

REPUBLIC OF LEBANON

MINISTRY OF ENERGY AND WATER

PROJECT No

CONTRACT No

**CONSTRUCTION OF RESERVOIR, LIFT LINE,
AND WATER DISTRIBUTION NETWORK
IN JAJ - JBAIL CAZA**

VOLUME 2

BILL OF QUANTITIES

(REVISION B)

Part A – Preamble to Bill of Quantities

Part B – List of Unit Prices

Part C – Bill of Quantities

FEBRUARY 2017

GENERAL TABLE OF CONTENTS

Volume 1 **Bid Conditions and Procedures**

Volume 2	Bill of Quantities
Part A	Preamble to Bill of Quantities
Part B	List of Unit Prices
Part C	Bill of Quantities

Volume 3 **Technical Specifications**

Part 1	General Requirements
Part 2	Civil Works
Part 3	Mechanical Works
Part 4	Not Used
Part 5	Not Used
Part 6	Testing and Commissioning

Volume 4 **Particular Specifications**

Part 1	General Requirements
Part 2	Civil Works

Volume 5 **Drawings**

PART A

PREAMBLE TO BILL OF QUANTITIES

TABLE OF CONTENTS

GENERAL

		PAGE NO.
1.000	INTRODUCTION	1
1.010	GENERAL	1
1.011	ITEMS DESCRIPTION	1
1.012	DEFINITION OF THE SCOPE OF WORK	1
1.013	RATES AND PRICES	1
1.014	MEASUREMENT	1
1.014.1	LUMP SUM	1
1.014.2	MEASURED QUANTITIES	2
1.015	DEFINITIONS	2
1.016	DEALING WITH WATER	2
1.017	WATER AND POWER	2
1.018	RECORDS AND “AS-BUILT” DRAWINGS	2
1.019	TRAFFIC REGULATION CONTROL AND SAFETY PROVISION	3
1.000	CIVIL WORKS	4
1.020	TOPOGRAPHIC SURVEY AND SITE DELIMITATION	4
1.021	SITE CLEARANCE	4
1.022	SITE REARRANGEMENT AFTER CONSTRUCTION	4
1.023	SOIL INVESTIGATIONS	4
1.024	EXCAVATION AND TRANSPORT OF UNSUITABLE BACKFILLING MATERIALS	4
1.025	PREPARATION OF FORMATION UNDER RESERVOIRS AND OTHER CONSTRUCTIONS	5
1.026	BACKFILLING AND COMPACTION	5
1.027	BLINDING AND MASS CONCRETE C20	5
1.028	REINFORCED CONCRETE C30 (RESERVOIRS)	5
1.029	REINFORCED CONCRETE C30 (BUILDINGS)	6
1.030	FAIR FACE CONCRETE (WALLS, CEILINGS)	6
1.031	LEVELLING WITH MECHANICAL FLOAT	6
1.032	CYCLOPEAN CONCRETE	6
1.033	STEEL REINFORCEMENT FOR RESERVOIRS AND OTHER BUILDING	6
1.034	WATERSTOP	7
1.035	NEOPRENE PADS	7
1.036	INTERNAL LINING FOR RESERVOIR	7
1.037	WATERPROOFING OF RESERVOIRS AND OTHER BUILDINGS ROOF SLABS WITH THERMAL INSULATION	7
1.038	WATER TESTING AND DISINFECTION OF RESERVOIRS	7
1.039	EXTERIOR STEEL DOORS AND WINDOWS INCLUDING GLAZING AND PAINTING	8
1.040	METAL WORKS	8
1.041	INDUSTRIAL FLOORING	8
1.042	WASHABLE PAINT INTERNAL OR EXTERNAL USE COATING	8
1.043	FENCE	8
1.044	ACCESS GATE	8
1.045	ASPHALTING	9
1.046	SUPPLY AND INSTALLATION OF PIPES	9
1.047	SUPPLY AND INSTALLATION OF GATE VALVES	9
1.048	SUPPLY AND INSTALLATION OF FLOOR DRAINS	9
1.049	SUPPLY AND INSTALLATION OF SUCTION STRAINERS	9
1.050	SUPPLY AND INSTALLATION OF LEVEL INDICATORS	10
1.051	SUPPLY AND INSTALLATION OF DOUBLE AIR RELEASE VALVES	10
1.052	SUPPLY AND INSTALLATION OF WATER METERS	10
1.053	SUPPLY AND INSTALLATION OF INSERTS	10

2.000	TRANSMISSION AND DISTRIBUTION LINES	11
2.010	GENERAL	11
2.011	TOPOGRAPHIC SURVEY	11
2.012	TRIAL PIT	11
2.013	TRIAL TRENCH	11
2.014	AS-BUILT DRAWINGS	12
2.015	SUPPLY OF PIPES INCLUDING ALL NECESSARY FITTINGS	12
2.016	TRENCH EXCAVATION	12
2.017	SAND BEDDING AND SAND SURROUNDS	13
2.018	LAYING OF PIPES	13
2.019	BACKFILLING OF TRENCHES	13
2.020	SUPPLY AND INSTALLATION OF BRIDGE OR CULVERT CROSSINGS	14
2.021	SUPPLY AND INSTALLATION OF GATE VALVES	14
2.022	SUPPLY AND INSTALLATION OF AIR RELEASE VALVES	14
2.023	SUPPLY AND INSTALLATION OF PRESSURE REGULATING VALVES	14
2.024	SUPPLY AND INSTALLATION OF WASHOUTS	15
2.025	SUPPLY AND INSTALLATION OF GLOBE VALVES	15
2.026	SUPPLY AND INSTALLATION OF PRESSURE RELIEF VALVES	15
2.027	SUPPLY OF DRINKING FOUNTAINS	15
2.028	SUPPLY OF FIRE HYDRANTS	15
2.029	CONSTRUCTION OF PRE-CAST OR CAST IN SITU, REINFORCED CONCRETE VALVE CHAMBERS	16
2.030	SUPPLY AND INSTALLATION OF VALVE CHAMBER COVER AND FRAME	16
2.031	SUPPLY AND INSTALLATION OF SURFACE BOX UNITS	16
2.032	CONCRETE WORKS	16
2.033	SUPPLY AND INSTALLATION OF HDPE PIPES FOR SERVICE CONNECTIONS	17
2.034	SUPPLY AND INSTALLATION OF TAPPING COLLARS	17
2.035	SUPPLY AND INSTALLATION OF STOP VALVES	17
2.036	TESTING AND COMMISSIONING OF POTABLE WATER PIPES	17
2.037	ROAD REINSTATEMENT	18
2.037.1	CUTTING	18
2.037.2	REINSTATEMENT	18

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 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.

1.011 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 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.

1.013 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, fire fighting 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, 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.

1.016 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.

1.000 CIVIL WORKS

1.020 TOPOGRAPHIC SURVEY AND SITE DELIMITATION

The price per site of the topographical surveys shall include checking, completing and/or performing land surveying based on approved benchmarks, the existing ground elevation, property lines, northing and easting coordinates, topographical maps, layouts, delimitation of plots (official delimitation from the concerned Authorities), implantation of foundations and buildings, the measurement of earthworks etc.... as well as all other additional tasks imposed by the site and/or the Engineer. It also includes all necessary topographical works, official delimitation certificates and approved plans, labor expenses, transport costs as well as all expenses resulting from calculations and data transfer on drawings and/or on technical sheets that will accelerate the progress of works.

The site survey shall be supplied on paper duly signed and stamped, and shall be supplied also as digital data suitable for automated plotting.

1.021 SITE CLEARANCE

The lump sum price shall include cleaning the entire surface of the site and clearing it from any obstacle (material or equipment) located within the area of works, it shall also include the demolition of existing unused structures (reservoirs, valve chamber, reinforced concrete structures, etc....), labors, necessary equipment, transport of soil or wastes to public dumps (permit from the concerned Authorities is required to use these public dumps) and all tasks to deliver the site clear for excavation.

1.022 SITE REARRANGEMENT AFTER CONSTRUCTION

The lump sum price shall include the reinstatement of the site after completion of the works according to the drawings and to the engineer's instructions. It also includes backfilling all around the structures and foundations with selected materials and/or backfill in order to deliver the site in a good condition and prepared for the proposed improvements.

1.023 SOIL INVESTIGATIONS

The lump sum price of soil investigations according to BS 1377 (Methods of test for soil for civil engineering purposes) shall include various boreholes according to the nature of soil, in situ and laboratory tests, report determining the specifications and settlement description of the layers, the bearing capacity of the soil, the nature of foundations and the retaining structures if needed, level of water table, installation of piezometer, labor, mobilization and demobilization of equipment, tests, reports etc..., and this according to the detailed requirements of the general specifications.

1.024 EXCAVATION AND TRANSPORT OF UNSUITABLE BACKFILLING MATERIALS

The price per cubic meter of excavation shall include but not be limited to:

Excavation in all kinds of soils and rocks for structures and for access roads, 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. The volume of excavations shall be measured from the geometric dimensions of structures and levels determined according to the site layout and drawings. No excess excavations or earthworks shall be paid for unless otherwise stated by the Engineer.

1.025 PREPARATION OF FORMATION UNDER RESERVOIRS AND OTHER CONSTRUCTIONS

The price per cubic meter for preparation of formation under the constructions foundation or slabs on grade shall include compacted gravels, sand, polyethylene sheet (150 μ), compaction equipment, labor and all material and equipment necessary to achieve the subbase and base to receive the concrete, the volume shall be measured according to geometric dimensions shown on the drawings.

1.026 BACKFILLING AND COMPACTION

The price of cubic meter of backfilling shall include backfilling layers (25 cm thickness each before compaction) placed and compacted for the needed area and behind retaining walls or other locations if ordered by written instructions from the Engineer or shown on the drawings. It shall also include geotextile sheets and drainage system if needed (minimum thickness 1.2mm, mass ≥ 300 g/m²), bituminous coating, etc....

The volume of backfill materials shall be computed according to the dimensions shown on the drawings and the site layout and shall be composed of selected material for each case.

The price shall also include material, equipment, labor, etc... and all necessary tasks to achieve the work in perfect conditions.

1.027 BLINDING AND MASS CONCRETE C20

The price per cubic meter shall include all material, equipment, labor, transport,... blinding and/or mass concrete and shall be composed of at least 250 kg of cement per cubic meter of concrete and shall be measured according to the geometric shapes shown on the layout drawings and/or Standard Drawings. Any quantity executed in excess of the indicated dimensions shall not be paid for. Any quantity less than that required in the Contract drawings and according to the specification documents shall be deducted or completed according to the instructions given by the Engineer.

1.028 REINFORCED CONCRETE C30 (RESERVOIRS)

The price per cubic meter shall include all material, equipment, labor, transport, admixtures (retarders, plastisizers, waterproofing materials, ...) batching, mixing, placing, vibrating, curing, testing, finishing, scaffolding, reservations for equipment, formwork, wrought formwork (fair face), surface levelling with mechanical float, etc... Dosage of cement shall be 400 kg/cu.m. for reservoirs and retaining aqueous liquid structures. All joints or sealing systems shall be included in the price. Measurement shall be determined according to the geometric shapes indicated on the layout drawings and/or buildings drawings; any quantity executed in excess of the indicated dimensions shall not be paid for. Any quantity less than that required in the Contract drawings and according to the specification documents shall be deducted or completed according to the instructions given by the Engineer.

The price shall also include all materials, equipment, labour, transport, storage, placing, bending, scaffolding, etc... reinforcing steel supplied, placed, bended, etc... with all needed materials, accessories and tasks to achieve the works in perfect conditions. Detailed bar bending schedules and sheets should be submitted for approval before placing and installation.

The price shall also include all needed works, labor, material, transport, formwork, etc... to execute a fair faced concrete for interior and exterior walls and ceilings, and leveling of horizontal surfaces of slabs on grade by a mechanical trowel.

1.029 REINFORCED CONCRETE C30 (BUILDINGS)

The price per cubic meter shall include all material, equipment, labour, transport, admixtures (retarders, plastisizers, waterproofing materials, ...) batching, mixing, placing, vibrating, curing, testing, finishing, scaffolding, reservations for equipment, formwork, wrought formwork (fair face), surface levelling, etc... Dosage of cement shall be 350 kg/cu.m. for technical buildings, channels, retaining walls, foundations, wellhead manholes, etc... All joints or sealing systems shall be included in the price. Measurement shall be determined according to the geometric shapes indicated on the layout drawings and/or buildings drawings; any quantity executed in excess of the indicated dimensions shall not be paid for. Any quantity less than that required in the Contract drawings and according to the specification documents shall be deducted or completed according to the instructions given by the Engineer.

The price shall also include all materials, equipment, labour, transport, storage, placing, bending, scaffolding, etc... of reinforcing steel supplied, placed, bended, etc... with all needed materials, accessories and tasks to achieve the works in perfect conditions. Detailed bar bending schedules and sheets should be submitted for approval before placing and installation.

The price shall also include all needed works, labor, material, transport, formwork, etc... to execute a fair faced concrete for interior and exterior walls and ceilings of technical rooms.

1.030 FAIR FACE CONCRETE (WALLS, CEILINGS)

An extra over payment shall be added for every visible square meter of wrought formwork (fair face) for interior and exterior reservoir walls, and/or ceilings, interior walls and ceilings of technical buildings, interior and exterior walls and ceilings of technical rooms.

1.031 LEVELLING WITH MECHANICAL FLOAT

The price per square meter includes material, equipment, transport, labor,... and consists in leveling horizontal surfaces of large areas of slabs on grade (reservoirs and/or technical buildings) by a mechanical trowel.

1.032 CYCLOPEAN CONCRETE

The price per cubic meter of cyclopean concrete shall include material, equipment, transport, supply, placing, mixing, labor ... and shall be composed of 300 kg of cement per cubic meter of concrete and a maximum of 40% of hardrocks ($\leq 200\text{mm}$). Formwork and scaffolding are included and cyclopean concrete shall be measured according to geometric shapes determined by written instructions of the engineer. All tasks necessary for the completion of the work are deemed to be included in the price.

1.033 STEEL REINFORCEMENT FOR RESERVOIRS AND OTHER BUILDING

The price per ton include all materials, equipment, labors, transport, storage, placing, bending, scaffolding, etc... of reinforcing steel supplied, placed, bended, etc... with all needed materials, accessories and tasks to achieve the works in perfect conditions.

The price shall be paid per ton of reinforcement steel supplied, bended and placed, and shall be measured according with the dimensions figured on the drawings. Detailed bar bending schedules and sheets should be submitted for approval before placing and installation, these bar bending schedules and sheets will be used for calculation of reinforcing steel weight.

1.034 WATERSTOP

The price per linear meter of P.V.C. water-stop joints (expansion, contraction,...) and/or hypalon strip of 15 cm width shall include the supply, transport and the installation of the water-stop strips (up to 25cm width) according to drawings (essentially between mat foundations and walls of reservoirs). Any additional water-stop strips to be used according to particular methods of execution shall not be taken into account for measurement and written instructions from the engineer shall be obligatory. The price also includes the backing rod, sealant and fiber boards if needed.

1.035 NEOPRENE PADS

The price per linear meter of neoprene pads placed between reservoir roofs, slabs and walls shall include preparation and application of neoprene pads which shall withstand all strains exerted by the roof cover. It shall also include the supply and application of polystyrene, polyethene sheets as well as equipment, materials, scaffolding, accessories and others that turn out to be necessary for a good execution.

1.036 INTERNAL LINING FOR RESERVOIR

The price per square meter of internal surface waterproofing coating for reservoirs shall include preparation of the surface (sand blasting, water blasting), treatment of singular points (contraction or expansion joints, pipe penetration,...) material, transport, scaffolding, application in several layers, labor, expenses,... in conformity with the technical sheet of approved material, quality tests, structures test, before and after application, warranty. Crystallisation or mineralisation products shall be applied on reservoirs walls and slabs on ground, and flexible protective and waterproofing slurry products on bottom faces of roof slabs or domes.

1.037 WATERPROOFING OF RESERVOIRS AND OTHER BUILDINGS ROOF SLABS WITH THERMAL INSULATION

The price per square meter of roof slab waterproofing shall include material, transport, equipment, labor, supply, installation, preparation of support (screed,...), treatment of singular point (rain outlet, ventilations, openings,...), and shall be composed of a vapor barrier SBS or APP; thickness ≥ 2.5 mm fixed by adherence or semi-adherence, a thermal insulation with minimum thickness of 50 mm and a thermal conductivity $\alpha = 0.037$ Kcal/h.m²/°C, and a waterproofing membranes (SBS/APP) 4 mm thick minimum. Vertical upstands shall be aluminium self-protected, supply and installation of concrete protection grade C20 or concrete paving slabs and a non woven polyester sheet 200 g/m². Supply and installation works of necessary roof drains are deemed to be included in this item and shall not be paid for separately. The membranes shall be measured only for horizontal surfaces and no measurements or excess shall be paid for vertical surfaces.

1.038 WATER TESTING AND DISINFECTION OF RESERVOIRS

The lump sum price of water testing of reservoirs per site shall include:

- Supply, transport and filling of reservoir with water, and checking for leaks. This operation shall be repeated to the Engineer's satisfaction.
- Water sampling for analysis and transport in an adequate packing to the laboratory, suppliers, labor,....
- Bacteriological analysis type B2 (2 per reservoir)
- Cleaning and disinfection including all material, scaffolding, labor, expenses and all tasks necessary to accomplish the work.

1.039 EXTERIOR STEEL DOORS AND WINDOWS INCLUDING GLAZING AND PAINTING

The price per square meter of exterior steel doors and windows shall include all material, equipment, transport, labor, expenses, water-resistant hardware, glazing (8mm glass) ventilation, mechanical protections, epoxy paint, louvers, openings, locking system, supply, installation, anchoring, reinstatement of support, finishing and all tasks and accessories, necessary to a perfect execution. Metal sheets shall be 3mm thick minimum.

1.040 METAL WORKS

The price per kilogram of metalwork (protection bars, louvers, ventilation, ladders, grating, railings, trap doors,...) shall include all material, equipment, transport, labor, expenses, hardware glazing (8mm glass), epoxy paint, supply, installation, anchoring, locking system, reinstatement of support, finishing and all tasks and accessories necessary to a perfect execution.

1.041 INDUSTRIAL FLOORING

The price per square meter of industrial flooring shall include all material, equipment, transport, labor, expenses, application, preparation of support, scaffolding, curing, finishing, cleaning, singular points, screed if necessary, and shall be composed of heavy duty chemical and abrasion resistant epoxy resin floor (5mm thick). For walls, 2mm thick of epoxy resin will be sufficient (the number of layers should be in compliance with the manufacturer recommendation and the Engineer's approval).

The surfaces shall be measured according to geometric shapes of painted area (floor, wall or ceiling), no measurement and no excess shall be paid for re-entrant or salient angles of openings.

1.042 WASHABLE PAINT INTERNAL OR EXTERNAL USE COATING

The price per square meter of washable paint includes all materials, equipment, transport, labor, expenses, scaffolding, application, preparation of support, finishing, cleaning, singular points, and shall be composed of a double layer of mastic, primer and a minimum of two coats of washable paint (latex emulsion and/or vinyl acrylic emulsion).

The surfaces shall be measured according to geometric shapes of painted area, no measurement and no excess shall be paid for re-entrant or salient angles of openings.

1.043 FENCE

The price per linear meter of fence shall include all excavation, concrete, reinforcement, metalwork, epoxy paint, finishing, material, labor, equipment, supply, transport, anchor bolts, reinstatement of property line, and all tasks necessary for a perfect execution. In case the fence has to be fixed on retaining walls and/or existing or new concrete structures, the contractor must take this constraint in consideration according to each site and adapt his price accordingly.

1.044 ACCESS GATE

The lump sum price of access gate per site shall include all excavation, reinforced concrete, steel access gate, locking system, epoxy paint, water resistant hardware, anchors, finishing material, labor, equipment, formwork, scaffolding, supply, transport, reinstatement of property line and all tasks necessary for a perfect execution. For access gate width refer to site implantation.

1.045 ASPHALTING

The price per square meter of asphaltting for structures and access roads layout shall include earthwork, sub-base preparation (scraping, leveling, compaction,...), sub-base material layer (hard stones, gravel, ...), base course material (hard crushed aggregate,...) bituminous tack coats, asphalt and all material, equipment, supply, transport, labor, expenses, drainage system, testing, quality control, hauling, spreading and compaction, and all necessary tasks for laying, jointing and a perfect execution and shall include, but not be limited to:

- Base course: supply, and transport of materials, earth work, scraping, levelling, compaction, labor, final thickness after compaction 20 cm, testing, quality control and all necessary tasks for a perfect execution.
- Asphalt: supply and transport of materials, bituminous, tack coat, asphalt and all necessary materials, labor, expenses, testing, quality, control, hauling, spreading and compaction and all necessary tasks for laying, jointing and a perfect execution.

1.046 SUPPLY AND INSTALLATION OF PIPES

Pipes shall be classified for payment according to diameter and material and shall be measured in linear meters of 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 all fittings, bends, joints, reducers, flanges, holderbats, supports, puddle flanges, inserts, bolts, nuts, brackets, bellmouths, as well as hauling, transport, unloading, staking and all necessary labour and accessories to provide a complete installation.

1.047 SUPPLY AND INSTALLATION OF GATE VALVES

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

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

1.048 SUPPLY AND INSTALLATION OF FLOOR DRAINS

Floor drains shall be measured by number, and shall include for floor drain pipe DN 80mm, excavation, backfilling, reinstatement of the concrete surface level, flap valve, bends and all components necessary to provide a complete installation.

1.049 SUPPLY AND INSTALLATION OF SUCTION STRAINERS

Suction strainers shall be measured by number according to nominal diameter. Material shall be stainless steel, coated cast iron or bronze.

Price shall include for all fittings necessary to install the suction strainer inside the reservoir on the outlet pipe including flanges, joints, bolts, nuts and all accessories to make a complete installation.

1.050 SUPPLY AND INSTALLATION OF LEVEL INDICATORS

Level indicators shall be measured by number, and the price shall include for all necessary fittings to install the level indicator, civil works, concrete drilling, grouting with suitable material, level indicator, testing, bolts, nuts, etc...

1.051 SUPPLY AND INSTALLATION OF DOUBLE AIR RELEASE VALVES

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

1.052 SUPPLY AND INSTALLATION OF WATER METERS

Water 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 watermeter), flanges, dismantling joints, supports, bolts, nuts and all components necessary to provide a complete installation.

1.053 SUPPLY AND INSTALLATION OF INSERTS

Inserts shall be classified for payment by nominal diameters, and shall be measured by number, price shall include for material, inserts, installation, grouting, bolts, nuts, flanges, etc...

2.000 TRANSMISSION AND DISTRIBUTION LINES

2.010 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.

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 kilometers.

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 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.

2.015 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.

2.016 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.

2.017 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.

2.018 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.

2.019 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)

2.020 SUPPLY AND INSTALLATION OF BRIDGE OR CULVERT CROSSINGS

Bridge or Culvert crossing shall be classified for payment by number of completed crossing unit installed in place and the price shall include but not be limited to:

- Extra excavation works.
- Removal of any abandoned pipework within the excavation.
- Distributing pipes along the structure.
- Checking and cleaning pipe from dirt, oil, grease, etc...
- Supply of temporary and/or final supports including supply and installation of metal works needed to support the pipe.
- All necessary types of jointing, welding, etc..
- Checking pipe alignment and elevations using topographical instruments.
- 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.
- Construction of a complete manhole including cover (refer to standard drawings).

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.

2.021 SUPPLY AND INSTALLATION OF 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 complete installation.

2.022 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.

2.023 SUPPLY AND INSTALLATION OF PRESSURE REGULATING VALVES

Supply and installation of pressure regulating valves shall be measured by number for each diameter of pipeline and shall include the supply and installation of thrust flanges, bypass pipe, bends, tees, orifice plates, filters, butterfly valves, short piece pipes, gate valves, air release valves, manometers, collars, flanges, dismantling joints, in addition to concrete works which include supports and all works necessary to form a complete installation according to standard drawings.

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

2.024 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.

2.025 SUPPLY AND INSTALLATION OF GLOBE VALVES

Globe valves shall be classified for payment by nominal diameter and nominal pressure class and shall be measured by number of globe 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 complete installation.

2.026 SUPPLY AND INSTALLATION OF PRESSURE RELIEF VALVES

Pressure relief 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.

2.027 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.

2.028 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.

2.029 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.

2.030 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.

2.031 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.

2.032 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.

2.033 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.

2.034 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.

2.035 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.

2.036 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.

2.037 ROAD REINSTATEMENT

2.037.1 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.

2.037.2 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

LIST OF UNIT PRICES

JAJ RESERVOIR (CAPACITY 500 m³)

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.0000	General			
2.0001	Checking, completing, and/or performing topographic survey and site delimitation	Site	Only LBP	
2.0002	Site clearance	L.S.	Only LBP	
2.0003	Site rearrangement after construction	L.S.	Only LBP	
2.1000	Earthworks			
2.1100	Soil investigations			
2.1101	Boring, core sampling, SPT tests and report	L.S	Only LBP	
2.1200	Excavation			
2.1201	Excavation in all types of soils and rocks and transport of unsuitable backfilling material to disposal sites	cu.m	Only LBP	
2.1300	Preparation of formation under reservoirs and other constructions			
2.1301	Supply, preparation and compaction of the granular beds in addition to laying the polyethylene sheet under the construction's foundations	cu.m	Only LBP	
2.1400	Backfilling			
2.1401	Backfilling and compaction	cu.m	Only LBP	

JAJ RESERVOIR (CAPACITY 500 m³)

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.2000	Concrete works and accessories			
2.2100	Concrete works			
2.2101	Blinding and mass concrete Class C20	cu.m	Only LBP	
2.2102	Reinforced concrete class C30, 400 kg of cement /cu.m, for reservoirs, including formwork	cu.m	Only LBP	
2.2103	Reinforced concrete class C30, 350 kg of cement /cu.m, for other buildings, including formwork	cu.m	Only LBP	
2.2104	Extra over items 2.2102 and 2.2103 for fair faced concrete in reservoirs and other buildings	sq.m	Only LBP	
2.2105	Concrete surface leveling with mechanical float	sq.m	Only LBP	
2.2106	Cyclopean concrete	cu.m	Only LBP	
2.2107	Steel reinforcement for reservoirs and other buildings	Ton	Only LBP	
2.2200	Water stop and bearing pads			
2.2201	Water stop up to 25 cm in width	lin.m	Only LBP	
2.2202	Neoprene pads between walls and roof slab	lin.m	Only LBP	

JAJ RESERVOIR (CAPACITY 500 m³)

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.3000	Waterproofing, thermal insulation, and water quality control			
2.3001	Internal lining for reservoirs	sq.m	Only LBP	
2.3002	Waterproofing of reservoir and other building roof slabs with thermal insulation	sq.m	Only LBP	
2.3003	Water testing and disinfection for reservoir	L.S.	Only LBP	
2.4000	Metal works			
2.4001	Supply and installation of exterior steel doors and windows including glazing and painting (with blue color)	sq.m	Only LBP	
2.4002	Supply and installation of metal works: steel protection bars for exterior windows, metallic ladders with or without safety hoops, gratings for channels, railings, locks and all other metal works, including painting (blue color)	kg	Only LBP	
2.5000	Painting			
2.5101	Supply and application of industrial flooring	sq.m	Only LBP	
2.5102	Supply and application of internal or external use coating	sq.m	Only LBP	
2.6000	Fence			
2.6001	Supply and installation of site's external fence, including painting	lin.m	Only LBP	

JAJ RESERVOIR (CAPACITY 500 m³)

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.6002	Supply and installation of the access gate (L = 4 m)	L.S.	Only LBP	
2.7000	Asphalting			
2.7001	Subgrade compaction, sub-base and base preparation, and asphalting	sq.m	Only LBP	
2.8000	Reservoir hydraulic accessories			
2.8100	Supply and installation of ductile iron K9 pipes including all necessary fittings (bends, tees, reducers, flanges, dismantling joints, support, etc...)			
2.8101	DI pipes, DN 100 (for inlet)	lin.m	Only LBP	
2.8102	DI pipes, DN 150 (for outlet, overflow, and washout)	lin.m	Only LBP	
2.8200	Supply and installation of gate valves			
2.8201	Gate valve PN16, DN 150 (for outlet and washout)	nb	Only LBP	
2.8300	Supply and installation of valve chamber floor drains			
2.8301	Valve chamber floor drain, including pipe DN 80 and flap valve	nb	Only LBP	

JAJ RESERVOIR (CAPACITY 500 m³)

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.8400	Supply and installation of suction strainers			
2.8401	Suction strainer, DN 150 (for outlet)	nb	Only LBP	
2.8500	Supply and installation of level indicators			
2.8501	Level indicator	nb	Only LBP	
2.8600	Supply and installation of double air release valves including isolating gate valves			
2.8601	Double air release valve including gate valve PN16, DN60 mm (for outlet)	nb	Only LBP	
2.8700	Supply and installation of water meters including Y strainers, filters, flow straighteners			
2.8701	Water meter PN16, DN 100 mm (for inlet)	nb	Only LBP	
2.8702	Water meter PN16, DN 150 mm (for outlet)	nb	Only LBP	
2.8800	Supply and installation of inserts			
2.8801	Insert DN 100 mm (for inlet)	nb	Only LBP	
2.8802	Insert DN 150 mm (for outlet, overflow, and washout)	nb	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.0000	General			
5.0001	Site topographic survey	km.	Only LBP	
5.0002	Trial pit not exceeding 3m depth	nb	Only LBP	
5.0003	Trial trench not exceeding 3m depth	lin.m	Only LBP	
5.0004	As-built drawings	km.	Only LBP	
5.1000	Pipeworks			
5.1100	Supply of ductile iron K9 pipes including all necessary fittings (bends, tees, reducers, flanges, etc...)			
5.1101	Supply of 80 mm pipes	lin.m	Only LBP	
5.1102	Supply of 100 mm pipes	lin.m	Only LBP	
5.1103	Supply of 150 mm pipes	lin.m	Only LBP	
5.1200	Supply of HDPE pipes including all necessary fittings (bends, tees, reducers, flanges, etc...)			
5.1210	Supply of HDPE pipes PE80 - PN10			
5.1211	Supply of 63 mm pipes for telemetry cables (tel.)	lin.m	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.1220	Supply of HDPE pipes PE100 - PN16			
5.1221	Supply of 63 mm pipes	lin.m	Only LBP	
5.1222	Supply of 75 mm pipes	lin.m	Only LBP	
5.1223	Supply of 90 mm pipes	lin.m	Only LBP	
5.1224	Supply of 110 mm pipes	lin.m	Only LBP	
5.1225	Supply of 125 mm pipes	lin.m	Only LBP	
5.1300	Trench excavation			
5.1301	Trench excavation for service connections	lin.m	Only LBP	
5.1302	Trench excavation for pipes not exceeding 110 mm in diameter	lin.m	Only LBP	
5.1303	Trench excavation for 150 mm DI pipes	lin.m	Only LBP	
5.1304	Trench excavation for 2 pipes: 80 mm DI and 63 mm HDPE	lin.m	Only LBP	
5.1305	Trench excavation for 2 pipes: 80 mm DI and 75 mm HDPE	lin.m	Only LBP	
5.1306	Trench excavation for 2 pipes: 80 mm DI and 90 mm HDPE	lin.m	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.1307	Trench excavation for 2 pipes: 80 mm DI and 110 mm HDPE	lin.m	Only LBP	
5.1308	Trench excavation for 2 pipes: 100 mm DI and 63 mm HDPE	lin.m	Only LBP	
5.1309	Trench excavation for 2 pipes: 100 mm DI and 110 mm HDPE	lin.m	Only LBP	
5.1310	Trench excavation for 2 pipes: 100 mm DI and 125 mm HDPE	lin.m	Only LBP	
5.1311	Trench excavation for 3 pipes: 150 mm DI, 100 mm DI, and 63 mm (tel.)	lin.m	Only LBP	
5.1312	Trench excavation for 4 pipes: 150 mm DI, 100 mm DI, 63 mm (tel.), and 63 mm HDPE	lin.m	Only LBP	
5.1400	Sand bedding and surrounds			
5.1401	Sand bedding for service connections	lin.m	Only LBP	
5.1402	Sand bedding for pipes not exceeding 110 mm in diameter	lin.m	Only LBP	
5.1403	Sand bedding for 150 mm DI pipes	lin.m	Only LBP	
5.1404	Sand bedding for 2 pipes: 80 mm DI and 63 mm HDPE	lin.m	Only LBP	
5.1405	Sand bedding for 2 pipes: 80 mm DI and 75 mm HDPE	lin.m	Only LBP	
5.1406	Sand bedding for 2 pipes: 80 mm DI and 90 mm HDPE	lin.m	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.1407	Sand bedding for 2 pipes: 80 mm DI and 110 mm HDPE	lin.m	Only LBP	
5.1408	Sand bedding for 2 pipes: 100 mm DI and 63 mm HDPE	lin.m	Only LBP	
5.1409	Sand bedding for 2 pipes: 100 mm DI and 110 mm HDPE	lin.m	Only LBP	
5.1410	Sand bedding for 2 pipes: 100 mm DI and 125 mm HDPE	lin.m	Only LBP	
5.1411	Sand bedding for 3 pipes: 150 mm DI, 100 mm DI, and 63 mm (tel.)	lin.m	Only LBP	
5.1412	Sand bedding for 4 pipes: 150 mm DI, 100 mm DI, 63 mm (tel.), and 63 mm HDPE	lin.m	Only LBP	
5.1500	Laying of ductile iron pipes			
5.1501	Laying of 80 mm pipes	lin.m	Only LBP	
5.1502	Laying of 100 mm pipes	lin.m	Only LBP	
5.1503	Laying of 150 mm pipes	lin.m	Only LBP	
5.1600	Laying of HDPE pipes			
5.1610	Laying of HDPE pipes PE80 - PN10			
5.1611	Laying of 63 mm pipes for telemetry cables (tel.)	lin.m	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.1620	Laying of HDPE pipes PE100 - PN16			
5.1621	Laying of 63 mm pipes	lin.m	Only LBP	
5.1621	Laying of 75 mm pipes	lin.m	Only LBP	
5.1622	Laying of 90 mm pipes	lin.m	Only LBP	
5.1621	Laying of 110 mm pipes	lin.m	Only LBP	
5.1622	Laying of 125 mm pipes	lin.m	Only LBP	
5.1700	Sand backfilling of trenches on main roads including compaction and testing			
5.1701	Sand backfilling of trenches for service connections	lin.m	Only LBP	
5.1702	Sand backfilling of trenches for pipes not exceeding 110 mm in diameter	lin.m	Only LBP	
5.1703	Sand backfilling of trenches for 2 pipes: 80 mm DI and 90 mm HDPE	lin.m	Only LBP	
5.1704	Sand backfilling of trenches for 2 pipes: 100 mm DI and 110 mm HDPE	lin.m	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.1800	Backfilling of trenches on other roads including compaction and testing			
5.1801	Backfilling of trenches for service connections	lin.m	Only LBP	
5.1802	Backfilling of trenches for pipes not exceeding 110 mm in diameter	lin.m	Only LBP	
5.1803	Backfilling of trenches for 150 mm DI pipes	lin.m	Only LBP	
5.1804	Backfilling of trenches for 2 pipes: 80 mm DI and 63 mm HDPE	lin.m	Only LBP	
5.1805	Backfilling of trenches for 2 pipes: 80 mm DI and 75 mm HDPE	lin.m	Only LBP	
5.1806	Backfilling of trenches for 2 pipes: 80 mm DI and 90 mm HDPE	lin.m	Only LBP	
5.1807	Backfilling of trenches for 2 pipes: 80 mm DI and 110 mm HDPE	lin.m	Only LBP	
5.1808	Backfilling of trenches for 2 pipes: 100 mm DI and 63 mm HDPE	lin.m	Only LBP	
5.1809	Backfilling of trenches for 2 pipes: 100 mm DI and 110 mm HDPE	lin.m	Only LBP	
5.1810	Backfilling of trenches for 2 pipes: 100 mm DI and 125 mm HDPE	lin.m	Only LBP	
5.1811	Backfilling of trenches for 3 pipes: 150 mm DI, 100 mm DI, and 63 mm (tel.)	lin.m	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.1812	Backfilling of trenches for 4 pipes: 150 mm DI, 100 mm DI, 63 mm (tel.), and 63 mm HDPE	lin.m	Only LBP	
5.1900	Supply and installation of bridge or culvert crossings			
5.1901	Bridge or culvert crossing	nb	Only LBP	
5.2000	Accessories			
5.2100	Supply and installation of gate valves (including bolts, nuts, dismantling joints, etc..).			
5.2101	Gate valve PN16, DN 50 mm	nb	Only LBP	
5.2102	Gate valve PN16, DN 65 mm	nb	Only LBP	
5.2103	Gate valve PN16, DN 80 mm	nb	Only LBP	
5.2104	Gate valve PN16, DN 100 mm	nb	Only LBP	
5.2105	Gate valve PN16, DN 150 mm	nb	Only LBP	
5.2106	Gate valve PN40, DN 80 mm	nb	Only LBP	
5.2107	Gate valve PN40, DN 100 mm	nb	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.2200	Supply and installation of air release valves			
5.2201	Single air release valve including isolating GV PN16, DN 40 mm	nb	Only LBP	
5.2202	Single air release valve including isolating GV PN16, DN 60 mm	nb	Only LBP	
5.2300	Supply and installation of pressure regulating valves			
5.2301	Pressure regulating valve PN16 for DN 63 mm HDPE pipe	nb	Only LBP	
5.2302	Pressure regulating valve PN25 for DN 63 mm HDPE pipe	nb	Only LBP	
5.2303	Pressure regulating valve PN40 for DN 80 mm pipe	nb	Only LBP	
5.2304	Pressure regulating valve PN40 for DN 100 mm pipe	nb	Only LBP	
5.2400	Supply and installation of washouts			
5.2401	Washout PN16, DN 40 mm	nb	Only LBP	
5.2402	Washout PN16, DN 60 mm	nb	Only LBP	
5.2403	Washout PN40, DN 60 mm	nb	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.2500	Supply and installation of globe valves			
5.2501	Globe valve PN40, DN 80 mm	nb	Only LBP	
5.2501	Globe valve PN40, DN 100 mm	nb	Only LBP	
5.2600	Supply and installation of pressure relief valves			
5.2601	Pressure relief valve including isolating GV PN40, DN 50 mm	nb	Only LBP	
5.2700	Supply and installation of drinking fountains			
5.2701	Drinking fountain PN16	nb	Only LBP	
5.2800	Supply and installation of fire hydrants			
5.2801	Fire hydrant PN16	nb	Only LBP	
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	Draw-pit for telemetry ducts size 60 x 60 cm x cm	nb	Only LBP	
5.3102	Valve chamber internal size 125 x 100 cm x cm	nb	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.3103	Valve chamber internal size 150 x 150 cm x cm	nb	Only LBP	
5.3104	Valve chamber internal size 175 x 125 cm x cm	nb	Only LBP	
5.3105	Valve chamber internal size 175 x 150 cm x cm	nb	Only LBP	
5.3106	Valve chamber internal size 200 x 150 cm x cm	nb	Only LBP	
5.3107	Valve chamber internal size 200 x 175 cm x cm	nb	Only LBP	
5.3108	Valve chamber internal size 250 x 175 cm x cm	nb	Only LBP	
5.3109	Valve chamber internal size 275 x 250 cm x cm	nb	Only LBP	
5.3110	Valve chamber internal size 350 x 225 cm x cm	nb	Only LBP	
5.3111	Valve chamber internal size 375 x 250 cm x cm	nb	Only LBP	
5.3112	Valve chamber internal size 425 x 250 cm x cm	nb	Only LBP	
5.3200	Valve chamber cover			
5.3201	Valve chamber cover Grade A	nb	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.3300	Surface box units for washouts and service connections			
5.3301	Supply and installation of surface box unit	nb	Only LBP	
5.4000	Concrete works			
5.4001	Mass concrete - Class C20 for blinding	cu.m	Only LBP	
5.4002	Mass concrete - Class C25 for pipe supports, thrust blocks, anchors, pipe bedding and surround at river crossing.	cu.m	Only LBP	
5.4003	Reinforced concrete - Class C25 for pipe anchors, supports, protection slabs, thrust blocks, drainage and irrigation channels	cu.m	Only LBP	
5.5000	Service connections			
5.5100	Supply and installation of HDPE Pipes			
5.5101	HDPE pipe PN16, OD 20 mm	lin.m	Only LBP	
5.5102	HDPE pipe PN16, OD 25 mm	lin.m	Only LBP	
5.5103	HDPE pipe PN16, OD 32 mm	lin.m	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.5200	Supply and installation of tapping collars			
5.5201	Tapping collar for DN 63 mm HDPE pipe	nb	Only LBP	
5.5202	Tapping collar for DN 75 mm HDPE pipe	nb	Only LBP	
5.5203	Tapping collar for DN 90 mm HDPE pipe	nb	Only LBP	
5.5204	Tapping collar for DN 110 mm HDPE pipe	nb	Only LBP	
5.5205	Tapping collar for DN 125 mm HDPE pipe	nb	Only LBP	
5.5300	Supply and installation of stop valves			
5.5301	Stop valve PN16, DN 16 mm	nb	Only LBP	
5.5302	Stop valve PN16, DN 20 mm	nb	Only LBP	
5.5303	Stop valve PN16, DN 25 mm	nb	Only LBP	
5.6000	Testing and commissioning of potable water pipes			
5.6001	Testing and commissioning of service connections	nb	Only LBP	
5.6002	Testing and commissioning of 63 mm HDPE pipes	lin.m	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.6003	Testing and commissioning of 75 mm HDPE pipes	lin.m	Only LBP	
5.6004	Testing and commissioning of 90 mm HDPE pipes	lin.m	Only LBP	
5.6005	Testing and commissioning of 110 mm HDPE pipes	lin.m	Only LBP	
5.6006	Testing and commissioning of 125 mm HDPE pipes	lin.m	Only LBP	
5.6007	Testing and commissioning of 80 mm HDPE pipes	lin.m	Only LBP	
5.6008	Testing and commissioning of 100 mm HDPE pipes	lin.m	Only LBP	
5.6009	Testing and commissioning of 150 mm HDPE pipes	lin.m	Only LBP	
5.7000	Road Reinstatement			
5.7100	Cutting			
5.7101	Cutting of paved roads for water pipes	lin.m	Only LBP	
5.7102	Cutting, breaking-out and removal of concrete pavement or stair cases for water pipes	sq.m	Only LBP	
5.7200	Reinstatement			
5.7201	Reinstatement in two layers of paved main roads including recutting works	sq.m	Only LBP	

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.7202	Reinstatement in one layer of other paved roads including recutting works	sq.m	Only LBP	
5.7203	Reinstatement of concrete pavement or stair cases for water pipes, including base, sub-base courses and concrete pavement	sq.m	Only LBP	

PART C

BILL OF QUANTITIES

JAJ RESERVOIR (CAPACITY 500 m³)

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
2.0000	General				
2.0001	Checking, completing, and/or performing topographic survey and site delimitation	Site	1		
2.0002	Site clearance	L.S.	1		
2.0003	Site rearrangement after construction	L.S.	1		
	Sub-Total 2.0000				
2.1000	Earthworks				
2.1100	Soil investigations				
2.1101	Boring, core sampling, SPT tests and report	L.S	1		
	Sub-Total 2.1100				
2.1200	Excavation				
2.1201	Excavation in all types of soils and rocks and transport of unsuitable backfilling material to disposal sites	cu.m	600		
	Sub-Total 2.1200				
2.1300	Preparation of formation under reservoirs and other constructions				
2.1301	Supply, preparation and compaction of the granular beds in addition to laying the polyethylene sheet under the construction's foundations	cu.m	45		
	Sub-Total 2.1300				
2.1400	Backfilling				
2.1401	Backfilling and compaction	cu.m	50		
	Sub-Total 2.1400				
	Sub-Total 2.1000				
2.2000	Concrete works and accessories				
2.2100	Concrete works				
2.2101	Blinding and mass concrete Class C20	cu.m	15		
2.2102	Reinforced concrete class C30, 400 kg of cement /cu.m, for reservoirs, including formwork	cu.m	125		
2.2103	Reinforced concrete class C30, 350 kg of cement /cu.m, for other buildings, including formwork	cu.m	32		
2.2104	Extra over items 2.2102 and 2.2103 for fair faced concrete in reservoirs and other buildings	sq.m	850		
2.2105	Concrete surface leveling with mechanical float	sq.m	140		
2.2106	Cyclopean concrete	cu.m	15		
2.2107	Steel reinforcement for reservoirs and other buildings	Ton	21		
	Sub-Total 2.2100				
2.2200	Water stop and bearing pads				
2.2201	Water stop up to 25 cm in width	lin.m	35		
2.2202	Neoprene pads between walls and roof slab	lin.m	35		
	Sub-Total 2.2200				
	Sub-Total 2.2000				

JAJ RESERVOIR (CAPACITY 500 m³)

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
2.3000	Waterproofing, thermal insulation, and water quality control				
2.3001	Internal lining for reservoirs	sq.m	400		
2.3002	Waterproofing of reservoir and other building roof slabs with thermal insulation	sq.m	145		
2.3003	Water testing and disinfection for reservoir	L.S.	1		
	Sub-Total 2.3000				
2.4000	Metal works				
2.4001	Supply and installation of exterior steel doors and windows including glazing and painting (with blue color)	sq.m	4		
2.4002	Supply and installation of metal works: steel protection bars for exterior windows, metallic ladders with or without safety hoops, gratings for channels, railings, locks and all other metal works, including painting (blue color)	kg	750		
	Sub-Total 2.4000				
2.5000	Painting				
2.5101	Supply and application of industrial flooring	sq.m	30		
2.5102	Supply and application of internal or external use coating	sq.m	400		
	Sub-Total 2.5000				
2.6000	Fence				
2.6001	Supply and installation of site's external fence, including painting	lin.m	88		
2.6002	Supply and installation of the access gate (L = 4 m)	L.S.	1		
	Sub-Total 2.6000				
2.7000	Asphalting				
2.7001	Subgrade compaction, sub-base and base preparation, and asphalting	sq.m	50		
	Sub-Total 2.7000				
2.8000	Reservoir hydraulic accessories				
2.8100	Supply and installation of ductile iron K9 pipes including all necessary fittings (bends, tees, reducers, flanges, dismantling joints, support, etc...)				
2.8101	DI pipes, DN 100 (for inlet)	lin.m	30		
2.8102	DI pipes, DN 150 (for outlet, overflow, and washout)	lin.m	72		
	Sub-Total 2.8100				
2.8200	Supply and installation of gate valves				
2.8201	Gate valve PN16, DN 150 (for outlet and washout)	nb	2		
	Sub-Total 2.8200				
2.8300	Supply and installation of valve chamber floor drains				
2.8301	Valve chamber floor drain, including pipe DN 80 and flap valve	nb	1		
	Sub-Total 2.8300				
2.8400	Supply and installation of suction strainers				
2.8401	Suction strainer, DN 150 (for outlet)	nb	1		
	Sub-Total 2.8400				

JAJ RESERVOIR (CAPACITY 500 m³)

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
2.8500	Supply and installation of level indicators				
2.8501	Level indicator	nb	1		
	Sub-Total 2.8500				
2.8600	Supply and installation of double air release valves including isolating gate valves				
2.8601	Double air release valve including gate valve PN16, DN60 mm (for outlet)	nb	1		
	Sub-Total 2.8600				
2.8700	Supply and installation of water meters including Y strainers, filters, flow straighteners				
2.8701	Water meter PN16, DN 100 mm (for intlet)	nb	1		
2.8702	Water meter PN16, DN 150 mm (for outlet)	nb	1		
	Sub-Total 2.8700				
2.8800	Supply and installation of inserts				
2.8801	Insert DN 100 mm (for intlet)	nb	3		
2.8802	Insert DN 150 mm (for outlet, overflow, and washout)	nb	8		
	Sub-Total 2.8800				
	Sub-Total 2.8000				
	Total JAJ RESERVOIR (CAPACITY 500 m³)				

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.0000	General				
5.0001	Site topographic survey	km.	18.20		
5.0002	Trial pit not exceeding 3m depth	nb	91.00		
5.0003	Trial trench not exceeding 3m depth	lin.m	273.00		
5.0004	As-built drawings	km.	18.20		
	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 80 mm pipes	lin.m	1,302.00		
5.1102	Supply of 100 mm pipes	lin.m	2,994.00		
5.1103	Supply of 150 mm pipes	lin.m	2,142.00		
	Sub-Total 5.1100				
5.1200	Supply of HDPE pipes including all necessary fittings (bends, tees, reducers, flanges, etc...)				
5.1210	Supply of HDPE pipes PE80 - PN10				
5.1211	Supply of 63 mm pipes for telemetry cables (tel.)	lin.m	2,106.00		
5.1220	Supply of HDPE pipes PE100 - PN16				
5.1221	Supply of 63 mm pipes	lin.m	13,685.00		
5.1222	Supply of 75 mm pipes	lin.m	1,000.00		
5.1223	Supply of 90 mm pipes	lin.m	1,040.00		
5.1224	Supply of 110 mm pipes	lin.m	665.00		
5.1225	Supply of 125 mm pipes	lin.m	276.00		
	Sub-Total 5.1200				
5.1300	Trench excavation				
5.1301	Trench excavation for service connections	lin.m	3,350.00		
5.1302	Trench excavation for pipes not exceeding 110 mm in diameter	lin.m	14,044.00		
5.1303	Trench excavation for 150 mm DI pipes	lin.m	36.00		
5.1304	Trench excavation for 2 pipes: 80 mm DI and 63 mm HDPE	lin.m	378.00		
5.1305	Trench excavation for 2 pipes: 80 mm DI and 75 mm HDPE	lin.m	372.00		
5.1306	Trench excavation for 2 pipes: 80 mm DI and 90 mm HDPE	lin.m	210.00		
5.1307	Trench excavation for 2 pipes: 80 mm DI and 110 mm HDPE	lin.m	144.00		
5.1308	Trench excavation for 2 pipes: 100 mm DI and 63 mm HDPE	lin.m	72.00		
5.1309	Trench excavation for 2 pipes: 100 mm DI and 110 mm HDPE	lin.m	522.00		
5.1310	Trench excavation for 2 pipes: 100 mm DI and 125 mm HDPE	lin.m	276.00		
5.1311	Trench excavation for 3 pipes: 150 mm DI, 100 mm DI, and 63 mm (tel.)	lin.m	1,242.00		
5.1312	Trench excavation for 4 pipes: 150 mm DI, 100 mm DI, 63 mm (tel.), and 63 mm HDPE	lin.m	864.00		
	Sub-Total 5.1300				

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.1400	Sand bedding and surrounds				
5.1401	Sand bedding for service connections	lin.m	3,350.00		
5.1402	Sand bedding for pipes not exceeding 110 mm in diameter	lin.m	14,044.00		
5.1403	Sand bedding for 150 mm DI pipes	lin.m	36.00		
5.1404	Sand bedding for 2 pipes: 80 mm DI and 63 mm HDPE	lin.m	378.00		
5.1405	Sand bedding for 2 pipes: 80 mm DI and 75 mm HDPE	lin.m	372.00		
5.1406	Sand bedding for 2 pipes: 80 mm DI and 90 mm HDPE	lin.m	210.00		
5.1407	Sand bedding for 2 pipes: 80 mm DI and 110 mm HDPE	lin.m	144.00		
5.1408	Sand bedding for 2 pipes: 100 mm DI and 63 mm HDPE	lin.m	72.00		
5.1409	Sand bedding for 2 pipes: 100 mm DI and 110 mm HDPE	lin.m	522.00		
5.1410	Sand bedding for 2 pipes: 100 mm DI and 125 mm HDPE	lin.m	276.00		
5.1411	Sand bedding for 3 pipes: 150 mm DI, 100 mm DI, and 63 mm (tel.)	lin.m	1,242.00		
5.1412	Sand bedding for 4 pipes: 150 mm DI, 100 mm DI, 63 mm (tel.), and 63 mm HDPE	lin.m	864.00		
	Sub-Total 5.1400				
5.1500	Laying of ductile iron pipes				
5.1501	Laying of 80 mm pipes	lin.m	1,302.00		
5.1502	Laying of 100 mm pipes	lin.m	2,994.00		
5.1503	Laying of 150 mm pipes	lin.m	2,142.00		
	Sub-Total 5.1500				
5.1600	Laying of HDPE pipes				
5.1610	Laying of HDPE pipes PE80 - PN10				
5.1611	Laying of 63 mm pipes for telemetry cables (tel.)	lin.m	2,106.00		
5.1620	Laying of HDPE pipes PE100 - PN16				
5.1621	Laying of 63 mm pipes	lin.m	13,685.00		
5.1621	Laying of 75 mm pipes	lin.m	1,000.00		
5.1622	Laying of 90 mm pipes	lin.m	1,040.00		
5.1621	Laying of 110 mm pipes	lin.m	665.00		
5.1622	Laying of 125 mm pipes	lin.m	276.00		
	Sub-Total 5.1500				
5.1700	Sand backfilling of trenches on main roads including compaction and testing				
5.1701	Sand backfilling of trenches for service connections	lin.m	670.00		
5.1702	Sand backfilling of trenches for pipes not exceeding 110 mm in diameter	lin.m	4,616.00		
5.1703	Sand backfilling of trenches for 2 pipes: 80 mm DI and 90 mm HDPE	lin.m	72.00		
5.1704	Sand backfilling of trenches for 2 pipes: 100 mm DI and 110 mm HDPE	lin.m	72.00		
	Sub-Total 5.1700				

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.1800	Backfilling of trenches on other roads including compaction and testing				
5.1801	Backfilling of trenches for service connections	lin.m	2,680.00		
5.1802	Backfilling of trenches for pipes not exceeding 110 mm in diameter	lin.m	9,428.00		
5.1803	Backfilling of trenches for 150 mm DI pipes	lin.m	36.00		
5.1804	Backfilling of trenches for 2 pipes: 80 mm DI and 63 mm HDPE	lin.m	378.00		
5.1805	Backfilling of trenches for 2 pipes: 80 mm DI and 75 mm HDPE	lin.m	372.00		
5.1806	Backfilling of trenches for 2 pipes: 80 mm DI and 90 mm HDPE	lin.m	138.00		
5.1807	Backfilling of trenches for 2 pipes: 80 mm DI and 110 mm HDPE	lin.m	144.00		
5.1808	Backfilling of trenches for 2 pipes: 100 mm DI and 63 mm HDPE	lin.m	72.00		
5.1809	Backfilling of trenches for 2 pipes: 100 mm DI and 110 mm HDPE	lin.m	450.00		
5.1810	Backfilling of trenches for 2 pipes: 100 mm DI and 125 mm HDPE	lin.m	276.00		
5.1811	Backfilling of trenches for 3 pipes: 150 mm DI, 100 mm DI, and 63 mm (tel.)	lin.m	1,242.00		
5.1812	Backfilling of trenches for 4 pipes: 150 mm DI, 100 mm DI, 63 mm (tel.), and 63 mm HDPE	lin.m	864.00		
	Sub-Total 5.1800				
5.1900	Supply and installation of bridge or culvert crossings				
5.1901	Bridge or culvert crossing	nb	8.00		
	Sub-Total 5.1700				
	Sub-Total 5.1000				
5.2000	Accessories				
5.2100	Supply and installation of gate valves (including bolts, nuts, dismantling joints, etc..).				
5.2101	Gate valve PN16, DN 50 mm	nb	84.00		
5.2102	Gate valve PN16, DN 65 mm	nb	6.00		
5.2103	Gate valve PN16, DN 80 mm	nb	8.00		
5.2104	Gate valve PN16, DN 100 mm	nb	8.00		
5.2105	Gate valve PN16, DN 150 mm	nb	1.00		
5.2106	Gate valve PN40, DN 80 mm	nb	3.00		
5.2107	Gate valve PN40, DN 100 mm	nb	2.00		
	Sub-Total 5.2100				
5.2200	Supply and installation of air release valves				
5.2201	Single air release valve including isolating GV PN16, DN 40 mm	nb	28.00		
5.2202	Single air release valve including isolating GV PN16, DN 60 mm	nb	1.00		
	Sub-Total 5.2200				
5.2300	Supply and installation of pressure regulating valves				
5.2301	Pressure regulating valve PN16 for DN 63 mm HDPE pipe	nb	4.00		
5.2302	Pressure regulating valve PN25 for DN 63 mm HDPE pipe	nb	2.00		
5.2303	Pressure regulating valve PN40 for DN 80 mm pipe	nb	1.00		
5.2304	Pressure regulating valve PN40 for DN 100 mm pipe	nb	2.00		
	Sub-Total 5.2300				

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.2400	Supply and installation of washouts				
5.2401	Washout PN16, DN 40 mm	nb	24.00		
5.2402	Washout PN16, DN 60 mm	nb	2.00		
5.2403	Washout PN40, DN 60 mm	nb	1.00		
	Sub-Total 5.2400				
5.2500	Supply and installation of globe valves				
5.2501	Globe valve PN40, DN 80 mm	nb	1.00		
5.2501	Globe valve PN40, DN 100 mm	nb	2.00		
	Sub-Total 5.2500				
5.2600	Supply and installation of pressure relief valves				
5.2601	Pressure relief valve including isolating GV PN40, DN 50 mm	nb	3.00		
	Sub-Total 5.2600				
5.2700	Supply and installation of drinking fountains				
5.2701	Drinking fountain PN16	nb	2.00		
	Sub-Total 5.2700				
5.2800	Supply and installation of fire hydrants				
5.2801	Fire hydrant PN16	nb	2.00		
	Sub-Total 5.2800				
	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	Draw-pit for telemetry ducts size 60 x 60 cm x cm	nb	40.00		
5.3102	Valve chamber internal size 125 x 100 cm x cm	nb	29.00		
5.3103	Valve chamber internal size 150 x 150 cm x cm	nb	22.00		
5.3104	Valve chamber internal size 175 x 125 cm x cm	nb	16.00		
5.3105	Valve chamber internal size 175 x 150 cm x cm	nb	1.00		
5.3106	Valve chamber internal size 200 x 150 cm x cm	nb	19.00		
5.3107	Valve chamber internal size 200 x 175 cm x cm	nb	4.00		
5.3108	Valve chamber internal size 250 x 175 cm x cm	nb	4.00		
5.3109	Valve chamber internal size 275 x 250 cm x cm	nb	1.00		
5.3110	Valve chamber internal size 350 x 225 cm x cm	nb	1.00		
5.3111	Valve chamber internal size 375 x 250 cm x cm	nb	1.00		
5.3112	Valve chamber internal size 425 x 250 cm x cm	nb	2.00		
	Sub-Total 5.3100				
5.3200	Valve chamber cover				
5.3201	Valve chamber cover Grade A	nb	140.00		
	Sub-Total 5.3200				
5.3300	Surface box units for washouts and service connections				
5.3301	Supply and installation of surface box unit	nb	317.00		
	Sub-Total 5.3300				
	Sub-Total 5.3000				

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
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	100.00		
	Sub-Total 5.4000				
5.5000	Service connections				
5.5100	Supply and installation of HDPE Pipes				
5.5101	HDPE pipe PN16, OD 20 mm	lin.m	2,490.00		
5.5102	HDPE pipe PN16, OD 25 mm	lin.m	840.00		
5.5103	HDPE pipe PN16, OD 32 mm	lin.m	20.00		
	Sub-Total 5.5100				
5.5200	Supply and installation of tapping collars				
5.5201	Tapping collar for DN 63 mm HDPE pipe	nb	223.00		
5.5202	Tapping collar for DN 75 mm HDPE pipe	nb	18.00		
5.5203	Tapping collar for DN 90 mm HDPE pipe	nb	29.00		
5.5204	Tapping collar for DN 110 mm HDPE pipe	nb	16.00		
5.5205	Tapping collar for DN 125 mm HDPE pipe	nb	4.00		
	Sub-Total 5.5200				
5.5300	Supply and installation of stop valves				
5.5301	Stop valve PN16, DN 16 mm	nb	221.00		
5.5302	Stop valve PN16, DN 20 mm	nb	68.00		
5.5303	Stop valve PN16, DN 25 mm	nb	1.00		
	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	290.00		
5.6002	Testing and commissioning of 63 mm HDPE pipes	lin.m	13,685.00		
5.6003	Testing and commissioning of 75 mm HDPE pipes	lin.m	1,000.00		
5.6004	Testing and commissioning of 90 mm HDPE pipes	lin.m	1,040.00		
5.6005	Testing and commissioning of 110 mm HDPE pipes	lin.m	665.00		
5.6006	Testing and commissioning of 125 mm HDPE pipes	lin.m	276.00		
5.6007	Testing and commissioning of 80 mm HDPE pipes	lin.m	1,302.00		
5.6008	Testing and commissioning of 100 mm HDPE pipes	lin.m	2,994.00		
5.6009	Testing and commissioning of 150 mm HDPE pipes	lin.m	2,142.00		
	Sub-Total 5.6000				
5.7000	Road Reinstatement				
5.7100	Cutting				
5.7101	Cutting of paved roads for water pipes	lin.m	20,350.00		
5.7102	Cutting, breaking-out and removal of concrete pavement or stair cases for water pipes	sq.m	30.00		
	Sub-Total 5.7100				

JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.7200	Reinstatement				
5.7201	Reinstatement in two layers of paved main roads including recutting works	sq.m	4,685.00		
5.7202	Reinstatement in one layer of other paved roads including recutting works	sq.m	15,575.00		
5.7203	Reinstatement of concrete pavement or stair cases for water pipes, including base, sub-base courses and concrete pavement	sq.m	30.00		
	Sub-Total 5.7200				
	Sub-Total 5.7000				
	Total JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK				

SUMMARY

Nb	DESCRIPTION	TOTAL AMOUNT (LBP)
1	JAJ RESERVOIR (CAPACITY 500 m³)	
2	JAJ LIFT LINE AND WATER DISTRIBUTION NETWORK	
	TOTAL	
	VAT (10%)	
	TOTAL (with VAT)	

TOTAL (with VAT) IN LETTERS Only

..... LBP

موافق
مدير المياه بالإنابة

دققه
رئيس مصلحة الدروس بالإنابة

نظمه
المكتب الفني للانماء (BTD)

المهندس منى فقيه

المهندس علي الخطيب

ميشيل مجدلاني

صدق
وزير الطاقة والمياه

موافق
المدير العام للموارد المائية والكهربائية

سيزار ريمون أبي خليل

د. فادي جورج قمير