

SECTION 5A-Subsection 4: General Requirements for the Execution and Completion of the Works

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4 General Requirements for the Execution and Completion of the Works

4.1 Introduction

The present section includes the general requirements for the execution and completion of the works supplementing the descriptions in the UNDP General Conditions of Contract for Works Contract.

4.2 Implementing Partner and Final Beneficiary

The Contractor shall establish coordination with implementing partner of the project, namely **ILLER BANK** and final beneficiary, namely Metropolitan Municipality of Gaziantep. If deemed necessary by Employer, the representatives of implementing partner and final beneficiary may participate meetings, tests on completion, acceptance and inspection of materials and equipment etc.

The representatives of the implementing partner and final beneficiary have right to access to site to monitor the progress of work, compliancy of the work to the requirements of the contract. The Contractor shall ensure their access to site at any time requested by them. However, they have no legal power in terms of contract terms and conditions.

4.3 Contractor's Equipment

The Contractor shall have equipment and machinery listed in the below table available on the site during the construction of the works as per the requirements of the programme of work

Key Equipment	Min Specifications	Min number of quantity
Crane	Min. 50 tons lifting capacity	1
Excavator	Min. 20 Tonne	1
Backhoe Excavator / Loader	Min. (0,3 to 1,0 m3)	2
Grader	Min. 213hp (159 kW)	1
Water tanker	15-20 tones	1
Wheel Loader	Min 2 m ³ bucket capacity	1
Mechanical Hand Compactors	Double Drum Roller / Plate / Rammer Type	2
Compressor	Min. air discharge:150 cfm	1
Concrete pumps or concrete trucks with conveyor band	-	1 pumps or 2 trucks
Dewatering System	WellPoint system or Submersible pumps	1set and / or 2 pumps

The plant will be efficient and appropriate to secure a satisfactory quality of work and a rate of progress, which will insure the completion of the works within the time stipulated in the Tender. If at any time such equipment appears to be inefficient, inappropriate, or insufficient for securing the quality of work required or for the rate of progress, the Engineer may order the Contractor to increase the efficiency, change the character or hire additional equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the works and rate of progress required.

4.4 Contractor's Personnel

The Contractor shall submit the names and details of the experience, qualifications and previous appointments for the supervisory staff including those of the Subcontractors who will be employed on the site with his bid. While allocation of mechanical and electrical engineers is to be in accordance with the Programme of Works and where necessary, the rest of the personnel shall be on site permanently after the approval by the Engineer.

Project Manager/Construction Manager: English speaking, minimum 10 years' experience in construction of electrical & mechanical plants and degree in civil engineering or architecture.

Site Works Manager: English speaking, minimum 5 years' experience in construction of any kind of structure and degree in civil engineering or architecture.

Electrical Engineer: Minimum 3 years' experience in construction of electrical & mechanical plants, and degree in electrical engineering.

Mechanical Engineer: Minimum 3 years' experience in construction of mechanical biological treatment plant and degree in mechanical engineering.

Process Engineer: Minimum 3 years' experience in construction/design of mechanical biological treatment plant and degree in mechanical engineering or environmental engineering, and demonstrated experience in mechanical biological waste treatment processes

QA/QC Engineer: English speaking, minimum 3 years' experience in construction of any kind of building and relevant degree.

The Contractor has to demonstrate to the Engineer his employee's consent for overtime work. Every month, the Contractor has to demonstrate to the Engineer duration of overtime work of each his employee. Total overtime work shall not be more than two hundred seventy hours in a year. The Contractor shall submit payment of all his' personnel wages. Otherwise, the contractor cannot be entitled to monthly progress payments.

The main activity shall not be divided and assigned to subcontractors, except for operational and work-related requirements or in jobs requiring expertise for technological reasons.

The contract between the Contractor and the Subcontractor shall be submitted to the engineer before that Subcontractor starts to work.

In the contract execution stage, the Contractor shall present the qualification documents related with the requirement of the related works, which shall be required by the Engineer, from subcontractor for the review and consent of the Engineer.

The Contractor can appoint only the subcontractors that obtained the consent of the Engineer.

Any other appointment will not be considered as subcontractor assignment.

The Engineer may request, with the approval of the Employer, the Contractor to remove (or cause to be removed) any sub-contractor on the Site.

4.5 Safety Procedures

The Contractor shall within 30 days of the commencement date provide safety procedures for all elements of the works.

4.6 Quality Assurance System

4.6.1 General

In order to respond to the contract requirements in an optimal way, a quality assurance system shall be established.

The present section defines the following:

- The commitment of the Employer and Final BeneficiaryFinal Beneficiary, the Engineer, the external controllers and the Contractor towards the quality of the Contract.
- The quality assurance plan to be prepared by the Contractor.

4.6.2 Standards and recommendations

The Contractor shall make sure that the quality control complies with the effective Turkish Standards and take guidance from the following international standards:

ISO 9000	Standards for the quality control and assurance - Guideline for selection and utilisation.
ISO 9001	Quality system - Model for the quality assurance in conception development, production, installation, and after-sales support.
ISO 9002	Quality system - Model for the quality assurance in production and installation.
ISO 9003	Quality system - Model for the quality assurance in controlling and final tests.
ISO 9004	Quality control and element of the quality system - Guidelines.
ISO 8402	Quality management and quality assurance - Vocabulary.

4.6.3 Quality assurance procedure

The compilation of the quality assurance procedure shall start when the Contractor submits the quality assurance plan, not later than thirty (30) days after the notice to commence the works.

The Contractor commits himself to the active participation in making the quality assurance procedures of the different sub-contractors close to and harmonising with one another during the advancement of the design and performance of the works.

It is therefore required of that Contractor participates actively in the elaboration, and in respect of these quality assurance procedures, relying on all his internal competencies in the matter of quality control in the design phase, the implementation phase, understanding that the quality assurance procedure is implemented with the purpose of improving an existing system and not of substituting or doubling it.

The first meeting shall take place not later than 15 working days after the Engineer receives the quality assurance plan from the Contractor.

4.6.4 Preparation of the quality assurance plan

On the basis of the organizational scheme of the quality assurance procedure, the Contractor develops the quality assurance plan for this Contract.

The Contractor has to write all arrangements of the quality assurance to be implemented by its own company, the sub-contractor enterprises and the suppliers in a simple but exhaustive way.

The Contractor will send it to the Employer, the Final Beneficiary, the Engineer and external controllers as well as all contributors.

The Contractor makes the documents up-to-date (list of documents, indication of the revision in course, nature of validation etc) in order to assuring their traceability.

Finally, the Contractor will be responsible for keeping his quality assurance plan up-to-date in accordance with the quality assurance procedure and the events of the Contract.

The quality assurance plan should contain at least the following:

a. The application range of the quality assurance plan

b. Organization and personnel means

The quality assurance plan specifies the general organization of the Contract with the help of the nominative organization charts, which should indicate especially the following:

- The elaboration meetings of the quality assurance procedure;
- The contract progress meetings;
- The organisation of internal and external control;
- It describes the functions, attributions and responsibilities of the personnel on the contract and of the external control responsible; and
- It specifies the maximum percentage of the recourse of the temporary personnel.

c. Design control

The quality assurance plan especially indicates:

- The distribution of tasks among the sub-contractors;
- The nature of documents to be submitted;
- The procedures of identification of critical points and the stopping points of the concept; and
- The procedures for check of design and documentation.

d. Document control - traceability

The quality assurance plan especially indicates:

- The rules for the identification of documents;
- The rules for the circulation of the different documents produced; and
- The methods for the management of documents (distribution, classification, archiving).

e. Purchases

The quality assurance plan especially indicates:

- Lists of suppliers and subcontractors and associated benefits. The Contractor supplies the list of envisaged suppliers and subcontractors as soon as possible;
- The procedures of repercussion of the quality requirements of the Engineer over the suppliers and the subcontractors; and
- The precise procedure of the evaluation of subcontractors.

f. Performance and test control

The quality assurance plan especially indicates:

- The list of documents and procedures written to define the modes of operation, the resources and the sequence of different activities;
- The procedures for the establishment of a list of critical and stopping points of the performance, controls and tests;
- The procedures for the internal delivery of subcontracted tasks;
- The procedures for the control of products delivered;
- The procedures for the controls and tests in course of the performance;

- The procedures for final controls and tests before the reception by the representative of the Engineer; and
- The procedures for the management of controlling documents (distribution, classification, archiving).

g. Control of non-compliance

The quality assurance plan indicates the procedures for identification, evaluation and treatment of detected non-compliance.

h. Protection of the site equipment

The quality assurance plan indicates the procedures for establishing a list of equipment to be protected and descriptions of measures to be applied.

i. Annexes

- Design planning;
- Work planning; and
- Directories of the sub-contractors

4.6.5 Quality audits

The Engineer can at all times audit the quality assurance procedure of the Contractor in the design or construction phase.

The audit is performed with reference to the quality assurance plan of the Contractor and on the basis of the quality assurance procedure.

The auditor establishes an audit report revealing the found gaps or non-compliance not later than three weeks after the performance of the audit.

Within a period of 10 working days counted from the date of the reception of the report, the Contractor indicates in writing the corrective actions he wishes to implement, their planning, and the name of the responsible of the control over these corrective actions.

4.7 Access Route

All access to the site shall take place on the existing site access roads.

No direct payment will be made to the Contractor for constructing temporary roads used for construction operations, or for improving, repairing or maintaining any existing road or structure thereon that may be used by the Contractor for performance of the works. The cost of all temporary roads shall be included in the payments for the other items of work.

The Contractor shall observe all rules and regulations regarding the use of railroads and public roads. The cost of maintaining all necessary safety measures and temporary structures and making any necessary repairs, replacements or similar operations and all or any other costs required

by reason of the use of such roads shall be borne by the Contractor, and the Contractor shall save harmless and indemnify the Employer in respect of all claims, demands, proceedings, damages, costs, charges and expenses whatsoever arising out of or in relation to any such operation or interference.

4.7.1 Signboard

Within 28 days of being given site access to site, the Contractor shall provide, erect and maintain a signboard bearing:

- The Financier's name;
- The Final Beneficiary's name;
- The Employer's name;
- The Engineer's name;
- The Contractor's name;
- The Project name;
- Start and finish dates of the contract and
- Such other information as the Engineer may direct to be inserted upon it according to the visibility guidelines.

The signboard shall be not less than 2.5 m x 2.5 m, lettered in Turkish and English.

The content, size and location shall be approved by the Engineer before erecting the signboard.

The Contractor shall remove the signboard from the site on completion of the works.

4.8 Temporary Works

The Contractor shall build the necessary temporary works to the sites at his own cost.

No direct payment will be made to the Contractor for constructing temporary works used for construction operations, or for improving, repairing or maintaining any existing road or structure thereon that may be used by the Contractor for performance of the works, such as crossing of roads, railways etc. The cost of all temporary works shall be included in the prices of the other items of work. The Contractor will provide its power requirement during the temporary work.

4.9 Protection of the Environment

The contractor shall submit with 30 days of the commencement date a detailed Environment Management Plan to mitigate any damage to the environment which may result from construction activities.

4.9.1 General

In order to address the environmental impacts associated with the construction of the works, the Contractor shall, in parallel with the detailed design for the civil works, submit an environmental management plan (EMP).

The EMP may include, but should not be limited, to the following:

- **Solid waste disposal** of all construction material and disposal sites for excess and waste materials in an environmentally safe manner; the material should be recycled to the extent possible and where this is not possible, it should be disposed of away from the site in a suitable landfill. Burning on site will not be allowed;
- **Liquid waste management** related to potential spills of combustibles and chemicals used during the construction in an environmentally safe manner away from the site in accordance with the national regulations;
- **Minimize equipment impacts** related to the use of heavy machinery in relation to human health and the general environment. This includes minimizing potential damage on the vegetation, noise emissions, dust and accidental spills of combustibles which may lead to the contamination of potable water;
- **Sanitary waste disposal** from all human wastes at the construction camps in an environmentally safe manner (e.g., chemical latrines);
- **Quarries and borrow pits**, the Contractor shall describe from where he will extract the materials and which measures he will take in order to minimize the environmental impact, during and after the construction period.

The Contractor shall meet the requirements of the relevant environmental authorities and obtain the required approvals in this respect.

The Contractor shall borne all the costs of measurements and testing in case of any grievance and request of authorities.

In addition to the above-described measures, protection of the environment related to air, wastewater, waste, noise, vibration and dust shall be controlled as described below.

4.9.2 Air quality

By wetting in excavations, filling, scraping and levelling works during construction, dust emissions will be reduced. The excavation banks formed during the cutting in the area will be compacted and will be wetted along with the entire area. Loading/unloading operations will be carried out paying attention not to produce scattering. The trucks will be subject to speed limitations and during transportation their trailers will be covered. Also, new and well-maintained vehicles will be used to the greatest extent possible. Wind-break plates can be placed and wind-break trees can be planted in the site as additional measures.

4.9.3 Domestic wastewater

The domestic wastewater to be generated at the construction stage will be treated in accordance with the national legislation and discharge accordingly.

4.9.4 Waste

The waste oils and paints to be generated during the civil works will be collected in impermeable containers and delivered to the licensed companies. The fertile vegetable soil will be scraped and stored for reuse later.

In accordance with Article 22 of "Regulation on the Control of Excavation Soil, Construction and Demolition Waste", (Official Journal No. 25406 dated March 18, 2004); "asbestos, paint, fluorescent lighting, mercury, acid and similar hazardous substances that exist in construction/demolition waste shall be collected separately from other types of waste and they shall be removed in accordance with the provisions of the Regulation on the Control of Hazardous Waste".

4.9.5 Noise control during construction

Generally, the Contractor shall ensure that the impact of noise due to construction activities is minimised through the use of good site management, plant maintenance and communications with adjoining property owners. Therefore, the Contractor shall employ the best practical means to minimise noise produced by his operations, including plant maintenance.

All vehicles and mechanical plant used on the works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order for the duration of the works. Machines in intermittent use shall be shut down in the periods between the works or throttled down to a minimum. The Contractor shall remove from the works any item of plant, which, in the opinion of the Engineer, is ineffectively silenced. All compressors shall be "sound reduced" models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use. All ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers. Pumps and mechanical static plant shall be enclosed by acoustic sheds or screens where directed by the Engineer.

Any plant, such as generators and pumps, which is required to work outside the normal working hours shall be surrounded by an acoustic enclosure to the approval of the Engineer which shall restrict the noise level to not less than 5 dB(A) below levels quoted hereunder.

Piling, including temporary piling, shall be carried out by recognised noise reduced systems. Piling should not be carried out before 07:00 or after 20:00 without the written consent of the Engineer.

With reference to the Regulation on "Environmental Noise Evaluation and Management (2002/49/EC)" (7 March 2008, Official Gazette: 26809), the Contractor shall in a distance of 1 km from the site boundaries ensure that the sound level arising from the construction of building does not exceed L_{day} (dBA): 70 and from the road construction L_{day} (dBA): 75. For strokes the noise level shall in a distance of 100 m from the site boundaries not exceed LC_{max} : 100dBC.

4.9.6 Vibration during construction

The Contractor shall take all steps necessary to minimise vibration caused by plant and machinery used on the site. No machine shall be permitted, which uses a system of dropping a heavy weight, whether power assisted or by gravity, for the purpose of breaking up paving or foundations.

Vibrations shall be monitored by vibrometer where instructed by the Engineer. Vibrations associated with mechanical plant shall not exceed 2.5 mm/sec. as peak particle velocity in any perpendicular direction at the property boundary.

4.9.7 Dust emissions during construction

Due to the nature and scope of the works, which will be undertaken on the site, dust from the construction works may be blown by prevailing winds across adjoining lands near the site works. The Contractor shall keep dust emissions to a minimum in accordance with good site management procedures. If dust emissions from the site become a problem the following precautions can be taken on site:

- Wind barriers at soil piles;
- Conveyor belts, trucks and other transporters are closed;
- Materials are covered with plastic covers;
- Compaction with binding material; and
- Upper layer of the land is watered.

The Turkish regulations as published in 25406 Official Gazette, dated 18 March .03.2004, for control of excavation soils, construction and demolition and 19269 Official Gazette, dated 02 November 1986 for air quality regulation and 26236 Official Gazette, dated 22 July 2006 for limit values for industrial air pollution are applicable for the present works.

4.10 Security of the Site

The Contractor shall provide following measures as minimum for security of the site as described below.

- Security guard (watchmen)
- Fencing and barriers
- Outside lightning

The Contractor shall be required to provide watchmen after normal working hours to guard all utilities, plants, equipment, material, etc. delivered on site and to ensure that all signs, lights, fences, etc. are in their proper place. The watchmen shall be responsible to guard all work carried out under this Contract, including part of the works that may have been taken over by the Employer, as well as to guard any goods or materials provided by the Employer for use in the works falling under this contract. The provision of watchmen shall continue until all the works have been taken over by the Employer.

The Contractor is to provide, install and maintain suitable barriers and fences to protect the work, construction camp, storage yard, existing facilities and construction and installation

operations and to remove same when no longer required by the Employer, or at completion of work.

Barriers shall be chain link fencing 2.0 m high and in good condition and shall comply fully with local laws and regulations.

All fences shall be structurally adequate for the required purposes and shall be maintained during the entire construction period.

All barriers and fences shall be completely removed on completion of the work. The Contractor is to clean the site and repair any damage that may have been caused by him.

Outside lighting, around the office buildings and on the parking area, shall be installed to the satisfaction of the Engineer.

The security of the existing facilities located inside the MBT area shall also be under the Contractor's responsibility.

4.11 Contractor's Operations on Site

The Contractor should have no need to enter land other than the proposed construction sites. If, however, the Contractor requires entry onto lands beyond the sites boundaries the Contractor shall request permission from the Engineer.

4.11.1 Site Meetings

For appropriate co-ordination of the site activities monthly progress meetings will be held. The Contractor's Representative(s) shall attend such meetings with the Engineer, Employer, Implementing Partner and Final Beneficiary..

The Engineer will prepare minutes of meeting (MoM) and supply to the Contractor with a copy for comments. Any comments must reach the Engineer within 3 days after submission day. Beyond this period of time the MoM will be considered as accepted by all parties. It is a duty of Engineer to forward the agreed revision of MoM

Should the Contractor fail to send his representative(s) to any meeting at which his presence has been requested, all decisions shall be taken as if the Contractor had been present and agreed on subsequent actions and orders.

Weekly Site Meetings

Site Meetings (SMs) will be convened by the Contractor as mutually agreed between the Contractor and the Engineer, during the project to allow discussion on specific aspects of the execution, orientation, future arrangement and coordination of the works and also for briefing. SMs may be held to formalize important technical discussions, generally prior to the Progress Meetings and record information's and recommendations arising from these discussions. Decision shall be normally taken at the Progress Meeting.

SMs will be held at locations to be mutually agreed between the Contractor and the Engineer. The Contractor shall provide SMs with the papers documenting the technical items for discussion and recommendations.

The agenda of SMs shall be determined by the Engineer and the Contractor together. The agenda of SMs shall be notified to the participants at least 2 (two) days prior to SMs in writing and via e-mails. In addition to the Engineer, the Employer and the Contractor, SMs can be attended by supply companies, manufacturer companies, subcontractors and other institutions and organizations related to the works when necessary.

Meeting minutes shall be recorded by the Engineer, kept carefully and these shall be distributed as minutes of SMs to the Employer and the Engineer, participants and also other persons, institutions and organizations to be found necessary by the Engineer. Minutes signed by the Engineer and the Contractor shall be attached to the contract file and shall become binding for both parties. Minutes shall be forwarded by the Employer and the End Recipient for consideration at the next Progress Meeting. All of these proceedings pertaining to SMs shall be conducted by the Contractor under the orientation of the Engineer.

Electronic mail link will be established between the Project Offices to ease the communications between the Contractor and the Engineer.

The Contractor is also responsible for organizing additional meetings upon the instruction of the Employer or the Engineer.

4.12 Existing Services

It is the Contractor's responsibility to consult with all the relevant authorities and owners of services and/or utilities before commencing any excavations and shall satisfy himself as to the exact position of existing services that affect or may be affected by the works. The Contractor shall record the position of all located existing services on the site plan, a copy of which shall be made available to the Engineer by the Contractor.

The Contractor shall execute the works in such a manner, that he does not damage or interfere with existing services on the site. If damage or interference is so caused the Contractor shall make his own arrangements to execute the repairs at his own cost, and to the approval of the Engineer and the relevant authority if applicable.

It shall be the Contractor's responsibility to safeguard by means of temporary or permanent supports or otherwise all pipes, cables, structures and other things that would be liable to suffer damage if such precautionary measures were not taken. This applies to all such items, existing and proposed, owned by the Final Beneficiary or others.

The Contractor may in his design require making connections to existing pipework. Connections between existing pipework and new pipework shall not be made until the necessary inspection and tests have been completed and the Engineer has approved the new pipework.

The Contractor shall arrange at his own cost the supply and distribution of electricity, potable water, telephone, compressed air and other services as are necessary to his site establishment and shall provide, maintain and remove on completion all pipes, cables and fittings which carry

such services to his operations. All electrical installations forming part of such temporary installations shall comply with current Turkish regulations. The telephone and water supply connections to the site boundary of the MBT Facility will be paid and realized by the Final Beneficiary.

4.13 Contractor's Designs

4.13.1 General

Based on these Schedule of Requirements and Technical Specifications/Statement of Works, the Contractor shall prepare detailed designs including drawings and complete specifications of materials and workmanship to such detail that not only the works can be executed on site, but also that the Engineer can approve the Contractor's designs and intentions for the execution of the works. In addition, it is the responsibility of the Contractor to obtain all the necessary approvals, certificates and permits from the relevant authorities without cost.

The SI-system of units shall be used throughout the Contract.

All detailed designs shall comply with relevant Turkish legislation, regulations, the Environmental Impact Assessment (EIA), pre-Feasibility Study and the obtained construction permission for the Facility.

Drawings are to be submitted in time for incorporation of comments without delaying the time schedule and the completion of the work.

The Engineer's review and approval shall not in any way relieve the Contractor of the responsibility for the completed works being in accordance with the Contract.

The procedure for obtaining approvals of engineering designs including calculations, reports, execution drawings etc. will follow the below mentioned path:

The Contractor shall prepare a Preliminary Design Report (PDR), which as a minimum shall contain the following information:

- The recommended solutions with brief descriptions of other alternative solutions considered.
- The assumptions and design criteria upon which the proposed design shall be based.
- Suitable engineering parameters for the projects in accordance with relevant Turkish regulations and internationally accepted ones.
- Inventory and results of all specialist investigations and surveys carried out to-date.
- Confirmed Work Programme for the procurement and implementation of specialist investigations/surveys still required.
- Control, automation and SCADA to be designed
- System for numbering of documents and drawings

The Contractor shall duly consider that the design parameters and performances, and technical specifications must comply with the requirements and UNDP General Conditions.

The PDR shall be prepared for the review of the Engineer within 28 days after the commencement date. Following the revision of the initial comments given in 7 days by the Engineer, the

PDR shall also be submitted to the Employer and Final Beneficiary for review. After the revisions are completed within 10 days by the Contractor, the PDR shall be re-submitted to the Engineer for final approval.

The Contractor shall prepare the Final Design Report (FDR) including detailed/implementation design, drawings and calculations, and submit to the review of the Engineer within 7 days after the approval of the PDR by the Engineer constituting the other authorities' review notes and comments. Following the revision of the initial comments given in 14 days by the Engineer, the FDR shall be re-submitted to the Engineer for approval. The all revisions of FDR shall be completed within 14 days.

Unless approved by the Engineer, any construction activities shall not be started and payment application which includes construction items (excluding design items) shall not be submitted prior to Engineer's approval of FDR.

The Contractor will hereafter forward all designs for each discipline (i.e. electricity, telephone, natural gas, etc.) to the related authorities like TEDAŞ, TURK TELEKOM, BOTAŞ, Municipality, etc. for necessary permits and approvals.

4.13.2 Preliminary Design Report Deliverables

The Contractor shall prepare Preliminary Design Deliverables in report format, which as a minimum shall contain at least the following information:

- ☐ Main Design Conditions (Mechanical Sorting, Anaerobic Digestion, RDF Drying etc)
- ☐ List of Standards and Codes to be used in design and execution of the Works
- ☐ Environmental Management Plan
- ☐ Process Design
 - Process calculations
 - Mass Balance Diagram
 - Process Flow Diagram
 - Draft Schedules of main electromechanical equipment (equipment, motor, instrument, with all relevant information such as type, capacity, voltage, starting method, pressure class, media, material, installation location, IP class, ATEX classification code, etc.)
 - Process Report with preliminary control philosophy
- ☐ Structural and Civil Design
 - Software to be used for the structural design
 - Design approach for using the software
 - Design criteria including concrete and steel classes to be used for each specific type of structure

- Method for process structures' drainage
- Method for site drainage
- Method for flood protection
- Electrical, Instrumentation, Control and Automation Design
 - Draft Consumer List with all relevant information
 - Single Line Diagram
 - Calculations (transformer, diesel generator, voltage drop, lighting, earthing, lightning, etc.)
 - List of measuring devices and their locations
 - Overall Control Block Diagram
 - Mode of operation with brief description
 - Circuit list
 - Lighting design
 - Earthing drawing
 - Lightning protection drawing
 - I/O list
 - Low voltage site and building distribution layout
 - Small power site and building distribution layout
- Drawings
 - General Layout
 - Facility Layout and Sections
 - Functional drawings of each individual structure showing the basic dimensions and electromechanical requirements. The buildings shall not include the architectural details at this stage, but show the basic requirements.
 - Site process piping plan (wastewater)
 - Cable routes

4.13.3 Final Design Report Deliverables

The Contractor shall prepare the Final Design Report (FDR) including detailed/implementation design, drawings and calculations, and submit to the review of the Engineer after the approval of the PDR by considering the review notes and comments if any.

4.13.4 Submission of Reports, Document and Drawings

All the drawings, calculations and other documentation shall be submitted in 1 hard copy and one soft copy for the review of the Engineer. Upon the Engineer's approval the deliverables shall be submitted in 4 hard copies and soft copies to the Engineer, Contracting Authority, PIU, for records. One approved stamped copy shall return to the Contractor.

All the drawings shall be prepared in bilingual (English and Turkish). Other documentation shall (except the reports required by public/state authorities) be prepared in English Language. The metric system shall be used.

The Contractor shall design and propose one or more system(s) for numbering of:

- All documents and manuals;
- All drawings;
- All electrical and mechanical components;
- All cables; and
- All pipes.

The system(s) shall comprise easy identification of all numbered items, and it shall be easy to see if drawings are made by the Contractor or one of his sub-contractors (if any).

The Engineer shall approve the numbering system(s), and all sub-contractors shall use the approved numbering system(s).

4.14 Tests on Completion

4.14.1 General

Commissioning and performance tests shall be carried out using trained, experienced staff. The Commissioning Engineer shall have a minimum of five-year experience in the commissioning and performance testing of similar Facilities.

All tests must be carried out in the presence of the Engineer, or such other person appointed for this purpose, unless the Engineer states otherwise in writing. Tests shall be carried out to the satisfaction of the Engineer. Certificates shall mention shortcomings to be corrected by the Contractor in a list of defects.

The Engineer may require additional tests to prove compliance with the specifications. All such tests shall be at the Contractor's expense.

4.14.2 Pre-commissioning and commissioning tests

The pre-commissioning and commissioning tests shall include all procedures and functions, safety, emergency as well as normal procedures.

The Contractor shall set out, in his construction documentation, a full list of the pre-commissioning and commissioning tests to be carried out under the Contract to prove compliance with the Employer's Requirements. Such tests shall include, but not necessarily be limited to: -

Test of structures and pipes

- Leakage and pressure tests; and
- Construction materials testing.

Tests of mechanical equipment

- Tests of correct direction of rotation of motors;
- Tests of automatic operation;
- Tests of manual operation;
- Tests of capacity of all machines individually and as part of the entire Facility; and
- Tests of quality of materials.

Tests of electrical equipment

- Tests of alarm systems;
- Tests of the emergency switch system;
- Tests of manual operation;
- Tests of all interlocking systems;
- Tests of indications;
- Tests of all panel functions;
- Tests of safety systems;
- Tests of modifications of the control systems (new start and stop level etc); and
- Tests of all signals to the SCADA PLC;
- Full test of all signals to and from the PLCs, instruments and signal converters.

The contractor is required to submit a report on a weekly basis, containing at least the following:

- Input of waste
- Consumption of energy and consumables
- Persons employed by the contractor and the operator
- The quantities of secondary products and residues
- Quantitative qualitative and percentages described in the guaranteed-binding results in each part of the production process
- Time of availability / operation of the equipment and unit systems, and interruptions with technical explanations of their causes.
- Maintenance, repair and modification work

During this period the Contractor is solely responsible:

- To monitor all the procedures to be followed by entering the truck into the facility until the final disposal of the products produced (temporary storage at the site, disposal of residues in the landfill, disposing of electricity on the network, etc.)
- To complete the necessary configurations and adjustments to each part of the process, to ensure the operation of the unit with the guaranteed binding results
- To operate all parts except those of the main process (i.e water supply, drainage, fire fighting, lighting, remote control system, weighbridges etc.)
- To operate the parts of the facility provided with the full back-up provided by the generator

- To implement the environmental monitoring program
- To train the operator's staff in all the necessary tasks for the operation of the facility

All testing shall be completed to the satisfaction of the Engineer prior to the introduction of “wet” conditions (commissioning) to the plant. For the key equipment such conveyors, sieves optical separators, digesters, de-dusting and deodorizing systems, diesel generators, etc the Contractor shall arrange the supplier’s expert staff to carry out and assist the pre-commissioning and commissioning test.

All necessary consumables, spare parts, electricity, tools, lubricants, etc. for the carrying out of tests shall be supplied by the Contractor as part of the Contract.

Commissioning tests shall be carried out with waste.

Test Equipment

The Contractor shall provide and install ready for use any equipment, materials, consumables, water, etc. necessary for execution of the functional tests at his own costs.

Any equipment used in the testing of the facility shall comply with the appropriate safety regulations and requirements in all respects. The Contractor shall ensure that all subcontractors are acquainted with the contents of these regulations.

The manufacturer shall satisfy the Engineer on the accuracy of all instruments used for tests and, if required, shall produce recent calibration test certificates, or otherwise have the instruments calibrated at his own expense by an independent authority.

KWh meters shall be checked for correct rotation and creep tests shall be carried out to ensure that the meter is inoperative with voltage alone if the secondary of the current transformer is left connected with the primary current interrupted.

All functional tests shall be carried out by the Contractor under the supervision of and to the satisfaction of the Engineer, as follows:

All the mechanical equipments shall be tested for capacity, head, power consumption and mechanical reliability.

Hydraulic Tests

Pumps, pipes, valves and pressure vessels shall be hydraulically tested to the pressure as specified or to at least 2.0 times the maximum working pressure or 1.5 times the normal pressure, whichever is the greater.

Testing of Pipelines

The testing of pipelines will be carried out according to relevant norms and standards.

Hydraulic tests will also be applied for all pipes of the force mains.

4.14.3 Trial operation (running-in and process proving)

Once the pre-commissioning and commissioning tests have been completed to the satisfaction of the Engineer, waste shall be introduced into the facility according to the start-up programme.

The Contractor shall operate and maintain the plant in accordance with the draft operation and maintenance manuals during the trial period. During this period the Engineer shall have the opportunity to witness all operation and maintenance activities, the objectives of which are to optimise the function and operation of the entire facility.

The facility shall be operated under automatic and manual control as directed by the Engineer to prove the functionality and reliability of the control systems.

The Contractor shall run the facility and monitor the performance during the trial operation.

In order to demonstrate that the constructed MBT facility conforms to the Schedule of Requirements and Technical Specifications/Statement of Works and the performance guarantees provided by the Contractor as a part of the Contract, the Contractor shall carry out performance tests in accordance with Test on Completion.

4.14.4 Performance Tests

General

The performance of the whole of the works and each process unit shall be demonstrated to be in compliance with the Schedule of Requirements and Technical Specifications/Statement of works .

An accredited laboratory, to be chosen by the Engineer, shall carry out all the analysis and prepare a final report.

The Contractor shall be responsible for setting up a system for completing the necessary performance tests and reporting the results indicating whether or not compliance with the Employer's Requirements has been achieved.

4.15 Substantial Completion and Hand -over to Final Beneficiary

Once the Contractor is satisfied that the necessary performance tests, to demonstrate compliance with the Schedule of Requirements and Technical Specifications/Statement of works and performance guarantees, have been completed he shall submit a final test report to the Engineer summarising the test results. This report shall be accompanied by:

- A statement from the Contractor that, in his opinion, the works have passed the tests on completion; and
- An application for a substantial completion certificate.
- Issuing of the substantial completion certificate will, in addition, take place after the following demands have been fulfilled to the satisfaction of the Engineer:
- The operation and maintenance manual has been handed-over to the Engineer/Employer in its final version;
- The as-built drawings have been handed-over to the Engineer;

- All works has been tested on-site for all functions and performance by the Contractor to the satisfaction of the Engineer and documented in the quality assurance and test report; and the quality assurance and test report have been handed-over to the Engineer.

4.16 Tests after Completion

4.16.1 General

Tests after completion are tests carried out on the initiative of the Engineer during/prior to the expiration of the defects notification period for final verification of all the performance requirements.

All tests shall be carried out in the presence of the Engineer or such other body appointed for this purpose unless the Engineer states otherwise in writing.

Below is described the tests procedure for the required tests after completion for the final verification of the treatment performance.

4.16.2 Verification of treatment performance

The required sizes to be fulfilled are stated in Volume 3: Employer's Requirements, Section 2: Design Basis, par 2.2. The verification of the fulfilment of these sizes shall be observed during the defect notification period following Employer's Taking Over.

During the Defects Notification Period, the Engineer shall monitor the sizes for compliance with the stated sizes.

Pre-conditions for the verification of the process performance

The fulfilment of process performance covers only conditions that the Contractor is able to control and regulate, whereas the following general and particular reservations are in force:

- The quantity and quality of the waste will not exceed the pre-conditions stated in the Statement of Wor, Sub-section 2: Design Basis.
- No harmful substances (heavy metals, toxins, etc.) are conveyed to the MBT Facility
- Tests shall be conducted by the Final Beneficiary. A representative from the Engineer will supervise the performance testing and the verification.
- The MBT Facility has been operated in accordance with Contractor's operation and maintenance manual.
- The treatment process is operated under normal conditions .
- Failure in the delivery of electricity, water etc, failure in analyses and sampling, extreme weather, etc. has not occurred.

If excess of control requirements appears in the Defects Liability Period due to appearance of one or more reservations, these data will be omitted from the total assessment of plant operation.

Noise

The noise levels in accordance with the requirements set out in the Employer's Requirements, Section 2. The Engineer shall determine the time and location of measurements.

Odour

Treated air from each odour treatment unit shall be analysed for the parameters given in Section 2 The Engineer shall determine the time and location of measurements.

4.17 Training of Final Beneficiary's Personnel

This subject is described in Subsection 12.

4.18 As-Built Documents

The Contractor shall prepare and submit to the Engineer for approval duly amended, 2 hardcopy and one softcopies (in dwg format) of the as-built documents. These accurate record drawings shall be fully dimensioned to show the locations, elevations, dimensions and other pertinent details of the work executed under this Contract.

The Engineer shall return to the Contractor 1 copy of the drawings showing the amendments required by the Engineer if any. The Contractor shall issue to the Engineer 4 hard copies and 3 soft copy of the amended drawings to be submitted to the Engineer, Employer and Final Beneficiary. One approved stamped copy shall return to the Contractor.

4.19 Operation and Maintenance Manuals

The Contractor shall submit draft copies of the operation and maintenance manuals in Turkish to the Engineer prior to trial operation.

The manuals shall be bound into suitable durable loose-leaf binders of A4 size. Copies of these manuals shall be used during the training courses for operation and maintenance.

For all installations, the manuals shall include:

- A general part comprising contents, description of the installation and relevant addresses and phone numbers;
- Documentation - as built;
- Functional description;
- List of components indicating manufacture, type, component numbers, ordering numbers, other data and position;
- Maintenance instructions stating maintenance routines and intervals;
- Fault finding instructions;
- Calibration reports for analogue signal circuits;
- Data leaflets;
- List of spare parts;
- List of tools; and
- List of consumables.

For mechanical installations the manual shall further as a minimum include:

- Machinery type and serial no. (all in one chart);
- Operating instructions;
- Lubrication charts and maintenance instructions (all equipment included in one chart);
- Fault finding details for rectification of basic faults;
- List of spare parts giving part numbers in relation to a drawing preferably of the exploded view type. The list shall be appropriate for correct reordering of the complete component and its spare parts;
- Brochures including all components accompanied with names and addresses of suppliers;
- Performance curves, diagrams, test certificates etc.;
- Specification of corrosion protection; and
- Specifications for repair of all painted/coated surfaces.

For all electrical components the manual shall be divided into separate sections for the following installations:

- Control panels;
- Instruments;
- Control and measuring components (signalling system); and
- Other components.

The manual shall further for electrical equipment include but not be limited to:

- CE-labelling and declaration of conformity;
- Layout drawings;
- Schematic and wiring diagrams;
- Detailed description;
- Specific operation instructions;
- Specific maintenance instructions;
- Component list for all equipment;
- Fault-finding chart; and
- Emergency procedures.

All information in the manuals shall apply specifically to the equipment being supplied, and shall be free from such irrelevant matters as might be contained in the manufacturer's general literature. Other types of machines and options not included in the contract are not allowed in the instructions.

Immediately after the test on completion, the suitable corrected manual shall be compiled into its final form and be submitted to the Engineer for approval. Operation Plan should be ready to

submit to MOEU at the end of the construction period according to the annex of Communiqué on “Mechanical Separation, Biodrying and Biomethanation Facilities and Management of Fermented Output”

The final version of the operating and maintenance manual shall be submitted with four (4) copies in English and four (4) copies in Turkish. Each of the operating and maintenance manuals shall be submitted in both hard copy and in electronic form approved by the Engineer. The manuals to be delivered to the Engineer, CA and PIU. One approved stamped copy shall return to the Contractor.

Any additions, alterations or deletions which may be required following the experience gained during the defects liability/notification period shall be incorporated into the final versions in the form of additional pages or complete replacement of sections as specified by the Engineer. All costs of these amendments shall be deemed to be included in the contract price.

The taking over certificate will not be issued until all copies of the final instructions have been handed over.

4.20 Facilities for Staff and Labour

4.20.1 Facilities for Contractor's personnel

As from the date of commencement of works, and thereafter, the Contractor shall provide, maintain, service and unless otherwise described remove from site, on the issue of the tests on completion certificate, appropriate mobile accommodation complete with sanitary facilities for the use of his site employees. The Contractor shall ensure that his employees do not at any time loiter on, or adjacent to, the site of works, or in any way enter or otherwise make unlawful use of contiguous public or private property and are not otherwise a nuisance to third parties. The Contractor will be required to comply with all current Turkish health and safety regulations (including all regulations and codes of practice made or approved there under) and comply with all other construction regulations and the working rules of any industry appertaining to all work personnel employed on the site.

New buildings shall not be used for sanitary accommodation, mess-rooms or other accommodation requirements unless specifically approved for such use by the Engineer.

The Contractor shall establish for his own use and at his own expense, telephone and internet connections at the site.

4.20.2 Facilities for Engineer's personnel

The Contractor shall provide, maintain and service an appropriate office of minimum 50 m² floor space and a conference room of minimum 20 m² including wall mounted ACs, and a toilet room including wash basin, sink unit, water and sewerage connections, as well as access road and hard standing thereto, for the exclusive use of the Engineer and his staff.

The Contractor shall supply, install and maintain the offices fully furnished for the staff of minimum 6 persons, including desks, chairs, filing cabinets, drawing racks, book shelves, curtains, drafting table, etc. Additional filing cabinets, etc will be provided from time to time as the volume to be stored increases. All facilities, including installations for communication shall

be ready for occupation and use by the Engineer not later than one (1) months after the commencement date. Moreover, offices will further be furnished with the following equipment:

- 1 telephone lines open for international calls and 1 line for internet connection lines (costs of telephone and internet lines shall be paid by the Engineer)
- air-conditioning unit(s) with summer/winter conditioning
- one laser printer (min. A4 + A3format)
- one scanner (min. A4 +A3 format)
- one photocopy machine (min A3 format)

The electricity, water supply, and maintenance costs of these offices will be met by the Contractor(s) until Substantial Completion of the Works.

All offices (i.e. layouts) shall be approved by the Engineer prior to the construction.

Offices shall be regularly cleaned for so long as it is in use and suitable arrangements shall be made for the disposal of waste arising from the office.

For the entire construction period the Contractor has to supply the office with water for sanitary installations facilities and drinking water.

All facilities shall be approved by the Engineer. The Contractor shall ensure that all equipment is kept in good repair and shall repair or replace, as directed by the Engineer, any equipment that becomes unserviceable.

The Contractor shall provide a separate connection direct to a telephone exchange of a telecommunication code system and internet connection for the exclusive use of the Engineer.

All the equipment (if any) shall be the property of the Contractor after the Substantial Completion.

4.20.3 Meeting facilities

The Contractor must provide facilities for meetings on site for minimum 15 participants.

4.21 Health and Safety

4.21.1 General

All works shall be carried out strictly in accordance with current legislation of Turkey

The Contractor's attention is drawn to the number of hazards that are likely to be encountered when carrying out the works that could affect the health and safety of his operatives, the Final Beneficiary's employees and members of the general public.

The following areas of work will involve serious hazards; hence appropriate actions shall be taken to reduce the risks as far as practicable:

- Excavations (e.g. support to prevent earth movement, contact with underground / overhead services, stops to prevent dumpers, barriers / warning signs for pedestrians);
- Working at height (e.g. falls, falling materials);

- Confined spaces (e.g. oxygen deficiency, poisonous gas/vapour/fumes, explosive gas);
- Sewage, sludge in tanks, chambers and pipelines (e.g. leptospirosis/Weil's disease, drowning, poisonous gas);
- Work on roads (e.g. traffic, pedestrians);
- Heavy lifting (e.g. suitable equipment, stable ground, trained driver/ slinger/ banksman);
- Vibrating equipment;
- Overlap with Final Beneficiary's undertaking (e.g. existing operational plan and equipment);
- Dangerous substances' storage, handling and use (e.g. chemicals, explosives); and
- Controlled waste materials' handling.

Prior to the commencement of all operations, the Contractor shall submit a safety method statement to the Engineer for his approval. Where deemed appropriate by the Engineer, a HAZCON study shall be undertaken by the Contractor and agreed with the Engineer prior to the method statement being prepared.

All operatives are to have been suitably trained prior to commencing work and are to be adequately supervised whilst carrying it out.

All plant and equipment is to be suitable for the task to be undertaken and properly inspected tested prior to being put into operation.

The Contractor shall appoint an accident prevention officer at the site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents.

The Contractor shall send to the Engineer details of any accident as soon as possible after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.

The Engineer will require the Contractor to remove (or cause to be removed) any person employed on the works who persist in any conduct that is prejudicial to safety, health or the protection of the environment.

Any part of the site that is designated as a "restricted area" may not be entered without a "permit to work". All places occupied by live, operational, mechanical, electrical or chemical equipment, and "live" sewers, manholes and chambers will usually be so designated. The Contractor shall not allow any of his operatives or sub-contractors to enter such an area until a permit has been issued. When the Contractor requires such a permit he shall give 7 clear days' notice to the Engineer, who will arrange with the appropriate authority to issue one. When the Contractor receives such a permit he shall comply with any precautionary requirements that may be specified in it and shall hold the permit until the end of the period covered and then return it to the Engineer. Compliance with the requirements of the permit shall not absolve the Contractor from any responsibilities under the Contract.

Contractor shall prepare an “Emergency Response Plan” and submit to the approval of the Engineer.

Suitable arrangements are to be made to cater for emergencies, including:

- First aid equipment (dressings, etc.);
- Person(s) trained to administer first aid;
- Communication with, and transport to, the nearest hospital with an accident emergency department;
- Monitoring equipment;
- Rescue equipment;
- Fire fighting equipment; and
- Communication with nearest fire brigade station.

The Contractor shall provide the necessary monitoring equipment required for entry to hazardous or potentially hazardous atmospheres. Monitoring of all hazardous or potentially hazardous atmospheres shall be carried out by the Contractor and a suitable register maintained.

The Contractor shall provide all necessary rescue equipment that shall be regularly checked and maintained. A register of equipment checks shall be kept on site. The Contractor shall ensure that an adequate number of his operatives are fully trained in the use of breathing apparatus and rescue techniques.

Personal protective equipment shall be available, and used by operatives when appropriate, including:

- Safety helmets;
- Eye protection;
- Ear (hearing) protection;
- Hand protection; and
- Foot protection

Adequate welfare facilities shall be provided, including as a minimum:

- Drinking water;
- Toilets;
- Washbasins with warm water, soap and towels; and
- Clean/dry/warm area equipped with tables and chairs at which food can be eaten.

All persons employed by the Contractor must be tested at the Contractor's expense (at the employment date and then quarterly) against pathogenic agents (typhoid fever, hepatitis, etc.). The employees will be informed about the contamination danger presented by the works they have to execute. The Contractor shall observe the sanitary protection norms for the water supply

works issued by the Ministry of Health. The Contractor shall immediately notify the Engineer for each person, certified by the doctor, suffering from a probable associated disease.

4.21.2 Safety guarantee plan

The Contractor shall elaborate and manage the Safety guarantee plan for the works in the frames of this Contract. The Safety guarantee plan shall include the following areas:

- safety devices and trained personnel on the site;
- the list of names and contact telephones of the Contractor's staff, responsible for safety guarantee;
- personnel staffing levels for all the project stages on the site and working with the special parts of the machines;
- personnel qualification in respect to the executed activities;
- post-accident order and responsibility and
- fire security and prevention of combustible/chemicals leakage.

The Contractor has to observe all the relevant state and local regulations and practice codes. Safety guarantee plan shall be approved by local authorities and the Engineer.

The Contractor shall submit one copy of the Safety guarantee plan to the Engineer before commencement of the works on the site.

In the chemical agents' storage place the emergency shower and emergency aid box shall be placed for the use in case of emergency during the work with reagents.

4.21.3 First medical aid

The Contractor shall provide and maintain in working condition all the equipment necessary for rendering the first aid in case of accidents or other emergency situations. This equipment shall be kept ready on the site and in other places of regular work of the Contractor's personnel. The Contractor shall ensure that in every such place a person with the relevant knowledge about the elementary first aid procedure is available, who is able to render aid in case of injury.

Before commencement of the works the Contractor shall submit to the Engineer the list of employees trained in rendering of the first aid.

4.21.4 Emergency measures

The Contractor shall organise all the formalities in such a way that he is able to quickly call upon the personnel outside the normal working hours, if it is necessary for taking the emergency measures connected with the works. In the Engineer's constant disposition shall be the list of addresses and telephone numbers of the Contractor's employees, who in the respective moment are responsible for organisation of emergency works.

The Contractor shall acquaint himself and shall acquaint his personnel with the relevant local order in force in the emergency cases.

4.21.5 Access of emergency services

The Contractor shall inform the fire and police services before closing up of any street outside the border of the site or its part, and shall receive the Employer's approval for every activity of this kind. The fire and police services shall be informed, when the streets are opened again for the transport of emergency services. The method applied in the construction works as much as possible shall decrease the access embarrassment for fire and police services and this access shall in no case be deterred.

The Contractor shall leave his night contact telephone number in the police station, on the territory of which the construction works are being executed.

4.21.6 Excavations

Protection of all the excavations shall be ensured with the help of temporary barriers, warning signs, cones and signal lights in order to prevent accidents with humans and property damage. All the signs shall be written in Turkish and shall comply with the requirements of local authorities.

The Contractor shall take precautionary measures in order to prevent human injuries due to open trenches. All the trenches, excavated materials, equipment and other obstacles, which may be dangerous for humans, shall be well-lightened during the time period starting half an hour before sunset until half an hour after sunrise, as well as in other low visibility circumstances. The amount and position of lamps shall be sufficient in order that the scope of structures and location are clearly understandable.

4.21.7 Fire protection

The Contractor shall take all the necessary precautionary measures in order to prevent the fire close to the works, buildings etc. and shall provide relevant fire fighting equipment, if such arise. It is not allowed to burn waste or construction waste on the site.

If fire or explosion risk close to the works is caused by the location of combustible tanks or similar dangerous plants or equipment, the Contractor shall immediately notify local authorities and the Engineer about such risk. The Contractor shall take all the precautionary measures and shall execute all orders issued by local authorities and the Engineer in order to prevent outbreak of fire or explosion.

In the Contractor's constant disposition shall be staff trained in fire fighting and relevant equipment in order to fight the fire irrespective of the cause of its outbreak.

4.22 Project Management

4.22.1 Project Management Obligation

The Contractor shall be responsible for effectively managing his efforts in carrying out the requirements of this Contract.

The Contractor shall be responsible for the management, performance, monitoring and coordination of the whole project in order to fulfil all requirements of the Contract and those given in Technical Specifications.

The Contractor's management obligations shall include the efficient planning of work to be performed in cooperation with the Engineer and Employer along with their appointed representatives to ensure project progress visibility.

4.22.2 General Requirements

The Contractor shall establish a project organization in accordance with requirements included herein, having the necessary resources, qualification and experience to fulfil all the Contractor's obligations.

The Contractor shall unambiguously define the tasks, responsibilities and authorities of each individual role within the organization, at least at the management and team leader level.

The project organization shall have clear and well-defined command lines and channels for reporting, within and outside the project organization.

The Contractor shall describe which parts of the Contractor's organization are used for staffing the project, and how the project organization aligns with the Contractor's main organization.

The Contractor shall describe the support functions, which are available for the project organization in the Contractor's main organization and how such resources are put to the disposal of the project.

The Contractor shall describe the organizational interfaces towards any sub-contractor and supplier that shall be in or outside the project organization. Such interfaces shall provide a clear reference between the project management level within the Contractor's and the sub-contractor's/Supplier's organizations.

The Contractor shall appoint key staff members, and these shall to the highest possible extent remain unchanged by the Contractor for the entire project.

Any later changes in such appointments shall be informed to and approved by the Engineer and shall be argued by the Contractor in order for the Engineer to assess the reasons and likely impact of such change.

The Contractor shall, unless this is not within the power of the Contractor, ensure that existing staff remains until suitable and acceptable replacements have been found.

4.22.3 Programme of Work

The programme of work shall comprise following as minimum:

- The proposed location of office on the site, stations (steel/concrete structures), warehouses, accommodation, etc. (sketches to be attached as required).
- A brief outline for completing the works in accordance with the required method of construction and stated time of completion
- A critical milestone bar chart (schedule of execution) representing the construction programme and detailing relevant activities, dates, allocation of labour and plant resources, etc.
- If the tenderer plans to subcontract part of the works, he must provide the following

details:

- Details of work to be subcontracted,
- Name and details of subcontractors,
- Value of subcontracting,
- Experience of subcontractor in similar work.

4.22.4 Project Manager Responsibilities

The Contractor shall define a project management team and shall appoint a Project Manager in charge of the entire project.

The Contractor shall allocate the necessary competence and authority to the Project Manager, entitling the Project Manager to make decisions related to all aspects of the day-to-day management of the project.

Any restriction in the Project Manager's rights in this respect shall be clearly identified and described. Such restriction shall not impose management difficulties upon the project.

All official communication between the Engineer/ the Employer and the Contractor shall be passed through the Contractor's Project Manager.

The Contractor shall prepare and submit to the Engineer a list of the following Contractor's key personnel (names and CVs)

- Contractor Project Manager
- Contractor Chief Engineers Responsible for Civil Works
- Contractor Chief Engineers Responsible for Electrical Works
- Contractor Chief Engineers Responsible for Mechanical Works
- Quality Control and Quality Assurance Managers
- Contracts and Financial Manager

4.22.5 Engineer's Involvement

For the execution of this project, the Engineer reserves the right to be assisted by other agencies for technical, operational and contractual matters.

The Contractor shall establish a close coordination with the Engineer for the development of all planning activities related to the project, and shall forward relevant plans, procedures etc. for review and approval, prior to putting such plans or procedures into force.

Engineer's duties and responsibilities are defined within the UNDP General Conditions of Contract for Civil Works.

4.22.6 Project Plans

The Contractor shall prepare the following Project plans, which shall be reviewed and approved by the Engineer:

- a) Authority Liaison and Permitting Plan with Manual and Schedule
- b) Project Management Plan, including Work Breakdown Structure and Risk Management Plan
- c) Quality Control and Quality Assurance Plan
- d) Safety Management Plan
- f) Training Plan
- j) Documentation Plan

k) Operation and Maintenance Manual

1) Spare Parts Management Plan

The Contractor shall as far as possible align the planning of the Engineer involvement to the Engineer's possibilities in regard to:

- Staffing
- Resources available
- Co-ordination needs with other projects.

In co-ordination with the Engineer, the Contractor shall also unambiguously define which information is required from the Engineer and when during development and testing.

In addition, the Contractor shall prepare method statements for each activity. Any site activity (excavation, filling etc.) can be start after the approval of the method statements by the Engineer.

4.22.7 Project Management Plan

The Contractor shall establish a management system to plan, organize and control the administrative, technical and financial aspects of the project which will ensure the timely, efficient and cost-effective completion of this Contract's requirements and provide the Engineer and the Contractor with program progress visibility.

The Contractor's Management system shall establish:

- An agreed plan for orderly and effective project implementation;
- Rapid and accurate procedures to provide reports on progress and problems in all areas
- Effective decision-making processes with clear provision for the Engineer's participation as required; and
- Appropriate resource designation with necessary authority to control the achievement of the program.

As part of the contract, the Contractor shall deliver to the Engineer the license to use the management tools for the duration of the project.

The Engineer may wish to conduct an audit of the project management systems to be used during the project implementation. The Contractor is required to provide Engineer's authorized representatives with access to the information and supporting documentation necessary to demonstrate compliance with the project management and reporting requirements of the contract.

4.22.8 Reporting and Reports

The Contractor shall ensure that the Engineer and the Employer are kept informed about the status of all areas within the project, and as a whole ensure that the Engineer can maintain a complete and detailed knowledge of the project.

The Contractor shall provide progress reports to the Engineer describing, but not limited to, achievement, problems, risks and containing updated schedules, WBS, cost/schedule control reports, status of contract variation proposals, and other data which are required for the efficient management of the project.

The Contractor shall agree with the Employer dates for the submission of monthly Progress Reports. These reports shall normally be submitted no later than 7 working days after the completion of each month.

Such reports shall provide information on the status of the Contract, and/or on any matters that could interfere with the timely achievement of any aspect of the Contract and the steps proposed by the Contractor to remedy such matters. The progress report will have minimum the following contents:

- Project progress
- * Project management overview. Describes major results achieved, problems that have occurred, and corrective action that has been taken or is planned for solving the problems.
- * Technical status: Identifies detailed status, including requirements definition status, design and development progress, problems encountered, corrective actions taken, and a summary of outstanding and approved change items during the period.
- * Quality follow-up: Describes activities of the quality assurance program
- Project Schedules: Shows activities completed (e.g., milestones and deliveries), status of ongoing activities, schedule changes (if any). This section also identifies the outlook for the next three months with an assessment of the major activity completion dates.
- Action item status: Describes outstanding action items and action items that have been closed during the reporting period.
- Risk assessment: Presents the current critical paths, critical activities, and technical risk, including assessment, impact, and containment plans.

The Contractor shall periodically take photos that will show the works progress, to show works that will be hidden later on and to support any claims etc. The photos shall be taken on his expense. The Contractor will provide the Engineer with 2 copies in 10x15 cm format plus electronic form on CD-ROM in "jpeg" format. Each photo will be with date and accompanied by a comment. Aerial photographs shall also be provided on his expense.

Any publication, in whatever form and by whatever medium, including the Internet, shall carry the following or a similar warning: "This document has been produced with the financial assistance of the European Union".

4.22.9 Action Items Management

The Contractor will generate action items throughout the Works life cycle, either at formal reviews and project progress meetings, or as issues arise during Works development.

The Contractor shall record and track all action items relating to schedule, technical issues, subcontractor problems, or the Engineer's concerns. The project managers will assign action items to the person responsible for resolving the issue.

Action items list and status shall be attached to the Progress report and shall be issued by the Contractor on request from the Engineer. The list shall at least include following information:

- Action item description
- Person in Charge
- Due Date
- Status

4.22.10 Meetings

Progress Meetings

Progress meetings will be held at the times indicated on the progress chart (at least every 1 months, unless agreed otherwise), and will take place at location, which shall be proposed by the Contractor and approved by the Engineer.

The following persons shall be present at progress meetings:

- The Contractor's representative (i.e. the project manager)
- The representatives of the Employer, the Engineer and the Implementing Partner.
- Any other persons whom the above representatives consider should be present in an assistant/consulting capacity.

The major items to be addressed in the progress meetings are those identified for the progress reports and any other items, which are deemed necessary by the Engineer, the Implementing Partner or the Contractor.

The Contractor shall prepare an agenda and forward it to the Engineer no later than 1 week prior to each meeting for review and approval.

Progress meetings will be chaired by the Engineer's Project Manager or his deputy and will be held at the Engineer's offices or as otherwise agreed.

The Contractor shall prepare and produce the minutes. Draft minutes will be ready at the end of meetings and reviews. Minutes signed by the Engineer and the Contractor shall be attached to the contract file and shall become binding for both parties. All of these proceedings pertaining to progress meetings shall be conducted by the Contractor under the orientation of the Engineer.

Weekly Site Meetings

Site Meetings (SMs) will be convened by the Contractor as mutually agreed between the Contractor and the Engineer, during the project to allow discussion on specific aspects of the execution, orientation, future arrangement and coordination of the works and also for briefing. SMs may be held to formalize important technical discussions, generally prior to the Progress Meetings and record information's and recommendations arising from these discussions. Decision shall be normally taken at the Progress Meeting.

SMs will be held at locations to be mutually agreed between the Contractor and the Engineer. The Contractor shall provide SMs with the papers documenting the technical items for discussion and recommendations.

The agenda of SMs shall be determined by the Engineer and the Contractor together. The agenda of SMs shall be notified to the participants at least 2 (two) days prior to SMs in writing and via e-mails. In addition to the Engineer, the Employer and the Contractor, SMs can be attended by supply companies, manufacturer companies, subcontractors and other institutions and organizations related to the works when necessary.

Meeting minutes shall be recorded by the Engineer, kept carefully and these shall be distributed as minutes of SMs to the Employer and the Engineer, participants and also other persons, institutions and organizations to be found necessary by the Engineer. Minutes signed by the Engineer and the Contractor shall be attached to the contract file and shall become binding for both parties. Minutes shall be forwarded by the Employer and the End Recipient for consideration at the next Progress Meeting. All of these proceedings pertaining to SMs shall be conducted by the Contractor under the orientation of the Engineer.

Electronic mail link will be established between the Project Offices to ease the communications between the Contractor and the Engineer.

The Contractor is also responsible for organizing additional meetings upon the instruction of the Employer or the Engineer.

4.22.11 Specific On-Site Activities

Management and Planning

The Contractor shall have the full responsibility for the construction, installation and setting up of the Works.

The planning of the construction, installation and setting up of the Works shall be developed in close cooperation with the Engineer.

The Contractor shall be responsible for the maintenance and operation of the system during its installation and setting up.

Installation Plan

At each site where installation is going to take place, the Contractor shall prepare an installation plan comprising:

- The Engineer's activities
- Sub-contractor's involved
- Tasks to be performed and who is responsible for each task
- Timing of the tasks
- Documentation of installation (e.g. instructions, specifications and drawings)
- and other information important for the final installation.

The installation plan shall be approved by the Engineer in due time before the final installation

Installation

The Contractor shall, in due time before installation, submit instructions and specifications with detailed information concerning:

- interior
- installation
- cabling, routing, grounding, power, communication
- other topics important for the installation of the Works.

The installation shall take into consideration local legislation, rules and procedures to (i.e.) cabling, power connection and working conditions.

The Contractor shall produce, procure and supply all necessary equipment, tools, etc. consumable as well as non-consumable needed for the installation and setting-up.

Setting up

Setting up covers the activities after the physical installation to adjust and tailor system parameters, fine tuning, etc. to make the system 100% operational.

The Contractor shall specify which procedures will be used to set up the Works.