

REPUBLIC OF LEBANON

MINISTRY OF ENERGY AND WATER

PROJECT No

CONTRACT No

CONSTRUCTION OF DISTRIBUTION LINES IN KLOUD - TRIPOLI CAZA -

VOLUME 5

BILL OF QUANTITIES

Part A – Preamble to Bill of Quantities

Part B – Bill of Quantities

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PART A

PREAMBLE TO BILL OF QUANTITIES

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1.000 INTRODUCTION

1.10 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 or of contingencies for which there is a Provisional Sum) 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.

1.11 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.

1.12 DEFINITION OF THE SCOPE OF WORK

The works shall include, but not be limited to, a complete topographic survey, soil investigations, excavation works, backfilling, road works, concrete works, blockworks, cladding, plastering, waterproofing, thermal insulation, painting, fencing, and all necessary works not mentioned above and needed for a good finishing and exploitation of the different structures. Also this category shall include, but not be limited to, the supply and installation of all necessary hydraulic accessories needed for equipment of the reservoirs and related valve chambers.

1.13 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.

1.14 MEASUREMENT

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

1.14.1 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, fire fighting equipment and the like.

1.14.2 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.

1.15 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, any items stated to be included with another item shall not be subject to measurement and their costs shall be deemed to be included within the rates of the billed item.

1.16 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.

1.17 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.

1.18 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.

1.19 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.

1.000 DISTRIBUTION LINES

120 GENERAL

The hydraulic design of 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.

121 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 kilometers.

122 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.

123 TRIAL TRENCH

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

124 AS-BUILT DRAWINGS

As-built drawings shall be measured by horizontal kms 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 center 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.

125 SUPPLY OF PIPES INCLUDING ALL NECESSARY FITTINGS

Ductile iron K9 and/or HDPE 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.

126 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 disposal sites approved 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.
- 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.

127 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.

128 LAYING OF PIPES

Laying of pipes shall be classified for payment according to 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.

129 BACKFILLING OF TRENCHES

1- Sand Backfilling of trenches 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 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)

130 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.

131 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 UPVC 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.

132 SUPPLY OF DRINKING FOUNTAINS

Drinking fountains shall be paid by number. Price shall include but not limited to:

- Drinking fountain
- Stop valve
- Surface box unit
- Ferrule and tapping collar
- Drain
- HDPE pipe
- Ductile iron pipe
- Flanges, joints, bends, and all necessary accessories to joint the assembly to the pipeline.
- Reinstatement works.
- All accessories necessary to make a complete installation as shown on drawings.

The exact location on the network will be decided on site by the Engineer.

133 SUPPLY OF FIRE HYDRANTS

Fire hydrants shall be paid by number. Price shall include but not limited to:

- Fire hydrant
- Gate valve
- Valve chamber
- Cover and frame grade A
- Step irons
- Reinstatement works

Flange sockets, puddle flanges, dismantling joints, bends, pipes and all necessary accessories to joint the assembly to the pipeline.

All accessories necessary to make a complete installation as shown on drawings.

The exact location on the network will be decided on site by the Engineer.

134 SUPPLY AND INSTALLATION OF CONNECTIONS TO EXISTING WATER TOWERS

Connections to existing water towers shall be measured by number and shall include pipes, bends, tees, concrete works, steel reinforcement, strainers, concrete supports, inserts, float valves (if any), filters, etc... (including excavation, bedding, compacting, supply, laying and backfilling, etc...) and all necessary items to make a complete connection system to the existing water tower.

135 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, soakaway, 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.

136 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.

137 SUPPLY AND INSTALLATION OF SURFACE BOX UNITS

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.

138 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, labor, transport, admixtures (retarders, plastisizers, waterproofness,...) 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, labor, 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 waterstops, 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.

139 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.

The price shall also include the connection of the newly installed service connection pipes to the existing orifices (عيارات) of subscribers to the concerned water establishment.

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, testing and commissioning, cutting and reinstatement of surfaces shall be measured separately.

140 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.

141 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.

142 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.

143 ROAD REINSTATEMENT

1.43.1 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 of widening of trench for chambers or other ancillary structures and fittings.

1.43.2 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 trench, according to the quantity actually executed but not to exceed the quantities shown on standard drawings 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 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.

Reinstatement of concrete and concrete stair cases shall be measured by square meters of completed asphalted and reinstated trench, according to the quantity actually executed but not to exceed the quantities shown on standard drawings 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..

PART B

BILL OF QUANTITIES

CONSTRUCTION OF DISTRIBUTION LINES IN KLOUD - TRIPOLI CAZA

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
5.0000	General				
5.0001	Site topographic survey	km.	2.50		
5.0002	Trial pit not exceeding 3m depth	nb	13.00		
5.0003	Trial trench not exceeding 3m depth	lin.m	38.00		
5.0004	As-built drawings	km.	2.50		
5.0005	Extra over for mobilization and site access to Kloud area and to cover all extra expenses for rehabilitation of damaged water pipes,waste water pipes, telephone cables, electric cables in case any, pedestrian access in case road is closed by works as safe and agreed with LebRelief engineer, pressurization of network to meet NLWE standards, excavation, pipe laying, bedding, surrounds, backfilling, testing	LS	1		
	Sub-Total 5.0000				
5.1000	Pipeworks				
5.1100	Supply of ductile iron K9 pipes including all necessary fittings (bends, tees, reducers, flanges, etc...)				
5.1101	Supply of 200 mm pipes	lin.m	1,434.00		
	Sub-Total 5.1100				
5.1200	Supply of HDPE pipes PE100 - PN16 including all necessary fittings (bends, tees, reducers, flanges, etc...)				
5.1201	Supply of 110 mm pipes	lin.m	346.00		
5.1202	Supply of 125 mm pipes	lin.m	751.00		
	Sub-Total 5.1200				
5.1300	Trench excavation				
5.1301	Trench excavation for service connections	lin.m	840.00		
5.1302	Trench excavation for pipes not exceeding 110 mm in diameter	lin.m	346.00		
5.1303	Trench excavation for 125 mm HDPE pipes	lin.m	751.00		
5.1304	Trench excavation for 200 mm DI pipes	lin.m	1,434.00		
	Sub-Total 5.1300				
5.1400	Sand bedding and surrounds				
5.1401	Sand bedding for service connections	lin.m	840.00		
5.1402	Sand bedding for pipes not exceeding 110 mm in diameter	lin.m	346.00		
5.1403	Sand bedding for 125 mm HDPE pipes	lin.m	751.00		
5.1403	Sand bedding for 200 mm DI pipes	lin.m	1,434.00		
	Sub-Total 5.1400				
5.1500	Laying of ductile iron pipes				
5.1501	Laying of 200 mm pipes	lin.m	1,434.00		
	Sub-Total 5.1500				
5.1600	Laying of HDPE pipes				
5.1601	Laying of 110 mm pipes	lin.m	346.00		
5.1602	Laying of 125 mm pipes	lin.m	751.00		
	Sub-Total 5.1600				
5.1700	Backfilling of trenches on paved roads including compaction and testing				
5.1701	Backfilling of trenches for service connections	lin.m	840.00		
5.1702	Backfilling of trenches for pipes not exceeding 110 mm in diameter	lin.m	346.00		
5.1703	Backfilling of trenches for 125 mm HDPE pipes	lin.m	751.00		
5.1704	Backfilling of trenches for 200 mm DI pipes	lin.m	1,434.00		

	Sub-Total	5.1700				
	Sub-Total	5.1000				

CONSTRUCTION OF DISTRIBUTION LINES IN KLOUD - TRIPOLI CAZA

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
5.2000	Accessories				
5.2100	Supply and installation of air release valves				
5.2101	Single air release valve including isolating GV PN16, DN 60 mm	nb	2.00		
	Sub-Total 5.210				
5.2200	Supply and installation of washouts				
5.2201	Washout PN16, DN 60 mm	nb	2.00		
5.2202	Washout PN16, DN 100 mm	nb	1.00		
	Sub-Total 5.2200				
5.2300	Supply and installation of drinking fountains				
5.2301	Drinking fountain PN16	nb	1.00		
	Sub-Total 5.2300				
5.2400	Supply and installation of fire hydrants				
5.2401	Fire hydrant PN16	nb	1.00		
	Sub-Total 5.2400				
5.2500	Supply and installation of connections to existing structures				
5.2501	Connection to existing water tower	nb	1.00		
	Sub-Total 5.2500				
	Sub-Total 5.2000				
5.3000	Valve chambers and surface box units				
5.3100	Construction of pre-cast or cast in situ, concrete valve chamber (excluding cover and frame)				
5.3101	Valve chamber internal size 125 x 100 cm x cm	nb	1.00		
5.3102	Valve chamber internal size 150 x 125 cm x cm	nb	1.00		
5.3103	Valve chamber internal size 150 x 150 cm x cm	nb	3.00		
	Sub-Total 5.3100				
5.3200	Valve chamber cover				
5.3201	Valve chamber cover Grade A	nb	5.00		
	Sub-Total 5.3200				
5.3300	Surface box units for washouts and service connections				
5.3301	Supply and installation of surface box unit	nb	45.00		
	Sub-Total 5.3300				
	Sub-Total 5.3000				
5.4000	Concrete works				
5.4001	Mass concrete - Class C20 for blinding	cu.m	5.00		
5.4002	Mass concrete - Class C25 for pipe supports, thrust blocks, anchors, pipe bedding and surround at river crossing.	cu.m	5.00		
5.4003	Reinforced concrete - Class C25 for pipe anchors, supports, protection slabs, thrust blocks, drainage and irrigation channels	cu.m	10.00		
	Sub-Total 5.4000				

CONSTRUCTION OF DISTRIBUTION LINES IN KLOUD - TRIPOLI CAZA

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE USD	TOTAL AMOUNT USD
5.5000	Service connections				
5.5100	Supply and installation of HDPE Pipes				
5.5101	HDPE pipe PN16, OD 20 mm	lin.m	200.00		
5.5102	HDPE pipe PN16, OD 25 mm	lin.m	140.00		
5.5103	HDPE pipe PN16, OD 32 mm	lin.m	460.00		
5.5104	HDPE pipe PN16, OD 40 mm	lin.m	40.00		
	Sub-Total 5.5100				
5.5200	Supply and installation of tapping collars				
5.5201	Tapping collar for DN 110 mm HDPE pipe	nb	42.00		
	Sub-Total 5.5200				
5.5300	Supply and installation of stop valves				
5.5301	Stop valve PN16, DN 16 mm	nb	10.00		
5.5302	Stop valve PN16, DN 20 mm	nb	7.00		
5.5303	Stop valve PN16, DN 25 mm	nb	23.00		
5.5304	Stop valve PN16, DN 32 mm	nb	2.00		
	Sub-Total 5.5300				
	Sub-Total 5.5000				
5.6000	Testing and commissioning of potable water pipes				
5.6001	Testing and commissioning of service connections	nb	42.00		
5.6002	Testing and commissioning of 110 mm HDPE pipes	lin.m	346.00		
5.6003	Testing and commissioning of 125 mm HDPE pipes	lin.m	751.00		
5.6004	Testing and commissioning of 200 mm HDPE pipes	lin.m	1,434.00		
	Sub-Total 5.6000				
5.7000	Road Reinstatement				
5.7100	Cutting				
5.7101	Cutting of paved roads for water pipes	lin.m	3,371.00		
5.7102	Cutting, breaking-out and removal of concrete pavement or stair cases for water pipes	sq.m	5.00		
	Sub-Total 5.7100				
5.7200	Reinstatement				
5.7202	Reinstatement in one layer of paved roads including recutting works	sq.m	2,920.00		
5.7203	Reinstatement of concrete pavement or stair cases for water pipes, including base, sub-base courses and concrete pavement	sq.m	5.00		
	Sub-Total 5.7200				
	Sub-Total 5.7000				
	Total CONSTRUCTION OF DISTRIBUTION LINES IN KLOUD - TRIPOLI CAZA				