

# **OPERATION & MAINTENANCE OF THE LEBANESE UNIVERSITY CAMPUS- HADATH**



## **VOLUME 1: PARTICULAR CONDITIONS**

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## **1. INTRODUCTION**

The purpose of this document is to provide a comprehensive and global description of the operation and maintenance services that are to be carried out by the Contractor at the Lebanese University Campus. The Contract duration is 12 months renewable (refer to Article 3.3 of the Conditions of Contract in Volume 1)

The description of the Campus, its constituents, equipment and the reference operation and maintenance manuals are provided in Volume 3 of the Contract Documents. The Contractor is advised that those prescriptions, as well as the requirements of the remaining contract documents, form part of his contractual obligations.

## 2. SCOPE OF SERVICES

The scope of services provided at the Lebanese University Campus is broken down into 7 Work Packages in order to efficiently manage the operation and maintenance cycles. A detailed description of the work packages is provided in Section 3.1 of Volume 3 of the Tender documents.

### 2.1. Objective

The main objective is to provide services for the daily management, operation and maintenance for the Lebanese University Campus. The Contractor is expected to apply a sound technical, administrative, financial and economic practices and to perform all duties and tasks to ensure that the best practices are followed and that the operation and maintenance is in all respect equal to or better than the minimum specified at the most economic costs, and execution shall be in full compliance with the specifications.

The services shall include but are not limited to the following:

1. Operate and maintain systems and equipment of the 7 Work Packages listed in the Contract Documents, in accordance with the requirement of these documents and in particular of the technical volume, bearing in mind the exclusions listed in section 2.6.
2. Ensure that domestic cold and hot water, potable water, distilled water, electricity, gas, telephone service, chilled and heating water, compressed air, vacuum are being satisfactorily and safely provided to the various buildings within the site.
3. Establish a manual of procedures to be agreed by the Employer Representative, defining all procedures, methods and aspects of the Work
4. Manage, purchase approved material/control stock in accordance with the requirements of the Contract Documents
5. Supply approved consumables required for the running of the systems handed over to the Contractor (fuel, gas for laboratories, chlorine, etc..)
6. Coordinate as required by the Employer Representative and the Lebanese University Management with the parties in charge of the various concessions within the Campus (catering of main restaurants and individual cafeterias, sport facilities, dormitories, laundry, parking, postal delivery, bus shuttle, etc.)
7. Optimize operational policies from a financial and in coordination with the Employer and the Lebanese University Management on a continuous basis and identify policies or tasks where optimization can be achieved
8. Coordinate with all involved authorities, coordinate and collaborate with Employer Representative, Lebanese University Management, attend meetings, etc.
9. Submit daily, weekly, monthly, yearly reports as required by the Contract Documents.

10. Evaluate the operation and maintenance services provided and implement agreed improvements.
11. Propose recommendations for upgrading the services and utilities managed.

## **2.2. Maintenance**

In addition to general tasks described above, the Contractor shall also perform the following specific maintenance tasks:

1. Comply with terms of contract agreement and contract documents.
2. Develop a detailed computerized tracking maintenance management program. The program shall be approved by the Employer's Representative ahead of utilizing.
3. Carry out all preventive and corrective maintenance requirements as defined in the Contract Technical Documents and Manuals or according to the Operation and Maintenance Manuals, that shall be collected by the Contractor from the concerned manufacturer, vendor, or supplier.
4. Clean, repair and restore (such as painting, welding, minor repairs, corrosion protection, etc.) equipments, systems, services, etc. related to the 7 work packages.
5. Submit regular (quarterly) reports showing the maintenance works executed, along with suggestions for future maintenance tasks, status of equipment, frequency & analysis of trouble-shooting and repetitive damages/defects – take into account the minimum reporting requirements of section 3.4 of this volume
6. Submit emergency report for problems that may occur. The report shall include description of problems encountered, corrective measures planned and cost implication impact.
7. Keep record of all maintained works, recurring problems, etc. using the computer software specified in section 4.2 of this volume.

## **2.3. Operation**

The Contractor shall:

1. Comply with terms of contract agreement and contract documents.
2. Develop a detailed computerized operation management tracking program, incorporating the input of the BMS of the Campus.
3. Coordinate with the Lebanese University management in order to operate the systems, services, etc. described in all work packages as per the management's requirements for each building, including the planned academic time schedules.
4. Keep systems in satisfactory operation so that they perform their designed functions optimally (Perfect attainment of temperatures, air quality and humidity with minimum noise and vibration levels, optimized consumption of power, fuel and water) taking into consideration manufacturer's original data.

5. Monitor and control domestic and potable water quality, in order to fit within the given technical and safety requirements.
6. Control the electro-mechanical equipment described in Volume III of the Contract Documents, via the Building Management System by keeping the key parameters (equipment, energy management, load shedding, monitoring, etc.) effective.
7. Provide regular reports (quarterly) showing the consumption of main consumables described in O&M manuals (such as chemicals, water, fuel, gas, energy management, load shedding, monitoring, etc.).
8. Operate systems within the zones assigned to the Contractor, taking into account the energy saving measures (see section 2.4) as for and non-restricted to the following:
  - Planning and updating the schedules for operation of systems according to the results of the reports mentioned above.
  - Other energy saving measures as for fuel, power, gas, and water consumptions, should be taken into consideration for efficient operation.
9. Coordinate with the local Authorities and perform all related administrative tasks/procedures when required.

## **2.4. Cost optimization measures and Energy Saving Measures**

The Contractor shall implement the below mentioned indicative cost-reduction and energy saving measures relating to the operation and maintenance activities:

### **2.4.1. Cost reduction measures**

1. Work orders control,
2. Preventive maintenance scheduling,
3. Time reporting methods,
4. Improve manpower control,
5. Improve material control,
6. Utilize time records for control,
7. Schedule the lighting program on shift duties by using minimum lighting in the evening, night and on weekends and holidays.
8. Switch off systems/equipment not in use and cycle electrical load to limit overall demand.

Etc.

### **2.4.2. Energy saving**

The Contractor shall perform the following operations related to energy saving measures, in complement to the related tasks listed elsewhere in the Contract Documents:

- Optimize the scheduling the operation of HVAC system in coordination with the Employer's Representative

- Scheduling of the lighting program on shift duties by using minimum lighting in the evening, night and on weekends
- Scheduling the operation of lifts by using limited number of lifts after business hours, weekend and on holidays
- Program the BMS to allow the use of outside cool air (free cooling) to cool rooms whenever air temperature allows that
- Switching-off systems and/or equipment not in use and cycle electrical load to limit the overall demand
- Other energy, fuel and water saving measures to be recommended by the contractor(s) for the efficient operation, maintenance and repairs of Electro – Mechanical equipments.

## **2.5. Services where Operation is Required**

### **2.5.1. Civil Works**

Upon request of the Employer or Employer Representative, the Contractor should undertake civil works, such as but not limited to concrete works, demolition, masonry works, plaster, waterproofing painting, etc. Prior to the commencement of works on any such assignment, and within two weeks from receiving the request, the Contractor shall submit at least 3 competitive offers from different contractors if the anticipated cost exceeds US \$5,000 and shall assist in negotiations and contractor selection. Payment for these works shall be made on a cost plus basis along the lines of clause 11.11 of the Conditions of Contract.

### **2.5.2. Plantations & Irrigation**

The Contractor shall be responsible for operating and ensuring a continuing maintenance programme for all plantations through at least the following:

- Pulverizing preventive formulas comprising pesticide, insecticide, etc.,
- Spreading of chemical and organic fertilizers,
- Trimming, mowing and reshaping,



- Ground aeration,
- Root treatment,
- Watering,
- All other maintenance operations required to keep plantations in a living/blooming condition,
- All other requirements indicated in Work Package 6 of Volume III of the Contract Documents

The above requirements are complementary to those listed in Volume III of the Contract Documents.

The Contractor shall procure, plant and maintain additional plantation, if required by the Employer or the Employer Representative. The Contractor shall provide all necessary equipments for this purpose and shall submit offers to the approval of the Employer or the Employer Representative for performing this service prior to execution. Payment for these additional plantation works shall be made on a cost plus basis along the lines of clause 11.11 of the Conditions of Contract.

### **2.5.۴. Sports Complex**

The Contractor shall be responsible for operating the technical equipment included within the Sports Complex, including those related to the swimming pools, lighting of the playing fields, irrigation of the football field and other systems listed in the Tender Documents for this work parcel.

The Contractor shall not be responsible for the operational aspects related to managing the use by students (or other users) of the Sports Complex, i.e. bookings, ticketing, subscriptions, life-guarding of the pools, towels distribution

or cleaning) nor for the provision of staff in relation to management of the Complex. The Contractor shall, however, be responsible for providing security and cleaning services within the Complex similar to those in other work parcels.

## **2.6. Particular Services not required**

### **2.6.1. Conference Centre**

The Contractor shall be charge of the following operation activities within the Conference Centre:

- **Operation & maintenances of all equipment and systems**

### **2.6.2. Parking Areas**

The Contractor shall not be responsible for the management of the underground or surface car parking areas within the campus, except for the operation & maintenance works described in the volumes of the Contract Documents.

### **2.6.3. Dormitories**

The Contractor shall be responsible for the management of the dormitories, except for the other operation, maintenance works in accordance with the technical volume (Volume III of the Contract Documents).

### **2.6.4. Laundry, Kitchen, Restaurants, Main Cafeterias & Cafeterias within faculties**

The Contractor shall not be responsible for the management and cleaning, but for the maintenance of laundry equipment, kitchen, restaurants, cafeterias and for the other operation & maintenance works as per the technical volume of the contract document, of the following:

- Laundry in Building T.
- Cafeteria of Dormitories.
- Cafeterias in faculties,
- Central Catering in Building X,
- Restaurant in building U2.
- Cafeteria of the Faculty of Sciences.

### **2.6.5. First-aid Service**

The Contractor shall not be responsible for the maintenance or operation of medical first aid services throughout the Campus.

### **3. KEY ORGANIZATIONAL SUBMITTALS**

In elaboration of the requirements expressed elsewhere in the Contract Documents, the following organizational submittals will be required by the Contractor in the course of performing the works. The documents submitted should be kept constantly updated and reviewed by the Contractor.

#### **3.1. Procedure manual**

The Contractor shall prepare and submit a procedures manual reflecting a regular, reactive and preventive maintenance and operational approach, which translates the requirements of the Contract into practical, regular steps to be implemented by the Contractor in relation to the 7 Work Packages of the project.

Procedures Manuals shall:

- Be approved by the Employer Representative upon submission.
- Be updated periodically by the Contractor during Contract period (as per Employer Representative instruction).

Define categories of events requiring emergency response for the Contractor and the acceptance time to response for each type of event.

#### **3.2. Schedule of Works**

The Contractor is required to develop maintenance and operation time schedule for works. Level of details (daily, weekly and monthly) included should be sufficient to allow for monitoring the works. Implementation of the schedule of works is expected following the Client-representative approval.

#### **3.3. Staff Organization**

The Contractor is required to provide a detailed organization chart describing scope of works of all the staff involved. The Contractor will provide a primary representative to coordinate all matters pertaining to the Contract. In the event that the Contractor's primary liaison is not available for any reason, a secondary contact will be provided as well. The Contractor will provide the name, telephone number, fax number, email address, business cell phone number, emergency telephone number and normal working hours of their primary and secondary liaisons to the University.

The Contractor shall submit on daily basis attendance sheet for all staff.

#### **3.4. Reporting**

The Contractor shall submit all necessary reports requested by the Employer or Employer Representative, including but not limited to the following daily reports, weekly reports, monthly report, emergency reports and quarterly reports addressing the following:

	Daily	Weekly	Monthly	Quarterly
Major problems encountered (such as failure of equipments, etc.)	x		x	
Status of schedule of maintenance		x		
Number and classification of staff employed		x		
Number and classification of idle equipment		x		
Number and classification of operational equipment		x		
<i>Lists of:</i>				
- Material/equipment/consumables purchased		x		
- Material/equipment/consumables installed		x		
- Material/equipment inventory		x		
- Spare part Material/equipment available		x		
- Summary of monthly expenditures				
- Copies of all signed subcontractor/supplier invoices		x		
<i>Financial information</i>				
- Costs incurred		x		
- Budget estimate of maintenance			x	x
- Budget estimate of operation			x	x
- Budget status in relation to the overall budget				x
Overall summary of activities undertaken			x	
Recommendations for the operation optimization			x	
Recommendations for upgrading efficiently the services and utilities managed			x	
Copies of important correspondences and minutes of meeting			x	

## 4. CONDITIONS OF PERFORMANCE

### 4.1. Site office

The Contractor will be provided with 2 types of site office to fulfill his obligations:

- Main central site office in building T divided into 3 parts (see attached A3 plans):
  - o Basement: approximately 650 m<sup>2</sup> office
  - o Ground floor: approximately 1020 m<sup>2</sup> office
  - o First floor: approximately 450 m<sup>2</sup> office

(some of these offices are already used to store the Operation & Maintenance Manuals, the as-built drawings and the spare parts made available by the Employer)
- Secondary site offices in each building of the Campus will consist of individual rooms or storage areas, of average size around 18m<sup>2</sup> in each building, and will be identified to the Contractor by the Employer Representative.

Office furniture and equipment are to be included in the Contractor's overheads. It is the responsibility of the Contractor to ensure the maintenance of the office, the furniture and the equipment and to supply all consumable required.

If the Contractor requires additional space beyond those described above, he should provide them at his own expense.

### 4.2. Computerized operation & maintenance management software

The Contractor is required to purchase, install and operate an industry-standard computerized maintenance management software (CMMS), integrating asset management and maintenance management automation. The program shall be approved by the Employer's Representative ahead of utilizing, where Proteus V is advised to be installed as a succession of the existing data base.

The Contractor shall assign staff to ensure that the maintenance management of the Campus is based on the CMMS; this staff shall receive the comprehensive training offered by the supplier of the software, and shall be responsible for managing the CMMS's application for the Campus.

The selected CMMS should allow the following:

- Labour management (tracking, allocation, costing)
- Asset management (list, type, code, location, details, costing, etc..)
- Work management (work orders, planning, recording downtime, compare planned versus actual)
- Preventive maintenance (meters to trigger PM requests on the basis of pre-defined conditions, tracking) and unplanned / reactive maintenance

- Materials management (store rooms, multiple manufacturers tracking, vendors, inventory, link to work orders, re-order triggers)
- Purchasing management

The integration of the above aims to help increase efficiency by providing management solutions, reduce costs when properly employing the proper software.

The Contactor should always upgrade the system to meet up to date requirements.

The Contractor shall investigate with the supplier the possibility of integrating the CMMS with the Campus's building management software, and shall do so if found feasible.

The Contractor is required to install a copy of the software within the Employer Representative's offices and will connect this copy to the main server within the Contractor's offices so that the Employer Representative is able to access, query and analyze in real time the database of information managed by the software

### **4.3. Material Purchase**

The Contractor should incorporate into the above management software a module for tracking, signaling and recording equipment and spare parts inventory in order to effectively monitor/control inflow and outflow of material/equipment purchased. The system should keep track of stocked items and warranted/guaranteed items.

Installed items are to be new, having the same specification as the ones installed earlier unless otherwise specified by the Employer Representative. All work shall be performed in accordance with the manufacturer's recommendations as stipulated in the original equipment operation and maintenance manuals to suit the specific operational needs of the campus.

Products are to be handled and fixed with care to ensure they are not damaged when incorporated in the works. Selection of products shall be in accordance with Specification documents.

### **4.4. Consumables**

The Contractor should be responsible for providing all consumables required to perform the scope of services, such as but not limited to the following:

- Bulbs/fuses/accessories
- Chemicals for Chiller and Boiler systems.
- Chemicals for the Reverse Osmosis (R/O) system
- Fire extinguishers refilling,
- Generators consumables (oil and filters),
- Chlorine and/or Chlore for domestic water
- Chlorine and/or chlore and other consumables for the swimming pools
- Fertilizers and other consumables related to the maintenance of the planted areas and of the sports fields

- Other items required for the operation and maintenance of the electro-mechanical equipment of the Campus.

Items required by students and staff in the course of using the Campus, such as (but not limited to) soap, toilet paper, hand towels, consumables in the cafeteria, office supplies, computer supplies, kitchen accessories, laboratories educational supplies, and other items indicated by the Employer shall not form part of the consumables which the Contractor is required to provide under the Contract.

#### **4.5. Spare Parts**

Equipment and materials supplied for this project shall conform to the standards and/or requirements issued by the following organization and in same order of references listed below:

- International Electro-technical Commission (IEC) or as strictly specified under the particular clauses of the specifications.
- VDE, DIN, BS, NEC or other internationally reputable standards where not in contradiction with the IEC.
- National Plumbing Code
- American Society of HVAC (ASHRAE)

#### **4.6. Response Time**

The response time between the time at which a fault is reported and the time at which on-the-ground remedial measures have started taking place shall not exceed one hour for any critical failure (i.e. one that affects the performance of academic task or one affecting safety), two hours for urgent failures (i.e. one that adversely affects administrative or research activity) and twelve hours for other cases.

#### **4.7. Monitoring and Controlling**

The Client or his representative shall manage the Contractor and shall conduct periodic inspections and post occupancy evaluation in order to:

- Ensure that the project is meeting the needs of the users.
- Control the effective and efficient performance of the Contractor.

#### **4.8. Staff Qualification**

The Contractor should employ at a minimum the number of staff listed in Volume I of the Contract Documents in addition to the technical staff, labor, security personnel, foremen required to operate the facilities management, the control software, the stores, inventories, accounts and to provide the management of routine activities and of service emergencies for all aspects of the maintenance and operation works listed in the Contract Documents.

The Contractor shall employ qualified personal of diverse staff as may be necessary to fulfill his contract requirements. The Contractor's workforce i.e. Engineers, individuals, technicians and foreman, etc, should be fully experienced in their respective fields and used to the highest class of contracting works at an international level of proficiency.

The Employer's Representative shall approve all key staff members ahead of recruiting the staff members and shall have the authority to request details concerning any staff member, and to require the removal of any staff member who is deemed by the Employer Representative as unsuitable for the works.

The Contractor shall carry-out briefing and on-the-job training of his designated personnel in the operation and maintenance of every part device and piece of equipment in the system with special emphasis on proper start-up and shut-down procedures, preventive maintenance and lubrication procedures with recommended lubricants, overhaul and maintenance methods, adjustments and calibration of instruments and controls and use of special tools, as well as in the various operation tasks required of them. The Contractor shall regularly motivate, train and educate his staff.

The Contractor should make the necessary arrangements with his staff and sub-contractors to respond to emergencies on 24-hours 7-days basis and be available in shifts.

The Contractor should provide alternate coverage for the regular staff during vacations, sickness and holidays at no additional cost.

The Contractor is required to ensure the following in relation to his staff:

- All are registered in the National Social Security office
- All comply with the applicable Lebanese labor laws
- All staff members are expected to wear nametags
- Key staff carry pagers and/or cellular phone at all times

The Contractor, at its sole expense, shall supply all uniform and safety shoes for its personnel (other than the supervisor) in such material, design and color as the Employer Representative approves and in quantities sufficient to discharge its obligations under the contract. The Contractor shall be responsible for the maintenance of the said uniforms in a neat and clean condition at all times. All personnel of the contractor shall wear uniforms, while on duty, with the exception of supervisory personnel. Other categories of personnel shall wear uniforms as requested by the Employer Representative.

The Contractor shall control attendance of all its personnel and shall be responsible for the transportation of his staff to and from the building.

#### **4.9. Subcontractors/Suppliers**

**Sub-contractors:** The Contractor shall provide evidence to the Employer Representative of the sub-contractors' capability and adequacy of resources to carry out the Contract and shall present qualifications and experience of key personnel proposed for administration and execution of the Works. The Contractor shall enter a statement of similar works previously executed by the proposed subcontractors, including description, location and value of work, year completed, and name and address of client. Notwithstanding such information, the Contractor, if awarded the Contract, shall remain entirely and solely responsible for the satisfactory completion of the Works.



**Suppliers/manufacturers:** The Contractor shall indicate the names of suppliers/manufacturers of major items that he proposes to incorporate in the Works. Submission of details of goods and materials for approval, as required by the Contract, shall be required from the Contractor and submitted for the Employer Representative approval.

The Contractor and his subcontractors should take advantage of the available spare parts in addition to the granted warranties and guarantees; in cases of non-compliance, deductions would be exercised on payment certificates.

**Sensitive equipment/systems** require the involvement of the original supplier/installer during the maintenance and operation phases, this relates particularly to the building management system, lifts, chillers, generators among others (a full list will be issued by the Employer Representative at Contract Effectiveness). The Contractor shall be required to work with these suppliers/installers for the trades which are identified.

#### **4.10. Equipment**

The Contractor shall identify numbers and classes of equipment to be used for works.

The Contractor shall mobilize all necessary equipment (computers, beepers, paging system, tools, drills, cranes, electric/manual equipment (cleaning, gardening, etc.), etc. to fulfill his obligations.

#### **4.11. Documentation**

The Contractor shall:

- Record and keep clean and clear documents, history card and log books for all operation and maintenance activities performed on systems, equipment and their components.
- Run a computerized management system for all documents and appropriate information issued for the purpose of the works. This software should be compatible with the computerized maintenance management software. These documentations are to be submitted regularly to the Employer Representative, along with regular copy of all updates.

#### **4.12. General conditions**

1. The Contractor shall visit the site to get him fully acquainted and be familiarized with the physical layout of all building facilities and shall be responsible for operation, maintenance and repair of all systems, equipment and other related facilities as broadly outlined.
2. The Contractor, when he finishes any repair order, shall be responsible to return area worked into its original state concerning finishing, workability etc. without any additional cost.
3. The Contractor shall conduct continuous and spot checks, other than preventive maintenance inspections, on equipment and facilities condition and performance.
4. The Contractor shall exercise all reasonable skills, care and diligence in the discharge of the duties to be performed by him. Insurance against

accident and injury to workmen and social security shall be at the cost and responsibility of the Contractor.

5. If the Employer Representative finds that certain system and/or facilities covered by the scope of work has to be modified and/or upgraded according to the recommendation of the manufacturer/supplier or the Contractor, the Contractor shall provide any additional equipment or spare parts and the Contractor shall carry out installation, testing and commissioning procedures as approved by the Employer .
6. The Employer Representative may require the Contractor to undertake services additional to the scope of work. Such additional services may include the operation, maintenance and repairs of additional systems or areas. Such additional services shall not be undertaken unless the Contractor has received a variation order signed by the Employer and the price, in respect thereof, has been agreed to. The Contractor, to this effect, shall not engage his regular staff for operation and maintenance of these additional services.
7. The Contractor shall be responsible to provide, maintain and replace whenever their condition requires, all test equipment and tools necessary to carry out the operation, maintenance and repairs of all electrical, mechanical, electronic and plumbing and other related facilities and services in the building.
8. All Electro – Mechanical works shall be carried out in accordance with the following specifications and regulations or the latest issues of codes of practice and standards.
  - Regulations for Electrical Installations (IEE wiring regulations, 26<sup>th</sup> edition) issued by the Institute of Electrical Engineers, UK, where not in contradiction with the local codes of practice and Regulations here in-after referred to as Regulations.
  - Conditions and practices enforced by the local Electricity Authority (EDL) for the supply of power.
  - Fire-fighting protection code (NFPA – 13<sup>th</sup> edition) (ANSI-c5)
  - National Plumbing Code
  - American Society of HVAC (ASHRAE)

#### **4.13. Failure to comply**

Failure to comply with any of the above conditions of performance shall constitute justified ground for financial deductions from the payments due to the Contractor for the period under question.

#### **4.14. Conditions at Handing Over**

The Contractor shall ensure at completion of the contractual period that the following is achieved:

- A full set of records concerning all the maintenance and operations activities performed by the Contractor are archived, classified and handing over to the Employer Representative.
- All buildings and equipment are handed over in a satisfactory and working condition.
- The site facilities occupied by the Contractor are handed back in a condition similar to that in which they were handed over at the start of the contract period.
- Ownership of the Employer's Representative site facilities is transferred to the Employer.
- Ownership of all software bought or developed for the use of the Works is transferred to the Employer.

The cost of ensuring the above shall be deemed to be included in the contract price.

## **ATTACHMENT 1**

Location of Offices Made Available in Building T for the  
Contractor (3 A3)