

REPUBLIC OF LEBANON

MINISTRY OF ENERGY AND WATER

NORTH LEBANON WATER ESTABLISHMENT

DESIGN AND SUPERVISION CONSULTANCY FOR REHABILITATION OF 1 KM OF WATER NETWORKS IN MENYE-DENNIYE AREA

VOLUME 5

BILL OF QUANTITIES

Part A – Preamble to Bill of Quantities
Part B – Bill of Quantities

JUNE 2024



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PART A

PREAMBLE TO BILL OF QUANTITIES

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1.000 INTRODUCTION

1.010 GENERAL

The Bill of Quantities is not and does not purport to be either exhaustive or explanatory of all the obligations and duties of the Contractor who shall be deemed to have satisfied himself as to the correctness and sufficiency of the rates and prices entered by him in the Bill of Quantities all of which shall cover all his obligations under the Contract (including those in respect of the supply of goods, materials, plant or services etc.) and all matters and things necessary for the proper execution and completion of the Works and the remedying of any defects therein and which may reasonably be inferred to be necessary for the Works as described in the Contract whether expressly mentioned therein or not.

1.011 ITEMS DESCRIPTION

A detailed description of the items and of the conditions under which and the manner in which the work is to be done and measured is not set out in each item of the Bill of Quantities. Reference should be made to this Preamble and all other documents forming the Contract.

1.012 DEFINITIONS OF BILL OF QUANTITY CATEGORIES

The Bill of Quantities is divided into several categories, listed below, to group the prices under the following:

- A) Distribution Networks
- B) General Works

1.012.1 Distribution Networks

The relevant activities shall comprise, but not be limited to, a complete topographic survey and a survey of the existing facilities using the GPR technique or others if approved by the Engineer.

Also included are trial tests and as-built drawings.

Besides, the pipe works shall mainly consist of the supply of the required pipes with all necessary fittings, trench excavation, preparation of suitable bedding and surrounds, pipe laying and trench backfilling. Special provision shall be made for stretches of pipes crossing bridges.

Furthermore, the Works relating to distribution pipelines shall include the supply and installation of hydraulic accessories, such as gate valves, air release valves, water meters, and others...

Also comprised are valve chambers in addition to their frames and covers.

The concrete works form an important element of these activities, especially regarding pipe supports, anchor blocks, thrust blocks, and others.

Moreover, the testing and commissioning of the pipes, besides road reinstatement where necessary, are also required.

1.012.2 General Works

The relevant activities shall comprise, but not be limited to notice boards at least at the starting and ending point of the project intervention; site insurance, site preparation and mobilization-demobilization, access to site and all requires health and safety measures.

1.013 RATES AND PRICES

The Contractor shall be deemed to have inserted against each item in the Bills such rates and prices as he may deem necessary to cover the requirements of the Contract. Where neither price nor rate is entered against an item or if the term “included” or any such similar term is used it shall be deemed to have been included in the other priced items in the BOQ and measured accordingly. All rates and prices entered against any item in the BOQ shall be deemed to include all the detailed requirements of the General and Particular Specifications and the requirements of the volume 1.

Rates and prices shall be inserted in the unit rate column of the Bill of Quantities. Each part of the Bill of Quantities shall be totalled and the totals carried to the Summary and Grand Summary.

1.014 MEASUREMENT

The Bill of Quantities includes items as lump sum and others as measured quantities.

1.014.1 Lump Sum

The lump sum items shall not be subject to re-measurement, and shall include the prices for all necessary construction, installation, testing and commissioning among others. The lump sum entered in the Bills shall include the price for a complete installation as described in the specifications.

The prices shall include all work necessary for completion of the Works and shall include the prices for all necessary building work such as forming box outs, supports plinths, cable trenches, and the like and all necessary safety and access works including guards, handrails, firefighting equipment and the like.

1.014.2 Measured Quantities

All measurements in the Bill of Quantities are taken strictly net. The principle of net measurements shall apply to all Works executed. All quantities measured for payment shall be measured by the Engineer on the basis of actual net quantities of Work fixed in position. Item not used shall neither be measured nor included by the Contractor in his statements.

The quantities given in the Bill are the estimated quantities. In no sense shall such quantities be considered as limiting or extending the amount of the work to be done by the Contractor and of the materials to be supplied by him. The Contractor shall be responsible for checking quantities and for making any necessary surveys and investigations prior to placing any order for materials.

1.015 DEFINITIONS

The following definitions shall apply to items in the Bill of Quantities.

- **Extra - Over**

Any “Extra-Over” (EO) item shall be measured and paid for in addition to the measurement of the basic item to which it relates.

- **Included**

Where the term included is used in the Preamble or in the Bills, items stated to be included within other items shall not be subject to measurement and their costs shall be deemed to be included within the rates of the billed items.

1.016 DEALING WITH WATER

Unit rates of items in the Bills of Quantities especially excavation items or excavation works shall be deemed to include the prices for dealing with water flows (especially for water courses crossing, or excavation along a water course) and keeping the Works free of water, and shall include prices for dewatering and supporting of trenches and excavation limits for pipeline works and structure works (for reservoirs, pumping stations, etc...) the above-mentioned works shall not be measured and shall not be paid separately.

1.017 WATER AND POWER

Unless otherwise explicitly stated in the Contract, water and power for the purpose of constructing, cleaning, and testing the Works shall be provided by the Contractor at his own expense, and shall not be measured separately.

1.018 RECORDS AND “AS-BUILT” DRAWINGS

After the work has been completed, the Contractor shall submit “as-built” drawings prepared whilst surveying during construction, showing the Works as constructed together with all other information that may either be required or be useful for the operation and maintenance of the Works in the future, such as type of soil, dimensions and location of structures, size of existing pipelines and cables encountered during excavation.

The cost of preparing the shop drawings, “as-built” Drawings and Records shall be deemed to be included by the Contractor in his unit rates for the various items in the Bill of Quantities and shall not be paid for separately. The As-built Drawings shall be submitted, if required by the Engineer, on computer CDs.

1.019 TRAFFIC REGULATION CONTROL AND SAFETY PROVISION

The provision of traffic control, safety equipment, signs, diversions, control systems including obtaining approvals and liaison with third parties for work in public roads and streets or in private sector will not be measured separately but shall be included in pipes rates, and shall include but not by way of limitation:

- Preparing all necessary plans, details and schedules and submission to the Employer/Engineer to obtain all necessary approvals.
- Liaison with third parties, to get all the needed permits from the concerned authorities.

- Erecting, maintaining, moving and removal of safety barriers, signs and traffic control equipment.
- Establishment and management of road diversions.
- Watching and lighting.
- Maintaining Roads and Streets clean and free from construction debris.

2.010 GENERAL

The hydraulic design of transmission and distribution pipelines is based on topographic surveys done during the design period. However, some or all topographical points like stakes or benchmarks may have disappeared due to works executed on the road after this period.

For this reason, the Contractor shall be deemed to have covered himself for checking quantities and for making any necessary surveys and investigations prior to placing or ordering for materials.

2.011 TOPOGRAPHIC SURVEY

The price shall cover performing land surveying of the designed networks layout. The surveyor shall start from approved benchmarks and shall mark the stations shown on drawings, using steel pegs and high-quality paint. Distance between two stakes or pegs shall not exceed 30m.

Moreover, the Contractor is supposed to visit the site to check and be familiar with the present status of the survey.

EDM devices shall be used exclusively.

New longitudinal profiles shall be issued on transparent paper and AutoCAD files and shall be submitted to the Engineer's approval.

Vertical scale 1/200 and horizontal scale 1/2000

Measurement of topographic survey shall be in horizontal kilometres.

2.012 TRIAL PIT

Trial pits shall be measured by number and shall include for excavation in any material, any type of soil and rock, to a depth not exceeding 3m, hand excavation as necessary, backfilling, reinstatement of the surface to its original condition and reinstatement of road surfaces.

Payment will only be made for trial pits ordered in writing by the Engineer. Any measures taken by the Contractor to locate existing services or determine ground condition shall be included within the respective excavation item, whether separately itemised or not, and shall not be measured for payment.

2.013 TRIAL TRENCH

Trial trenches shall be measured by linear meters and shall include for all requirements as stipulated in item 'Trial pit' above.

2.014 AS-BUILT DRAWINGS

As-built drawings shall be measured by horizontal km and shall consist of new profiles, plans and details on scale similar to the design drawings scale.

Pipes, manholes, and accessories shall be shown clearly as well as effective cover depth of the crown of the pipe and distance between pipe axis and carriage edge or sidewalk, and between manhole cover centre and electric pylons or buildings corners. Adequate number (minimum one for each road or 250 m which is less) of transversal sections showing all existing underground utilities/or facilities, should also be submitted.

Payment shall only be made for as-built drawings approved by the Engineer and submitted on paper and AutoCAD files.

2.015 PIPEWORKS

2.015.1 SUPPLY OF DUCTILE IRON PREFERRED C-CLASS PIPES INCLUDING ALL NECESSARY FITTINGS

Ductile iron preferred C-Class pipes shall be classified for payment according to diameter and shall be measured in linear meters of pipeline supplied and stored in good conditions.

The price shall cover all fittings, bends, tees, reducers, detachable joints, flanges, bolts, nuts, as well as fittings, joints and jointing material.

Only pipes, fittings, junctions, bends, etc... supplied and stored in good conditions and accepted by the Engineer shall be taken into account for payment.

2.015.2 SUPPLY OF HDPE PIPES INCLUDING ALL NECESSARY FITTINGS

Price shall include all the requirements as stipulated in item 4.015.1 above (for HDPE pipes).

2.015.3 TRENCH EXCAVATION

The price shall be calculated in terms of linear meters of dug trench only. The minimum width of trench is shown on the corresponding Contract drawings (refer to standard drawings).

This price shall include but shall not be limited to:

- Excavating in any type of soil, rock, structural fill, contaminated fill, clay or others.
- Excavating by hand or machine.
- Excavating in asphalted or non-asphalted roads, in fields, in valleys, in accessible or non-accessible areas, including the execution of temporary access roads if needed.
- De-watering operations necessary for keeping the excavation free from water whether rain water or any other sources.
- Extra excavation depth carried out as shown on the longitudinal profiles or under the direction of the Engineer.
- Extra excavation carried out in width for laying of the HDPE duct.
- Transport of unsuitable backfilling materials to environmentally approved disposal sites accepted by the Engineer.
- Levelling or grading and compacting the bottom of excavations.
- Supporting, protecting and maintaining existing services and utilities.
- Temporary or permanent supports to sides of excavation, roads or structures as required by the Engineer (soil supports, sheet piling, etc...) or other method proposed by the Contractor and approved by the Engineer (micro-tunnelling, concrete piles, etc...).
- Traffic regulation and safety provisions as described in Volume 1- Appendix 1 – CDR Safety, Health and Environmental Regulations.
- Repairing of all damaged utilities caused by the execution of the works.

Any excavated quantity will not be paid by the Employer under this item, if it is dumped or accidentally falls in the valley or in the field.

2.015.4 SAND BEDDING AND SAND SURROUNDS

The sand bedding and sand surrounds shall be classified for payment according to pipe diameter and shall comply with the corresponding contract drawings (refer to standard drawings), and shall be measured by linear meters of completed pipeline.

Price shall include supply of material, backfilling, testing and compaction.

2.015.5 LAYING OF PIPES

Laying of pipes shall be classified for payment according to pipe material and diameter and shall be measured in linear meters of completed pipeline in place measured along the crown of the pipeline and the price shall include but not be limited to:

- Removal of any abandoned pipework within the excavation.
- Distributing pipes along the trench.
- Checking and cleaning pipe from dirt, oil, grease, etc.
- Supply of temporary or final supports.
- Laying of pipes.
- All necessary types of jointing, welding, etc...
- Checking pipe alignment and evaluations using topographical instruments.
- Installation of all fittings, bends, tees, reducers, dismantling joints, flanges, couplings, bolts, nuts as well as hauling, transport, unloading, and staking of pipes, fittings, joints, and jointing material.

The length measured for payment shall include the lengths of all fittings, valves and accessories installed in the line.

Only pipes, fittings, junctions, bends, etc... actually laid, jointed and tested and accepted by the Engineer shall be taken into account for payment.

2.015.6 BACKFILLING OF TRENCHES

1-Backfilling of trenches (for main roads – refer to Ministry of Public Works decree No. 13495 dated 5/11/1998 – Volume 4 - Annex 1) shall be classified for payment according to pipe diameter and shall be measured by linear meters along the crown of the pipeline (refer to standard drawings).

Sand Backfilling shall include for:

- Supply of imported materials.
- Backfilling in layers and compaction.
- Testing and compaction
- Supply and installation of the warning tape (Marker Tape)

2-Backfilling of trenches on other roads shall be classified for payment according to pipe diameter and shall be measured by linear meters along the crown of the pipeline (refer to standard drawings).

Backfilling shall include for:

- Supply of materials.
- Backfilling in layers and compaction.

- Testing and compaction
- Supply and installation of the warning tape (Marker Tape)

2.016 ACCESSORIES

2.016.1 SUPPLY AND INSTALLATION OF AIR RELEASE VALVES

Air valves shall be measured by number for each air valve size, and nominal pressure, and shall include gate valves, riser pipe, flanges, bolts, nuts, supports and all necessary components to provide a complete installation.

Reinforced concrete chambers, covers and frames shall be measured separately by number. Cutting and reinstatement shall also be measured separately.

2.016.2 SUPPLY AND INSTALLATION OF ISOLATING / GATE VALVES

Gate valves shall be classified for payment by nominal diameter and nominal pressure class and shall be measured by number of gate valves supplied and installed.

Price shall include for the supply and installation of all fittings necessary to joint the assembly to the pipeline (either new or existing), including thrust flanges, flexible joints, dismantling joints, supports and all necessary items to make a completed installation.

2.016.3 SUPPLY AND INSTALLATION OF WASHOUTS

Washouts shall be measured by number for each washout size and pressure class and shall include gate valves, duck foot bends, tees, flap valves, drain pipe HDPE or D.I. pipes for washout with the needed length (excavation, bedding, supply, laying and backfilling) and all necessary items to make a complete washout.

Reinforced concrete chambers, covers and frames, shall be measured separately by number. Cutting and reinstatement shall be also measured separately.

2.016.4 SUPPLY AND INSTALLATION OF ELECTROMAGNETIC FLOW METER

Flow meters shall be measured by number for each nominal diameter and nominal pressure class, and shall include for **filters/Y strainers, flow straighteners** (both having same DN and PN as water meters. Moreover, flow straighteners should be of the type which eliminate the need for any straight length of pipe before and after the water meter), flanges, dismantling joints, supports, bolts, nuts and all components necessary to provide a complete installation.

Price shall include for the supply and installation of all necessary fittings to join the assembly to the pipeline, adapters, screen filter and all items necessary to make a complete installation according to standard drawings. Manhole frame, covers, reinforcement, concrete chambers and asphalt reinstatement shall be measured separately.

2.016.5 CONNECTION TO EXISTING PIPES

Connection to existing pipes shall be classified for payment according to diameter and material and shall be measured in number of completed connection unit installed in place and the price shall include but not be limited to:

- Extra excavation works to locate the existing pipe.
- Removal of any abandoned pipework within the excavation.

- Distributing pipes along the trench.
- Checking and cleaning pipe from dirt, oil, grease, etc...
- Supply of temporary or final supports.
- All necessary types of jointing, welding, etc...
- Checking pipe alignment and elevations using topographical instruments.
- Transport the material from the warehouse and/or storage area to site.
- Supply and installation of all fittings bends, tees, reducers dismantling joints, flanges, couplings, bolts, nuts, as well as, hauling, transport, unloading, and staking of pipes, fittings, joints and jointing material.
- Reinforced concrete manhole including cover and frame.

The Unit measured for payment shall include all fittings, accessories installed in the line. Only pipes, fittings, junctions, bends, etc... actually installed, jointed and tested and accepted by the Engineer shall be taken into account for payment.

2.017 VALVE CHAMBERS AND SURFACE BOX UNITS

2.017.1 CONSTRUCTION OF PRE-CAST OR CAST IN SITU, REINFORCED CONCRETE VALVE CHAMBERS

Valve chambers where not included in another item, shall be measured by number according to chamber internal length and width and shall include for excavation, formwork, concrete, mass concrete, blinding etc..., reinforcement, rendering, external damp-proofing, painting, backfilling, floor drain, soak away, step irons access ladders, compacted gravel, sub-base and base layers, asphalt, etc... and all necessary items to make a complete chamber according to the contract drawings.

The valve chamber cover and frame shall be measured by number separately.

2.017.2 SUPPLY AND INSTALLATION OF VALVE CHAMBER COVER AND FRAME

Valve chamber cover and frame shall be measured by number and shall include all necessary materials and equipment including installation, labour, painting etc... in order to get an installed cover and frame according to the specifications.

2.017.3 SUPPLY AND INSTALLATION OF SURFACE BOX UNITS FOR WASHOUT AND SERVICE CONNECTIONS

Surface box units shall be measured by number and shall include for spindle guards, extension spindles, caps, couplings, covers, surface box units, and all necessary items to make a complete surface box unit.

2.018 CONCRETE WORKS

Cast in situ or precast concrete shall be measured by net volume shown on drawings.

Concrete, whether included in another item or separately measured, shall include for:

- All material, equipment, labour, transport, admixtures (retarders, plasticizers, waterproofing products, ...) batching, mixing, placing, vibrating, curing, testing.

- Formwork (Formwork shall be “sawn” finish to all buried external faces of concrete below a line 200mm below ground level and shall be “wrought” finish to all other faces).
- All needed excavation in all kinds of soils and rocks, use of all adequate equipment, transport of soil to disposal sites approved by the Engineer, labour, dewatering, temporary and/or final retaining structures for trenches or open digs, backfilling, compacting, cutting of asphalt.
- Forming of chamfers (25mm x 25mm) to all exposed external angles.
- Forming expansion, contraction, movement and construction joints and for all water stops, jointing materials, sealing compounds and formwork necessary for forming such joints;
- Building in of all pipes and fittings, bolts, frames, iron and steelwork and the like.
- Finishing of surfaces.
- Reinforcement.
- All necessary items to have the concrete works according to the specifications.

2.019 SERVICE CONNECTIONS

2.019.1 SUPPLY AND INSTALLATION OF HDPE PIPES FOR SERVICE CONNECTIONS

Supply and installation of HDPE pipes shall be classified for payment according to outer diameter, and shall be measured in linear meters of completed pipeline in place measured along the crown of the pipeline. The length measured for payment shall include the lengths of all fittings, valves, and specials installed in the line.

The price shall cover the supply and installation of all fittings, bends, tees, reducers, joints, adapters as well as hauling, transport, unloading, staking and laying of pipes.

Only pipes, fittings, junctions, bends, etc... actually laid, jointed and tested and accepted by the Engineer, shall be taken into account for payment.

Trench excavation, sand bedding, backfilling of trenches, cutting and reinstatement of surfaces shall be measured separately.

2.019.2 SUPPLY AND INSTALLATION OF TAPPING COLLARS

Supply and installation of tapping collars shall be classified for payment according to the distribution main diameter without taking into account the service connection diameter.

The price shall include for the supply and installation of bolts, nuts, rubber joints, wedge keys and all necessary accessories to make a good tapping collar.

2.019.3 SUPPLY AND INSTALLATION OF STOP VALVES

Supply and installation of stop valves shall be classified for payment by nominal diameter and shall be measured by number.

Price shall include for the supply and installation of all fittings necessary to joint the assembly to the pipeline and all necessary items to make a complete installation.

2.020 TESTING AND COMMISSIONING OF POTABLE WATER PIPES

Testing and commissioning shall be measured by linear meters along the pipe crown. The price shall include all the material, equipment and labour (water, pumps, barrels, manometers, valves, labour, power supply, etc...) and no payment shall be made before getting the Engineer's approval.

For service connections only, testing and commissioning shall be measured by number.

2.021 ROAD REINSTATEMENT

2.021.1 CUTTING

Cutting of paved roads shall be measured by linear meters along the pipe crown. It shall include for asphalt cutting at both sides of the trench, and removal of excavated material to disposal sites.

Cutting and breaking of concrete pavements shall be measured by square meters, it shall include for cutting and breaking out of concrete pavement (the width of the cut trenches will be as shown on standard drawings) and removal of excavated material to disposal sites.

The price shall include cutting works and removal of material for widening of trench for chambers or other ancillary structures and fittings.

2.021.2 REINSTATEMENT

Reinstatement of asphalt pavement shall be classified for payment according to type of roads, as for main roads two layers of asphalt shall be applied, and one layer for the other roads, and shall be measured by square meters of completed asphalted and reinstated trenches, the quantity to be considered for payment will be the quantity actually executed but not to exceed the quantities shown on standard drawings, otherwise it will be on the Contractor own expenses and will not be considered for payment. For trench reinstatement, the price shall include for:

- Transport of material.
- Recutting works.
- Base and sub-base courses, material.
- Compaction.
- Laying and application of material,
- Tests.
- Repairing of all defects, asphalt or concrete collapse.
- Etc.

The width of asphalt layers shall be in accordance with the standard drawings.

Reinstatement of concrete and concrete stair cases shall be measured by square meters of completed reinstated trenches, the quantity to be considered for payment will be the quantity actually executed but not to exceed the quantities shown on standard drawings, otherwise it will be on the Contractor own expenses and will not be considered for payment. For trench reinstatement, the price shall include for:

- Transport of material.
- Recutting works.
- Base and sub-base courses, material.
- Compaction.
- Laying and application of material,
- Tests.
- Repairing of all defects, asphalt or concrete collapse, Etc...

Reinstatement shall also include for any re-cutting works of asphalt or concrete required by collapse of trench edges and for base and sub-base courses and compaction according to drawings and complying with the specifications.

3.000 BILL B – GENERAL WORKS

3.010 NOTICE BOARDS

The price per unit of a notice board shall include manufacturing, transportation, installation (including concrete, excavation, equipment, labor, etc...) and removal prior and after completion of the works (Refer to particular Specifications paragraph 101.16) and any other works to make a complete installation of the boards.

3.011 INSURANCES

This item shall be paid as a lump sum and the price shall cover, during the contract duration and the defects liability period, the insurance of Contractor's personal and staff, employer and his representative(s) and all equipment in accordance to the Contract.

3.012 SITE PREPARATION AND MOBILIZATION-DEMobilIZATION

The rate shall include the full mobilization / demobilization of all resources and equipment necessary for the execution and completion of the works. The rate shall also include the design and construction of offices, stores, workshops, clinics and all other facilities required for the completion of the works under this Contract. The price shall be paid as a lump sum and the works shall include but not be limited to:

- Protection of public and private properties,
- All necessary procedures for the supply and testing of material in conformity with the specifications and as directed by the Engineer,
- Temporary works and site protection, watching, fencing and lighting,
- Supplying the required equipment in order to execute all the required works including but not limited to:
 - Transport material and equipment to the different parts of the project,
 - Ensure storage areas and disposal sites,
 - Supply water and power to complete the works,
 - Keep the site free of water for excavation, backfilling and concrete works,
 - Supply compressed water (not less than 2 bars),
 - Accomplish excavation including removal of excavated material and backfilling,
 - Install wrought steel
 - Perform geotechnical investigations,
- Management, operation and maintenance of site equipment,

- Indemnification and remedying of all damages caused by the execution of the works to the private or public properties,
- Guiding and protecting traffic and pedestrians through areas of construction including the erection of signs, barriers and lighting,
- Removal of utilities, plants, machinery and all other facilities after the completion of the works including reinstatement to the Engineer's satisfactory,
- Ensuring that all parts of the project are operating as required after the completion of the works and after testing and remedying of all defects that may appear while testing,
- Completion of all procedures necessary for the taking over and commissioning,
- All items necessary to complete the mobilization / demobilization including all related costs.

The rate shall also cover all costs related to providing facilities for the engineer's representative as stated in the particular specifications paragraph 101.12.

3.013 ACCESS TO SITE

This item shall be paid on a Lump Sum basis and shall include all necessary equipment or labor for the site access to deliver material needed for the good installation of the water system. The price shall include for all safety measures and equipment for the safety of labour, equipment and materials.

This item shall also include the preparation of any temporary access road to the site(s). Access road shall be constructed prior to the beginning of the works and shall be kept in good condition for traffic for the whole duration of the project. Maintenance of access roads and all costs pertaining to this matter shall be deemed to be included by the Contractor in his unit rates for this item and shall not be paid for separately.

3.014 HEALTH AND SAFETY REQUIREMENTS

Health and Safety requirements shall be paid as a lump sum and shall include but not be limited to the following:

- PPE including safety boots, gloves, safety vests, helmets, masks ...
- Safety Barriers.
- Safety lights, signs and cones.
- Firefighting equipment.
- COVID 19 health & safety measures (refer to particular specs paragraph 205.2)
- Etc...

Health and safety requirements shall also include an Induction training for all personnel. Refer to Conditions of Contract.

PART B

BILL OF QUANTITIES

BILL A

DISTRIBUTION NETWORKS (PART1)

BILL A - DISTRIBUTION NETWORK (Part 1)

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
3.0000	General				
3.0001	Site Topographic Survey	km.	1.23		-
3.0002	Trial pit not exceeding 3m depth	nb	7.00		-
3.0003	Trial trench not exceeding 3m depth	lin.m	19.00		-
3.0004	As-built drawings	km.	1.23		-
	Sub-Total 3.0000				-
3.1000	Pipeworks				
3.1100	Supply of C-Class ductile iron pipes including all necessary fittings (bends, tees, reducers, flanges, etc...)				
3.1101	Supply of 100 mm pipes	lin.m	1,230.00		-
	Sub-Total 3.1100				-
3.1300	Trench excavation				
3.1301	Trench excavation for service connections	lin.m	1,322.00		-
3.1303	Trench excavation for 100 mm DI pipes	lin.m	1,230.00		-
	Sub-Total 3.1300				-
3.1400	Sand bedding and surrounds				
3.1401	Sand bedding for service connections	lin.m	1,322.00		-
3.1403	Sand bedding for 100 mm DI pipes	lin.m	1,230.00		-
	Sub-Total 3.1400				-
3.1500	Laying of ductile iron pipes				
3.1501	Laying of 100 mm pipes	lin.m	1,230.00		-
	Sub-Total 3.1500				-
3.1800	Backfilling of trenches on other roads including compaction and testing				
3.1801	Backfilling of trenches for service connections	lin.m	1,322.00		-
3.1803	Backfilling for 100 mm DI pipes	lin.m	1,230.00		-
	Sub-Total 3.1800				-
	Sub-Total 3.1000				-

BILL A - DISTRIBUTION NETWORK (Part 1)

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
3.2000	Accessories				
3.2100	Supply and installation of air release valves				
3.2101	Single air release valve including isolating GV PN16, DN 60 mm	nb	1.00		-
	Sub-Total 3.2100				-
3.2200	Supply and installation of isolating/ gate valves (including bolts, nuts, dismantling joints, etc..).				
3.2201	Gate valve PN16, DN 50 mm	nb	1.00		-
3.2203	Gate valve PN16, DN 100 mm	nb	4.00		-
	Sub-Total 3.2200				-
3.2300	Supply and installation of washouts				
3.2301	Washout PN16, DN 60 mm	nb	1.00		-
	Sub-Total 3.2300				-
3.2400	Supply and installation of Electromagnetic flowmeter				
3.2402	Flow Meter PN16, DN 100 mm	nb	1.00		-
	Sub-Total 3.2400				-
3.2500	Supply and installation of connections to existing pipes				
3.2501	Connection to existing pipe	nb	1.00		-
	Sub-Total 3.2500				-
	Sub-Total 3.2000				-
3.3000	Valve chambers and Surface box units				
3.3100	Construction of pre-cast or cast in situ, concrete valve chamber (excluding cover and frame)				
3.3101	Valve chamber internal size 150 x 150 cm x cm	nb	2.00		-
3.3102	Valve chamber internal size 175 x 125 cm x cm	nb	1.00		-
3.3104	Valve chamber internal size 325 x 175 cm x cm	nb	1.00		-
	Sub-Total 3.3100				-
3.3200	Valve chamber cover				
3.3201	Valve chamber cover Grade A	nb	4.00		-
	Sub-Total 3.3200				-
3.3300	Surface box units for washouts and service connections				
3.3301	Supply and installation of surface box unit	nb	30.00		-
	Sub-Total 3.3300				-
	Sub-Total 3.3000				-

BILL A - DISTRIBUTION NETWORK (Part 1)

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
3.4000	Concrete works				
3.4001	Mass concrete - Class C20 for blinding	cu.m	18.00		-
3.4002	Reinforced concrete - Class C25 for pipe supports, thrust blocks, anchors, pipe bedding and surround at river crossing.	cu.m	15.00		-
	Sub-Total 3.4000				-
3.5000	Service connections				
3.5100	Supply and Installation of HDPE Pipes				
3.5101	HDPE pipe PN16, nominal OD 20 mm	lin.m	1,243.00		-
3.5102	HDPE pipe PN16, nominal OD 25 mm	lin.m	79.00		-
	Sub-Total 3.5100				-
3.5200	Supply and Installation of tapping collars				
3.5206	Tapping Collar, OD100mm	nb	29.00		-
	Sub-Total 3.5200				-
3.5300	Supply and Installation of stop valves				
3.5301	Stop valve PN16, DN 20 mm	nb	27.00		-
3.5302	Stop valve PN16, DN 25 mm	nb	2.00		-
	Sub-Total 3.5300				-
	Sub-Total 3.5000				-
3.6000	Testing and commissioning of potable water pipes				
3.6001	Testing and commissioning of service connections	nb	1,322.00		-
3.6003	Testing and commissioning of 100 mm DI pipes	lin.m	1,230.00		-
	Sub-Total 3.6000				-

BILL A - DISTRIBUTION NETWORK (Part 1)

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
3.7000	Road Reinstatement				
3.7100	Cutting				
3.7101	Cutting of paved roads for water pipes	lin.m	1,230.00		-
	Sub-Total 3.7100				-
3.7200	Reinstatement				
3.7201	Reinstatement in one layer of other paved roads including recutting works	sq.m	1,960.00		-
	Sub-Total 3.7200				-
	Sub-Total 3.7000				-
	Total BILL A - DISTRIBUTION NETWORK (Part 1)				-

BILL A

DISTRIBUTION NETWORKS (PART 2)

BILL A - DISTRIBUTION NETWORK (Part 2)

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
3.0000	General				
3.0001	Site Topographic Survey	km.	0.30		-
3.0002	Trial pit not exceeding 3m depth	nb	2.00		-
3.0003	Trial trench not exceeding 3m depth	lin.m	5.00		-
3.0004	As-built drawings	km.	0.30		-
	Sub-Total 3.0000				-
3.1000	Pipeworks				
3.1200	Supply of HDPE pipes including all necessary fittings (bends, tees, reducers, flanges, etc...)				
3.1220	Supply of PE100 - PN16 HDPE pipes				
3.1221	Supply of 90 mm pipes	lin.m	300.00		-
	Sub-Total 3.1200				-
3.1300	Trench excavation				
3.1302	Trench excavation for pipes not exceeding 110 mm in diameter	lin.m	300.00		-
	Sub-Total 3.1300				-
3.1400	Sand bedding and surrounds				
3.1402	Sand bedding for pipes not exceeding 110 mm in diameter	lin.m	300.00		-
	Sub-Total 3.1400				-
3.1600	Laying of HDPE pipes				
3.1620	Laying of PE10 - PN16 HDPE pipes				
3.1621	Laying of 90 mm pipes	lin.m	300.00		-
	Sub-Total 3.1600				-
3.1800	Backfilling of trenches on other roads including compaction and testing				
3.1802	Backfilling of trenches on main roads for pipes not exceeding 110 mm in dia.	lin.m	300.00		-
	Sub-Total 3.1800				-
	Sub-Total 3.1000				-

BILL A - DISTRIBUTION NETWORK (Part 2)

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
3.2000	Accessories				
3.2200	Supply and installation of isolating/ gate valves (including bolts, nuts, dismantling joints, etc..).				
3.2202	Gate valve PN16, DN 80 mm	nb	1.00		-
3.2204	Gate valve PN16, DN 150 mm	nb	1.00		-
	Sub-Total 3.2200				-
3.2300	Supply and installation of washouts				
3.2301	Washout PN16, DN 60 mm	nb	1.00		-
	Sub-Total 3.2300				-
3.2400	Supply and installation of Electromagnetic flowmeter				
3.2401	Flow Meter PN16, DN 80 mm	nb	1.00		-
	Sub-Total 3.2400				-
3.2500	Supply and installation of connections to existing pipes				
3.2501	Connection to existing pipe	nb	1.00		-
	Sub-Total 3.2500				-
	Sub-Total 3.2000				-
3.3000	Valve chambers and Surface box units				
3.3100	Construction of pre-cast or cast in situ, concrete valve chamber (excluding cover and frame)				
3.3101	Valve chamber internal size 150 x 150 cm x cm	nb	1.00		-
3.3103	Valve chamber internal size 300 x 175 cm x cm	nb	1.00		-
	Sub-Total 3.3100				-
3.3200	Valve chamber cover				
3.3201	Valve chamber cover Grade A	nb	2.00		-
	Sub-Total 3.3200				-
3.3300	Surface box units for washouts and service connections				
3.3301	Supply and installation of surface box unit	nb	1.00		-
	Sub-Total 3.3300				-
	Sub-Total 3.3000				-

BILL A - DISTRIBUTION NETWORK (Part 2)

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
3.4000	Concrete works				
3.4001	Mass concrete - Class C20 for blinding	cu.m	17.00		-
3.4002	Reinforced concrete - Class C25 for pipe supports, thrust blocks, anchors, pipe bedding and surround at river crossing.	cu.m	5.00		-
	Sub-Total 3.4000				-
3.6000	Testing and commissioning of potable water pipes				
3.6002	Testing and commissioning of 90 mm HDPE pipes	lin.m	300.00		-
	Sub-Total 3.6000				-
3.7000	Road Reinstatement				
3.7100	Cutting				
3.7101	Cutting of paved roads for water pipes	lin.m	300.00		-
	Sub-Total 3.7100				-
3.7200	Reinstatement				
3.7201	Reinstatement in one layer of other paved roads including recutting works	sq.m	280.00		-
	Sub-Total 3.7200				-
	Sub-Total 3.7000				-
	Total BILL A - DISTRIBUTION NETWORK (Part 2)				-

BILL B

GENERAL WORKS

BILL B - GENERAL WORKS

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
4.0000	General				
4.0001	Notice boards	nb	2.00		-
4.0002	Insurance	L.S	1.00		-
4.0003	Site Preparation and Mobilization-Demobilization: This item shall be paid as a lump sum value. 65% of the lump sum value will be paid upon mobilization completion, and the remaining 35% after the termination of site clearance upon completion of works	L.S	1.00		-
4.0004	Access to site	L.S	1.00		-
4.0005	Health & Safety Measures	L.S	1.00		-
	Sub-Total 4.0000				-
	Total BILL B - GENERAL WORKS				-

SUMMARY

SUMMARY

BILL	DESCRIPTION	TOTAL AMOUNT USD
BILL A	DISTRIBUTION NETWORK (PART1)	
BILL A	DISTRIBUTION NETWORK (PART2)	
BILL B	GENERAL WORKS	
GRAND TOTAL		