



Design - Built - Operate and Transfer of WWTP Baten-Elhawa Area

Ramallah Municipality

**Tender No. RamMun/RM/2020/017
Requirements**

اعلان طرح مناقصة عامة

محطة تنقية صرف صحي لمنطقة باطن الهواء

مناقصة رقم : RamMun/Rm/2020/017

تصميم – تنفيذ – تشغيل – ترحيل

(DBOT Model)

ضمن خطتها الاستراتيجية لتغطية مدينه رام الله بكافة احيائها بمنظومة الصرف الصحي المتكاملة وفق المواصفات الهندسية المعتمدة، وحيث انه يربط منطقة باطن الهواء بشبكة الصرف الصحي سيتم تغطية كافة احياء المدينة بخدمة الصرف الصحي. وعليه تعلن بلدية رام الله عن طرح مناقصة عامة وفق نموذج تصميم – تنفيذ – تشغيل – ترحيل (DBOT Model) لمحطة تنقية صرف صحي لمنطقة باطن الهواء بقدرة تنقية حوالي 2000 م³ في اليوم، وذلك حسب الشروط المرجعية الواردة في وثيقة المناقصة. على الراغبين بالتقدم لهذه المناقصة مراعاة الشروط التالية:

1. يكون مسجلاً "لدى إتحاد المقاولين ومصنفاً" لدى لجنة التصنيف الوطنية في مجال المياه والصرف الصحي و / او في مجال الالكتروميكانيك بحيث لا يقل عن درجة تصنيف ثانية سارية المفعول بالاضافة الى نسخة عن رخصة المهن سارية المفعول.
2. ان تكون الشركة او الائتلاف قد نفذت اعمال بتكنولوجيا مشابهة لما سيتم اقتراحه وتصميمه من قبل المقاول/الائتلاف (3 محطات على الاقل) بحيث تتناسب مع مساحة الأرض المتوفرة.
3. ان تكون الشركة مسجلة في دوائر الضريبة والجهات المختصة على ان يتم طلب توثيق الائتلاف بعد الفوز بالعبء.
4. تقديم نسخة عن رخصة المهن سارية المفعول حين التقدم لشراء العبء.
5. يطلب الحصول على براءة ذمة خاصة بالتقدم للمناقصة صادرة عن بلدية رام الله ترفق بمغلف منفصل حين تسليم مغلف العبء.
6. يجب تقديم كفالة تأمين ابتدائي ك مبلغ مقطوع بقيمة (100,000) دولار وذلك بكفالة بنكية سارية المفعول لمدة لا تقل عن 120 يوم من تاريخ الاقفال.
7. الأسعار المقدمة تكون بالشيكال الجديد وشاملة لجميع الضرائب وعلى المقاول دفع جميع انواع الضرائب.
8. يمكن الحصول على نسخة من وثائق المناقصة من مركز خدمة الجمهور – الطابق الاول – مبنى بلدية رام الله، مقابل مبلغ غير مسترد وقدره 100 دولار أمريكي أو ما يعادله، ويمكن الاطلاع على وثيقة المناقصة قبل شراءها من خلال الموقع الالكتروني لبلدية رام الله www.ramallah.ps تحت عنوان قسم العطاءات وعلى الموقع الالكتروني احادي البوابة www.shiraa.gov.ps
9. يكون الاجتماع التمهيدي وزيارة الموقع الساعة 10:00 من صباح يوم الأثنين الموافق 2020/6/15 ، بحيث يتم التجمع في قاعة اجتماعات بلدية رام الله – الطابق الثاني. وتكون زيارة الموقع بعد هذا الموعد من مسؤولية المقاول.
10. اخر موعد لشراء وثيقة المناقصة هو نهاية دوام يوم الخميس الموافق 2020/7/30
11. اخر موعد لتسليم العطاءات هو الساعة 12:00 من ظهر يوم الاربعاء الموافق 2020/9/30 وذلك لقسم العطاءات، الطابق الاول – دار بلدية رام الله ، مع العلم أنه لن يقبل أي عطاءات بعد هذا الموعد، وتكون فتح العروض بنفس اليوم في قاعة اجتماعات بلدية رام الله وفي جلسة علنية.
12. رسوم الإعلان في الصحف على من يرسو عليه العبء.

لمزيد من المعلومات يرجى ارسالها مكتوبة على فاكس 022963214

او البريد الالكتروني: tenders@ramallah.ps

م. موسى حديد

رئيس بلدية رام الله

الكفالات المطلوبة

- الكفالات التي يجب تقديمها من قبل الجهة المنفذة:
- 1- كفالة دخول العطاء, كفالة بنكية بقيمة 100,000 دولار.
 - 2- كفالة حسن تنفيذ صالحة طيلة فترة التنفيذ بقيمة 10% من قيمة العطاء (العقد).
 - 3- كفالة صيانة لمدة سنة تبدأ من تاريخ التسليم الابتدائي المكتمل حسب الاصول وبعد صدور الفحوصات المخبرية الاولى حسب المواصفات المطلوبة 10% من قيمة العطاء (العقد).
 - 4- كفالة التشغيل صالحة طيلة فترة التشغيل 10% من قيمة عقد التشغيل.

Invitation for Bids Ramallah Municipality

Ramallah Municipality is requesting a qualified individual company or join venture with previous experience worldwide company who did similar projects concerning membrane technology or similar technologies to Design Built and Operate at Baten-Elhawa Area (Al Terih 2)

The tender should be submitted to Ramallah municipality, procurement section, must be before see below.

Field visit	10 o'clock on 2020/3/24
Last date for any written question and clarifications to the wastewater eng. Section in Ramallah Municipality.	20/5/2020
All answers will be submitted to all bidders	7 days before the closed date
Tender opening	12 Noon o'clock on 22/7/2020
Technical evaluation	90 days, this will include clarification from the bidders.
Work implementation period including design build, testing, commissioning and training.	To be filled by the bidder as time frame and work plan, not to exceed 24 months from signing date of the contract. شامله (العطل الاسبوعيه, العطل الرسميه, والاعياد)
Contact person	Mr Saleh Azar – Email: tenders@ramallah.ps

Introduction:

Ramallah Municipality is going to tender a tender NO. RM 36/2019 for Design Built and Operate of new WWTP to serve Baten-Elhawa catchment area; with average capacity of 2000 m³/day for a total population of around 31,000 inhabitants. The proposed Municipal waste with inflow characteristics are shown in the below table:

Parameter	Unit	Average Inflow Values
BOD ₅	mg/l	700 - 800
COD	mg/l	1300 - 1700
TKN	mg/l	100 - 110
FC	Per100ml	3.00E+06
TSS	mg/l	500 - 600

Final effluent should meet standards of PWA; comply with treated effluent for reuse adopted criteria (Reclaimed waste water classification class "A" high quality.

Class A

Parameter	Units	Required out flow Values
BOD ₅	mg/l	≤20
COD	mg/l	≤70
TN	mg/l	≤30
FC	Per100ml	≤200
NO ₃ -N	Mg/l	≤20
TSS	mg/l	≤30
NH ₄ -N	mg/l	≤5

Land location:

The proposed location is nearby the existing Al Terih WWTP at level (600) above sea level and the topography as attached with tender documents, with total area of 3000 square meter.

One main line at the entrance will be at invert level and location as attached maps.

Before pricing the bidder shall make soil test analyses.

The bidder shall furnish the land to be suitable for all of the works, so any leveling or digging and excavation or any other related work will be on the expenses of the bidder.

The excavated surplus materials will be on the responsibility of the contractor, with all expenses.

Technology of waste water treatment plant:

According to:

- * The quality of class (A) at the outflow required.
- * The municipal waste characteristics at the inlet
- * Space and topography of the land available.

The contractor can submit any feasible and suitable technology but he should mention the details of the equipment's and layout with the running cost for the stages and the all of wastewater treatment plant.

Consumption of KW/hr per quip per cubic meter of waste water according to the characteristics of the inlet, this should be mention as equation in the proposal offer.

Origin of manufacture and mounting detail for the electro mechanical equipment's (known manufacture with good reputation in this field) in the WWTP. All the equipment's should be new.

Joint venture agreement should be attaching with the tender documents, with local grade "A" contracting company in the field of water and wastewater or/and electromechanical.

All civil works will be according to Palestinian standard codes

Design criteria for each stage.

100m run (length) channel after the outflow should be done; it is recommended to use either circular shape (half of reinforce concrete pipe) or U-shape (pre-cast).

Description:

The WWTP should be fully automatic, all operating modes are controlled and monitored by and advanced PLC based, user friendly machine interface system with interactive dialog screens.

No odors and environmentally sound proof, efficient and should be running cost very effective. The min WWTP components are:

- 1- Pretreatment (Manual screen, Fine mechanical screen, sluice gate valves)
- 2- Treatment. (MBR treatment technology or any other technology can be built in the same area)
- 3- Facilities:
 - Spare part stock
 - Workshop with recommended tools.
 - Guard room with bath
 - Emergency first aid kit.
 - Mobile sludge 3kw submersible pump with 25mt quick coupling hoses.
 - Firefighting powder extinguishers.
 - High pressure washing machine 7.5 KW.

- Lab with furnish instruments to test all parameters (PH, DO, CL, turbidity, TDS, Temperature, TSS, MLSS)
- Office and library for all catalogues and one latest model desk computer with latest model of one laptop with accessories.

5- Sludge treatment, the bidder should propose solution for dewatering (18-20%) minimum.

6- Stand by generator stable for the load of treatment plant.

7- All needed of civil works like excavation, reinforced concrete, fencing, ect.

Other works:

* Security fence with wall (the height will be submitted with the offer) and all protections.

* Design drawings. All should be from bidder with the technical proposal offer included, taking in to consideration that it could be expandable.

- Hydraulic flow drawings of the lay out for all stages in the treatment plant with cross sections.

- All equipment's should be Brand new with all detailed contacts from the manufacture.

Bid Design

The Bidder shall provide a design report in his bid. The design report shall give details and justifications for the proposed treatment process, the civil works and the overall layout. The Bid Design shall at least include:

- Description and justification of design criteria and assumptions
- Description of standards and codes of practice used for calculations
- Detailed and clearly explained design calculations
- Detailed description of proposed facilities
- Characteristics of main mechanical and electrical equipment items
- Description of the performances under various operating conditions
- Description of civil works required to install the facilities
- Description of work methods to be used in the implementation

The bid shall include drawings with sufficient detail for the easy understanding of the proposed Facilities.

Proposed Programmed of Works

The Bidder shall here insert a separate memorandum with charts showing details of his proposed programme, from the Commencement Date, in respect to elapsed time in months for

all significant operations, periods and milestones. Details should include but not necessarily be limited to:

1. Period required for mobilisation after receipt of the Notice of Commencement Date;
2. Periods for design and Employer's/Project Manager's approval
3. Period for manufacturing of the equipment
4. Period for shipping the equipment
5. Delivery to Site and installation of Plant and Materials;
6. Relationship and timing of each operation to other operations within the Contract;
7. Commissioning test
8. Trial operation period
9. Test on completion;
10. Clearance of Site and demobilisation.

The proposed programme shall be based on the requirements given in the Employer's Requirements.

Operation ()

Full detail proposal for operation should be submitted with the tender documents.

The bidder must take in to consideration all SAFETY MEASURES, according to the international standers.

The bidder should operate the WWTP for at least (5) years after the commissioning period & he is responsible for all expenses either during the testing and the commissioning period and during the operating period, including maintenance with spare parts, electrical and water consumption, also with all needed consumables including the commission period. With a monthly report at approved form.

The date of operation will be after handling all the works of the WWTP (official hand over of the project).

There will be an evaluation by the end of each year; since the operation for each year outflow/month parameters should match class "A" table. The contract extension for the next year will be according to the result of each evaluation.

Each month the operator should submit operation report including the at least five main test parameters for the inlet and five for the outlet and two for the sludge, and all data required according to the needs of municipality in special form, the bidder should submit this form with the technical proposal.

The Municipality has the right to take 12 tests (12 from inlet and 12 from outlet) during the operation by the contractor and send it to recommended lab for testing; all these expenses are included on the contractor.

The WWTP during the period of operation should be odor free and clean. All penalties will be mentioned with the agreement.

Safety requirements for the operators and visitors will be included with all types of insurances. Solid waste must be dry sludge (18-20% dewatering) before transported to the nearby solar drying greenhouse.

The contractor should train for one year the required number of municipality staff to be able to operate the plant (optional)

The contractor should arrange and cover all the expenses for four mun staff to visit one of his success project outside Palestine for one week.

PRICES FOR WWTP AND OPERATING:

The prices that are to be submitted by the contractor are lump sums:

- For the design and the building of the waste water treatment plant (WWTP)
- For fixed costs to operate for five years after handling the project according to agreement that will be sign with the winner contractor
- For additional variable cost depending on the volume measured treated by the WWTP

There will be NO variation in these tender prices.

The contractor should submit the prices with closed envelope, and the technical offer with other closed envelope, and both in one sealed envelope.

Breakdown prices for all works with all details, as tables with all catalogues, manufacture and origin.

It is the contractor respon

PRICE FORMS FOR DESIGN AND BUILD :

The bidder must use these forms for pricing, and the municipality has the right to cancel any item with its price.

The bidder should make breakdown price for all stages **supply and install** according the table 1 below (example):

Table 1: PRICES FOR DESIGN AND BUILD				
PRICE FOR OVER HEAD WORKS				
No	Description	Unit	Unit price NIS	Total price NIS
1	Site offices for the contractor and supervision each separate with all facilities (details should be attach from the bidder)	LS		
2	All types of insurances	LS		
3	Testing, commissioning and training	LS		
4	Design works	LS		
5	Supply a rent new (max one year old) car 4x4 derive automatic	month	24	

	gear for supervisor during the Design- Build-Operate period including all expenses like insurance; oil, filter, ect, with fuel for max 1800 km per month. The car should be replaced by max each year. The price should include providing safety shoes; clothes, hard cap; and laser meter.			
6	Other general items to be interred by the bidder			
Sub total a				
PRICE FOR CIVIL WORKS				
No	Description	Unit	Unit price NIS	Total price NIS
1	All items to be interred by the contractor			
2				
3				
4				
5				
Sub total b				
PRICE FOR ELECTRO-MECHANICAL WORKS AND OTHERS				
No	Description	Unit	Unit price NIS	Total price NIS
1	all items to be interred by the contractor			
2				
3				
4	Solution for sludge treatment	LS		
5	Lab for testing the parameters	LS		
Sub total c				
TOTAL = subtotal a + subtotal b + sub total c				

PRICES FORM FOR OPERATING:

The bidder must submit integrated proposal for operation during the operation period (5 years), taking in to consideration that all expenses will be on the bidder during the operation period, according the tables 2 and 3 below (examples):

Table 2 : FIXED PRICE (For 5 years)		
No	Description	Total price NIS
1	All items to be entered by the contractor	
2		
3		
4		
....		
TOTAL (Lump Sum)		

Table 3: VARIABLE PRICE (For 1 year) AT NOMINAL CAPACITY (1)		
No	Description	Total price NIS
1	All items to be entered by the contractor	
2		
3		
4		
....		
TOTAL (Lump Sum)		

Remind that the yearly final operating cost will calculated as follows:

OPERATING COST (for one year) = FIXED COSTS (for one year) + VARIABLE COSTS AT NOMINAL CAPACITY (for one year) x Cc

Where Cc = Inlet volume measured (for one year)/Inlet volume at nominal capacity (for one year)

Bidder should provide catalog for each electro-mechanical item, also bidder should provide cost break down for each electro-mechanical item with life cycle as well. Missing such breakdown make the bid non-responsive.

Municipality responsibilities

- 1- Main power supply after knowing the consumption according technology approved. During building the WWTP it is not the responsibility of the municipality to provide electricity and fresh water for the works.
- 2- Main fresh water supply.

- 3- Screening, grit waste and dry sludge transportation out of the site after treatment, also will be the municipality responsibility.

GLOBAL SCALE FOR RANKING THE TENDERS

The tender will be considered as non-responsive if one of the following is missing:

- Legal documents
- Financial capacity
- Three similar projects in the last 10 years, similar to the proposed design by the bidder.

After that the responsive proposals will be ranked according the scale below:

GLOBAL SCALE					
BIDDERS	TECHNICAL SCORING (see table 4 below) NOTE ON 600 points	SCORING FOR PRICE OF WWTP (Design and build) NOTE ON 150 points	SCORING FOR FIXED PRICE FOR OPERATING NOTE on 150 points	SCORING FOR VARIABLE PRICE FOR OPERATING NOTE ON 100 points	SCORING FOR TOTAL NOTE ON 1 000 points
Bidder 1					
Bidder 2					
.....					

SCORING FOR FIXED COST OF WWTP (Design and build):

According the table 1 of breakdown of fixed cost, the note will be calculated as follows:
The maximum score of 150 will be awarded for the lowest bid. Other offers will have 1 point less for every gap of 1% with the cheapest offer.

SCORING FOR FIXED PRICE FOR OPERATING:

According the table 2 of breakdown of fixed cost, the note will be calculated as follows:
The maximum score of 150 will be awarded for the lowest bid. Other offers will have 1 point less for every gap of 1 % with the cheapest offer.

SCORING FOR VARIABLE COST FOR OPERATING AT NOMINAL CAPACITY:

According the table 3 of breakdown of variable cost at nominal capacity, the note will be calculated as follows:
The maximum score of 100 will be awarded for the lowest bid. Other offers will have 1 point less for every gap of 1% with the cheapest offer.

Table 4 : TECHNICAL SCORING		NOTE ON
1	Lifting raw water	25
2	Pretreatments (broken down as follows) :	60
	• Process	25
	• Equipments	20
	• Maintainability	15
4	Biological treatment (broken down as follows) :	140
	• Process	40
	• Sizing	60
	• Equipments	20
	• Maintainability	20
5	Sludge treatment (broken down as follows) :	80
	• Process	15
	• Dryness	30
	• Equipments	20
	• Maintainability	15
6	Odor treatment	15
7	Disinfection	15
8	Others equipments (broken down as follows) :	15
	• Ironwork	7
	• others.....	8
9	Stand-by equipments	30
10	Supervision and nature of sensors	15
11	Footprint (broken down as follows) :	35
	• total footprint of the structures alone	20
	• total WWTP footprint (structures and traffic areas)	15
12	Architecture and landscape integration	30
13	Electric consumption by m ³ (on the basis of nominal capacity) (1)	40
14	Electric consumption by Kg of BOD ₅ eliminated (on the basis of nominal capacity) (1)	40
15	Quality of water treated (outlet) (broken down as follows) :	30
	• before disinfection	20
	• after disinfection	10
16	Schedule of works	30
TOTAL (MAXIMUM)= 1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+16		600

(1) According the results of the "BREAKDOWN TABLE OF ELECTRICITY CONSUMPTION" see below
 Table 5

**Table 5: BREAKDOWN TABLE OF ELECTRICITY CONSUMPTION
(EXAMPLE)
On the basis of nominal capacity of the WWTP**

ELECTRICITY CONSUMERS (a consumer is a type of engine like pump, screen, sieve, bottom stirrer, centrifuge, fanfor instance)	Nbr of installed engines	Nbr of engines operating	Nominal power/engine (kW)	Power Consumption /engine (kW)	Total Power Consumption (kW)	Daily Operating Time (h/d)
.....						
.....						
.....						
<i>Subtotal for LIFTING STATION</i>						
.....						
.....						
.....						
<i>Subtotal for PRETREATMENTS</i>						
BIOLOGICAL TREATMENT						
.....						
.....						
.....						
.....						
<i>Subtotal for BIOLOGICAL TREATMENT</i>						
SLUDGE TREATMENT						
.....						
.....						
.....						
<i>Subtotal for SLUDGE TREATMENT</i>						
ODORS TREATMENT						
.....						
.....						
.....						
<i>Subtotal for ODORS TREATMENT</i>						
OTHERS ELECTRICITY CONSUMERS						

.....							
.....							
.....							
<i>Subtotal for OTHERS ELECTRIC CONSUMERS</i>							
TOTAL OF DAILY ELECTRICITY CONSUMPTION (kWh)							
ELECTRICITY CONSUMPTION BY M3 TREATED (kW/m3) :							
ELECTRICITY CONSUMPTION BY KG OF BOD5 ELIMINATED (kW/Kg BOD5):							

GENERAL REQUIREMENTS

Scope of works

The services to be provided by the Contractor include, but are not limited to the following:

Design and additional studies

- The preparation of a design report of the installations answering the programme fixed by the Employer's Requirements.
- Detailed design of the wastewater treatment plant, DESIGN AND DRAWINGS TO BE CARRIED OUT BY THE Contractor.
- Detailed design of all site works required for the installation DESIGN AND DRAWINGS TO BE CARRIED OUT BY THE Contractor.
- The preparation of drawings and diagrams of equipment, erection and dismantling drawings, in compliance with the detailed design accepted by the Employer.

Implementation

- a) Implementation of the "electricity and electromechanical and hydro mechanical equipment" section in conformity with the accepted detailed design, including the supply, factory inspection; testing and transportation on site of all necessary materials and equipment and their implementation or erection and adjustment, namely:
 - hydraulic, mechanical and electrical treatment equipment, including driving equipment and control, monitoring, measurement, protection and safety devices,
- b) The commissioning of the installation and performance of the tests defined in the Employer's requirements.
- c) The provision of maintenance and operating manuals, as-built drawings of the structures and networks.
- d) Supply of spare parts, minimum spare part stock during the operation period should be mentioned as list with its price.
- e) Services for the Employer, as defined below and/or in this bid documents.
- f) Training.

Existing facilities within the site of works

The proposed site is exactly nearby and to the east side of the existing Al Terih WWTP.

NON-DISCLOSURE OF INFORMATION

The bidder shall not without the consent in writing of the Employer disclose particulars of the Contract to any person or furnish or publish or permit to be furnished or published any information with regard to the Employer's business to any person save in so far as may be necessary for the due performance of the Contract and shall preserve strict confidence with regard to any information of a confidential or secret nature received from the Employer or the Project Manager.

SITE OF WORKS

The site

The Site shall be deemed to include all areas on which temporary and permanent Works are to be constructed, all other areas made available to the bidder for the execution of the Works and all roads, tracks and footpaths whether private or public between the various parts of the Works.

Use of land and right of way

The Contractor will, during the execution of the Works, have free and temporary use of working areas and accesses there to, the working areas will include space for the Contractor's offices, camps, stores, yards, constructional plant, temporary roads, parking areas and other temporary works. The Contractor's proposal for temporary works including overall layout plan in conformity with the Bid Documents shall be included in the Contractor proposal.

All use of land is subject to the Project Manager's (owner) approval.

Apart from transport to and from these areas the Contractor shall confine his operations under the Contract to these areas. Before entering any working sites, the Contractor shall give 10 days' notice to the Project Manager in writing. Such notices shall be given for each occupation of the working sites.

Before entering any additional working sites the Contractor shall obtain and forward to the Project Manager a copy of the written consent of the owner or occupier or Authority having charge of the land stating the purposes for which such land is to be used by the Contractor, and defining the extent and periods of his occupation for which such consent is granted. Notwithstanding the

requirements of such consent, additional working sites shall be protected by fences or barriers or other works as required by the Project Manager. Wherever practicable a passage shall be maintained for vehicles and pedestrians along public roads and to all adjacent properties.

In the event of the Contractor making use of any special temporary wayleave or additional accommodation acquired by him pursuant to the Conditions of Contract hereof or any trip for the disposal of surplus materials he shall obtain and forward to the Project Manager a copy of the written consent of the owner and occupier or Authority having charge of the land in which such way leave, accommodation or tip is situated and shall make a record to be agreed by the Project Manager of the condition of the surfaces of the land before entering thereon. The Contractor will not be permitted to occupy space in public roads or thoroughfares along the route of pipelines nor additional accommodation except with the written consent of the Project Manager, whose consent will not be given unless the Contractor shall have first obtained the written consent of the Authority concerned and having charge of the road surface.

Temporary office buildings and accommodation:

Shall be on the bidder expenses

Notice boards

The Contractor shall manufacture notice boards and erect these where directed by the Project Manager. The notice boards shall be 1, 00 x 2, 00 m of 20 mm thick plywood W.B.P. bonded to BS 1088 or similar approved with softwood surround to Class 2 of BS 1186 Part 1. The notice boards shall have the indication as instructed by the Project Manager and be painted after fabrication on all surfaces.

The Contractor shall erect these boards on suitable supports in positions within the area as directed by the Project Manager. **Quantity 2**

Advertising and publicity

Advertising will not be allowed on any hoarding whether temporary or permanent, or on any other part of the Works, except such as the Employer may require for this own purposes.

The Contractor shall obtain the permission of the Employer before publishing any article describing the Works. The Project Manager's permission shall be obtained before any member of the public is allowed to inspect the Works. All visitors will be required to sign a form of indemnity.

Project location

The Works in this contract have to be constructed at Ramallah, Abnaa-Ramallah Street.

Special conditions and hazards

The Contractor shall observe the following conditions when drawing up his proposal for traffic access to the Sites and Working Sites and such proposals shall be submitted to the Project Manager for his approval before implementation.

- Restricted headroom due to flyovers and overhead cables.
- Restricted loading to existing services, manholes, etc.
- Buildings in the locality particularly sensitive, due to their use or condition, to undue noise and vibration.
- Access to private and public properties and buildings.
- High voltage overhead cables.

Traffic arrangements

The bidder shall seek information on and comply with all requirements and recommendations of the police regarding traffic safety measures.

Plans for re-routing traffic along public streets during occupation of the Working Sites will be arranged by the Employer with the appropriate Government Authorities which include the Traffic Police. Such arrangements include the acquisition on behalf of the bidder of provisional Permits from the traffic authorities to occupy Working Sites. The bidder shall not occupy any Working Sites without holding such Permits.

The bidder shall provide, erect and maintain during his occupation all barriers and traffic signs as required by the Authorities or instructed by the Project Manager. All signs must comply with standard international practice or as otherwise required by the traffic authorities. All written notices on signs shall be in both English and Arabic.

The bidder shall arrange with the owners and occupiers of properties alternative temporary access and shall submit details of such agreed temporary access arrangements where necessary.

Amenities to be preserved

The bidder shall cause the least possible interference with existing amenities, whether natural or man-made. No trees shall be trimmed or felled except as authorised by the Project Manager.

All lights provided by the bidder shall be so placed or screened as not to interfere with the use of adjacent buildings, road users, traffic or signal lights or other equipment of the Employer or other authority.

The Contractor shall store and place all materials, plant and appliances in such a manner as to prevent them causing injury or damage to persons or property and at a safe distance from roads, tracks and footpaths.

Claims for damage to persons or property

Any claim received by the Employer in respect of matters in which the bidder is required under the Contract to indemnify the Employer will be passed to the bidder who shall likewise inform the Employer of any such claim which is submitted directly to him by a claimant. The bidder shall do everything necessary, including notifying the insurers of claim received, to ensure that all claims are settled properly and expeditiously and shall keep the Employer informed as to the progress made towards settlement. If the Contractor receives a claim which he considers to be in respect of matters for which he is to be indemnified by the Employer under the bidder him shall immediately pass such claim to the Employer. All information as aforesaid shall be given in writing and shall be copied to the Project Manager.

SITE CONDITIONS

General

The Employer does not guarantee the correctness of the designations of any materials described in this Clause and elsewhere nor any interpretations, deductions or conclusions relative to site conditions.

Climate

The Climate is typically Mediterranean with hot dry summers and mild wet winters. The average daily temperature varies; the bidder shall take it from the Palestinian weather authority.

Protection and diversion of existing services

The approximate locations of existing services are indicated on the Drawings. The Contractor is required by his own enquiries and actions to satisfy himself as to the sufficiency and accuracy of the information set out thereon.

The Contractor shall be responsible for notifying the service authorities and the Project Manager of his intention to expose the services and where so required by the service authority shall not

commence operations until the service authority is represented on Site.

Protection of antiquities and fossils

As soon as antiquities or fossils are encountered during the course of any excavation, the Contractor shall forthwith call the attention of the Project Manager and the appropriate service authority thereto.

Vulnerable parts of the discovered antiquities of fossils shall be protected by the Contractor as may be reasonable required by the Project Manager.

No requirement of the Specifications regarding the disposal of material arising from site clearance or excavation shall override any provision in the Conditions of Contract as to the discovery of ownership, of fossils, coins, articles of value or antiquity of anything of geological or archaeological interest found on the Site.

SAFETY MEASURES

General

The Contractor shall submit a Health and Safety Plan.

The Contractor shall be responsible for the safety of all workmen and other persons entering the Works and shall, at his own expense (where not otherwise stated) and to the approval of the Project Manager, take all measures necessary to ensure their safety. Reference in these respects is made to the Conditions of Contract, but in particular, such measures shall include, but are not limited to, the following:

1-Provision of proper safety and emergency regulation; fire, gas (if any) and electric shock prevention, stretchers and first aid boxes, together with rescue facilities generally, for each place of working.

2-Provision of efficient safety helmets for all personnel including the Employer and the Project Manager and each of their staff and any authorised visitors to the Site.

3-Safe control of water including provision of ample standby pumping plant.

4-Provision and maintenance of suitable lighting to provide adequate illumination of the Works with appropriate spares and standby equipment.

5-Provision of good and safe access to any part of the Works.

6-Provision of notices written in English and Arabic languages to be erected at points likely to be used by the public, which shall warn the public of the existence of the Works. These notices shall be in addition to any statutory requirements demanded of the Contractor.

The bidder shall submit for the approval of the Project Manager detailed proposals under sub-clause A above. When the regulations have been approved and before the work is started the bidder shall distribute copies in English to all his employees and to the Project Manager.

The Contractor shall ensure that all his employees are fully conversant with the regulations, emergency and rescue procedures, etc., and the Contractor shall enforce the rule that any employee committing a serious breach of such regulations shall be instantly dismissed and shall not be re-employed.

Personal protective equipment shall be available and used by operatives when appropriate, including: safety helmet, eye protection, ear protection, hand protection, foot protection.

If any of the employee according to his position and what he should wear protection clothes at the time and type of work is implementing the project manager has the right to discount as penalty according to the cost of what the employee from the bidder side is not wearing.

Transportation of materials and equipment

1-The bidder shall take all reasonable precautions to ensure that public streets and thoroughfares used by him either for the construction of the Works or for the transport of plant, labour and materials are not made dirty as a result of such construction or transport and in the event of their becoming thus dirtied in the opinion of the Project Manager the Contractor shall take all necessary and immediate steps to clean them.

2-Vehicles shall be thoroughly cleaned down before leaving the Sites and shall be so loaded that spillage therefrom is prevented.

3-Each individual site must be kept clean during the work and must be thoroughly cleaned upon completion.

Prevention of noise and disturbance

1-The Contractor shall in general comply with the recommendations of Palestinian Law.

2-The Contractor shall justify the details and arrangements of all plant before installation to ensure that suitable provisions are provided to reduce noise emission in built-up areas.

3-The bidder shall take noise intensity readings as required by the Project Manager and shall submit the results to the Project Manager. The Contractor shall comply with measures required by the Project Manager to keep noise and disturbance to the reasonable minimum.

Fire prevention

The bidder shall make arrangements to the satisfaction of the Project Manager for the protection of the Works and any Temporary Works and any adjacent property from fire and shall give the Fire Authority all facilities periodically to inspect the fire prevention arrangements.

Particular care must be exercised in connection with the operation of electric-arc welding equipment, oxy-acetylene cutting equipment and other processes involving the use of naked lights. Special arrangements will be necessary for the storage of highly flammable liquids on the Site.

The bidder shall remove all rubbish and surplus material of a flammable nature and take such other steps as the Project Manager may require but this shall not relieve the bidder of any of his obligations under the Contract. The Project Manager has the right to make penalty for cleaning the area if there is any rubbish caused by the bidder employees, the bidder must remove the solid waste daily from the site and surrounding to the nearest municipal solid waste container (could be compacted), or to location determine by the project manager.

Work in the vicinity of operational mechanical and electrical equipment

Any permanent fencing or other safeguards required to be erected around electrical equipment shall be completed as far as practicable before connection is made to the electricity supply. In so far as this is not practicable the Project Manager may permit the use of temporary fencing or other safeguards.

Where work has to be carried out in proximity to operational mechanical and electrical equipment other than the Contractor's own plant, the Contractor shall put into operation a « Permit to Work » system to the approval of the Project Manager.

Each equipment should be tested on site separately after installation

GENERAL COORDINATION

Employer's use of contractor's temporary works

The bidder shall during the progress of the Works allow the Employer, the Project Manager and other contractors employed by the Employer in connection with the Works the use of his roads, scaffolding, constructional plant, other temporary works or services such as described in the present Section.

DESIGN AND DRAWINGS TO BE CARRIED OUT BY THE bidder

Design report

Within 20 days after the Commencement date, the Contractor will submit to the review of the Project Manager a Design Report. This report will be based on the Contractor Proposal; it will include the following documents:

- a) The description of the plant
- b) The detailed process calculations including a Process Flow Block Diagram, a Process and Instrumentation Diagram, mass flow and load balances.
- c) The hydraulic profile
- d) The entering and leaving flows (water, grease, grit, sludge, etc.) in terms of quantities and pollution loads
- e) The pre- sizing of the structures
- f) The sizing of the installed power
- g) The single line power diagram
- h) The general organisation of the remote control system
- i) A weekly general implementation program
- j) A weekly Contractor's Documents submittal program

General provisions for construction drawings

As soon as the Project Manager approves comments on the Design Report, the drawings shall be issued by the bidder for construction.

The drawings issued by the bidder for construction will include:

- 1) The general layout drawings showing structures, roads, offices, recreational area, etc.
- 2) The roads, pipes, utilities and networks drawings.
- 3) The single line diagram
- 4) The flow chart of the remote control
- 5) The additional drawings as required by the Project Manager to develop in greater detail the construction required.

All these drawings shall be referred to hereinafter as Construction Drawings.

These drawings will be submitted by the bidder in accordance with the Documents' submittal program, to the approval of the Project Manager.

All drawings shall be in the English language, and all dimensions shall be in Metric system. Symbols shall be in accordance with approved Standards. All drawings submitted for approval shall conform to ISO paper sizes A0 to A4. Title block and numbering shall be approved by the Project Manager.

The Permanent Works shall be executed in conformity with the Construction Drawings and other drawings approved by the Project Manager.

Mechanical equipment included in the present contract

General

The bidder is responsible for the execution of documents (drawings, diagrams, design calculations, etc.) for the different supplies.

A list of all drawings, diagrams and design calculations to be submitted to the Project Manager shall be drawn up at the start of the design stage in agreement with the Project Manager. However, the Project Manager reserves the right to request further details at a later stage in order to facilitate understanding of equipment functions.

Overall and detail drawings of the equipment

The bidder shall supply drawings for information of assemblies, parts of assemblies and large parts of the equipment to the Project Manager for information.

These drawings, or where applicable their technical associated documents, shall include, in addition to production dimensions, flatness, straightness, horizontal and vertical tolerances, the values of assembly and operating clearance with the minimum and maximum acceptable deviations, the type and the properties of the materials used in the different parts, the weld categories and the types of non-destructive testing to be carried out on welds, the surface condition valued to be achieved for parts machined in accordance with ISO/R 468 standard.

Drawings, or, where applicable, their technical associated documents shall also include the weights of assemblies, parts of assemblies and detailed parts as well as the surface areas to be painted for large structures.

Civil works

Design calculations

The design calculations may be presented in a computer format and shall include in:

- Design calculations conditions and criteria
- The values of the maximum stresses under normal and exceptional operating conditions
- The main dimensional characteristics
- The properties of material to be used
- The loads to which the supply is subjected and their supply

Drawings

In addition to the documents listed hereafter, the Contractor shall prepare and deliver to the Project Manager the drawings for:

- The drawings relevant to the Construction
- The as-built drawings of all permanent works constructed
- The other drawings necessary for the performance of each part of the Works in accordance with the Contract.

Submission and approval

The Contractor shall submit in two (2) copies to the Project Manager, for review, information or approval, all designs and drawings which he prepares under this Clause (except for "As-Built"). The Project Manager will analyse all such designs and drawings, will appraise them as to whether they are reasonable and consistent with the Construction Drawings, will approve if requested and will order changes when deemed necessary.

The Contractor's designs and drawings shall be submitted in a sequence to facilitate the Project Manager's study and scrutiny of the same, shall be completed in regard to all computations and data, and shall be traced on size 840 mm x 594 mm (A1-size) or 297 mm x 420 mm (A3-size) paper. The title of the drawings, the signature of the Contractor's representative, the date of preparation and the reference to Construction

Drawings, if any, shall appear in the bottom right hand corner of the drawing. Within twenty-one (21) days after submission of the drawings, the Project Manager will advise the Contractor of his conclusions regarding the drawings.

When approval is requested, the Project Manager's conclusions may be one of the following:

- "APPROVED"
- "APPROVED EXCEPT AS NOTED"
- "DISAPPROVED" (with relevant reasons determining rejection duly indicated).

Within seven (14) days of the return of designs and drawings marked "APPROVED" or "APPROVED EXCEPT AS NOTED", the Contractor shall present to the Project Manager one reproducible copy of the drawings traced in ink and two (2) prints of the same.

No drawing shall be considered valid unless signed by the Project Manager. The approval by the Project Manager of such drawings shall not relieve the Contractor of his obligations and responsibilities under the Contract.

Those marked "DISAPPROVED" shall be redone and submitted anew to the Project Manager.

The Contractor shall not be entitled to a time extension based upon the rejection of designs or detail drawings, because such designs or detail drawings fail to conform to sound engineering principles, or to the Specifications.

All Works should be executed with the relevant approved drawings. All materials ordered or Works performed prior to approval of the relevant designs, shall be at the Contractor's risk.

The Contractor shall bring to the attention of the Project Manager any variation to the Contract in the document submitted for approval.

When no approval is requested within fourteen (14) days after submission of the drawings, the Project Manager will notify his comments or requests. All materials ordered, or work performed, prior this notification shall be at the Contractor's risk.

Ownership of drawings and data

All the drawings, details, bill of materials and any other information or documents furnished by the bidder shall become the property of the Employer and shall be non-returnable. The Employer will have the right to use this property.

Such information shall be given in paper copy and in digital format.

Design criteria

The bidder should mention the design criteria for each stage.

LAYOUT OF WORK AND SURVEYS

Reference points, lines and levels

General setting out

- 1) At the beginning of the Works, the bidder and the Project Manager shall agree on the definition and general setting out of the structures to be built on the site, based on the general network established for the project.
- 2) Three points which shall be used as a reference basis in three dimensions (X, Y, Z) will be made available at site by the Employer by the date of beginning of the work. These three points shall be handed over to the Contractor, which will accept them as references. These three points shall be adequately anchored and protected by the Contractor.
- 3) Additional bench marks may be provided by the bidder for triangulation reference.
- 4) The bidder shall be responsible for the conservation of the related benchmarks during the entire duration of the construction.
- 5) The Project Manager shall draw up a report to confirm completion of these operations in the field.

Complementary setting out

During the execution of the Works, the Contractor shall complete the general setting out by as many stakes, seats and gauges as may be necessary.

At the beginning of erection of equipment, complementary reference points shall be placed by the Contractor. Position of lines and levels shall be defined by mutual agreement of all parties. In case of disagreement the Project Manager shall decide.

The Project Manager will draw up a report to confirm completion of these operations in the field.

Record of site conditions before construction

Topographical data of the site are indicated, any other works should be done by the contractor during pricing or in the working period.

STANDARDS, CODES AND REGULATIONS

General

General Standard specifications and codes of the PWA & ministry of work in the Palestinian state and the following listed authorities wherever cited herein are referred to by use of the abbreviations shown below. All materials and workmanship shall comply with requirements of applicable codes:

		Abbreviation
1.	International Standard Organisation 1, rue de Varembe Case Postale 56 CH1211 GENEVE 20 - Suisse	ISO
2.	European Committee for Standardization 36 rue de Strassart 1050 Brussels, Belgium	EN
3.	American Society for Testing and Materials 1916 Race Street PHILADELPHIA, PA 19103 – USA	ASTM
4.	American Association of State Highway and Transportation Officials 444 North Capitol Street, nw WASHINGTON, DC20001 – USA	AASHTO
5.	American Concrete Institute Box 19150 - Belford Station DETROIT, MI 48219 - USA	ACI
6.	British Standards Institution Linford Wood, Milton Keynes MK14 6LE - UK	BS
7.	Bundesanstalt fuer Wasserbau D-7500 KARLSRUHE, Kussmaulstr. 17 Germany	BAW

8.	Deutsches Institute fuer Normung D-1000 BERLIN 30, Burggrafen Str. 6 Germany	DIN
9.	Association Française de Normalisation Tour Europe - Cedex 7 92080 PARIS LA DEFENSE – France	AFNOR
10.	American National Standards Institute, Inc. 10 East 40th Street NEW YORK, NY 10016 - USA	ANSI
11.	American Petroleum Institute	API
12.	American Welding Society 205 MW 7th Street MIAMI FLO 33125 - USA	AWS
13.	United States Bureau of Reclamation Engineering and Research Center Code 922 Post Office Box 25007 Denver Federal Center DENVER, Colorado 80225 - USA	API USBR
14.	The Institution of Civil Engineers Publication Thomas Telford Ltd. 1 Heron Quay LONDON E148XF - UK	ICE
15.	Eurocode 2, rue Bréderole B-1000 BRUXELLES – Belgique	
16.	Fédération Européenne de la Manutention 80 boulevard A. Revers B-1030 BRUXELLES – Belgique	FEM
17.	Commission Electrotechnique Internationale 1 rue de Varembe Case Postale 56 CH 1211 GENEVE 20 – Suisse	CEI

The following particular Standards will be used:

- EN 12225, part 1 to 14 : Wastewater treatment plants
- EN 752, part 1 to 7 : Drain and sewer systems outside buildings
- EN 809: Pumps and pump unit for liquids- Common safety requirements
- EN: 1085: Wastewater treatment- Vocabulary

Applicable standards

Unless otherwise specified, the Standard to apply will be as follows:

- a) Palestinian Standards, regulations and directives: depots for chlorine and others dangerous noxious substances, Fire protection, Protection of workers in building with MV and LV electrical energy, Earthquake regulation.

- b) Mechanical works :DIN
- c) Electrical works: IEC (in addition to EAC requirements)
- d) Handling equipment : FEM

Except if otherwise specified, where such standards are mentioned, the latest revision or edition on the Reference Date shall apply.

When the Contract Documents contain particular specification or more restrictive specification than required in Standards and Codes listed above, the Contract Documents will always prevail.

In case of lack of precise requirements in the Specifications and even if no reference to any standard listed in Sub-Clause 10.1 hereof, these standards shall be used as a reference.

WATER CONTROL

All constraints related to the presence of or risks caused by water flooding, all additional work which may prove necessary on this account, all damage caused by water flooding, all pumping in all structures shall be at the expense of the bidder.

QUALITY OF MATERIALS

Manufactured materials

All materials, fixtures, fittings, and supplies furnished under the Contract shall be new and unused, of standard first-grade quality and of the best workmanship and design. All the materials, electrical and mechanical equipment shall be heavy duty and of latest model. No inferior or low grade materials, supplies or articles will be either approved or accepted, and all work of assembly and construction shall be done in a first-class and workmanlike manner.

In asking for prices on materials intended for delivery to the site and incorporation in the Works under any portion of these Specifications, the bidder shall provide the manufacturer or supplier with complete information as may, in any case, be necessary to secure compliance with this Clause and, in every case, he shall quote this Clause in full to each such manufacturer or supplier.

APPROVAL OF MATERIALS AND EQUIPMENT

General

All materials and equipment intended to be incorporated in the Works shall be subject to information given by the Contractor to the Employer in the technical proposal offer as table showing name, origin, serial number and any other related data.

For the materials incorporated in the civil works (including architectural materials), the Project Manager shall give approvals and the Contractor shall wait for this approval prior to order. For the mechanical and electrical equipment, the Project Manager shall give only comments or refusals if necessary.

Unless otherwise authorised by the Project Manager no material or equipment shall be shipped from its point of original manufacture or final shop assembly to the work site before it has been inspected.

Submission of samples and data

The bidder shall submit for the approval of the Project Manager samples, drawings, catalogues, cuts, diagrams and other descriptive data for all mechanical, electrical and such other materials and equipment as may be designated by the Project Manager and which the Contractor proposed to incorporate in the Works. For certain materials and equipment data may be required to be submitted in accordance with a detail form furnished by the Project Manager.

Items submitted shall be properly labelled to indicate the Project Contract number, Contractor, source of supply, manufacturer Contract Item number, and other data required by the Specifications.

All items shall be submitted in sufficient time, but not later than 30 calendar days prior to purchase, to permit proper consideration and action thereon without delaying the construction schedule.

Items sent for approval shall be shipped prepaid by the Contractor and the Contractor shall give the Project Manager Advance notice in writing of all items shipped.

The results of the tests shall generally indicate:

- 1) Sample identification numbers.
- 2) Sample origin.
- 3) Part of the Works represented by the sample.

- 4) Sampling date.
- 5) Description of tests with reference to the relevant standards.
- 6) Test results (with appropriate units when applicable).
- 7) Date of tests.
- 8) Reference of laboratory undertaking the tests.
- 9) Conclusion (Satisfactory or Unsatisfactory).

Inspection at the place of manufacture

To allow possible inspection of materials and equipment in the course of or on completion of preparation or manufacture, the Contractor shall give the Project Manager written notice of the workshops and places where the materials and equipment are manufactured or stored and advise him of the state of progress, so that the inspection may take place at appropriate times and without delaying the dispatch of materials and equipment to the Site. In particular, the Contractor will inform the Project Manager of the date of final erection tests prior shipping.

The Contractor shall include in his price all the expenses cost (visa; insurance; accommodations, transportation ; international perdem cost; ect) for the Project Manager plus his assistance to conduct the factory inspection.

Manufacturer's certificate of compliance

In the case of standard labelled stock products of standard manufacture which have a record of satisfactory performance in similar work over a period of not less than 2 years, the Project Manager may accept a statement from the Manufacturer attested by a notary public certifying that the product conforms to the applicable Specifications.

Mill certificates

In the case of materials for which such practice is usual, the Project Manager may accept the manufacturer's certified mill and laboratory certificate.

Service record

If a demonstrable satisfactory service record is available for a material, certain specified tests may be waived by the Project Manager.

Testing laboratory certificates

The Project Manager may accept a certificate from an independent commercial testing laboratory, satisfactory to him, certifying that the product has been tested within a

period acceptable to the Project Manager and that it conforms to the requirements of the Specifications. For all works.

Acceptance of materials

The approval by the Project Manager of any material or equipment shall in no way relieve the Contractor of any of his responsibilities for meeting all of the requirements of the Specifications and shall not prevent subsequent rejection if such material or equipment is later found to be defective or not conforming to the Specifications.

ASSEMBLY MARKING

All parts, or units of shop assemblies, shall be marked, or tagged with piece marks. Marks shall be in accordance with approved erection drawings, shall be clearly legible and so placed as to be readily visible when the part is being erected in the field. Before dismantling for shipment, connecting parts assembled in the shop shall be match marked to facilitate erection in the field and marked so as to identify each part with the assembly to which it belongs. The location of the match marks shall be clearly indicated on erection drawings. All parts or assembly of parts shall also be so marked as to identify them with this Contract.

SHOP CLEANING AND PAINTING

After shop assembly and inspection all parts of the Plant and Erection Equipment shall be cleaned and painted in accordance with the Specifications.

NAMEPLATES

Each major and auxiliary items of equipment shall have a nameplate permanently affixed thereto, or as directed, showing in a legible and durable manner the serial number, name and address of the manufacturer, rating data, electrical and mechanical characteristics, and other significant information, as applicable. Nameplate of distributing agents only will not be acceptable.

Nameplates shall also be provided where required for panel-mounted devices. Dials, gauges, and nameplates shall be marked with the nomenclature and units of measure in the metric system, and a schedule of such makings shall be submitted for review and approval by the Project Manager.

All nameplates shall be in the English language.

Nameplates for Plant Identification and record purposes shall be manufactured from stainless steel with satin finish and engraved with black lettering of a size which is legible from the working level.

Warning plate shall be manufactured from stainless steel with satin finish and engraved with red lettering and sited in a position affords maximum personnel safety.

Quality control System and tests carried out by the contractor

Quality control system

Within 28 calendar days after the Commencement Date, the Contractor shall submit for the Project Manager's approval a detailed description of his Quality Control System.

The system shall include the quality control of all aspects of on-site construction, laboratory tests and on-site tests. It will include a quality inspection plan which will cover all items intended for inspection at the Contractor, Sub-contractors and Supplier's works and premises.

The plan shall contain but will not be limited to the following items:

- 1) Quality Organisation plan for quality control (principles and procedures).
- 2) Curriculum vitae of his staff exclusively appointed for all aspects of quality control during the Contract period.
- 3) List of the Contractor's staff engaged in quality control and material testing.
- 4) Name and address of site materials testing laboratory.
- 5) List of laboratory equipment and description of the laboratory testing capabilities.
- 6) Arrangements for any tests to be performed beyond the capability of the Contractor's laboratory.
- 7) Procedures for comprehensive records.

The bidder shall be responsible for establishing and maintaining procedures for quality control which will ensure that all aspects of the Works comply with the requirements of the Contract.

The bidder shall be responsible for routine inspection, sampling and testing of all materials, workmanship, and plant and measuring devices.

The bidder shall establish at Site an efficient, comprehensive records facility and library. Books, drawings, standards, publications and manuals shall be indexed and their distribution controlled.

Record books of tests results

The sheets recording test results shall be of a type approved by the Project Manager. The Records Book of tests and results shall be kept by the Contractor.

A copy of the Records Book shall be supplied once a month to the Project Manager's Representative.

Special equipment

In addition the bidder shall provide other Laboratory equipment or/and field testing equipment as specified in the different Sections for the purpose of controlling particular works or/and determining in-site parameters. This equipment shall be available as necessary during the execution of such activities and could be removed from the Site as and when approved by the Project Manager.

Quality assurance and quality control system

To be specified by the bidder.

SITE FACILITIES TO BE PROVIDED BY THE Contractor

Access to working areas

The contractor must submit plan to the project manager for Access to working areas before implementation.

Storage areas

The Contractor shall make his own arrangements for the installation, operation and removal of this temporary storage and works and during the Contract period. Location and layout of these storage and work yard shall be subject to the prior Project Manager's approval.

SOLID WASTES

The Contractor shall make all provisions, subject to the Project Manager's approval, for collection and disposal of solid wastes from all camps and work places. Wastes shall be collected at least twice a week and disposed in an approved location.

All dumping materiel should be dump in the location that will be determined by the supervision engineer.

MEETINGS

The Contractor or his nominated Representative shall participate in progress meetings convened by the Project Manager. Such meetings will generally be held at regular intervals through prior notice, but may also be convened without prior notice, in the event of any unusual occurrence, at the discretion of the Project Manager.

The Contractor shall immediately notify the Project Manager of any unusual occurrence which he considers would justify an exceptional meeting.

The agenda shall include approval of the minutes of the previous meetings, progress of the works with respect to the schedule and analysis of the difficulties encountered in the work.

The minutes of the meeting shall be prepared by the Project Manager and shall be deemed, after approval by the other participants, to be written confirmation of the declarations, instructions and decisions taken during the meeting.

During the period for manufacturing of the equipment, progress meetings shall be held as conference calls or video conferences. When site erection starts, meetings shall be held on site.

RECORDS

Progress reports

By the last working day of each calendar month, the Contractor shall submit two copies of a draft monthly progress report which shall contain at least the following information:

- 1) Percentage progress of the Works compared with the approved programme, together with a description and percentage estimate of the work programmed for the following month.
- 2) List of Contractor's Equipment on Site together with its deployment during the month.
- 3) List of all personnel employed on Site.
- 4) Accident record, if any.
- 5) Summary of all work carried out during the period in question together with a description of any difficulties or problems occurring therein.
- 6) Description of the daily climatic conditions during the month.

- 7) Situation with respect to payments, together with the dates on which the Payment Certificates were submitted by the Contractor.
- 8) Description of any claim made by the Contractor during the period.
- 9) Progress photographs, when available.
- 10) State of progress of customs clearance and local transport operations.
- 11) Inventory of materials stored on Site.
- 12) Tests in progress or already carried out during the period and those planned for the next period. Within two working days of receipt of the draft monthly reports the Project Manager will return to the Contractor one copy marked for amendment together with any separate comments for correction or addition to the draft report.

Within two working days of receipt of the Project Manager's comments the Contractor shall submit ten copies of the final progress report which will include all of the corrections, additions and amendments requested by the Project Manager.

Each progress report shall be in a format approved by the Project Manager.

Photographs

To record the general progress of the work as well as particular details and special phases of erection and commissioning the Contractor shall take photographs at regular intervals, not more than one week.

Photographs of a given part of the Works shall as far as possible be taken from the same location and at the same angle.

OPERATION AND MAINTENANCE

General

The Contractor shall provide Operation and Maintenance Manuals of the facilities.

The manual shall be on paper size A4 (210 x 297 mm) paper 80-90 grams with offset or equivalent printing strongly bound in a durable stiff cover bearing the title in approved legend. Drawings shall be folded or reduced to 297 mm height. All volumes shall bear on the spine an approved shortened version of the title.

Each manual shall contain all relevant information on the operation, maintenance, servicing and dismantling of the relevant equipment.

General Comments concerning Printings of Manuals

- 1) Technical documents of commercial type, containing the necessary information, may be used partly or in full.
- 2) Drawings, diagrams, sketches or photographs shall be included whenever necessary for easier understanding or clarity.
- 3) Precautions and warnings relating to the safety of persons and of the equipment shall be clearly stated.
- 4) The sections of the Manual shall be arranged in the following order:
 - a) Title page
 - b) Table of Contents
 - c) Section I - Operation
 - d) Section II - Maintenance
 - e) Section III - Dismantling
 - f) Corresponding publications
 - g) Perspective drawings, scale drawings, diagrams, etc.

A complete document in electronic format (pdf) shall also be submitted.

Procedure

- 1) The Contractor shall submit 3 draft copies of each manual to the Project Manager 1 month before the Pre-commissioning Tests.
- 2) Once the Project Manager has given written approval of the draft, the Contractor shall hand over an additional 2 copies of the manuals to the Project Manager at the date of the Commissioning Tests.
- 3) Final version shall be strictly identical to approved drafts.

Content

Section I - Operation

This section shall include:

- 1) A general description.

2) Operating instructions:

These shall specify the precautions which must be taken and critical points to be observed and shall recommend a method for monitoring and recording observations and maintaining operational records.

3) Fault-finding table:

A single document for the intention of operating staff shall indicate the full list of all faults that may occur in all the equipment and which are detected by protection systems activating alarms.

For each fault, the document shall indicate the probable causes and the remedial measures to be taken to ensure return to normal operation.

4) Characteristic data:

The main specific characteristics of each item of Plant shall be listed including but not limited to rated capacity, power, voltage, amperage, pressure, temperature, number of revolutions per minute, discharge, operating range, efficiency.

5) Curves:

Characteristic curves of each item of Plant shall be provided whenever specified or whenever it is normal practice to do so.

Section II - Maintenance

This section shall contain the following:

Maintenance instructions:

These shall include instructions for routine preventive maintenance and lubrication requirements. Schedules shall be given for Plant shut-down indicating the frequency in the operating cycle at which they should occur, and the tests to be made during shut-down. The instructions shall also include a brief description and identification of special tools required.

Calibration and tolerances:

Information shall be given in tabular form of the calibration of instruments and alarms. Information on operating temperatures, pressures, discharges, and other such data, shall also be given in tabular form. Settings for protection relays, contact gaps, clearances, and contact pressures shall be given.

This information shall be set out under two headings: "Recommended" and "Actual". Actual characteristics shall be ascertained during the Commissioning Tests on Site after the Plant has been erected.

Section III - Dismantling

This section shall describe the sequence and procedure to be followed, operation by operation. Points where exceptional care is needed and precautions to be taken shall be specifically noted.

PROTECTION OF FINISHES

The Contractor shall take every care to prevent damage to the works and shall ensure that adequate protection is given to all works from the activities of following trades and any third party. Vulnerable parts of the works particularly liable to damage shall be protected as may be reasonably required by the Project Manager and shall be deemed to be insured against damage in accordance with the conditions of contract.

Spare parts

Spare parts

The Contractor shall provide the spare parts required by the Specifications and as recommended by the suppliers.

Spare part book

- 1) The Contractor shall give a spare part book. This spare parts book shall contain an assembly drawing of the plant which shall show all parts of the plant separately marked, designated and referenced.

The book shall also contain sketches of each part with the part number and the designation of the part. The material of the part shall also be indicated. These sketches and lists of parts shall be cross-indexed with the assembly drawings.

- 2) The spare parts book shall present information in a simple manner so that non-technical personnel may be able to indent these spare parts. The lists of spare parts required shall be made with reference to the spare parts book.

Duplicate

All spare parts shall be duplicates of the original parts furnished and interchangeable therewith.

Packing and packing list

The spare parts shall be suitably identified, treated and packed for a long storage in containers plainly marked "SPARE PARTS ONLY". A packing list, indicating the contents of each such container, shall be securely fastened in a moisture-proof envelope to the outside of the container. The packing list shall also provide the following information:

- 1) Contractor.

- 2) Contract number.
- 3) Identification, including Contractor's drawing number, reference of each spare part in the container.