
Greywater Treatment System
Greywater Treatment System in Harir

Bill of Quantities
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Republic of Iraq, Autonomous Region of Kurdistan	
Tender Document Volume 3	
Improvement of Sanitation Supply / Construction of Grey Water Treatment plants	
IRQ BOR 26	Preamble

Preamble

1 INTRODUCTION

- 1.01 The rules contained in this Preamble apply equally to both proposed and executed works.
- 1.02 The Bills of Quantities are to be read and construed in association with the Drawings, the Specification and this Preamble. Information which is given on the Drawings and/ or in the Specification is identified by cross references included in the descriptions of work in the Bill of Quantities.
- 1.03 Where work cannot be fully described or where the quantity of work required cannot be accurately determined, it is given as an item or a Provisional Sum.
- 1.04 Unless the term meter, used in this Preamble, is preceded by the words square or cubic it is deemed to be linear.

2 PRICING

- 2.01 The items in the Bill of Quantities do not necessarily contain full description of the required Works, and when pricing, the Tenderer shall allow in his unit rates for all obligations, liabilities and services stipulated in the relevant sections of all Tender and Contract Documents to provide and maintain a complete
- 2.02 The Tenderer shall, during his study of the Tender, address his queries, if any, to the Client, who will study and clarify all such queries. Should the Tenderer during his study of the Tender, consider that there is any shortage, error or inconsistency in the Contract Documents, which would affect the rates of his Tender, or the value of the works, the Tenderer must have all such points clarified by the Client before submitting his Tender.

- 2.03 Tenders shall be strictly in accordance with the Tender Documents and shall not be qualified in any way. Any such qualification is liable to result in a Tender which is otherwise favorable, not being considered. The Tenderer shall therefore ensure that any explanatory or descriptive matter included with his Tender does not constitute a qualification to the Contract requirements and the provisions and conditions as stipulated in the Documents.
- 2.04 The Tenderer shall not alter the text of the Bill of Quantities. Any alteration to the text inserted by the Tenderer shall lead to the rejection of the Offer.
- 2.05 The Bill of Quantities shall be priced in IQD. All payment made to the successful Tenderer in accordance with all certificates, accounts and similar documents relating to this Contract shall be in IQD.
- 2.06 The Tenderer shall satisfy himself as to the meaning of each item in the Bill of Quantities. Unless otherwise measured separately, the rates inserted by the Tenderer shall be deemed to cover all costs, expenses, risks, liabilities, obligations and services described in the Tender Documents, the full cost of the Works, including all direct and indirect expenses, sundry labors, overhead and profit, and all matters for the proper construction, completion and maintenance of the Works.
- 2.07 These rates shall allow, but not by way of
- for complying with all Contract Documents;
 - for any design required by the Contractor where expressly stated in the Contract;
 - for all labor and material including samples, sampling and testing, waste, transport, mockups, and shop, fabrication and as-built
 - for all temporary work of each description required including any that may be required by Sub-Contractors whether nominated or
 - for the provision and use of all equipment and plant of every kind, whether mechanical, non-mechanical or manual, required for the expeditious carrying out of the Works in their proper sequence;
 - for shifting, altering and adapting such temporary work and equipment as may be required during the progress of the Works and removing at completion and making good any surfaces disturbed;
 - for full customs and other import duties;
 - for cooperation and coordination of the Works with his Sub-Contractors;

- for providing all required insurances and the
- for all necessary temporary services associated with the Works;
- for providing until handing over, clean and uncontaminated water and all necessary adequate electrical power required for the works;
- for the work in connection with measurement and re-measurement, and the final account;
- for daily site cleaning during execution of the Works and final cleaning after completion of the works including removing all waste, scrap and resulting materials to approved dumping areas;
- for overhead and profit;
- and for all other establishment charges and all costs of whatever nature.

No claim for additional payment or extension of time will be considered for any error or misunderstanding by the Tenderer in these respects.

- 2.08 Any item, which is not priced, shall be deemed to have been included in other rates and prices, and in the Contract Price.
- 2.09 The rates inserted by the Tenderer in the Bill of Quantities shall be in words and in figures. In case of discrepancy between the two, the rates written in words shall govern.
- 2.10 When pricing the Bill of Quantities, the Tenderer must be aware of all site conditions.
- 2.11 The unit rates and prices inserted by the Tenderer shall apply throughout the Contract and to any additional work, which might be ordered by the Client.
- 2.12 The Tenderer shall submit to the Client, unless stated otherwise, a detailed breakdown of all his rates and lump sums prior to the signing of the Contract. The Tenderer shall liaise on this matter with the Client.
- 2.13 The Tenderer should price all items he considers of value. If items are not priced by the Tenderer, they will be deemed to be of no value or that their value has been spread throughout the rates of other items.
- 2.14 The Tenderer shall complete the collections at the end of each Bill and carry the totals to the "Summary".

- 2.15 The Tenderer shall allow in his rates for protecting all Works against damage by whatever method deemed necessary and approved. Any work damaged before the Works are handed over shall be replaced or made good at the Tenderer's expense and to
- 2.16 The Tenderer is expected to take all necessary precautions to avoid damaging services and where they are interrupted to reconnect them immediately. Any underground utility structure related to any local authority shall be properly disconnected, disposed, relocated and/or diverted under the Engineer's supervision and under the control of the relevant authority at no additional cost. No separate payment shall be made and the rates in the Bill of Quantities shall be deemed to cover adequately all costs. The Tenderer's attention is drawn to the fact that the service authorities may impose, in addition to the cost of repair, statutory penalties. Details of these requirements may be obtained from the respective authorities.
- 2.17 Unit rates and lump sums inserted by the Tenderer in the Bill of Quantities shall be fixed and not subject to variation. The Tenderer shall not be able to claim for any compensation due to difficulties in the works, shortage of labor, equipment or material, bad weather or unforeseen circumstances.
- 2.18 Any item included in the Bill of Quantities, which is not carried out, shall be omitted from the interim and final statements. Any additional item of work carried out on the Engineer's written instructions shall be included in the relevant interim and final statements.
- 2.19 Any discount offered by the Tenderer shall be applied uniformly on a pro-rate basis to all items in the Bill of Quantities, and to items of any necessary variation (if any) made by the Employer, which shall be a part of the Tender Documents. Discount shall not be applied against Provisional Sums inserted by the Employer in the Bill of Quantities.

- 2.20 The Contractor shall include in his rate the cost and time effect of coordinating and fully assisting any other Nominated Sub-Contractors, if any, appointed by the Employer, during schedule overlapping in the utilization of all equipment and facilities, and maintaining all equipment (cranes, generators, safety barriers, site security, etc.) operational until the end of all trades of the entire project. No claim for additional payment or extension of time will be considered in these respects.

3 MEASUREMENT

- 3.01 The Quantities set-out in the Bill of Quantities are estimated quantities and are intended to give a reasonable indication of the works shown on the Drawings, they are not to be taken as the actual and correct quantities of the Works to be executed by the Tenderer in fulfillment of his obligations under the Contract.

- 3.02 This is a **Remeasured Contract**.
Notwithstanding the quantities given, all Works itemized in the Bill of Quantities shall be subject to re-measurement on site as executed and approved by the Engineer, and in the unit of measurement indicated in the Bill of Quantities, and payment will be made at the corresponding unit rates on the re-measured quantities.

- 3.03 All Works shall be measured net as installed with no allowance made for laps or waste, and irrespective of any trade, general or local customs. Measurement shall be applicable to finished work only as completed and no allowance shall be made for wastage, working spaces, bulking, shrinkage, overlaps, etc.; the principle of net measurement shall be applied to all Works under this Contract. All measurement shall be rounded up or down to the nearest integer number and exact half units shall be rounded up. Any thickness stated in this Document, shall be the finished and specified thickness. The unit of measurement for each item shall be as indicated in the Bill of Quantities.

- 3.04 Certain items in the BOQ are designated "Provisional". The provision of such items shall be used only at written direction of the Engineer. If not used either wholly or in part, the amount not used shall be deducted from the Contract Price and no claim shall be entertained with respect to overhead charges or any other cost that may allegedly result therefrom.

- 3.05 Lump Sum items shall not be paid until all the requirements and obligations set forth in these respects are accomplished completely to the satisfaction of the Engineer; However, where Lump Sum items involve the Contractor in periodic costs, payment will be made at the Engineer's discretion.

4 EXPRESSIONS, NOTATIONS AND ABBREVIATIONS

- 4.01 The expression "approved shop drawings" shall be deemed to mean "shop drawings submitted by the Contractor and approved by
- 4.02 Whenever the expression "shown on the drawings" appears in the Bill of Quantities, it shall be deemed to mean "shown on the Tender drawings and on approved shop drawings".
- 4.03 When the expression "ditto" appears under an item in the Bill of Quantities, it shall be deemed to mean that the said item shall include the whole relevant description of the preceding item together with any description written before and/or after the said expression.
- 4.04 When the expression "extra-over" appears under an item in the Bill of Quantities, it shall be deemed to mean that the said item shall be measured and paid for in addition to the measurement of the basic item to which it
- 4.05 The following notations and abbreviations are used in the Bill of Quantities:
- Millimeter mm
 - Centimeter cm
 - Linear Meter lm
 - Kilometer km
 - Square Meter m²
 - Cubic Meter m³
 - Kilogram kg
 - Megapascal MPa
 - Flange Pressure Rating PN
 - Kilowatt kW
 - Unit U
 - Number №
 - Lump Sum LS
 - Provisional Sum PS
 - Drawing Dwg.
 - Value Added Tax VAT
 - Bill of Quantities BOQ

5 RATES AND METHODS OF MEASURING

- 5.01 General Requirements:

► Payment for all items listed under the "Preliminaries" in "Bill № 1", shall be spread over the Contract Period in proportion to the percentage of the value of work completed to the satisfaction of the Engineer.

► Unless otherwise specifically stated in the Bill of Quantities or herein, the following are deemed to be included in all work:

- labor and all costs in construction therewith,
- materials, products, goods and all costs in connection therewith,
- Contractor's equipment, including but not limited to construction plant, scaffolding, tools, vehicles and the like and all costs in
- assembling, fitting and fixing materials, products and goods in position,
- any method of fixing, fixing to any nature of base or background including preparation and providing fixing materials,
- breaking down for transport and installation and subsequent reassembly of composite items manufactured off site,
- waste of materials,
- square, raking and curved cutting,
- work at any location or height,
- work in small, isolated quantities,
- protection of all work,
- protection of all existing structures, utilities, site improvements, trees and vegetation, features, pavements and other facilities on and adjacent to the site, which are to remain upon completion of the work,
- all other enabling tasks associated and subsidiary components and items of work which are indicated or reasonably inferred from the Drawings and/ or Specification and necessary to perform and complete the work described.
- establishment and overhead charges and profit.

► Except where items are included in the Bill of Quantities and are priced separately by the Contractor therein, provision of the following are deemed to be included with all work:

- site administration and security,
- insurances,
- bonds and guarantees,
- water for the Works,
- lighting and power for the Works,
- temporary accommodation for the use of the Contractor and the Engineer,
- temporary telephones and the cost of calls for the use of the Contractor and the Engineer,
- temporary roads, hardstandings, crossings and the like,
- temporary fencing, hoardings, screens, fans, footways, guardrails, gantries and the like,
- giving notices and making applications, including the payment of fees and charges in connection therewith,
- safety, health and welfare of workpeople,
- compliance with traffic regulations
- maintenance of public and private roads, services and adjoining property,
- control of noise and pollution, prevention of fire and compliance with all other statutory and general obligations,
- removing rubbish, protective casings and coverings, and cleaning the Works on
- drying the Works,
- testing and commissioning of service installations including the provision of fuel,
- samples of materials and testing of materials including providing equipment for testing,
- design, co- ordination, installation and as- built record drawings and the like,

- preparation and submittal of reports, records, certificates, notices, proposals, designs, details, calculations and other information and data required by the Specification,
- allow in unit rates for all other requirements, services, provisions, liabilities and obligations contained in the General Requirements and Conditions of Contract.
- Maintaining, adapting, clearing away and making good are deemed to be included with the items for temporary works.

5.02 Site Construction:

- Rates for breaking out and reinstatement of existing surfaces shall include, but not limited
 - Shop and As-Built Drawings;
 - Tests and samples;
 - Waste;
 - Transport;
 - Breaking out existing paved surfaces in bituminous courses, concrete, or pavers of any type;
 - Reinstatement to match previously existing;
 - Removal and replacement of aggregate base and sub-base courses, bituminous courses, concrete surfaced roads, curbs and pavers of
 - Removal and replacement of street lamps, roads signs, road marking, safety barriers, any form of structure and all other street furniture;
 - Removing and disposing off resulting materials to approved dumping area.
- Rates for trench excavation shall include, but not limited to:
 - Shop and As-Built Drawings;
 - Tests and samples;
 - Waste;
 - Transport;
 - Excavating in any type of soil and to the required depth;
 - Making good all work disturbed.
 - Grading or leveling and compacting or trimming bottom of excavation;
 - Planking, strutting and supporting sides of excavation;
 - Keeping excavation free from all water sources;
 - Protection of existing service utilities and provision of all necessary temporary works to maintain utilities in use during and until completion of works;
 - Removing abandoned services and utilities of any type;
 - Preserving the bottoms of trenches;
 - Multiple handling of materials and transporting around the site, provision of storage areas;
 - Selection, handling and storage of material for backfilling purposes;

- Locating and protecting existing services and utilities, and provision of necessary temporary diversion works to maintain said services/utilities in use during execution of works and repairing or replacing them should
- Any hand working close to or below existing services;
- Providing all necessary barriers, lighting, warning signs, traffic controls and all other safety measures necessary for the Works;
- Temporary cofferdams, supports, bailing, drainage, pumping, sheeting and all other temporary works;
- Unauthorized over depth/width trenching and the backfill material including lean concrete required in such cases, no allowance shall be made for any working space or subsequent variation in trenching;
- Over excavating as a result of Contractor's failure to protect and preserve the trenches and formations;
- Consolidation of pipe bedding and surrounding material using water or hand tamping;

- Backfilling to indicated levels with selected excavated or borrow fill materials;
- Compaction in layers to required density;
- Moisture content control and testing;
- Loading and disposing off surplus and excess materials to approved dumping areas.

- Length of trench excavation for pipes shall be measured from center to center of manholes, chamber and the like. Trench width shall be as shown on Drawings. Bottom limits of trench excavation shall be the pipe invert level in addition to the thickness of the pipe and pipe bedding; However, trench depth stated in the Bill of Quantities shall be the difference between bottom of aggregate sub-base level
- Depth of trench excavation for channels shall be overall, measured from top of channel down to bottom of blinding layer.

- Rates for pipe installation shall include, but not limited to:
 - Shop and As-Built Drawings;
 - Tests and samples;
 - Waste;
 - Transport;
 - Supplying, installing, connecting and testing;
 - All necessary fittings, jointing materials and fixing accessories.

- Rates for pipe bedding and cover shall include, but not limited to:
 - Shop and As-Built Drawings;
 - Tests and samples;
 - Waste;
 - Transport;

- Supplying, leveling, spreading and compacting.

- Rates for concrete encasement shall include, but not limited to:

- Shop and As-Built Drawings;
- Tests and samples;
- Waste;
- Transport;
- formwork, concrete works, reinforcement and accessories.

- Rates for manholes and structures shall include, but not limited to:

- Shop and As-Built Drawings;
- Tests and samples;
- Waste;
- Transport;
- Site clearing;
- All necessary excavation in any type of soil;
- Concrete works including formwork, accessories and reinforcement;
- Bituminous paint to concrete surfaces in contact with soil;
- Liner to internal surfaces of sewer manholes and sewer structures;
- Concrete benching to manholes;
- Breaking into pipes, and forming and sealing pipe inlets and outlets;
- Backdrop connections;
- Cover and frame, ladder or steps, supports and accessories;
- Backfilling and compacting in layers to required density;
- Disposing off resulting materials to approved dumping area.

- Rates for liners are included in the rates for sewer manholes and shall include, but not

- Shop and As-Built Drawings;
- Tests and samples;
- Waste;
- Transport;
- Mockups;
- Preparing the surfaces including sandblasting;
- Air cleaning the surfaces;
- Application and placing the required liner as per approved manufacturer's recommendations;
- Application of additional liner at outlets and openings;
- All necessary accessories;

- Rates for connection of new pipes to existing manholes and connection of existing pipes to new manholes shall include, but not limited to:

- Shop and As-Built Drawings;
- Tests and samples;
- Waste;
- Transport;
- Site clearing;
- All necessary excavation in any type of soil;
- Keeping excavation free from all water sources;
- All necessary temporary works to maintain services in use;

- Breaking into existing pipes and/or existing manholes;
- All necessary connections;
- Preparing cut ends of pipes including all joint short pieces of pipe and rocker pipes;
- Proprietary pipe seals and making good;
- Supply, laying, connecting, jointing and testing of new pipes to match existing, for the connection of existing pipes to new manholes, with all necessary and required pipe fittings, jointing materials, accessories and sand for
- Making good all disturbed surfaces;
- Backfilling with selected excavated or imported fill materials;
- Compacting in layers to required density;
- Disposing off resulting materials to approved dumping area;

End of Preamble

Improvement of Sanitation Supply / Construction of Grey Water Treatment plants

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DIVISION 1: Preliminaries

Item	Description	Unit	Estimated Quantity	Unit Rate IQD	Amount IQD
1	<u>Preliminaries</u>				
	The Contractor shall fully price the following selected "General Preliminary Items" as scheduled hereunder. All other Preliminary items of works shall be deemed included within his unit rates and lump sums for work items.				
1.1	<u>Mobilization and Demobilization</u>				
	Include all necessary "Mobilization" to site and "Demobilization" on completion of the Works.	Item	1.00		
1.2	<u>Temporary Facilities and Services for the Engineer</u>				
	Provide, furnish, equip and maintain during and until completion of the Works, all "Temporary Facilities and Services for the Engineer", complete all as scheduled in the Contract.	Item	1.00		
1.3	<u>Setting Out and Accuracy</u>				
	Include all necessary temporary survey works and tasks required for "Setting Out and Accuracy" described in the Contract.	Item	1.00		
1.4	<u>Temporary Services</u>				
	Include all necessary and required "Temporary Services" to properly carry out all the works including water, electrical power, lighting, local phone charges and all other services of a temporary nature required and described in the Contract.	Item	1.00		
1.5	<u>As-Built Drawings and Manuals</u>				
	Prepare and furnish to the approval of the Engineer all required "As-Built Drawings" on completion of the Works and "Manuals" in the type, number and presentation as described in	Item	1.00		
	Subtotal Division 1				
	Preliminaries				

Improvement of Sanitation Supply / Construction of Grey Water Treatment Plants**IRQ BOR 26****DIVISION 2: Earthwork**

Item	Description	Unit	Estimated Quantity	Unit Rate IQD	Amount IQD
2	<u>Earthwork</u>				
2.1	<p>Removal of topsoil</p> <p>Excavate and remove topsoil to a depth of 20 cm across the construction pit area, including any loose material, vegetation, and organic matter. If old pavement, concrete, or large stones are present within the topsoil, these must also be broken up and removed. Ensure the removed pavement and concrete are disposed of or recycled according to regulations, and large stones are extracted for reuse or proper disposal. Stockpile the removed topsoil on-site for later use, keeping it covered to prevent contamination. Leave the excavation area clean, level, and free of debris, ready for further construction.</p>	m2	95.00		
2.2	<p>General excavation</p> <p>Excavate the construction pits to the required dimensions as agreed on-site with BORDA, including excavation through all types of soil, rock layers, existing foundations, concrete, and asphalt layers if present. Any removed material should be set aside for later refilling. Ensure to provide a working distance of at least 50 to 80 cm from the walls of the excavation to allow for safe and efficient excavation. Refer to the attached sketch in the annex for specific dimensions and layout.</p>	m3	300.00		
2.3	<p>Gravel subbase</p> <p>Deliver and place gravel of size 16/32 mm in the bottom of the construction pits. Fill the pit with a single layer of 20 cm thick gravel. Ensure the gravel is evenly spread, leveled, and compacted using a vibro compactor to achieve a stable sub-base. The final decision on the exact requirements and any adjustments will be made by BORDA.</p>	m2	50.00		
2.4	<p>Backfilling</p> <p>Backfilling of the excavated soil to the construction pit after finishing the treatment plants including soft compaction with vibrocompacter / vibe-roller; every 30 cm of backfilling in layers to be compacted; grain size between 0.1 cm to max. 3.0 cm; in case excavation material is not suitable, other backfilling material has to be brought; to be approved by BORDA</p>	m3	153.00		

2.5	<p>Transport of soil</p> <p>Transport surplus material and excavated soil from the construction site to an approved dumping site. This includes all necessary activities for loading the material onto transport vehicles, transporting it to the designated disposal location, and unloading it at the approved site. Ensure that the transport and disposal comply with local regulations and <u>environmental guidelines.</u></p>	m3	147.00		
2.6	<p>Pegging and leveling for the treatment plants.</p> <p>Establish and fix proper center lines in two directions and benchmarks as per the project specifications, attached drawings, and instructions from the supervising engineer. This work must be carried out for all required cutting depths and layouts for plant installations. Ensure that all lines and benchmarks are accurately set and aligned according to the provided specifications to facilitate precise construction work.</p>	item	1.00		
	<p>Subtotal Division 2</p> <p>Earthwork</p>				

Improvement of Sanitation Supply / Construction of Grey Water Treatment plants**IRQ BOR 26****DIVISION 3: Reinforced Concrete / Concrete**

Item	Description	Unit	Estimated Quantity	Unit Rate IQD	Amount IQD
3	<u>Reinforced Concrete / Concrete</u>				
	The following positions include the delivery of concrete, the needed formwork , the build in of the concrete with all necessary machines and the compaction of the concrete with vibro-compaction; formwork anchor, tie rods and spacers are part of formwork and will not be payed as reinforcement steel.				
3.1	Blinding layer Provide material and formwork for a blinding layer with a thickness of 15 cm . Use Concrete C10, ensuring it is laid to a proper level. The concrete must be poured over a plastic foil to prevent moisture loss and ensure proper curing.	m2	50.00		
3.2	Foundation plates/Double layer Reinforcement Providing of material and formwork for a reinforced concrete foundation with a thickness of 20 cm; Concrete C 25/30 with proper level; the amount of cement has to be 350 kg per cubic meter at least. Installment of reinforcement as shown in drawigs, special bar spacers have to be used; the connection between foundation and walls has to be	m3	9.50		
3.3	concrete ceiling / top plate Provide material and formwork for a reinforced concrete top plate with a thickness of 20 cm. Use Concrete C25/30 with a minimum cement content of 350 kg per cubic meter. Reinforcement must be installed as shown in the drawings, with special bar spacers used to ensure correct placement and alignment. The top plate must be cast in one continuous operation to avoid joints or seams within the plate. Frames for manhole covers and pipes must be installed before casting to ensure proper integration.	m3	9.50		

3.4	Concrete testing Concrete compressive strength test have to be done by cubes of 15 cm x 15 cm x 15 cm; at each treatment plant 3 tests have to be done, 2 at foundation plate, 1 at ceiling/top plate; the strength tests have to be done 7 and 28 day after casting; test reports have to be made in ENGLISCH. The Contractor has to provide three options of testing laboratory, so that BORDA can choose.	pcs	12.00		
	Subtotal Division 3 Reinforced concrete/concrete				

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DIVISION 4: Hollow Concrete Blocks

Item	Description	Unit	Estimated Quantity	Unit Rate IQD	Amount IQD
4	<u>Hollow Concrete Blocks</u>				
4.1	Supply materials and construct partition walls for treatment plants using hollow concrete blocks measuring 20x20x40 cm with a thickness of 20 cm. The construction shall use cement mortar with a mix ratio of 1:3. The work must be executed in accordance with the project specifications, detailed drawings, and instructions from the supervising engineer. Ensure that all walls are properly aligned, leveled, and finished to meet the specified standards.	m2	136.31		
4.2	Cement Plastering Apply two layers of cement plaster to walls/ceilings with a total thickness of 2.5 cm (1.25 cm per layer). The plaster shall be composed of cement mortar with a mix ratio of 1:3 (1 part cement to 3 parts sand). The surface must be properly cleaned, dampened, and prepared before application. The first layer of plaster, 1.25 cm thick, is to be applied, allowed to set, and cured before the second layer is applied to achieve the final thickness of 2.5 cm. Ensure proper curing throughout both layers to prevent cracks and ensure durability.	m2	288.22		
4.3	Waterproof Coating Apply SEAL Boss Waterproof Coating HD 80 to all plastered surfaces on both inside and outside walls. This coating should be applied after the plastering work is complete and has fully cured. Ensure uniform and complete coverage to achieve effective waterproofing, as specified in item 4.2	m2	288.22		
	Subtotal Division 4				
	Hollow Blocks				

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DIVISION 5: Pipework

Item	Description	Unit	Estimated Quantity	Unit Rate IQD	Amount IQD
5	<u>Pipework</u>				
	PVC-Pipes and fittings 100 mm				
	Supply and install all necessary fittings and accessories for pressure sewer pipes as specified and shown on the drawings. This includes all required components, such as connectors, valves, and fittings, necessary for the complete and functional assembly of the pressure sewer system. Ensure that all components are properly fixed, connected, and tested according to project specifications and engineering standards. All installation work must be carried out to the satisfaction of the Engineer, including any additional related tasks required for proper system operation and compliance with specifications.				
5.1	PVC-pipe 100 mm Providing of material and assembly of PVC-pipe quality SN4, diameter 100 mm	m	46.80		
5.2	Ellbow 100 mm Providing of material and assembly of ellbow 45°, PVC-pipe quality SN4, diameter 100 mm	pcs	3		
5.3	T-fitting 100mm Providing of material and assembly of T-fitting, PVC-pipe SN4, diameter 100 mm	pcs	24		
5.4	Coupling 100mm Providing of material and assembly of T-fitting, PVC-pipe SN4, diameter 100 mm	pcs	4.00		
	Pipes and fittings 150 mm				

	Supply and install all necessary fittings and accessories for pressure sewer pipes as specified and shown on the drawings. This includes all required components, such as connectors, valves, and fittings, necessary for the complete and functional assembly of the pressure sewer system. Ensure that all components are properly fixed, connected, and tested according to project specifications and engineering standards. All installation work must be carried out to the satisfaction of the Engineer, including any additional related tasks required for proper system operation and compliance with specifications.				
5.5	PVC-pipe 150 mm Providing of material and assembly of PVC-pipe quality SN4, diameter 150 mm	m	2.55		
5.6	Ellbow 150 mm Providing of material and assembly of ellbow 45°, PVC-pipe quality SN4, diameter 150 mm	pcs	3.00		
5.7	T-fitting 150mm Providing of material and assembly of T-fitting, PVC-pipe SN4, diameter 150 mm	pcs	3		
5.8	PVC-pipe 200mm Providing of material and assembly of PVC-pipe quality SN4, diameter 200 mm	m	9.00		
5.9	Ventilation PVC-pipe 50mm Providing of material and assembly of PVC-pipe quality SN4, diameter 50 mm	m	2		
5.10	Flexible PVC-pipe 150 mm Providing material and assembly of flexible PVC-pipe, quality SN4, diameter 150 mm	m	20		
	Subtotal Division 5 Pipeworks				

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DIVISION 6 Miscellaneous

Item	Description	Unit	Estimated Quantity	Unit Rate IQD	Amount IQD
6	<u>Miscellaneous</u>				
6.1	<p>L-Section Iron Frame Support for Perforated Slab:</p> <p>The frame should be made from L-shaped iron with dimensions of 5 cm x 5 cm and a thickness of 5 mm. The iron frame should be painted with anti-corrosion paint to ensure durability and resistance to rust. The price includes welding all necessary framework, made from L-shaped iron, designed to securely support the perforated slab, as per the drawing.</p>	m	167		
6.2	<p>Prefabricated Manhole Cover 70cm*70cm</p> <p>Provision of material and assembly of prefabricated manhole cover. The manhole covers must be painted with two layers of corrosion resistance and should be designed according to the specifications provided by the BORDA technical engineer.</p>	pcs	10		
6.3	<p>Filter Material</p> <p>Filter material for the anaerobic filter, such as broken hollow bricks of good quality.</p>	m3	14		
6.4	<p>UV Disinfection Lamp</p> <p>Providing of materials and setting up automatic UV disinfection lamp: Capacity not less than 40litre/minute, Power consumption 20-40 WATT, Operating pressure 300 PSI & Lamp total working hours not less than 9000 hours with all necessary accessories price including fitting and electricity connection, the UV lamp should be approved by BORDA site engineer.</p>	pcs	1.00		
6.5	<p>Water drainage:</p> <p>Set-up, operation and removing of sufficient drainage system for construction dewatering including pumps, piping system and fittings.</p>	Item	1.00		

6.6	150 mm Cast Iron Gate Valve: Supply and installation a 150 mm cast iron gate valve for influent of the system.	item	1.00		
6.7	Submersible Pump Supplying material and installation of a submersible pump to transport treated water from the collection tank to Harir Park(Green Area), the pump must be suitable to transport 20 cubic meter of treated water per day and the price including fitting and including all electrical accessories. It should be equipped with all necessary accessories for proper installation, including mounting brackets, baseplates, piping connections, automatic control panels, and a timer. Ensure the pump is suitable for the water quality and pressure requirements specified in the project. Installation includes connecting the pump to the existing system, ensuring proper alignment and secure mounting, and making all necessary electrical and control connections. Perform comprehensive testing to confirm the pump's performance meets the specified flow rate and operational standards. Provide all relevant documentation, including operation manuals and maintenance instructions, and ensure the installation is completed to the satisfaction of the BORDA Engineer.	pcs	2		
6.8	Diversion Box Supply materials and install a diversion box parallel to the open channel with dimensions of 70 cm x 70 cm and a maximum depth of 1 meter, constructed from solid concrete blocks measuring 15 cm x 20 cm x 40 cm. The installation includes fitting a gate inside the box for controlling flow quantity, a metal anti-corrosion cover for protection, and plastering with cement mortar on both the interior and exterior surfaces. The scope covers all necessary materials, labor, and associated work to ensure the diversion box is built to specifications and fully functional, with the final work subject to the BORDA Engineer's approval.	pcs	1.00		
	Subtotal Division 6 Miscellaneous				

Improvement of Sanitation Supply / Construction of Grey Water Treatment plants

IRQ BOR 26

DIVISION 7: Rehabilitation of Irrigation

IRQ BC Description		Unit	Estimated Quantity	Unit Rate IQD	Amount IQD
7	<u>Rehabilitation of Irrigation Network in Sharistani Park</u>				
7.1	<p>Polyethylene Pipe 2.5 inch</p> <p>Supply and install 2.5-inch polyethylene pipe for irrigation purposes. The installation includes all necessary fittings, connectors, and accessories required for a complete and functional irrigation system. The pipe should be installed according to the project specifications and aligned properly to ensure efficient water flow. Secure the pipe with appropriate supports and ensure all connections are watertight. Perform pressure testing to verify the system's integrity and functionality. The scope covers the provision of materials, labor, and all associated work to ensure the irrigation system operates as designed, with final inspection and approval by BORDA Engineer</p>	m	165.00		
7.2	<p>Polyethylene Pipe 1.5 inch</p> <p>Supply and install 1.5-inch polyethylene pipe for irrigation purposes. The installation includes all necessary fittings, connectors, and accessories required for a complete and functional irrigation system. The pipe should be installed according to the project specifications and aligned properly to ensure efficient water flow. Secure the pipe with appropriate supports and ensure all connections are watertight. Perform pressure testing to verify the system's integrity and functionality. The scope covers the provision of materials, labor, and all associated work to ensure the irrigation system operates as designed, with final inspection and approval by BORDA Engineer</p>	m	480.00		

7.3	Supply and install drip emitters (dripping heads) for the irrigation system under trees, ensuring proper placement to deliver water efficiently to the root zone. The installation includes all necessary components such as emitters, connectors, and accessories to form a complete and functional system. The emitters should be spaced according to project specifications to ensure uniform water distribution. All connections must be secure, watertight, and appropriately supported to maintain optimal function.	pcs	100.00		
	Subtotal Division 7 Rehabilitation of Irrigation				

IRQ BOR 26 Greywater Treatment System in Qushtapa

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