

## **PART II DETAILED PROJECT REFERENCE**

### **1.0 ELIGIBILITY AND QUALIFICATION PROCESS**

- 1.1 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 thru Bid Bulletin by UPLB. The eligibility requirements and qualification process shall be in accordance with the provisions of Annex "G" of the IRR of RA 9184.
- (a) The eligibility requirements shall be in accordance with the provisions of Section 24.1 and Section 23.1 of the IRR of RA 9184 for the design phase and construction phase, respectively.
  - (b) The eligibility criteria shall be in accordance with the Section 24.3 and Section 23.5.2 of the IRR of RA 9184 for the design phase and construction phase, respectively.

### **2.0 PROJECT COMPONENTS**

- 2.1 The project shall have the following basic components:
- (a) During the Bidding Phase: Preliminary conceptual plans covering schematic architectural and engineering designs for the **CERF Building** and overall conceptual site development designs, shall comprise the initial outputs required during the Bidding Phase.
  - (b) During the Design Phase:
    - 1. The Design Development (DD) and the Contract Documents (CD) phases of the design shall continue after the bid is awarded. All plans, designs and specifications shall be subject to review and approval by the University.
    - 2. The complete Detailed Architectural and Engineering (A&E) Plans and Designs for CERF, including the Fence Layout, Site and Landscape Development, and the CERF Building Construction Drawings, technical specifications and building permit documents.
  - (c) Construction of the CERF Building and its peripheral site development, perimeter fence and lighting, site utilities, and ancillary facilities:
    - 1. Headhouse laboratories, an interconnecting hall, full-fit, complete with all elements that allow the rooms to be occupied, ready for operation, including ALL finishes, fittings and mechanical and electrical distributions, laboratory casework, air-conditioning, supply and exhaust air systems, fire alarm and automatic fire sprinkler system, and telecommunications cabling.
    - 2. Greenhouse including the greenhouse structures attached to the headhouses, steel frame, exterior envelope of CHB wall and fiberglass panels, interior greenhouse partitions, concrete slab on fill, basic utilities such as water and power supply, and greenhouse ventilation,

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- sprinkler irrigation lines. The design should be able to accommodate future improvements to control indoor environment e.g. light intensity, temperature and humidity.
3. Shed structure for the Reverse Osmosis system, concrete slab on fill, interlink fence wall and roof, water and power supply.
  4. Transformer pad and Main Distribution Panel shelter
  5. Perimeter fence constructed of CHB and interlink wire fence with gates and perimeter site lighting
  6. Interior roads inclusive of Concrete paved roads and parking with curb, gutter and sidewalks and gravel road with curb and gutter within the open field area
  7. Site development including site grading, site drainage system, fire water cistern and septic vault, water supply and distribution system, and electrical feeder and distribution system.
- (d) Supply, installation and commissioning of the following special equipment installations:
1. Walk-in Plant Growth Chambers, including all system components, controls, utilities access, complete per specifications
  2. Reverse Osmosis system including water storage and pressurized distribution system
  3. Carbon Dioxide (CO<sub>2</sub>) manifolded distribution system and CO<sub>2</sub> tank storage room
  4. Drip Irrigation System for the greenhouse irrigation
  5. Pad mounted power transformer
  6. Elevated water tank
- (e) Aside from the A&E professional design fees, other incidental expenses to the account of the winning bidder shall include other geologic and geomorphologic tests deemed necessary by the winning bidder, and other design and construction requirements.

## 2.2. Coverage of Procurement

This procurement covers infrastructure projects inclusive of the following:

- a. Design and Construction of Buildings and Structures:
  - Headhouse structure, interior finishes complete
  - Roads and perimeter fence
  - Domestic and RO water distribution system
  - RO equipment shed
  - Sanitary and drainage fixtures, including emergency eyewash and shower
  - Sewage collection and septic tank

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- Storm water collection and recovery system, including canals, culverts and concrete drain pipes
  - Impounding concrete cisterns for recovered water (for use in field irrigation)
  - Normal power and lighting distribution and interrupt system
  - Site & perimeter lighting
  - Feeder line installation incl. pad mounted transformers
  - Shelter for transformer and main power distribution panel
  - Telephone System
  - Access to UPLB Fiber-optic system, interior local area data distribution lines
  - Ducted supply and exhaust air system
  - Fire alarm system (smoke detectors, manual alarms, automatic fire alarm & control panel)
  - Fire suppression system (includes automatic sprinkler system, fire hose cabinets, wet standpipe)
- b. Supply and Installation of Equipment, Furniture and Fixtures
- Elevated water tank
  - RO water treatment, storage and main distribution lines
  - CO<sub>2</sub> Tanks and manifold distribution system
  - Walk-in plant growth chamber, air handling unit and electronic controls, computers and accessories
  - Air Conditioning Equipment
  - Laboratory Furniture and Fixtures

### **3.0 CONCEPTUAL DESIGNS**

The proponent/bidder shall abide by these criteria and parameters for the Design of the Controlled Environment Research Facility:

#### 3.1 Classification

- (a) Ownership : University of the Philippines Los Baños
- (b) Type : **One Storey Research Facility**

#### 3.2 Main Requirements

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The proponent/bidder shall consider in their proposal the following requirements of Controlled Environment Research Facility: (See **Section DRAWINGS SECTION OF THE PBD**)

**A. SPACE REQUIREMENTS FOR THE PROJECT (for the Building)**

<b>SPACE/ROOM</b>	<b>SUGGESTED FLOOR AREA (sq.m.)</b>	<b>Furniture and Fixtures</b>	<b>Equipment</b>	<b>Critical Design Considerations</b>
<b>BUILDING 1 (WEST WING)</b>				
<b>HEADHOUSE</b>				
VESTIBULE	15.50	Fire Extinguisher, Robe and Shoe Rack	Automatic Disinfectant Dispenser	
PLANT GROWTH ROOM	68.00	Carts, Fire Extinguisher, Emergency Eyewash and Shower, Stainless steel work table and deep sink	Plant growth chambers	Provide all utility connections per Plant Growth chamber requirements: CO2 supply, RO water supply, LAN connection, Condensate drainage, Water drains to trench, ducted air supply and exhaust systems. 24-hour air handling; 24-hr uninterrupted power supply. Standard features for clean room design. Provide access doors and corridor to growth chamber utilities and air handling unit. Adapt room design per requirements of Plant growth chambers.
OFFICE	14.00	Chair, cabinets, trash bins (coded)	Computer workstations, wi-fi access, wired LAN access	Should be visible from building entrance, and vice versa.
DATA / CONTROL ROOM - Controls the plant growth chambers and other equipment	14.00	Computer table, Chairs	Computer workstations, wi-fi access, wired LAN access, Server	Growth chambers should be visible from this room
CO2 TANK ROOM - Storage room for CO2 tanks, with a manifolded CO2 distribution system	5.00	4-tank wall mounted gas cylinder bracket; Simplex Gas Manifold, 4-cylinder capacity		Provide vented metal doors
PUMP ROOM - Contains various water supply pumps (fire and greenhouse irrigation)	5.00	Provide floor drain	Fire pump, Booster Pump and Fertigation tank	
SERVER ROOM - Room to contain the data server	5.00	Cable tray	Data / Network Server / Server rack	Provide telecom access as per requirement of ITC (see detail). Provide 24-hour air-conditioning to maintain room temp at 20 deg C
ELECTRICAL ROOM - Room for electrical panels	5.00			
MALE CR - Male hygiene	5.75	Lighted dressing counters with mirrors,	Hand Dryer, Automatic Soap Dispenser, Paper	UPLB Template finishes

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<b>SPACE/ROOM</b>	<b>SUGGESTED FLOOR AREA (sq.m.)</b>	<b><u>Furniture and Fixtures</u></b>	<b><u>Equipment</u></b>	<b><u>Critical Design Considerations</u></b>
facilities		lavatories, water closets, urinals, shower cubicles	Towel Dispenser	
FEMALE CR - Female hygiene facilities	4.00	Lighted dressing counters with mirrors, lavatories, water closets, urinals, shower cubicles	Hand Dryer, Automatic Soap Dispenser, Paper Towel Dispenser	UPLB Template finishes
CORRIDOR	2.75			
<b>GREENHOUSE</b>				
WORK AREA - Work area for greenhouse activities, e.g. preparation of media, etc.	35.00	Deep sink, Work tables	Convection Oven	Provide axial exhaust fans at roof monitor vent.
PARTITION 1 (Module 1&2) - Space for growing plants	65.00	Drip irrigation lines		Provide Axial exhaust fans at roof monitor vent.
PARTITION 2 (Module 3&4) - Space for growing plants	50.00	Drip irrigation lines		Provide Axial exhaust fans at roof monitor vent.
PARTITION 3 (Module 5&6) - Space for growing plants	50.00	Drip irrigation lines		Provide Axial exhaust fans at roof monitor vent.
<b>CERF BUILDING 2 (EAST WING)</b>				
<b>HEADHOUSE</b>				
ANTEROOM	8.00	Emergency eyewash and shower, robe rack, shoe rack		
INNER ANTEROOM	16.00	Emergency Eyewash and shower, robe rack, shoe rack		
PREPARATION ROOM - Where experiments with liquid solutions are performed	20.00	Laboratory work tables, cabinets, tables, chairs, carts, sink, Fire Extinguisher, RO water line	CI-600 Root Imager, Stereo Microscope, CI-800 Programmable, LED Experimentation System, Refrigerator, Analytical balance, Top Loading Balance	
SUPPLIES AND STORAGE ROOM - Storage of laboratory supplies, chemicals. Also accommodates the office of the laboratory custodian	20.00	Chemical storage cabinets, supplies storage racks	Refrigerator, Fumehood ,	
INSTRUMENTATION ROOM - Room for instruments of research works	20.00	Laboratory work tables, cabinets, tables, chairs, carts, Fire Extinguisher, RO	Analytical balance, CN analyzer, Chlorophyll meter, Light meter, Plant canopy analyzer, CO2	

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<b>SPACE/ROOM</b>	<b>SUGGESTED FLOOR AREA (sq.m.)</b>	<b><u>Furniture and Fixtures</u></b>	<b><u>Equipment</u></b>	<b><u>Critical Design Considerations</u></b>
		water line	analyzer	
SOIL PHYSIOLOGY LAB - Soil test room	22.50	Laboratory work tables, cabinets, tables, chairs, carts, sink, Fire Extinguisher, RO water line	Fumehood, Analytical balance, Soil moisture meter, convection oven	
PLANT PATHOLOGY LAB	21.25	Laboratory work tables, cabinets, tables, chairs, carts, sink, Fire Extinguisher, RO water line	Laminar Flow, Electric Stove, Refrigerator, Analytical balance, Top Loading Balance	
ENTOMOLOGY LAB	21.25	Laboratory work tables, cabinets, tables, chairs, carts, sink, Fire Extinguisher, RO water line	Data Logger, StereoMicroscope, Refrigerator, Analytical balance, Top Loading Balance	
<b>GREENHOUSE</b>				
WORK AREA - Work area for greenhouse activities, e.g. preparation of media, etc.	35.00	Deep sink, Work tables	Convection Oven	Provide Axial exhaust fans at roof monitor vent.
PARTITION 1 (Module 1&2) - Space for growing plants	65.00	Drip irrigation lines		Provide Axial exhaust fans at roof monitor vent.
PARTITION 2 (Module 3&4) - Space for growing plants	50.00	Drip irrigation lines		Provide Axial exhaust fans at roof monitor vent.
PARTITION 3 (Module 5&6) - Space for growing plants	50.00	Drip irrigation lines		Provide Axial exhaust fans at roof monitor vent.
INTERCONNECTING HALL / RECEIVING LOBBY	40.00	Lounge chairs		
MEETING ROOM	16.00	Conference table with chairs, Pantry cabinet console	Computer, LED TV, Wifi Router, coffee maker, refrigerator, water dispenser, microwave oven	
<b>RO WATER SHED</b>				
SHED	18		Pressure tank and booster pump, RO water filters	Provide drain trench in perimeter to homerun to site drainage system.

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*Note: Computations of room area requirements will be performed by the Consultant engaged for the Pre-Design services but not less than the area of refurbished materials (excluding future development).*

**B. BUILDING AND SITE UTILITIES**

Building and site utilities to be allocated include the following

<b>BUILDING &amp; SITE UTILITIES</b>	
Water Supply Storage & Distribution System	Elevated Water Tank, water pressure booster system, Cold water line distribution, Field Irrigation water system
Reverse Osmosis treatment system	RO treatment system, Water pressure booster system, pressure tank
Drip irrigation system	Filtration system, fertigation system, water distribution pipes and nozzles
Storm and Site Drainage System	Trench drains, Road curb and gutter, Culvert/ RCP drains, open swales, storm water impounding cistern/s
Sanitary and Wastewater Collection system	Sanitary/sewer lines, septic vault
Fire protection and alarm system	Smoke detection and fire alarm, wet standpipe system consisting of fire hose cabinets, automatic sprinkler system, fire water cistern tank, fire pump, fire water distribution line
Electrical system	Power transformer and feeder line, switchgear & circuit protection & distribution system, future connection to generator with ATS.
Electrical Auxillaries System	Telecommunication Facilities, Paging system, LAN and Wi-Fi System, CCTV/Surveillance
Air handling	Air cooling and conditioning, HEPA filtration, fresh air supply and exhaust system

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## 2.1 Site Development Plan

- (a) Site components shall consist of buildings, driveways, ample parking, green areas and other landscape elements.
- (b) The proponent/bidder shall fit in the above mentioned services (Items 2.1 to 2.5) in the Site Development Plan
- (c) Lot Occupancy, Building Shape and Orientation:
  - (i) To allow for efficient traffic circulation between buildings and to provide adequate ventilation, individual building footprint shall not cover more than 38% of its allocated lot (building to block ratio).
  - (ii) Building shape shall be in accordance with **DRAWINGS SECTION OF THE PBD** or as recommended by drawings provided by the OVCPD.
- (d) Circulation
  - (i) Minimum number of entry points and total width shall follow 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 overall housing development master plan.
  - (iii) The circulation system shall designate emergency routes.

## **4.0 ARCHITECTURAL AND ENGINEERING DESIGN PARAMETERS**

### 3.1 General A&E Design Parameters

- (a) Use of Appropriate Building Design and Technology
  - (i) The architectural character of the building should appropriately project the image of ONE storey building under the National Building Code of the Philippines, and all its services.
  - (ii) Building form shall be adapted to tropical climate conditions and the functional requirements of a residential structure.
  - (iii) Detailed design of interior spaces should accommodate the building program and residential requirements.
  - (iv) Building systems shall adopt energy-efficient and user-friendly technologies. Day lighting shall be interfaced with energy-efficient electric lighting. Passive cooling systems shall be incorporated.
  - (v) Maximum number of stories is ONE (1).
  - (vi) Building envelope, materials and finishes shall be specified in accordance with green building principles. Use of renewable and recyclable materials should be maximized.

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- (b) 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) RA 9514 or Fire Code of the Philippines and its Latest and Amended IRR
  - (iv) Laws concerning senior citizens
  - (v) National Structural Code of the Philippines (NSCP) 2010
  - (vi) National Plumbing Code of the Philippines (NPCP)
  - (vii) Sanitation Code of the Philippines
  - (viii) Mechanical Engineering Code of the Philippines
  - (ix) Philippine Electrical Code
  - (x) National Electrical Code
  
- (c) 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.

### 3.2 General Performance Specifications

Unless otherwise specifically specified by UPLB, the architectural/engineering designs should conform to the specifications set by the University.

#### a. Indoor Environmental Quality (IEQ) Performance Specifications

Indoor Environmental Quality (IEQ)	Space/Area	Specification
<b>LIGHTING</b>		
(i) Illuminance	All areas	300 lux
<b>ACOUSTIC</b>		
(i) Indoor Noise Level	All patient/consultation rooms	Quiet at 35 dB
(ii) Sound Transmission Class (STC) Value of room partitions	All patient/consultation rooms	STC 40-45
<b>THERMAL COMFORT</b>		
(i) Indoor Temperature	All areas	23 - 25°C
(ii) Humidity	All areas	50%
(iii) Air Velocity	All areas	3-15 meters per minute
(iv) Air Changes per Hour	All areas	10 - 20

- b. Adjacencies and Space Inter-relation  
Spatial disposition shall be based on rational zoning that considers related and complementary uses.
  
- c. Spatial/ Boundary Definition

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- (i) There shall be clear definition of common spaces while incorporating concepts that allow multi-functional uses.
  - (ii) Private and public spaces shall be clearly delineated for privacy and security of tenants.
- d. Design Standards
- (i) Have a thorough understanding of the policies of the University of the Philippines.
  - (ii) Be familiar with the campus development of UPLB, as well as the context of the proposed *CONTROLLED ENVIRONMENT RESEARCH FACILITY* 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 academic 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 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) Ideal floor-to-ceiling height shall be 3.00 meters, minimum at 2.70 meters.
  - (xi) Provide and install required signages for proper fire escape and identification of private spaces from public spaces.
  - (xii) Enclosures (fences)/ Lot perimeters
  - (xiii) Provisions for special needs
  - (xiv) Consider views and vistas
  - (xv) Safety (on-site and within the vicinity)
  - (xvi) Security systems
  - (xvii) IT systems (Wi-Fi connectivity, etc.)
- e. Environmental Hazards
- (i) Designs for interior and exterior spaces must incorporate disaster-preparedness features.
- f. 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.

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- g. Integration with the Campus
    - (i) Site development shall seamlessly integrate with the circulation and other service systems, either existing or proposed, of the UPLB Zones.
    - (ii) The project should fit well into the UPLB overall ecological concept.

*END OF PART II*

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