System
 - 2. Fire Suppression System (using approved system for specific areas)
 - 3. Air Cleaning System for Laboratory Room
- (h) Final and approved Scope of Works and Technical Specifications and other Requirements. (All sheets must be marked "For Construction")
 - i. Bill of Quantities with Unit Price Analysis
 - ii. Walk-through Presentation of 3D Model
 - iii. Proposed Construction Schedule
 - iv. Occupational Health and Safety Program for the Construction Phase
 - v. Construction Methodology

6.5 CONSTRUCTION PHASE

- (a) Monthly site visits to monitor the implementation of the design and the general progress and quality of work. Monthly reports shall be submitted to the Campus Planning and Development Office pertaining to the

project’s quality, workmanship and compliance to the plans and specifications.

- (b) Prepare supplementary drawings should there be elements in the plans which needs detailing or revising.
- (c) Evaluation and approval of detailed shop drawings prepared by the contractor/s in accordance with the overall design shall not exceed seven days upon submission/receipt.

7.0 DESIGN PROJECT DURATION, DELIVERABLES AND PAYMENT

7.1 The Approved Period for the actual Design is **TWO HUNDRED FORTY (240) calendar days**, exclusive of design review and approval period, starting seven (7) calendar days from the receipt by the Contractor of the Notice to Proceed (NTP) for which the Consultant shall be paid eighty percent (80%) of the Contract Amount. The remaining twenty percent (20%) shall be released after at least 75% completion of the Construction Phase of the project. Schedule of submissions and activities of the Design Phases shall be as follows:

Stage	Submission Schedule	Outputs	Format	Payment (w/o DP)
Submission of Project Milestones	Due upon Effectivity of Contract	Project Milestones	3 Copies in A4 size, flash drive containing an electronic file in PDF	0%
Project Inception with Conceptual Design Stage	Due 20 CD after Effectivity of Contract	Project Inception and Site Analysis Report: <ul style="list-style-type: none"> • Project Methodology & Schedule (GANNT Chart) • Consultant Man-Hours Schedule • Review of Project Data • Initial Site Analysis • Soil Analysis • Photo Survey of the Site • Initial Recommendations 	3 Copies of A3 size report, flash drive containing an electronic file in PDF	5%
		<ul style="list-style-type: none"> • Presentation of Findings 	PowerPoint/ Visual Presentation	
Schematic Design Stage	Due 75 CD after receipt of the Notice to Proceed for Schematic Design	<ul style="list-style-type: none"> • Schematic Design Stage • Bill of Quantities Level 3 • Technical Specifications in outline format (Level 2) with Proposed Materials Sample Submission 	<ul style="list-style-type: none"> • 3 copies of bound A3 Size Report, flash drive containing electronic file in PDF • Visual Presentation in PowerPoint 	25%

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<p>Design Development Stage</p>	<p>Due 60 CD after receipt of NTP for Design Development</p>	<ul style="list-style-type: none"> • Design Development Report and detailed drawings for Architectural, Civil & Structural, Electrical, Plumbing & Sanitary, Auxiliary • BOQ Level 3 & 4 • Tech Specs Level 3 • Presentation of the Design Development Plans • Minimum 5 to 8 minutes Walkthrough 	<ul style="list-style-type: none"> • 3 Copies of bound A3 Size Report (All sheets must be marked "FOR REVIEW"), flash drive Containing an Electronic File in PDF • Visual Presentation in PowerPoint 	<p>25%</p>
<p>Final Report and Final Contract Documents Submission</p> <ul style="list-style-type: none"> • Pre-final Review 	<p>Max 45 CD after Receipt of NTP for Pre-Final Report</p>	<p>Presentation of Final Report and Final Contract Documents</p> <ul style="list-style-type: none"> • Architectural Programming, Plans & Detailed Drawings • Structural Engineering Plans, Specs, BOQ and Detailed Drawings with Structural & Seismic Analysis • Electrical Plans, Specs, BOQ & Detailed Drawings & Load Schedules and Computations Plumbing & Sanitary Plans Specs, BOQ & Detailed Drawings • Mechanical Plans, Specs, BOQ & Detailed Drawings • Bill of Materials & Cost Estimates 	<p>Visual Presentation in PowerPoint and Poster Boards</p> <ul style="list-style-type: none"> • 3 Copies of bound A3 Size Report (All sheets must be marked "FOR FINAL REVIEW"), flash drive Containing an Electronic File in PDF 	<p>10%</p>
<ul style="list-style-type: none"> • Final Review 	<p>Max 40 CD after receipt of the NTP for Final Report</p>	<ul style="list-style-type: none"> • Final Architectural & Engineering Plans and Detailed Drawings 	<ul style="list-style-type: none"> • 7 sets/copies of signed & sealed detailed drawings in A1 size blueprints (All sheets must be marked "FOR CONSTRUCTION") • One (1) set of A1 Size 90/95 Tracing Paper Print of Plans 	<p>15%</p>

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			& Detailed Drawings and electronic files of CAD drawings and in PDF in flash drive	
		<ul style="list-style-type: none"> • Technical Specifications • Occupational Health and Safety Program during Construction • Construction Methodology and Schedule 	<ul style="list-style-type: none"> • 3 signed and sealed copies bound A4 size, electronic file in MSWord file and PDF formats (All sheets must be marked “FOR CONSTRUCTION”) 	
		<ul style="list-style-type: none"> • Final Bill of Quantities & Cost Estimates with Unit Price Analysis (2nd set if req'd) 		
		Blank Forms for Proposal of Bidders & Contractors	1 copy bound A4 size, electronic file in MSWord/ Excel file and PDF formats	
TOTAL Number of Calendar Days	240 CD**			Total 80%
Construction Phase	Based on implementation schedule	Design Supervision		20%

** Exclusive of design review and approval period.

8.0 LIQUIDATED DAMAGES

The Procuring Entity shall impose liquidated damages per Design Phase equivalent to one tenth of one percent (0.001) of the cost of the unperformed Design Phase in consideration per day of delay but not to exceed ten percent (10%) of the amount of the said Design Phase, chargeable to the next Billing of the Consultant.

END OF PART I

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PART II DETAILED PROJECT REFERENCE

1.0 CONCEPTUAL DESIGNS

The commissioned Designer shall abide by these criteria and parameters for the Design of the UP Mindanao Technology Transfer and Business Development Office (TTBD0) Lactic Acid Pilot Plant Project at the UP Mindanao Campus.

1.1 CLASSIFICATION

- (a) Ownership : University of the Philippines Mindanao
- (b) Occupancy : Group C – Education and Recreation, Division C-2
- (c) Type : Pilot Plant

1.2 CONCEPTUAL PLANS

See Part VII Annex B for the Conceptual Site Development Plan and Floor Plans.

1.3 MAIN SPACE REQUIREMENTS

The commissioned Designer shall consider in their design the following work and space program requirements for the design of the proposed Technology Transfer and Business Development Office (TTBD0) Lactic Acid Pilot Plant:

- (a) Pilot Plant Area
- (b) Laboratory Area with fume hood section
- (c) Conference area for at least 12 pax
- (d) Data room
- (e) Support Areas/Utilities
 - (i) Storage Silo for yeast and starch supply (outdoors)
 - (ii) Electrical Room with Genset with Solar power provision
 - (iii) UPS
 - (iv) Lobby / Reception
 - (v) Pantry
 - (vi) Comfort Rooms (gender responsive with PWD access)
 - (vii) Office Space (for 3 research staff)
 - (viii) Lactation room
- (f) Site Components
 - (i) Vehicular Driveway
 - (ii) Covered Entrance Drop-off Area
 - (iii) Paved Pedestrian Walkways leading to the building entrance/s
 - (iv) Access Ramps

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- (v) Service/Delivery Areas
 - (vi) Waste Disposal and Collection Area
 - (vii) Landscaped Green Areas and Open Spaces
 - (viii) Perimeter Fencing/Protective Barriers
- (g) Permeable Parking
- (i) On-site parking spaces for cars, and passenger loading/unloading area in compliance with the National Building Code (NBC) provisions
 - (ii) At least two (2) parking spaces for PWD in compliance with the Accessibility Law (BP 344) provisions
 - (iii) Bicycle parking racks
 - (iv) Service and emergency vehicle parking spaces
- (h) Circulation
- (i) Minimum number of site entry points and total width shall comply with the NBC and Fire Code provisions
 - (ii) Detailed designs shall provide for pedestrian and vehicular traffic for the projected user population. Circulation and parking areas shall be provided in relation to the nearby surrounding buildings and developments, in consideration of the Lactic Acid Pilot Plant's security requirements and in accordance to the provisions in the NBC, BP344 and other related rules and standards. Walkways must be installed with non-slippery pavement/tiles.
 - (iii) The circulation system shall designate emergency routes.

1.4 ENGINEERING AND OPERATIONS SERVICES

- (a) Water Supply and Sanitary Systems
- (b) Rainwater and Storm Water Retention and Use Systems
- (c) Power Supply System
- (d) Emergency Power Utilization Systems
- (e) Lighting System (with provision for perimeter lighting system)
- (f) Telephone System
- (g) Data Communication and Networking Systems
- (h) Security Systems: Closed Circuit Television (CCTV) System, Controlled Access System
- (i) Air-Conditioning and Condensing System
- (j) Fire Detection and Suppression System
- (k) Mechanical Systems: Exhaust Ventilation and Air Conditioning System
 - Server areas and non-server areas are to have separate systems
 - Data server areas shall have dedicated air supply and Air Cleaning System.

- (l) Waste Management System with particular consideration on the disposal and possible treatment of laboratory waste
- (m) Room Identification, Hazard Warnings, and Wayfinding Signage Systems

1.5 FUTURE SITE AND BUILDING EXPANSION

The proposed Lactic Acid Pilot Plant shall be so planned, designed, and constructed as to anticipate possible horizontal upgrading of the facility.

At the early stages of the Design Phase, the commissioned Designer shall coordinate with the Campus Planning and Development Office (CPDO) on the expansion plans for the building and the UP Mindanao Campus Master Development Plan in order to harmonize the A&E design with that of future developments.

1.6 SITE DEVELOPMENT PLAN

- (a) The Site Development Plan shall consist of buildings, driveways, ample parking, green areas, and other landscape elements.
- (b) The commissioned Designer shall fit in the above-mentioned requirements and services (Items 1.1 to 1.5) in the Site Development Plan taking into consideration the functional design requirements and relationships with other buildings and services in the UP Mindanao Campus.
- (c) Lot Occupancy, Building Shape and Orientation
 - (i) Building-to-block ratio shall be planned so as to allow for efficient traffic circulation between buildings, existing and proposed, and to provide adequate ventilation.
 - (ii) The buildings shall be oriented along the east-west axis to maximize natural ventilation and day lighting.
 - (iii) Minimum building setbacks shall be as specified in the Conceptual Design and Plans prepared and issued by the Campus Planning and Development Office (CPDO) (Item 1.2) and shall comply with existing building code requirements.
 - (iv) Building shape shall be in accordance with the Conceptual Plans.

2.0 ARCHITECTURAL AND ENGINEERING DESIGN PARAMETERS

2.1 GENERAL DESIGN PRINCIPLES

- (i) Provide optimal benefits for all stakeholders, which include the procuring entity, the direct users and UP Mindanao;
- (ii) Present market, financial and economic viability balanced with social and environmental responsibility;
- (iii) Allow flexibility for maximum programme options;

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- (iv) Allow site development and building design adaptability to organizational, community and technological changes;
- (v) Minimize staffing levels whilst allowing effective management of health and safety;
- (vi) Help achieve sustainability and is responsive to environmental issues;
- (vii) Minimize cleaning and maintenance requirements; and
- (viii) Conform to relevant laws, design standards, and legal procedures.

2.2 GENERAL A&E DESIGN PARAMETERS

- (a) Representation of the Culture and Traditions of Mindanao's Indigenous Peoples (IP)
 - (i) Incorporation of IP cultural symbols and patterns in the building's exterior and/or interior design, components, and finishes
 - (ii) The commissioned Designer shall coordinate with the CPDO on the IP tribe motif to be assigned to the building. (Refer to UPMIN CLUP)
- (b) Use of Appropriate Building Design and Technology
 - (i) The architectural character of the building should appropriately project the image of a Pilot Plant development or structures belonging to Group C: Educational and Recreational, Division 2 under the National Building Code of the Philippines, and all its services.
 - (ii) Building form shall be adapted to tropical climate conditions.
 - (iii) Building utilities shall prioritize the functional requirements of the Lactic Acid Pilot Plant
 - (iv) Detailed design of interior spaces should accommodate the building program
 - (v) Building systems and design shall factor in and incorporate comprehensive A&E concepts including:
 - Sustainable building and green architecture and engineering concepts;
 - Safe building and resilient design concepts in response to climate change;
 - Natural ventilation and thermal comfort concepts;
 - Energy savings concepts through day lighting, electric lighting, power consumption monitoring and evaporative cooling technology;
 - Water use efficiency concepts, water consumption monitoring, and rainwater and storm water retention and use;
 - Expansibility and flexibility concepts;
 - Occupational hazards and environmental health concepts;
 - Site and culture sensitivity concepts; and
 - other applicable concepts.
 - (vi) Building envelope, materials and finishes shall be specified in accordance with green building principles. Use of renewable and recyclable materials should be maximized.

- (c) Compliance with Relevant Laws and Design Standards
 - (i) PD 1096 or National Building Code of the Philippines and its Latest and Amended IRR
 - (ii) BP 344 or Accessibility Law and its Latest and Amended IRR
 - (iii) UP MDP Development Principles and Design Guidelines
 - (iv) UP MDP Restroom Design Standards
 - (v) UP MDP Accessibility Guidelines
 - (vi) RA 9514 or Fire Code of the Philippines and its Latest and Amended IRR
 - (vii) Laws concerning senior citizens
 - (viii) National Structural Code of the Philippines (NSCP) 2010
 - (ix) National Plumbing Code of the Philippines (NPCP)
 - (x) Sanitation Code of the Philippines
 - (xi) Mechanical Engineering Code of the Philippines
 - (xii) Philippine Electrical Code
 - (xiii) National Electrical Code
 - (xiv) ANSI/BICSI 002-2019
 - (xv) ISO 9001 Certification

- (d) Incorporation of Waste Management Systems
 - (i) All liquid waste and sewage shall be treated and free from harmful elements prior to their disposal to the waste disposal system.
 - (ii) Hazardous and toxic waste shall be treated before entering the public sewer.
 - (iii) All solid waste shall be sorted and recycled in a space designated for such.

- (e) Information Technology and Local Area Network (IT/LAN) Infrastructure
 - (i) Provision for fiber optic connection to KIST Area shall be included in the scope of work.
 - (ii) Overhead cable tray system within the building shall provide access for network connections and upgrades.
 - (iii) Laboratories and offices shall be hardwired preferably underground. Common areas shall be ready to receive active equipment for wireless network access.
 - (iv) Data and phone ports shall be located according to the equipment layout requirement in laboratories and work stations. Each office desk shall also be provided with its own data and phone ports. Data ports shall also be provided along the corridors for IP cameras (security cameras) and Wi-Fi routers.

- (v) Industrial-grade Wi-Fi routers are desired over home and small office routers. These are more secure and can connect more than 100 simultaneous users without loss of quality.
 - (vi) Server room ambient temperature shall be cooled down to 18 degrees Celsius using appropriate ventilating equipment.
 - (vii) Server room shall be physically secured and data center/room shall be shielded.
 - (viii) Data center/room shall have a minimum area of 3mx3m and shall be properly mechanically ventilated to complement server racks that shall have cooling fans on local Uninterruptable Power Supply (UPS). Server equipment shall be served by the building emergency generator.
 - (ix) Servers shall be installed in the Server Room and secured.
- (f) Reliable Power – Emergency Generator
- (i) See the Functional and Technical Criteria for the Project – Electrical Section
 - (ii) Quality of electrical power shall be consistent and stable, and power surges must be eliminated to protect equipment.
 - (iii) Earth grounding for the building will be provided with each floor having a wired connection to grounding plates.
- (g) Lightning Protection
- (ix) Building shall be provided with lightning protection.

2.3 GENERAL PERFORMANCE SPECIFICATIONS

Unless otherwise specified by the University, the architectural and engineering designs shall conform to the specifications set by the functional requirements of the Lactic Acid Pilot Plant:

- (a) Adjacencies and Space Inter-relation Spatial disposition shall be based on rational zoning that considers related and complementary uses.
- (b) Design Standards
 - (i) Have a thorough understanding of the policies of the University of the Philippines, including the stipulations in the University of the Philippines Master Development Plan Development Principles and Design Guidelines and other similar documents and provisions.
 - (ii) Be familiar with the UP Mindanao Campus Master Development Plan, as well as the context of the proposed Lactic Acid Pilot Plant in relation to the rest of the campus.
 - (iii) Have verified the topographic survey and other site investigation procedures.

- (iv) Have studied the layout and site development plans of existing buildings to align the development of the proposed building and its site within its environs.
 - (v) Identify the architectural features and character of the surrounding structures.
 - (vi) Identify the location of critical areas and portions of utility systems within and around existing buildings, including the outflow direction of sanitary lines, septic tanks, building water meter and water supply lines, power supply service entrances, cisterns and other utility lines.
 - (vii) Have studied the current and projected flow of people, vehicles and activity within and proximate to the project site to allow for the provision of sidewalks, lighting systems, directional signs and traffic signs, to effectively design an efficient vehicular and pedestrian circulation route.
 - (viii) Identify the presence of vegetation that may be affected during and after the development of the site and the proposed buildings.
 - (ix) Common or public spaces shall follow general design criteria that would allow ease of egress in times of emergency.
 - (x) When necessary, ceiling heights shall allow ductwork and plumb utilities to run below the largest structural elements (beams). Slab to slab ceiling heights shall be reviewed in relation to the expected structural supports and other building elements.
 - (xi) Provide and install required signage for proper fire escape and identification of private spaces from public spaces. Signage shall also indicate the location of mechanical room hazards to alert personnel prior to entering the interior entry doors.
 - (xii) Include enclosures (fences)/lot perimeters
 - (xiii) Include provisions for special needs
 - (xiv) Consider views and vistas
 - (xv) Consider safety (on-site and within the vicinity)
 - (xvi) Include appropriate security systems
 - (xvii) Include appropriate IT systems (Wi-fi connectivity, etc.)
- (c) Environmental Hazards
- (i) Precautions should be in considered for possible hazards due to falling debris, from surrounding trees and vegetation that may cause disruption of operations.
 - (ii) Designs for interior and exterior spaces must incorporate disaster-preparedness features
- (d) . Maintenance
- (i) The design shall consider both capital and long-run costs. The latter involves efficient life cycle operation.

- (ii) Energy-efficient systems shall be incorporated to minimize operation costs. Consider using passive evaporation cooling system.
- (iii) Access panels and doors shall be planned for periodic service and inspection.
- (e) Site Integration
 - (i) Site development shall seamlessly integrate with the circulation and other service systems, either existing or proposed, of the approved-UP Mindanao Campus Land Use Plan of 2016.
 - (ii) The project shall fit well into the UP Mindanao Campus Master Development Plan, including its overall ecological concept.
 - (iii) Avoid conflict with perceived property limits of adjacent buildings and structures.

2.4 DESIGN GUIDELINES

- (a) See the following annexes for reference:
 - (i) Part VII - Annex A: Proposal for Infrastructure
 - (ii) Part VII - Annex B: Design Concept and Other Conceptual Plans
 - (iii) Part VII - Annex C: Checklist of Requirements
 - (iv) Part VII - Annex D-1: Laboratory Functional and Technical Criteria
 - (v) Part VII - Annex D-3: Laboratory Biosafety Manual 4th ed
 - (vi) Part VII - Annex C-5: University of the Philippines Master Development Plan Development Principles and Design Guidelines (UP MDP DPDG) 2014
 - (vii) Part VII - Annex C-6: University of the Philippines Master Development Plan Accessibility Guidelines 2018
 - (viii) Part VII - Annex C-7: University of The Philippines Master Development Plan - Restroom Design Standards 2018

3.0 ADDITIONAL DETAILED DESIGN PARAMETERS

3.1 ARCHITECTURAL DESIGN PARAMETERS

A. CODES AND STANDARDS

The Architectural Works shall be in accordance with the following Laws, Codes and Standards, whichever has stringent provisions will prevail.

1.0 LAWS AND CODES

- PD 1096 or National Building Code of the Philippines and its Latest and Amended IRR
- RA 9266 or The Architecture Act of 2004 and its Latest and Amended IRR
- BP 344 or Accessibility Law and its Latest and Amended IRR
- RA 9514 or Fire Code of the Philippines and its Latest and Amended IRR
- Existing Local Codes and Ordinances

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- UP MDP Restroom Design Standards
- UP MDP Accessibility Guidelines

2.0 STANDARDS

- ANSI
- ASTM
- Bureau of Product Standards
- Underwriters Laboratory (UL)

B. GENERAL DRAWING GUIDELINES

1.0 GENERAL

- All drawings shall be computer drafted. Drawings shall be submitted both in printed and electronic copies.
- Keep the same orientation for all plans. The north orientation shall be indicated in all architectural plans. The orientation of the architectural plans shall be consistent with all the engineering plans.
- Existing buildings and new works shall be clearly indicated and labelled in 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 1:20 meters.
- Avoid notes such as “see architectural detail” or “see structural”. Always refer with a callout to the specific detail drawing and sheet number.

2.0 SITE PLANS

- The site plans shall have a scale not smaller than 1:200 meters.

3.0 FLOOR PLANS

- All plans shall have a minimum scale of 1:100 meters. The same scale shall be used 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.
- Elevation callouts shall be indicated on the floor plans and shall 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.

- Floor elevations shall be indicated in the floor plans. This shall be in reference to the natural grade line or the established finished floor lines of the adjoining existing buildings.
- The location of mechanical equipment, e.g., air conditioning shall be indicated in the floor plans. This shall be consistent with the mechanical and electrical plans.
- Door callouts shall be circles with proper numbering, e.g., D-01.
- Window callouts shall be hexagons with the proper numbering, e.g., W-01.

4.0 ELEVATIONS AND SECTIONS

- Finish floor lines and top of truss lines shall be consistent in all the elevations, sections and structural plans and details.
- Floor-to-floor heights shall consider beam depths, mechanical ducting, cable trays and plumbing space above the ceiling, and optimum ceiling heights. Floor-to-floor heights shall not be less than the values indicated on the Schematic Plans.

5.0 REFLECTED CEILING PLANS

- Reflected ceiling plans shall be indicated with boxed room callout numbers, including the callout for ceiling finishes and lighting fixtures.
- Ceiling height relative and in reference to the finish floor line shall be indicated in the reflected ceiling plans in each room with boxed dimensions. This is to ensure that the ceiling heights of all rooms are established whether or not reflected in the sections.
- The description and location of the fixtures, e.g., lighting, smoke detectors, air condition vents, exhaust fans, in the reflected ceiling plans shall be consistent with the electrical and mechanical plans.

6.0 ROOF PLANS

- Location of all downspouts shall be indicated in the roof plans.

7.0 DOORS AND WINDOWS

- Door and window schedules shall indicate the type of door or window, the number of doors and windows, the location/s of the door or window, the materials and accessories included and other special specifications, e.g., color or finish.

8.0 DETAILS

- Provide a minimum of one (1) section of a scale not smaller than 1:50 meters for each area preferably cut along the area with 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 detail plan of a scale not smaller than 1:50 meters for all areas needing tile pattern, e.g.
- dwelling units, toilets, corridors, stairs, lobby, common areas, entrance walk, showing the position and pattern of tiles.
- Centerline location of plumbing fixtures shall be indicated in detail plan with lines of reference and its corresponding dimensions. This is to indicate the exact locations of the plumbing/sanitary roughing-ins.

9.0 COORDINATION DRAWINGS

- During design development only, provide colored coordination floor plans and reflected ceiling plans that show the overlays of all relevant disciplines. The scale should not be less than 1:100 meters, with each professional assigned a unique color. A legend identifying the discipline and line or object colors shall be contained in each sheet.
- Responses to reviewer comments shall be noted in the forms supplied by the Construction Manager. Approval to proceed with Construction Documents (For Construction) shall be confirmed after designer's responses to reviewer comments on the coordination drawings have been accepted.
- Responses to reviewer's comments on Design Development documents shall be back-checked in the Construction Documents prior to implementation.

10.0 ACCOUNTABILITY OF DRAWINGS AND SPECIFICATIONS

- All drawings and specifications shall be signed and sealed by the licensed professional prior to submission of Design Development and For Construction deliverables.

C. SITE WORKS

- The Master Site Development and Utility Plan shall include the following:
 1. Contour and survey of the lot, including bearing and dimensions of the property lines
 2. Road network, curbs and gutters, and sidewalks
 3. Parking spaces
 4. Reference location of existing trees, swales and waterways
 5. Reference location and footprint of proposed and existing buildings, with the corresponding building names and dimensions, including

distances between adjacent buildings, and distances between buildings and the nearest property lines

6. Reference location of utilities, e.g., water reservoirs, septic tanks, water treatment plant, powerhouse, transformers, waste storage area, security outposts.
7. A porte-cochere or covered drop-off area shall be provided at the main entrance of the building. Where required, covered walkways shall be provided for access and connection to other buildings.
8. Parking area shall be provided with grass pavers as surface material to promote natural water seepage.
9. Ramps shall be provided in all main entrances of the buildings and other access opening to walkways leading to other buildings.
10. A rain water catchment system for the structure shall be so designed to collect rain water into one of the overhead water tanks and the cistern. Rain water shall be used mainly for flushing of toilets and irrigation.
11. A septic tank shall be provided away from the cistern.

D. BUILDING ARCHITECTURAL WORKS

1.0 FLOOR PLANS

- The structural, sanitary, plumbing, electrical and mechanical designs are required to refer to the architectural plans and specifications in case of discrepancies. If an engineering design will have any possible conflict or interference on the architectural design, the latter may be adjusted provided that the aesthetic value will not be compromised.
- The architectural and engineering plans shall be consistent all throughout in terms of dimensions and locations of columns, beams, walls, roof line, conduits, ducts, pipes and fixtures, among others. Column and beam grid lines shall be consistent in all the architectural and engineering plans.
- Verify and coordinate floor plans with the mechanical, electrical and sanitary design with regard to the requirements for mechanical rooms, AHU rooms, pipe chase, and other engineering requirements.
- A separate public toilet shall be provided for persons with disability as required by BP 344, which shall also be designed for persons from the LGBTQI community.

2.0 WALLS

- Exterior concrete walls shall be 200mm thick, while interior concrete walls shall be 150mm thick, where indicated in the plans. Otherwise, use 150mm CHB for exterior, 1st floor walls of appropriate strength as specified. This is indicative of the finished wall thickness including the plastering and tile works.

- IP carvings shall decorate the façade of the structure and where agreed upon or approved by the University. The IP carvings shall be made of concrete or approved equivalent material.
- Toilet wall tiles shall be at least 300mm x 300mm, unless otherwise specified or approved by the University. As much as possible, toilet wall dimensions shall be based on the modular sizing of tiles to avoid tile serujo and or excessive tile wastage.
- Layout and work on wall and floor tiles must be aligned, plumb, level and square.
- All edges, corners and intersections of toilet tiles, including the top most tiles not reaching the ceiling shall be provided with polyvinyl chloride tile trims.
- Tile color and design shall first be approved by the University before installation.

3.0 FLOORS

- If floor tiles in two adjacent areas with different material, color or design meet at the door opening, the cut shall be located at the middle of the door thickness when in a closed position. Provide details in the floor pattern designs. Provide aluminum threshold, when required.
- Floors at the openings of toilets for persons with disability shall be sloping. Indicate in the plans and sections.
- Toilet floor tiles shall be at least 300mm x 300mm, unless otherwise specified or approved by the University. As much as possible, toilet dimensions shall be based on the modular sizing of tiles to avoid tile serujo and or excessive tile wastage.
- Pantry floor tiles shall be at least 400mm x 400mm, unless otherwise specified. Pantry dimensions shall be based on the modular sizing of tiles to avoid tile serujo and or excessive tile wastage.
- Lobby and corridor floor tiles shall be at least 600mm x 600mm, unless otherwise specified. Tile type (i.e., glossy, non-skid, etc.) shall be as approved by the University.
- Layout and work on wall and floor tiles must be aligned, plumb, level and square.
- All edges, corners and intersections of toilet tiles shall be provided with polyvinyl chloride tile trims.
- Tile color and design shall first be approved by the University before installation.

4.0 CEILING WORKS

- Ceiling height should be maximized in all areas. Off-the-form smooth rubbed ceiling finish may only be used in utility areas such as electrical rooms, mechanical rooms, battery rooms, and the like.

- Ceiling height should be planned to avoid conflicts between ductwork for exhaust, cable trays and plumbing. Determination of slab-to-slab height should consider beam depth which would limit the locations where room air supply and exhaust may run across.
- Soffit of exterior beams and slabs shall have drip molds to prevent damage due to water seeping into the eaves or ceiling. Section details shall be required to show the drip mold.
- The direction of lighting fixtures shall be consistent in all building rooms with exterior windows.

5.0 DOORS AND WINDOWS

- Major entry ways that require security control shall have sturdy doors, e.g., wood panel and metal, installed with security access systems as required.
- Minor entry ways that do not require security control shall at least have wood flush doors.
- All entrance doors to offices shall be frameless glass doors, unless approved otherwise.
- Toilets and other wet areas shall have steel doors on steel frames.
- Fire escape doors should be provided with panic hardware and door closers and shall conform to the requirements of the Fire Code of the Philippines.
- Aluminum frames of glass doors shall be powder-coated.
- Door jambs with no molding/casing installed on concrete walls shall have construction grooves all around. Provide details.
- Door finish and color shall first be approved by the University before application.
- All doors and windows shall have reinforced concrete lintel beams. Provide details.
- All awning windows shall have powder-coated aluminum frames. Tint color, if any, shall be approved by the University before installation.
- Windows with slots for window type air conditioning units shall be positioned in coordination with other windows in the same wall or side of the building.
- 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.
- Wall partitions facing or along the corridors shall be frame glass partitions, unless approved otherwise.

6.0 STAIRS, RAMPS AND CORRIDORS

- Ramps for persons with disability shall have a slope not greater than 1:12. Handrails and clearances shall conform with the requirements of BP 344.

- Grab rails shall be provided in the PWD toilets conforming to the requirements of BP 344.
- All stair, ramp, balcony, and corridor railings shall be stainless steel tubes unless approved otherwise.
- Regular stairs shall have risers at 150mm high and treads at 300mm wide. Handrails shall be at least 900mm high. Clearances shall conform to the requirements of the Fire Code of the Philippines.
- Corridors shall have a minimum unobstructed width of 1500mm. This shall be measured clear from the surface of the finished wall and not on-center of the rough CHB wall.
- Corridors and exit doors shall conform to the requirements of the Fire Code of the Philippines.

7.0 FIXTURES AND ACCESSORIES

- Electrical light switches shall be located by the knob side of the door.
- Electrical light switches and outlets shall be installed plumb and level.
- The backboxes of receptacles and switches shall be packed with expanding sealant prior to installation. The outside edges and screws on face plates or trims shall be sealed and wiped clean of excess sealant.
- A drainage line shall be provided for window-type air conditioners.
- All plumbing and lighting fixtures shall be subject to the approval of the University prior to installation.

8.0 ROOFING WORKS

- The section of the concrete roof gutters shall be designed, in case of a clogged downspout, so that the overflow of water will be directed outside of the building and not towards the eaves or interior ceiling to prevent any damage. Provide membrane-type and integral-type waterproofing. Provide details.
- Avoid valley or inside gutters in roof design. But in cases required in aesthetic design, valley or inside gutters shall be in stainless steel or concrete gutters with membrane-type waterproofing, and the section shall be designed with a capacity for big volume to prevent any damage due to overflow. Provide details.
- Parapets, designed as a roof protection from the winds, must be designed to satisfy the preceding parameters. Provide details.
- Concrete roofs shall be provided with membrane-type and integral-type waterproofing. Where roof space is to be developed into a roof deck garden, the proper drainage, insulation, waterproofing, vapor/thermal barriers and irrigation system shall be put in place. Provide details and mock-ups for approval prior to installation.
- The slope of a hipped roof shall not be less than 14 degrees.
- Access to the roof shall always be provided for maintenance and other purposes.

- The roof structure shall be designed to carry the weight of 2-3 persons for cleaning and maintenance.
- Roof shall be marked with paint to indicate where the maintenance staff can safely walk and stand on while cleaning.
- Where concrete canopies are provided at the main entrance of the building, provide a slope of at least 5 degrees for proper drainage.
- Final paint color and shade shall first be approved by the University before application.

9.0 PAINTING

- Painted ceiling shall be in flat latex finish, while cornices and moldings shall be in gloss enamel finish unless otherwise noted.
- Painted interior wall shall be at least in semi-gloss latex finish for rooms, unless specified to a higher type of paint.
- Painted exterior wall shall be at least in moisture-resistant/water-repellant solvent-based paint finish, textured or smooth, unless otherwise specified.
- Final paint color and shade shall first be approved by the University before application.

E. SPECIFIC REQUIREMENTS

- Provide spot detail plan and sections of the following:
 1. Gutter, eaves, and parapet
 2. Ceiling – cove light (if provided), special connections and design, moldings, valances
 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 windows and doors
 7. Special Carpentry Works, e.g., partitions, cabinetry
 8. Other details as may be required
- Provide Room Data Sheets, including detail floor plan, ceiling plan and sections in coordination with the requirements of the electrical, sanitary and mechanical designs

F. 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.

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- Wet areas, e.g., toilets and kitchen shall use non-skid/non-slip granite or vitrified ceramic floor tiles.
- Heavy traffic areas, e.g., lobby, and corridor shall use heavy-duty vitrified ceramic floor tiles, seamless granite floor tiles or a higher type of floor material.
- Vinyl floor tiles (if considered) shall be homogenous and not less than 2mm thick.
- 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 be used to support and suspend the aluminum T-runners and light gauge metal furring.
- Roofing sheets shall be Ga. # 24 aluminum-coated, pre-painted, pre-formed and long-span.

G. DRAWING REQUIREMENTS

See Annex for Checklist.

3.2 CIVIL/STRUCTURAL DESIGN PARAMETERS

A. CODES AND STANDARDS

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

1.0 LAWS AND CODES

- National Structural Code of the Philippines (NSCP) 2010
- PD 1096 or National Building Code of the Philippines and its Latest and Amended IRR
- BP 344 or Accessibility Law and its Latest and Amended IRR
- Existing Local Codes and Ordinances

2.0 STANDARDS

- Bureau of Product Standards (BPS)
- Philippine National Standards (PNS)
- DPWH Blue Book
- American Concrete Institute (ACI)
- American Society for Testing Materials (ASTM)
- American Welding Society (AWS)

B. SITE WORKS

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1.0 GENERAL

Based on the Master Site Development Plan, provide where applicable complete design and details of road (concrete with curb gutter, including drainage) network, walkways parking areas and fencing.

- The main driveway leading to the main entrance of the building shall be at least 4.00 meters wide with a minimum thickness of 200mm (8 inches). Concrete strength should be at least 3000psi. Roads shall be so designed to accommodate delivery vehicles.
- Walkway should be at least 100mm thick with concrete strength of 2500psi. Ramps should be provided, instead of steps, for any change in elevations.
- Parking area slabs should be at least 150mm thick with concrete strength of 3000psi.

C. BUILDINGS

- The buildings should be designed using seismic importance factor of 1.25 for immediate occupancy category. Buildings should be designed in accordance with NSCP requirements using the appropriate magnitude and seismic source. Seismic gaps between buildings (old and new) should be properly observed.
- The buildings should be designed also using wind importance factor appropriate to the site (especially for design of trusses/roofing system). Concrete gutters and parapet walls should be provided as additional protection to the roofing system during strong typhoons.
- The structural designer should verify with Philippine Volcanology and Seismology (PHIVOLCS) the distance of the proposed building to the nearest active fault lines conforming with the DENR for geohazard mapping.
- The structural designer is encouraged to use fire-resistive and non-toxic materials.
- All columns shall be constructed with standard materials, plastered and painted as required.
- Soil investigation (at least three bore holes) should be conducted at the designated area to determine soil bearing capacity and recommended foundation system for the building.

D. SPECIFIC REQUIREMENTS

The following shall be provided:

- Connection details of beam and columns following the requirements of NSCP on confined areas.
- Connection of trusses to beams and columns.

- Splicing details of reinforcing bars on columns and beams and the required bar cut-off points.

E. SUMMARY OF MATERIALS

- Concrete shall be Portland cement and conforming to ASTM Specification C150, Type I to Type II.
- Coarse Aggregates shall consist of washed gravel, crushed stone or rock or a combination thereof conforming to ASTM C33.
- Concrete hollow blocks shall be a standard product of recognized manufacturer conforming to PNS 16 with at least 350psi strength.
- Reinforcing bars shall conform with PNS Grade 60 for 16mm diameter and above and PNS Grade 40 for 12mm diameter and below.
- Structural steel shall conform with ASTM A36.
- Bolts and studs shall conform with ASTM A325.
- Welding electrodes shall be E60 or E70 and conform with AWS D.1.1.

F. DRAWING REQUIREMENTS

See Annex for Checklist.

3.3 SANITARY/PLUMBING DESIGN PARAMETERS

A. CODES AND STANDARDS

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

1.0 LAWS AND CODES

- RA 1378 or National Plumbing Code of the Philippines (NPCP)
- Sanitation Code of the Philippines
- PD 1096 or National Building Code of the Philippines and its Latest and Amended IRR
- RA 9514 or Fire Code of the Philippines and its Latest and Amended IRR
- Existing Local Codes and Ordinances

2.0 STANDARDS

- Bureau of Product Standards (BPS)
- Philippine National Standards for Drinking Water
- National Water Resources Board (NWRB)
- National Plumbers Association of the Philippines (NAMPAP)
- Philippines Society of Sanitary Engineers, Inc. (PSSE)

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B. SITE WORKS

1.0 GENERAL

- Based on the Master Site Development Plan, the Site Works shall provide complete layout of the following:
 1. Storm Drainage Network, indicating Drainage Manholes and Pipe Culverts;
 2. Sewerage Pipe Network, indicating Sewage Manholes, Sewage Pipes and the location of the proposed Sewage Treatment Plant;
 3. Water Supply Network, indicating the location of Water Service entrance, Cisterns, Elevated Water Tank and proposed Pump House.
- The Storm Drainage Network shall accommodate the magnitude of peak rates of surface run-off including drainage coming from the building. The system shall be capable of handling the design flows routing to the designated outfall. For rainfall calculation and sizing of drainage pipes, refer to Table-D2, Appendix-D, National Plumbing Code of the Philippines and current rainfall record from PAG-ASA (156mm/hr).
- The Sewerage Pipe Network design shall accommodate all sewage coming from all the facilities, conveyed by gravitational flow leading to the proposed or existing Sewage Treatment Plant.
- The Water Supply Network shall include the provision of Fire Hydrants, accessible Drinking Fountain that will serve as testing point for safe and potable water supply.

C. BUILDING FACILITIES SANITARY/PLUMBING SYSTEM

1.0 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 Sewage Treatment Plant (STP). For Demand Weight of Fixtures in Fixture Units, refer to Appendix-A, Table A-2, NPCP.
- Provide exact location of toilet floor drains relative to the tile layout for approval of the University.

2.0 WASTEWATER LINE AND VENT SYSTEM

- For all wash areas dealing with and generating oil/grease, provide separate Waste Line and Vent System and solely tap to the proposed Grease Trap and then connect its effluent to the Sewage Treatment Plant. For

Estimated Demand Weight of Fixtures in Fixture Units, refer to Appendix A, Table A-2, NPCP.

3.0 WATER LINE SYSTEM

- Provide complete cold water supply pipes to all plumbing fixtures. From the main water source to cistern tank, the water shall be pumped to the Elevated Water Tank (EWT) and conveyed to the fixtures by gravity system and or distributed to fixtures by transfer pumped with constant pressure through a Pneumatic Storage Tank, whichever is feasible.

4.0 STORMWATER DRAINAGE SYSTEM

- Provide complete storm drainage system for all roofs, canopies, concrete ledges and balconies including condensate drains laid for gravity flow connected to a leader/pipe line leading to the natural ground level storm drainage network.
- Rain water shall be collected in an overhead water tank and in a cistern. Rain water shall be used mainly for flushing of toilets and landscape irrigation.
- Downspouts shall preferably be embedded in the columns. However, these should be outside the required structural section for the column.
- Provide Computation of Rain Water Catchment System Capacity as per Required by Davao City Rainwater Ordinance of 2009 (Ordinance # 0298-09).

5.0 FLOOR DRAINS

- Aside from the required floor drains for drainage of surface water, also provide floor drains as needed to conveniently admit condensate pipes from air conditioning units.

D. SPECIFIC REQUIREMENTS

- Provide details of the following:
 1. Grease Trap (where applicable)
 2. Cistern Tanks and Elevated Water Tanks (c/o Mechanical Engr)
 3. Details for plumbing lines
 4. Pump/machinery locations in consideration of vibration and noise controls.
 5. Effluent treatment method

E. SUMMARY OF MATERIALS

- Sewer and vent pipes: unplasticized Polyvinyl Chloride (uPVC) extra series 1000 conforming to ISO 3633 ASTM D2729 including trims and fittings
- Waste water and Storm drainage pipes: downspouts, unplasticized Polyvinyl Chloride (uPVC) extra series 1000 conforming to ISO 3633 ASTM D2729 including trims and fittings (BPS Certified)
- Drainage pipes: 250mm dia. and below, Non-Reinforced Concrete Pipe (NRCDP) For 300mm dia. and above, Reinforced Concrete Pipe (RCDP)
- Drainage manholes: Street inlet/curb inlet, Traffic Type Reinforced Concrete Area drain/catch basin, Reinforced Load Bearing CHB
- Sewage manholes: Traffic Type Reinforced Concrete with Standard Steel Brass Cover
- Cleanouts: Interior Cleanout covers shall be Brass while On-grade exterior Cleanout covers shall be Cast Iron with counter sunk key plugs (BPS Certified)
- Floor drains/Deck drains: Cast Iron/Brass (BPS Certified)
- Gutter drains: Cast Iron/Brass Dome Type (BPS Certified)
- Cold Waterline pipes: for buildings, Polypropylene Pn20 Fusion Weld Pipes including Trims and Fittings (BPS Certified)
- Trench grating: Galvanized/Stainless Steel Iron grates
- Plumbing Fixtures including Trims, Fittings and accessories (BPS Certified):
 - a) Water Closet – Tankless type, DFV
 - b) Lavatory – Pedestal/Counter type with C-sprout spray faucet
 - c) Urinal – Wall hung flush valve type

F. DRAWING REQUIREMENTS

See Annex for Checklist.

3.4 MECHANICAL DESIGN PARAMETERS

A. CODES AND STANDARDS

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

1.0 LAWS AND CODES

- Mechanical Engineering Code of the Philippines
- Sanitation Code of the Philippines
- PD 1096 or National Building Code of the Philippines and its Latest and Amended IRR
- RA 9514 or Fire Code of the Philippines and its Latest and Amended IRR
- Existing Local Codes and Ordinances

2.0 STANDARDS

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- Bureau of Product Standards (BPS)
- Philippine National Standards (PNS)
- Underwriters Laboratory (UL) and Factory Mutual (FM)
- International Electrotechnical Commission (IEC) 1988
- National Fire Protection Association (NFPA)
- ANSI-BICSI 002-2019

B. SPECIFIC REQUIREMENTS

Provide details of the following:

- Cistern tanks and elevated water tanks at mechanical penthouse.
- Energy saving measures designed to decrease relative energy consumption.
- Passive measures for providing indoor air comfort and monitoring indoor air quality.

C. DRAWING REQUIREMENTS

See Annex for Checklist.

3.5 ELECTRICAL DESIGN PARAMETERS

A. CODES AND STANDARDS

The Electrical Design shall be in accordance with the following Laws, Codes and Standards.

1.0 LAWS AND CODES

- Philippine Electrical Code
- National Electrical Code
- PD 1096 or National Building Code of the Philippines and its Latest and Amended IRR
- RA 9514 or Fire Code of the Philippines and its Latest and Amended IRR
- Existing Local Codes and Ordinances

2.0 STANDARDS

- Bureau of Product Standards (BPS)
- Underwriters Laboratory (UL)
- National Fire Protection Association (NFPA)
- International Electrotechnical Commission (IEC)
- Illumination Engineering Society (IES)
- National Electrical Manufacturer's Association (NEMA)

Read and accepted as part of the Contract:

- ANSI-BICSI 002-2019

B. SITE WORKS

- Based on the Master Site Development, the Site Works shall provide complete Electrical layout of the following:
 1. KVA rating and other specifications of Transformer
 2. Switchgear requirements
 3. Panelboard Layout
 4. Electrical Metering Devices
 5. Service Conductors and Conduit Layout
 6. Grounding System
 7. Lightning Protection System
 8. Emergency Standby Generators
 9. Street and Perimeter Lighting System
 10. Lighting calculations for offices, meeting rooms
 11. Energy saving measures to decrease relative energy consumption.

C. BUILDING FACILITIES ELECTRICAL SYSTEM

1.0 LIGHTING SYSTEM

- Provide and install adequate normal branch circuits for Lighting Systems to all areas using the standard Lighting Design Analysis. Utilize the standard illumination requirements per area of concern using the preferred particular type of luminaires.
- Provide LED lights for all areas, unless otherwise specified.

2.0 POWER SYSTEM

- Provide and install adequate normal branch circuits for the Power System.
- Provide sufficient wall and/or floor convenience outlets according to user requirements.
- Provide convenience outlets, weatherproof, if necessary, in public areas such as corridors, lobbies, etc.

3.0 STANDBY/EMERGENCY SYSTEM

- Provide and install adequate life safety and critical emergency branch circuits for lighting or utilization equipment connected to the alternate power source.

4.0 AUXILIARY SYSTEM

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- Provide and install provisions for the following Auxiliary System (to be centrally controlled in the Lactic Acid Pilot Plant Office):
 - a) Communication System
 - Telephone System
 - Internet with Wi-Fi System
 - Private Branch Exchange (PABX)
 - Closed Circuit Television System
 - Master or Cable Antenna Television
 - Fiber Optic Cable System
 - b) Fire Alarm System
 - c) Security System
- Fire detection, alarm and appropriate suppression systems shall be provided in all rooms and common areas complete with smoke detectors.
- Fire extinguishers in properly designed cabinets shall be provided at required locations.

5.0 LIGHTNING PROTECTION SYSTEM

- The building lightning protection system shall include roof-mounted air terminals grounding conductors, ground rods, conduits, clamps, and auxiliary equipment as required for a complete and operational lightning protection system.

6.0 EARTHGROUNDING

- The building electrical system should be provided with earth-grounded connections. Equipment manufacturers may require earth-grounding and reliable power for special connections and services at specific locations.

D. SPECIFIC REQUIREMENTS

Provide details of the following:

1. Lighting Fixtures/Luminaries
2. Panel board and Circuit Breakers
3. Switchgear and other Metering Devices
4. Electrical Equipment and other Special Equipment
5. Installation and Termination of Auxiliary and other Special Devices and Equipment
6. Power and Telephone Hand holes (as may be required)
7. Pedestal and Service Entrance to building
8. Grounding System Layout
9. Others as may be required

E. SUMMARY OF MATERIALS

1.0 GENERAL LIGHTING LUMINAIRES

Fixtures type shall be as indicated on the Lighting Layout Plan:

- LED lights shall be wall or ceiling mounted or recessed luminaires.
- LED fixture housing shall be copper-free aluminum with epoxy powder coat paint finish and the lens material shall be heat and impact-resistant glass or polycarbonate.
- Other special lighting requirements shall be as approved by the University.

2.0 WIRING DEVICES

Wiring devices shall be non-automatic control devices, the contact is guaranteed by the pressure of the special spiral springs.

- Switches shall be of 15A, 250V or 300V except as otherwise noted and approved. Terminals shall be screw-type or quick-connected type.
- General use receptacle shall be 15A, 240V grounding type unless otherwise indicated on the drawings.
- Special purpose receptacles shall be as required. Matching plugs shall be supplied. The End user's equipment list shall determine locations of special purpose receptacles.

3.0 PANELBOARDS AND CIRCUIT BREAKERS

The Panel Board and Circuit Breakers shall be equipped with molded-case circuit breakers and shall be the type as indicated in the panel board schedule and details.

- Provide molded-case circuit breakers of frame, trip rating and interrupting capacity as shown on the drawings. The circuit breakers shall be quick-make, quick break, thermal-magnetic, trip-indicating and shall have common trip on all multiple breakers with internal trip mechanism.
- All current-carrying parts of the panel boards shall be plated. Provide solid neutral (S/N) assembly when required. The assembly shall be isolated from the enclosure.
- Circuit breakers for large equipment set-ups may be added in the future so sizing of electrical equipment should be based on a fully occupied Lactic Acid Pilot Plant building.
- Surface mounted raceways shall have a duplex receptacle spaced every 600 mm and circuit breakers shall be mounted on or at the raceways for safe shut-off during emergencies.
- All receptacles shall be commercial grade with brushed metal face plates.

- All receptacles shall have labels or tags identifying the panel and circuit number as shown on the electrical power plans.
- All electric outlets shall be color-coded, i.e., metallic grey or approved color for outlets connected to emergency power source/ back-up generator.
- Sub-meters shall be provided for every office or space as required by the University.

4.0 ELECTRICAL CONDUITS, BOXES AND FITTINGS

All conduits, boxes and fittings shall be standard rigid steel, zinc coated or galvanized.

- Rigid Steel Conduits (RSC)
- Rigid Metal Conduits (RMC)
- Intermediate Metal Conduits (IMC)
- Electrical Metallic Tubing (EMT)
- Unplasticized Polyvinyl Chloride (uPVC conduits), if required shall be S40.

5.0 CONDUCTORS

Wires and cables shall be of the approved type and unless specified or indicated otherwise, all power and lighting conductors shall be insulated for 600 volts.

- The conductors used in the wiring system shall be of soft-annealed copper having a conductivity of not less than 98% of that of pure copper and insulated for 60°C temperature.
- All conduits of convenience outlets and wire ways for lighting branch circuit homeruns shall be wired with a minimum of 3.5mm square in size.

6.0 STRUCTURED CABLING AND TELEPHONE SYSTEM

- Install provisions for telephone systems going into individual offices, meeting rooms.
- Install provisions for structured cabling as specified.

7.0 FIRE DETECTION AND ALARM SYSTEM

- The Fire Detection and Alarm System shall be of multiplex, microprocessor-controlled addressable or zonal conventional fire detection, alarm and communication system.
- The system shall consist of full integration automatic fire detection, voice alarm communication and fire fighters telephone system.
- The system shall consist of control station, mimic panel initiating and indicating devices, control modules and system of wirings.

- Actuation of the protective signaling system shall occur by manual pull station, automatic smoke or heat detector, sprinkler flow switch and tamper switch.
- The system shall be able to monitor the status of flow switches, supervisory switches and blowers installed at the Sprinkler System risers. These monitoring points are also addressable or the conventional zonal in the same way as the detectors are making them easily recognizable at the control panel.
- Occupant notification shall be accomplished automatically. Notification shall be the general, audible alarm type complying with the appropriate section of the NFPA.
- The system shall be installed with provision for future connection to the nearest fire services station in the locality.
- Fire alarm annunciators should comply with code requirements for the type of occupancy of the building.

8.0 SECURITY SYSTEM

- The Security System shall include intrusion detection and alarm, CCTV, access control or as may be required.
- Conduit pathways in concrete and access boxes must still be provided even if value engineering limits the amount of equipment in the base building construction.

F. DRAWING REQUIREMENTS

See Annex for Checklist.

END OF PART II

PART III BIDDING PHASE

1.0 DESIGN CONSULTANT'S RESPONSIBILITIES

- 1.1 The Design Consultant shall be responsible for taking the necessary steps to carefully examine all documents. It also rests upon the Design Consultant to acknowledge all conditions, local or otherwise, affecting the carrying out of the contract works, and to arrive at an estimate of the facilities available and needed for the Project. Failure to do so shall be at the Designer's risk which shall cover part of the Designer's liability.
- 1.2 It shall be the sole responsibility of the Design Consultant to determine and suit himself by such means as he considers necessary or desirable as to all matters pertaining to the Project, including the location of the project site and nature of work, climatic conditions, nature and condition of the terrain, geological conditions at the site; transportation and communication facilities, requirement and availability of materials, labor, water, electrical power and roads; location and extent of aggregate source; and other factors that may affect the cost, duration and execution of the work. The Design Consultant, by the act of submitting his proposal, acknowledges that he has inspected the site and determined the general characteristics of the Project and the conditions indicated above. The University requires an affidavit, duly notarized, of such site inspection from the Design Consultant.
- 1.3 It shall be the responsibility of the Design Consultant to check and verify the location of existing water, electrical, and other utility tapping points, sewer lines, and storm drainage and incorporate such in their bid. In the event that historical infrastructure plans are not available, the Design Consultant shall include a line item that will cover the cost of completing the preliminary survey and mapping and preliminary investigations as required. The projected cost of preliminary survey and mapping and preliminary investigations shall be submitted with bids.
- 1.4 Prior to submittal of proposals, it is assumed that the Design Consultant is already familiar with all existing laws, decrees, ordinances, acts and regulations of the Philippines, which may affect or apply to the operations and activities of the Design Consultant. However, in the case where the cost of the awarded contract is affected by applicable new laws, decrees, ordinances, regulations and other acts of government promulgated after the date of submission of proposals, a contract price adjustment may be made or appropriate relief be applied on a no loss-no gain basis provided such is not covered by the provisions on price escalation hereof and subject further to the availability of funds.
- 1.5 The Design Consultant is responsible for acquiring Pilot Plant design references, publications, manuals and guidelines necessary to review and evaluate in detail the project design requirements

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- 1.6 The Design Consultant shall be required **to submit the Preliminary Schematic Design and Plans and make a 5 to 8-minutes long Walkthrough Presentation in accordance with the Evaluation Criteria for Design Proposal (Part VII – Annex F)** attached in this Terms of Reference (TOR). The Designer is given liberty to design the exterior and interiors of the proposed Lactic Acid Pilot Plant facility according to his/her vision and enhance the University issued Conceptual Design and Plans as he/she sees fit, taking into consideration the provisions in the UP MDP Development Principles and Design Guidelines. Prior to the award of the contract, the preliminary designs shall be rectified for errors in the interpretation of the specified conceptual design specifications and parameters.
- 1.7 The Design Consultant shall include a pay item in the Bill of Quantities (BOQ) of the construction budgetary cost with unit price analysis that shall cover any and all expenses incurred in the clearing of the site and all other existing obstructions excluding removal of affected trees requiring compensation.

2.0 ELIGIBILITY AND QUALIFICATION

- 2.1 All submittals and attendances required for this bidding and enumerated in the Invitation to Bid must be strictly complied with, without exemption to the place, date and time unless otherwise modified with proper notification through Bid Bulletin by the University. The eligibility requirements and qualification process shall be in accordance with the provisions of Annex “F” of the 2016 Revised IRR of RA 9184.
- (a) The eligibility requirements shall be in accordance with the provisions of Section 24.1 of the 2016 Revised IRR of RA 9184 for the design phase.
- (b) The eligibility criteria shall be in accordance with the Section 24.3 of the 2016 Revised IRR of RA 9184 for the design phase.
- 2.2 MINIMUM QUALIFICATIONS REQUIRED FOR THE DESIGNER AND DESIGN TEAM
- (a) The Design Consultants shall have valid licenses issued by the Professional Regulatory Commission (PRC).
- (b) The Designer, whether the principal or the designated lead designer of the firm, shall be a **Registered Licensed Architect** with at least 5-year experience and solid background in Architecture and Engineering Design and Development. He/She shall report to an active local/satellite office with a locally-based staff.

- (c) The Designer shall be an architect, an architectural firm of two or more associated individuals, or a partnership with expertise in structures and facilities belonging to Group C-Education and Recreation, Division C-2 occupancies, preferably including research laboratory facilities, under the National Building Code of the Philippines and its latest amendments.
- (d) The Designer shall be responsible for hiring the members of the design team under his supervision and coordination. His allied professionals and Design Team members shall have at least 5 years experience and solid background in his/her discipline and at least 3 years experience in Engineering Design and Development to include the following:
- (i) **Licensed Civil/Structural Engineer**
 - (ii) **Licensed Sanitary/Plumbing Engineer**
 - (iii) **Licensed Professional Electrical Engineer**
 - (iv) **Licensed Electronics and Communications Engineer**
 - (v) **Licensed Professional Mechanical Engineer**
 - (vi) **Landscape Architect**
 - (vii) **Pilot Plant Design Professional**
 - (viii) **and other manpower necessary to accomplish the project requirements, such as, but not limited to, the following:**
 - 1. Draftsman or AutoCAD operator/ 3D Modeler or Renderer**
 - 2. Quantity Surveyor/Estimator**

The Pilot Plant Design Professional may be a Mechanical Engineer or any similar discipline with at least five (5) years experience including at least 1 year in an Industrial Plant setting and at least 3 years of experience in Engineering Design and Development. Some experience in the design of an Industrial Plant facility would be a decided advantage.

- 2.3 The Consultant Bidder is required to prioritize the hiring of locally-based architects, engineers and draftsmen especially if such have had experience in the design of Group C – Education and Recreation, Division C-2 Scientific Research Facility.

END OF PART III

PART IV DESIGN PHASE

1.0 DESIGN CONSULTANT'S RESPONSIBILITIES

1.1 GENERAL COORDINATION

- (a) The Design Consultant shall perform all services specified in the Contract Documents as well as those services reasonably deduced from the Contract Documents as necessary for completion of the Work and the Project. The Designer agrees to perform these services using its best efforts, skills, judgments and abilities.

The Design Consultant shall consult representatives of the various sectors of the UP Mindanao end-user and shall consider the needs of the different groups.

- (b) The Design Consultant shall at all times endeavor to further the interests of the University and complete the Project in an expeditious and economical manner consistent with the interests of the University and in accordance with the Project Schedule.
- (c) The Design Consultant, is expected to have visited the project site, familiarized themselves of the terrain, climatic conditions, availability and location of utility tapping points, and other conditions that have direct bearing on the Project.

1.2 MILESTONE SCHEDULE

- (a) Within seven (7) days upon receipt of the Notice to Proceed and before the scheduled Pre-Design Conference, the Design Consultant shall submit to the UP Mindanao Campus Planning and Development Office (CPDO) for review and acceptance a Design Milestone Schedule in accordance with the Project Planning and Scheduling requirements of the University. The Design Milestone Schedule shall encompass the entire project duration
- (b) The Milestone Schedule for the Design Phase of the Project shall include reasonable amount of time for CPDO review and approval of design drawings and specifications and for approval of authorities having jurisdiction over the Project.

1.3 DESIGN SUPERVISION AND COORDINATION

- (a) The Designer shall designate in writing a Project Architect as the representative who will be responsible for the day-to-day management of the Design Phase Services. The Architect shall be the University's primary

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contact during the Design Phase of the Project and shall be available as required for the benefit of the Project and the University. The Project Architect shall be subject to the required qualifications called for by the project, being authorized to act on behalf of and bind the Designer in all matters related to Design Services. In no case shall replacement or substitution of the Designer/Project Architect be allowed by the University.

- (b) The **Project Architect**, as the lead designer and designated representative, shall supervise the submission of all design requirements. He shall be responsible for the direct supervision and coordination of the Design Team members as mentioned in Item 2.2 MINIMUM QUALIFICATIONS REQUIRED FOR THE DESIGNER of Part III, Bidding Phase:
- (d) The Project Architect, as the lead designer and designated representative, shall personally attend meetings to be scheduled by CPDO during the Design and Construction Phase for updates or reports regarding the Project. The allied consultants are likewise required to attend design and coordination meetings as called for to expedite the process of design review, consultation and presentation to CPDO and the end-users. Should the Architect be unavailable, he/she shall notify the UP Mindanao CPDO at least five (5) days before the set schedule and send/assign a temporary substitute representative, who shall be authorized to act and make decisions on design concerns in the lead designer's behalf. **In no case, however, shall the Project Architect miss three (3) consecutive scheduled meetings.**
- (e) The Project Architect, as the lead designer and designated representative, shall be required to be assigned and stationed locally during *the entire Design phase (Schematic Design and Design Development phases)* for close coordination with and monitoring of CPDO. This is to ensure that the design requirements and delivery of services are translated and executed according to the contract in the most expeditious manner.

The Project Architect is expected to bring and use his/her own desktop computer or laptop, complete with the necessary legal software/s to perform and deliver the services.

- (f) The Designer shall submit its proposed Organizational Chart for Design Services, including the Project Architect **and its consultants, in particular the Industrial Plant Designer, as identified in their bid proposal** for approval by the University. CVs of the Designer's key personnel shall be submitted to CPDO for review and approval prior to the Pre-Design Conference. **At any time before or during the implementation of the project, any substitution of key personnel committed to the project without prior approval from CPDO shall be considered ground for termination of the project.** In the event that the Architect or any of its Engineers shall be

found unqualified and subsequently rejected, the Designer shall immediately nominate a substitute for review and approval of CPDO.

- (g) Any proposed replacement or substitute of an allied professional or Design Team member should at least have equivalent if not higher qualification. The Design Consultant shall submit the following documents for the University's perusal:

- (i) Curriculum Vitae of recommended professional
- (ii) Other pertinent data showing the professional's qualifications.

Should the professional still be considered as unqualified after the University's evaluation, the Designer shall again nominate another consultant as replacement. However, the vacancy should not jeopardize the schedule of the project and be cited as reason for the delay of the deliverables.

- (h) The Designer must ensure that the following are achieved:

The Project shall be designed according to the end-user requirements such that all provisions are considered, planned and indicated in the drawings, specifications and cost estimates, whereby future add-ons to the building such as equipment and technological and operational systems are identifiable, considered and possible without compromising the integrity of the building design and entailing unreasonable cost;

The Project, as designed, can be constructed for an amount that is within Construction Cost Limitation and will achieve the energy and operational savings required by the Contract. The obligation to design the Project so as to achieve the program objectives of scope and cost shall continue through completion and acceptance of Construction Contract Documents. Any adjustment to the scope or quality considered necessary to comply with the Construction Cost Limitation or the program during the Design Phase shall be mutually agreed upon and shall be considered normal to that process.

- (i) The Designer warrants to the University the sufficiency and completeness of all Design Services performed and that all drawings, specifications, and other information furnished or provided in the Design shall be free from material errors and omissions. Approval or acceptance of any Design Services by the University shall not in any way release Designer from any duty, responsibility or liability for such services, it being understood that the University is at all times relying upon Designer's skill and knowledge in performing the Design Phase Services.
- (j) The University shall have the right to reject any portion of the Design that is deemed unreasonable and unacceptable or other defective Work on

the Project due to poor/defective design that only becomes evident to the University inspectorate during construction. The Designer shall promptly correct any such defect at the Designer's expense.

1.4 VALUE ENGINEERING AND DECISION TRACKING SYSTEM

- (a) The Designer shall implement and conduct a value engineering exercise to identify and document project cost and schedule savings opportunities.

Note: Prepare a "Constructability Report" that identifies items which, in the Designer's opinion, may negatively impact construction of the Project. The Constructability Report shall address the overall coordination of Project Drawings, Specifications, and details and identify discrepancies that may generate Change Orders or claims once Project construction commences. The Constructability Report shall be updated at least monthly during the Design Phase.

- (b) The Designer shall provide and implement a system for tracking questions, resolutions, decisions, directions and other information matters that arise during the development of the Drawings and Specifications for the Project. The decision tracking system shall be in a format approved by the University and updated at least monthly during the Design Phase.

1.5 COORDINATION OF DESIGN AND CONSTRUCTION CONTRACT DOCUMENTS

- (a) The Designer shall review all Drawings, Specifications, and other Construction Documents as they are developed during the schematic design, design development, and contract documents stage of the Design Phase of the Project.
- (b) The Designer shall consult with CPDO on the selection of materials, equipment, component systems, and types of construction used on the Project. The Designer shall likewise advise the University on site use, construction feasibility, availability of labor and materials, procurement time requirements, and construction coordination.
- (c) The Designer shall advise the University on reasonable adjustments in the project scope, quality or other options for keeping the Project cost within the Construction Cost Limitation.

1.6 REVIEW OF DRAWINGS

- (a) The Designer, at its sole expense, shall provide the University with the required number of design document review sets at each required stage of completion.
 - (b) The Designer shall incorporate into the documents such corrections and amendments as the University requests at each stage review, unless the Designer objects to such changes in writing and the University agrees to the objections. Any additional cost incurred due to Designer's failure to incorporate the University's requested corrections and amendments shall be borne by the Designer.
- 1.7 The Designer shall submit a schedule/timeline covering the scope of work indicating the percentage of man hours or percentage of work per item. This document shall be used as a basis for the monitoring of the Design progress for the duration of the Project.
- 1.8 The Designer is required to submit the proposed relocation map/plan of affected utilities, if any.
- 1.9 **COORDINATION OF WORK WITH PROJECT MANAGEMENT TEAM**

The University, through the CPDO, shall contract a Project Management Team as owner representative who will work with the Design Consultants during design, construction, and post-construction. They shall report all information and issues to the CPDO or its representative prior to implementation.

2.0 DESIGNER'S SCOPE OF WORK

The Design Consultant shall have the following minimum scope of work in each phase of the design process as outlined below. The Designer shall perform other tasks not mentioned but may be required by the University or its representatives as long as such tasks are legally within their professional responsibility.

2.1 SCHEMATIC DESIGN PHASE

- (a) Conduct preliminary site inspections and data gathering to verify the existing facilities and environment in relation to the issued Conceptual Design and Plans;
- (b) Attend a Pre-Design Conference and subsequent meetings/ consultations, as necessary, with the CPDO and end-user to ascertain the project requirements and to further develop and finalize the Schematic Plans;
- (c) Prepare and submit the proposed schedule of the Project Architect's engagement in UP Mindanao, detailing how the **Three Hundred sixty-five (365) calendar days** shall be broken down during the Schematic Design and Design Development phases;

- (d) Submit the name, contact number, and email address of the Project Architect who shall be the main contact person for the Design Phase;
- (e) Prepare and submit the Proposed Design Schedule for approval by the CPDO;
- (f) Prepare and submit the final Schematic Plans approved by the University:
 - (i) Floor Plan
 - (ii) Exterior Perspectives; and
- (g) Prepare and submit a Project Construction Cost Estimate (Levels 1 and 2) based on current cost parameters.

2.2 DESIGN DEVELOPMENT PHASE

- (a) Attend meetings/consultations and make presentations, as necessary, with the CPDO and end-user to develop the approved Schematic Plans;
- (b) Prepare and submit the Preliminary Architectural and Engineering Design Report, including Functional and Technical Criteria of the Lactic Acid Pilot Plant;
- (c) Prepare and submit Design Developed Plans approved by the University:
 - (i) Floor Plan
 - (ii) Elevations
 - (iii) Sections
 - (iv) Roof Plan
 - (v) Site Development Plan
 - (vi) Exterior and Interior Perspectives;
- (d) Prepare and submit the outline specifications to fix and illustrate the size and character of the Project in its essentials as to kinds of materials, type of structure, mechanical, electrical, and sanitary systems and such other work as may be required;
- (e) Prepare and submit an enhanced Project Construction Cost Estimate (Levels 2 to 3); and
- (f) Prepare and submit a preliminary walk-through presentation of the 3D model of the Project including exterior and interior perspectives.

2.3 CONTRACT DOCUMENTS PHASE

- (a) Attend meetings/consultations and make presentations, as necessary, with the CPDO to develop the approved Design Development Documents;
- (b) Prepare and submit the Architectural and Engineering Design Report;
- (c) Prepare and submit weekly progress drawings/plans in CAD and PDF file formats according to the approved Design Schedule;
- (d) Prepare and submit the complete Construction Drawings approved by the University:

- (i) Detailed Architectural Designs and Plans, setting forth in detail the work to be executed and as required for building permit application purposes
- (ii) Detailed Architectural Interior Designs and Plans with Sample Boards
- (iii) Detailed Lactic Acid Pilot Plant Plans, including, but not limited to the following: Sheet series showing the following:
 1. Locations of special Server Rooms which shall be tested for room integrity to meet the requirements for air quality, temperature, noise and vibration control, and special fire suppression systems showing raised floor system, dedicated building utilities and other special design details
 2. Details for penetrations in walls, ceilings and floors by lighting, plumbing, exhaust and other devices.
 3. Sections through the Server Rooms to show coordination with the work of other trades
- (iv) Detailed Furnishing Plans, indicating casework and base building equipment that shall be Contractor Furnished / Contractor Installed (CFCI)
- (v) Detailed Site Development Plan/Civil and Landscape Architectural Designs and Plans
- (vi) Detailed Site and Building Engineering Designs and Plans:
 1. Detailed Structural Plans, including, but not limited to the following:
 - a. Structural plans and details of all facilities and amenities, with due consideration for future expansion;
 - b. And other crucial structural details.
 2. Detailed Structural Plans, including, but not limited to the following:
 - a. Plumbing and Sanitary plans and details of all facilities, with due consideration for future expansion;
 - b. And other crucial Plumbing and Sanitary details.
 3. Detailed Electrical Plans, including, but not limited to the following:
 - a. Electrical plans and details of all facilities, with due consideration for future expansion;
 - b. And other crucial Electrical details.
 4. Detailed Electrical Auxiliary Plans, including, but not limited to the following:
 - a. Components:
 - i. Telephone System
 - ii. Data Communication and Networking System
 - iii. Security Systems: Closed Circuit Television (CCTV) System, Controlled Access System
 - iv. Fire Detection and Alarm System

- b. Electrical Auxiliary plans and details of all facilities and amenities, with due consideration for future expansion;
 - c. And other crucial Electrical Auxiliary details.
5. Detailed Mechanical Plans, including
- a. Engineering Mechanical Building Utilities, Fire Suppression Systems and Ventilation/Air Changing or Air Cleaning Systems, including, but not limited to the following:
 - b. Mechanical plans and details of all facilities and amenities, with due consideration for future expansion;
 - c. Mechanical plans and details of the Server Rooms
 - d. other crucial Mechanical details.
- (e) Prepare and submit the Technical Specifications per Trade stating the Scope of Work and describing the type and quality of materials, manner of construction and the general conditions under which the Project is to be implemented;
 - (f) Prepare and submit the Bill of Quantities and Detailed Cost Estimates (Levels 1 to 5) for the whole project using the template/format to be provided by the University. A second set of Bill of Quantities and Detailed Cost Estimates shall also be prepared based on the limit of the available Approved Budget for the Contract at the time of construction phase/bidding if this is not similar to the former amount;
 - (g) Prepare and submit Weekly/Monthly report updates of the Programme demonstrating progress to date to UP Mindanao CPDO for review. This will include progress of the design, procurement, construction methodology and meetings attended.
 - (h) Prepare and submit a walk-through presentation of the digital 3D model of the Project including exterior and interior perspectives;
 - (i) Prepare and submit the Proposed Construction Schedule
 - (j) Prepare and submit the Proposed Occupational Health and Safety Program during Construction
 - (k) Prepare and submit the Proposed Construction Methodology
 - (l) Furnish the University the following:
 - (i) One (1) complete set of signed and sealed construction drawings in original tracing paper;
 - (ii) Seven (7) complete sets of signed and sealed blueprint copies with all sheets marked "FOR CONSTRUCTION";
 - (iii) Five (5) sets of Technical Specifications in A4 sheets with all sheets marked "FOR CONSTRUCTION";
 - (iv) Five (5) final sets of Bill of Quantities and Detailed Cost Estimates Detailed Unit Price Analysis (DUPA) in A4 sheets with all sheets marked "FOR CONSTRUCTION";
 - (v) One (1) set of Blank Bid Proposal Form for Contractors
 - (vi) One (1) set (or as required) of signed and sealed Building Permit forms;

- (vii) One (1) set of signed and sealed photocopy of PTR and PRC ID of all Design professionals;
- (viii) One (1) flash drive containing
 - complete set of construction drawings in CAD and PDF formats
 - Technical Specifications in PDF format
 - Bill of Quantities and Detailed Cost Estimates with Detailed Unit Price Analysis (DUPA) both for the whole project and for Construction (if not similar amounts) in Excel and PDF formats
 - Walk-through presentation of the 3D model
- (m) Keep the University informed of any adjustments to previous Project Construction Cost Estimates indicated by changes in scope, requirements or market conditions;
- (n) Conduct a Risk Analysis activity with CPDO to forecast variations in the design; and
- (o) Assists the University in filing required documents to secure approval of government authorities having jurisdiction over the design of the Project.
- (p) Assists the University in preparation of the required tender documents for the Construction Bidding Process.

3.0 DETAILED ARCHITECTURAL DESIGN PLANS AND SPECIFICATIONS

The complete set of detailed architectural drawings/plans and specifications of all the structures/buildings to be submitted shall be signed and sealed by a Registered Licensed Architect (RLA) shall be in accordance with the herein attached checklist of requirements in Annexes B1 to B-3.

The checklist itemizes only the minimum standard drawings to be prepared and submitted. It shall be the responsibility of the Designer to provide detailed architectural drawings/plans and specifications that are as complete and comprehensive as necessary to set forth in detail the work to be executed.

4.0 DETAILED ENGINEERING DESIGN PLANS AND SPECIFICATIONS

The complete set of detailed engineering drawings/plans and specifications shall be signed and sealed by qualified licensed professionals, for each of engineering discipline cited below in accordance with the checklist of minimum requirements in Part VII – Annex C:

- (a) Structural Design - Annex C-4
- (b) Sanitary/Plumbing Design - Annex C-5
- (c) Electrical Design - Annex C-6
- (d) Electrical Auxiliaries Design - Annex C-7
- (e) Mechanical Design - Annex C-8

The checklist itemizes only the minimum standard drawings to be prepared and submitted. It shall be the responsibility of the Designer to provide detailed engineering drawings/plans and specifications that are as complete and comprehensive as necessary to set forth in detail the work to be executed.

5.0 COST ESTIMATE GUIDELINES

5.1 If the available budget for construction is less than the estimated cost of the entire designed project, the Design Consultant shall prepare and submit as part of his deliverables, the Bill of Quantities (BOQ) for **two (2) sets of Detailed Cost Estimates**; one, **based on the detailed cost estimate of the entire designed project** and another, **based on the limit of the available Approved Budget for the Contract at the time of construction phase/ bidding**, following the sequence of priorities below:

(a) Design Phase

The detailed costing for the design phase is for the preparation, submittal and approval of the following:

- (i) Preliminary Surveys/Studies, including:
 1. Preliminary Survey and Mapping
 2. Preliminary Investigations, including, but not limited to:
 - a. Geodetic and Topographic Survey
 - b. Geotechnical Investigation
 - c. Environmental Conditions Investigation
 3. Location and Invert Elevations of Existing Utilities.
- (ii) Architectural and Engineering Design Reports
- (iii) Architectural & Engineering (A&E) Design Development Plans, Elevations and Sections
- (iv) Detailed Architectural Designs and Plans, setting forth in detail the work to be executed and as required for building permit application and construction purposes
- (v) Detailed Architectural Interior Designs and Plans with Sample Boards
- (vi) Detailed Furnishing Plans, indicating casework and base building equipment that shall be Contractor Furnished/Contractor Installed (CFCI)
- (vii) Detailed Site Development Plan/Civil and Landscape Architectural Designs and Plans
- (viii) Detailed Site and Building Engineering Designs and Plans
 2. Detailed Structural Plans
 3. Detailed Plumbing and Sanitary Plans, including Rainwater and Storm Water Retention and Use Plans
 4. Detailed Electrical Plans, including Emergency Power
 5. Detailed Mechanical Plans, including Engineered Mechanical Building Utilities and Ventilation Systems

- i Air-conditioning and Condensing System
 - ii Fire Detection, Alarm and Suppression System
 - 6. Detailed Electrical Auxiliaries Plans
 - a. Data Communication and Networking System
 - b. Security Systems: Closed Circuit Television (CCTV) System, Controlled Access System
 - c. Telephone System
- 5.2 In the preparation of all detailed cost estimates, the Design Consultant shall use the Detailed Unit Price Analysis (in Annex D), Cost Estimate Form and Cost Estimate Guide to be provided by the University as template/format and guide.
- 5.3 The Bill of Quantities (BOQ) submitted during bidding shall be adjusted throughout the Design Phase to reflect the actual materials and quantities according to the degree of detail in the plans.
- 5.4 The Design Consultant shall prepare and submit the Bill of Quantities (BOQ) in the level corresponding to the phase of the design (i.e., Level 1-Summary, Level 2-Schematic Design Phase, Level 3-Design Development Phase, Level 4-Construction Document Phase, Level 5 Detailed Unit Price Analysis).
- 5.5 In the preparation of all detailed cost estimates, the Design Consultant shall be guided by the following guidelines:
 - (a) Direct Construction Cost means the sum of the amounts that the Cost Engineer estimates the Constructor necessarily incurs constructing the Work in strict compliance with the Construction Documents.
 - (b) Materials-market price means the costs of material supplied to the project site by Build Contractor, if such items are fully consumed in the construction of the Work. Cost for used items shall be based on fair market value. If an item is not fully consumed in the construction of the Work, its cost shall be based on actual cost of the item less its fair market salvage value.
 - (c) Rental rates of equipment and hand tools (except those customarily owned by construction workers) supplied to the project site by Build Contractor shall be based on prevailing ACEL rental rates.
 - (d) Indirect cost computations shall be guided by COA guidelines.

- (e) The labor component of the cost estimates shall follow the ranges provided in the ordinance and the latest wage order of the Department of Labor and Employment (DOLE) Region XI.
- 5.6 The Design Consultant Contractor shall draw up a unit price analysis for each of the pay item.

6.0 DESIGN DURATION AND SCHEDULE OF DELIVERY OF SERVICES

- 6.1 The approved period for the Design Phase is **Two Hundred forty (240) calendar days**, starting seven (7) days upon receipt of the Notice to Proceed (NTP) excluding the Design evaluation Period per design phase.
- 6.2 The schedule of submissions and activities will be as follows, starting seven (7) days from the receipt of the Design Consultant of the Notice to Proceed (NTP). The project design period includes reviews by CPDO, end-user (based on the presentations) and the Project Management Team, allotted with a separate deadline.

<u>Activity</u>	<u>Submission Deadline (CD)</u>
(a) Submission of complete Conceptual Design	20 th c.d.
(b) Submission of complete Schematic Documents and Bill of Quantities Level 1 and 2	95 th c.d.
(c) Submission of complete Design Development Documents, Technical Specifications and Design Report, and Bill of Quantities Levels 1 to 3	155 th c.d.
(d) Submission of approved and complete set of signed and sealed Contract Documents: A&E Plans, Technical Specifications, Occupational Health and Safety Program, Construction Methodology and Schedule, Design Report, and Bill of Quantities Levels 1 to 5	240 th c.d.

- 6.3 Submittals for each phase of the Project on the indicated schedules shall first be checked for completeness prior to acceptance. Lacking documents shall be basis for outright imposition of Liquidated Damages on the Design Phase under consideration. The review by CPDO may then proceed.

The Designer is responsible for addressing all design concerns/issues in the Design Review/s issued by CPDO in each Design Phase. All items in the Design Review documents shall be resolved and considered “closed” only upon approval of the submissions. Only then can the Design Consultant proceed to the next phase of the design. Any document found unacceptable shall be

returned for correction subject to imposition of Liquidated Damages after failure to resubmit within the prescribed correction period.

- 6.4 After satisfactory review and approval of the submitted documents for a particular Design Phase, CPDO shall issue a duly Notice to Proceed signifying eligibility to proceed to the next Design Phase.
- 6.5 Prior to commencement of the Design Phase, the Designer may propose an alternative Schedule of Delivery of Design Services as it deems more advantageous or suitable to its operations. Such proposal is subject to the review and approval of the CPDO.
- 6.6 Submittals shall follow the listed requirements under Part 1 of the General Project Information Section 7.1.

7.0 DESIGN BUDGET AND SCHEDULE OF PAYMENTS

- 7.1 The ***budget for the design phase shall be equivalent to the Professional/ Detailed A&E Fee line item***, unless changes are recommended and approved by the University after the Project is awarded. The schedule of payment for the design services will be as follows

<u>Activity</u>	<u>% of Professional/ Detailed A&E Fee</u>
(a) Upon submission of complete and <u>approved</u> Conceptual Design including Preliminary Survey and Mapping, Preliminary Investigations, and Location and Invert Elevations of Existing Utilities, Preliminary Site Development studies, Orientation and including Resolution of Design Review Comments	5%
(b) Upon submission of complete and <u>approved</u> schematic Documents and Bill of Quantities Level 1 and 2, including Resolution of Design Review Comments	25%
(c) Upon submission of complete and <u>approved</u> Design Development Documents, Technical Specifications and Design Report, and Bill of Quantities Levels 1 to 3, including Resolution of Design Review Comments	25%
(d) Upon submission of complete and <u>approved</u> signed and sealed Contract Documents, Technical Specifications and Design Calculations, Occupational Health and Safety Program, Construction Methodology and Schedule, Analysis and Report, to fulfil Building Permit forms and submission requirements, and Bill of	25%

	Quantities Levels 1 to 5 (2 nd set if required), including Resolution of Design Review Comments	
(e)	Upon substantial completion of Construction Phase	<u>20%</u>
	TOTAL	100%

END OF PART IV

Read and accepted as part of the Contract:

Consultant Bidder

PART V PROJECT CONSTRUCTION PHASE, COMPLETION AND ACCEPTANCE

1.0 AS-BUILT PLANS APPROVAL

- 1.1 The Designer shall make himself/herself available for any clarification of his/her design in all aspects during the Construction Phase as necessary in order to keep the integrity of the design and to be able to track the progress of the design implementation and construction progress.
- 1.2 The Designer and his/her allied consultants may be called for in meetings as deemed necessary by the Project Manager and UP CPDO for the purpose of addressing design matters affecting the project and his/her design responsibilities during the Construction Phase.
- 1.3 Prior to the signing and issuance of the Certificate of Acceptance of the Project, the Design Consultant shall review, approve, and sign and seal the “As-built Plans” prepared and submitted by the Contractor.

2.0 DESIGN REVIEW COMMITTEE

- 2.1 The Design Review shall be undertaken by the Design Review Committee which shall ensure that:
 - (a) The “For Construction” contract documents (plans and specifications) are approved by the End User and the University.
 - (b) The approved design shall be implemented as per the designer’s intent;
 - (c) The “As-built Plans” shall be accurate and submitted accordingly prior to the Designer and UP CPDO’s approvals.

3.0 FINAL COMPLETION, ACCEPTANCE AND PAYMENT

- 3.1 The Certificate of Completion shall be issued upon completion of the Final Review Phase with a corresponding release of 80% of the contract amount.
- 3.2 The Certificate of Acceptance of the of the Design project shall be issued when the construction of the Project reaches 95% with the consequent release of the remaining 20% of the contract amount.
- 3.3 After signing by all applicable design professionals of the Consultant on the Building Occupancy Forms and the As-built Plans and Occupancy Permit Forms, the Retention Money shall be released.

END OF PART V

PART VI RESPONSIBILITIES OF THE UNIVERSITY OF THE PHILIPPINES

1.0 BIDDING PHASE (PRE-CONSTRUCTION)

- 1.1 **The Campus Planning and Development Office (CPDO) as the planning, implementing and monitoring arm of the University of all campus development projects, the Designer shall coordinate their activities through the said office.**

It shall assist the bidders, together with the UP Physical Plant Office (PPO), in locating the existing water, electrical, and other utility tapping points, sewer lines, and storm drainage and shall provide locational plans of the utilities, only if available.

1.2 Design Review

A Design Review after every Design Phase shall be conducted by the University after each submission to ensure that the following general conditions are met:

- (a) The Architectural and Engineering (A&E) plans are in accordance with the design parameters and space requirements provided and approved by the End User and the University;
- (b) The A&E plans are detailed, coherent, and comprehensive enough to allow the successful execution of the construction;
- (c) The documents submitted as output of each design stage are complete and verified against the provided checklist.

Document submissions shall be immediately checked for completeness prior to acceptance. Only complete documents shall be accepted. Any lacking document shall be grounds for imposition of Liquidated Damages for the particular Design Phase until such time that such document is submitted.

Minor deficiencies in the submitted documents shall be imposed with a deadline for their completion/submission, after which a demand letter shall be issued with possible imposition of Liquidated Damages for the whole Design Phase in case of failure to comply.

1.3 Design Review Committee

The Design Review Committee shall be composed of the representative/s from the following:

- a. CPDO – the implementing arm of the University and shall coordinate with the Consultant on all activities regarding the Design Project
- b. The Project Management Team – an engineering and design team hired to augment the manpower capability of the CPDO. It shall exercise

- the same functions as regular staff of CPDO in the implementation, monitoring and evaluation of projects
- c. The End User – is the head of the University Department/Unit which is the beneficiary of the project. An authorized representative may be delegated to represent the Head of the Department/Unit during meetings, inspections and reviews of the design. Their approval is necessary prior to the acceptance of the project.
 - d. GAD Consultant.- as a member of the Design Review Team, their role is to ensure that the HGDG guidelines are complied with.

The Team shall meet regularly to monitor the progress of the project particularly during the presentation of each Design Phase output. The head of the University Department/Unit as End User shall sign in the corresponding Design Phase Acceptance Checklist to attest to the completion of each Design Phase and **in the Notice to Proceed as consent to the start of the next design phase.**

2.0 DESIGN PHASE (PRE-CONSTRUCTION)

- 2.1 CPDO and the Design Review Committee shall conduct design review/s of all plans and documents during each Design Phase in order to comply with the Project requirements.
- 2.2 CPDO and the Design Review Committee's review of plans and documents shall be given Seven (7) to Fourteen (14) calendar days, starting from the receipt of the Designer of the written acknowledgement of CPDO or the Design Review Committee that the submitted hard and/or soft copies of the documents are complete, clear, readable and/or not corrupted.
- 2.3 CPDO, through the Design Review Committee, shall notify the Designer of the results/findings of the design review/s. Should the CPDO, Design Review Committee or any other representative of the University notice errors or missing details in the Contract Documents during the review of the Designer's output, the Designer shall comply with the required revisions and additions as required by CPDO.
- 2.4 After the plans and documents have been verified against the checklist as complete, the Design Review Committee shall signify acceptance of the submitted documents on the Design Phase Acceptance Checklist for the approval of the End-User on the Notice to Proceed and as supporting document for corresponding payment of the particular Design Phase. The next Design Phase shall commence upon receipt by the Designer of the Notice to Proceed.

3.0 CONSTRUCTION PHASE

Read and accepted as part of the Contract:

- 3.1 CPDO, the Design Review Committee together with the End-user and the Project Monitoring Committee shall conduct regular site inspection of the construction in coordination with the building contractor and shall inform the Consultant/Design Architect of the possible necessity of their presence during such inspections.
- 3.2 The University shall refer queries or clarification on the design by the Contractor that may affect the design intent and such queries shall be responded/resolved promptly and expeditiously by the Designer.
- 3.3 The University shall inform the Designer on any changes in the design deemed to be poor/ineffective that only becomes evident to the University inspectorate during construction. The Designer shall promptly correct any such defect at the Designer's expense.

4.0 BILLINGS

- 4.1 Any partial billing shall not exceed the allowable percentage set for the accomplished Design Phase based on the schedule specified in Section 7.1 of this Terms of Reference, Part 1, supported by the Notice to Proceed to the next Design Phase.

Upon completion of the Final Review Phase entailing among others submission and acceptance of the Final Detailed Architectural & Engineering Design Plans and Detailed Drawings, CPDO shall issue the Certificate of Completion and recommend the release of 80% of the contract amount which is the maximum allocated for the Design Phase. The remaining 20% shall be released near the end of the Construction Phase.

In addition, progress billings shall only be requested once a month as stipulated in the RIRR of RA 9184 of 2016.

- 4.2 Once the project construction is substantially complete at 95% accomplishment, CPDO may issue the Certificate of Acceptance for the Consultancy project and recommend for the release of the remaining 20% of the contract amount.

5.0 RETENTION MONEY

- 5.1 All progress payments are subject to a retention of ten percent (10%) based on the total amount due to the Consultant prior to any deduction.
- 5.2 The Retention Money may be released one (1) month after the issuance of the Certificate of Acceptance and signing by appropriate Design professionals of

the Consultant on the As-built Plans and Occupancy Permit and upon submission of a Guarantee Bond callable on demand equivalent to 10% of the total project cost.

END OF PART VI

Read and accepted as part of the Contract:

Consultant Bidder