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Resilient nations.*

**UNITED NATIONS DEVELOPMENT PROGRAMME**

**RFQ - PAL-0000049866**

## **Bill of Quantities**

**Programme Title:** PAL10- 00102677- Early Recovery for Economy

Construction of Water Well

Item No.	Description	Unit	QTY	Rate \$	Total \$
<b>Concrete Works,Excavation and Earthworks</b>					
	<p><b>General Notes:</b></p> <p>1- Complete detailed shop drawings should be delivered to the Engineer to take his approval prior the commencement of work. Samples of all materials shall also be delivered to the Engineer to take his approval.</p> <p>2-Contractor shall take into consideration costs for all – direct and indirect works and their relevant expenses required for proper implementation of the project including temporary items and toilets for men and women for contractors and supervision staff, fencing, securing utilities (water, wastewater, telephone and electricity systems) officially form service providers as well as making proper access to project implementation location . The contractor will be accountable for all necessary equipment, materials and activities to assure the safety of people within the buildings and vicinity, where an approved safety plan will be prerequisite to initiating activities along with installing all required componenets and materials necessary for safety of workers, project team as well as people at buildings. All relevant costs are deemed to be included in the unit price in addition to the required re-instatment works needed to bring the original facilities to its original status before addition of temporary works.</p> <p>3-All works and installations listed here below should be carried out, tested and commissioned by specialized responsible skilled labours in full coordination with society mangment , all in accordance with drawings, specifications and relevant standards, and the instruction of the Engineer. The Engineer has the right to reject any component of the work not complying with the specifications and the terms of the contract.</p> <p>4-Contractor shall take into consideration that all – direct and indirect works and expenses required for the completion of the coming items are included in the uint price. Measurement is engineering measurement.</p> <p>5-All works must be according to drawings, specification and engineer instructions. Rates shall include :</p> <p>5-1. Shoring the sides of excavation and preserving the adjacent buildings as well as existing infrastructure utilities (sewage, water, telecommunication and electricity works). In case of damages that may incur, all relevant necessary repairs will be the contractor responsibility to cover its relevant costs.</p> <p>5-2. Cleaning the site and removing all debris, surplus unwanted materials and rubbles to approved dump site.</p> <p>5-3. Backfilling in layers not more than 25cm thick for each layer and compaction to 98% of MDD.</p> <p>5-4. All required Tests by an accredited laboratory.</p> <p>5-5. The cadastral survey and leveling of existing status at grids not exceeding 5 m in both directions.</p> <p>5-6.Leveling and backfilling from imported sand dune in case excavated materials are not approved for backfilling and up to the level of the top of external ground beams levels and to the formation level of apron and surrounding landscaping.</p> <p>"Rates of Concrete Works shall include:-</p> <p>1. All form works and shuttering (new lumber for shuttering painted by special oil (fuel or burnt oil is not accepted) in any form, shape and size . Making chamfered and curved edges, allowing for and making grooves and sleeves and using Tie Rods (Batant) for concrete walls and using special material for closing holes tightly; removal of forms and cleaning of all exposed tie wires and rods. Steel forms must be used in shuttering the external decorations."</p> <p>2. Supplying, Casting, vibrating and curing as per specifications.</p> <p>3. Approved additives and admixtures.</p> <p>4. Developing new Concrete Job Mix Designs, Sampling , testing and providing test results certificates, storing and saving of samples.</p> <p>5. Painting of exposed surfaces of underground reinforced concrete elements with two coats of hot bituminous paint (75/25) after primer layer , the strokes of each layer to be opposite to each other.</p> <p>6. Preliminary installations for Electrical, plumbing and floor drainage in floor slabs including final floor slab.</p> <p>7. Compaction and testing under the foundation, ground beams, ground slabs and Apron. the compaction should not be less than 98% of MDD.</p> <p>8. All works according to specifications , drawings and supervisor engineer instructions</p> <p>9.Supply, fabricate and fix steel reinforcement (fy= 420 N/mm2) for all the structural elements according to drawings and engineer's instructions for any grade, size and length as detailed in the drawings, storing on site including cutting, bending and fixing in position and providing all tying wires, spacers, shop drawings, testing and bar bending schedules .All works according to specifications, drawings and Supervisor Engineer instructions .</p>				

Item No.	Description	Unit	QTY	Rate \$	Total \$
<b>1</b>	<b>CONCRETE WORKS</b>				
1.1	Supply and cast reinforced concrete B250, 40cm height , 20cm thick (edge beam) for required interlock tiles (2Ø 12 mm upper reinforcement and 2Ø 12 mm lower reinforcement and 5Ø 8 mm stirrups every 1meter), the cost includes but not limited to workmanship and materials needed for excavation, bakfilling with approved sand materials, compaction not less than 98%, construction joints with mix from hot Bitumene 75/25 with sand for expansion joints, polyethylene sheets, Painting of exposed surfaces of underground reinforced concrete elements with two coats of hot bituminous paint (75/25) after primer layer, form works, curing, and testings cost. All works as per drawings, specifications and Engineer instructions.	M3	3		
1.2	Supply and cast reinforced concrete B250 for ground slab 10cm thick as shown in drawings for required sheds base including steel reinforcement Ø 8/20 cm. in both directions. Works shall include but not limited to dismantling of existing interlock tiles, cutting, backfilling with clean approved sand, leveling, compaction not less than 98%, construction joint, polyethylene sheets, form works, testing, all required mechanical and electrical piping and conduits according to Drawings, Specifications and Engineer instructions.	M3	10		
1.3	Supply and cast reinforced concrete B250 for tie beam 40*20 cm under the fence including supplying and casting B 250 foundations 60*60*60 cm for the fence steel posts and supports, the work includes making expansion joints,the cost includes but not limited to workmanship and materials needed for excavation, bakfilling with approved sand materials, compaction not less than 98%, construction joints with mix from hot Bitumene 75/25 with sand for expansion joints, polyethylene sheets, Painting of exposed surfaces of underground reinforced concrete elements with two coats of hot bituminous paint (75/25) after primer layer, form works, curing, and testings cost. All works as per drawings, specifications and Engineer instructions.	M3	5		
	<b>Total of Concrete Works - US\$</b>				

Item No.	Description	Unit	QTY	Rate \$	Total \$
<b>2</b>	<b>Metal Works</b>				
	The items include supplying of steel elemnts, ironmongery , accessories and hard ware along with fixing as per specification and drawings. All maintenance works include all needed materials for reinstatement and workmanship. All kind of steel work should be properly treated and prepared, painted with two coats of oil paint,one primer and one undercoat.				
2.1	Supply and install steel shed for the Well & Pump Station 4.0 m Height including line welded Double steel profile 80x80x3 mm thick for each, the cost for the work includes but not limited to workmanship and materials needed for excavation, bakfilling with approved sand materials, compaction not less than 98%, polyethylene sheets, steel reinforcement, Painting of exposed surfaces of underground reinforced concrete elements with two coats of hot bituminous paint (75/25) after primer layer, form works, curing, and testings cost. with steel base plate 300x300x6mm to be fixed to the reinforced concrete foundation size 60x60x60 cm using another leveling bearing steel plate 300x300x6 mm with hook Anchor bolts Ø 20 mm. complete with all washers nuts, supports, and all needed accessories to perform the required works . The works include all sheeting (cladding) works with painted corrugated steel sheets 0.55mm with fixation double and single channels 80x40x3mm thick, covering with corrugated sheets for the top and sides of the shed with all required accessories, bolts, nuts ... etc, and painting with one primer coat and three coats of approved oil Hummer paint as per drawings as per specifications, and Engineer's instructions.	M2	55		
2.2	Supply and install boundary fence 240 cm high with 3 barbed wire top 4mm tension bars, also 3 Galvanized Steel wires 4 mm Dia. along the fence and galvanized steel wire mesh 4mm, PVC coated, 40x40mm openings with galv. steel (Rectangular hollow section) RHS cap profile 80x40x3mm posts at 3m interval, including 80x40x3mm RHS profile supported every 12m, and 80x40x3mm GS Profiles supporters at the corners and double RHS profile 80x40x3mm posts where expansion joints every 24m with tension bars, and accessories. All works shall be according to the drawings, specification and the Engineer's instructions, all steel elements shall include painting and welding points with approved hummer paint.	LM	30		
2.3	Supply and install painted Hot Dip double swing steel main gate 200 cm x 500 cm clear opening with galv. steel RHS cap profile 80x40x3 mm and 60x40x3 mm profile for bracing. the price shall include supply and cast B 250 reinforced concrete foundations 70cm x 70cm x 70cm with steel reinforcement 5 Ø12 mm both directions with painting of exposed surfaces of underground reinforced concrete elements with two coats of hot bituminous paint (75/25) after primer layer and PVC coated galvanized steel wire mesh 4mm with 40x40mm openings, two galv. steel RHS profile posts 150x150x5 mm, two galv. steel RHS profile 60x40x3 mm for each gate leaf swing as a bracing, in addition to 3 lines barbed wire top tension 4mm, lock type heavy duty Multi-Lock or equivalent and all necessary accessories as per approved drawings, specifications and Engineer's instructions, the work shall include painting the welding points with approved paint. All of that according Drawings. welsing will be from line welding with thickness not less than 5 mm. all steel elements shall be painted with two coats of primer and one coat of hummer paint, the price shall include excavation, backfilling with compaction not less than 98%, and the cost for all required testings.	No.	1		
<b>Total of Metal Works - US\$</b>					

Item No.	Description	Unit	QTY	Rate \$	Total \$
<b>3</b>	<b>Mechanical Works</b>				
3.1	Drilling and digging borehole passing through any type of soil with drilling shell pipe of diameter of min. 18 inches size. The item cost includes Supply and install all required materials, drilling, pipes lowering and welding and extraction works, and removing all the materials to places as instructed by Engineer. The prices must include for detailed soil sampling report and sieve analysis including water quality report to be issued from licensed laboratory and also XYZ coordinates of the water well must be identified.	L.M	80		
3.2	Supply and install steel pipes schedule 40 .12" diameters. 9.6 mm thickness	L.M	64		
3.3	Supply, weld and install a Stainless steel screen Grade 304, 12" diameter 3/16" thick.	L.M	15		
3.4	Supply; weld and install Stainless steel pipe Grade 304. 12" diameter 3/16 thick .	L.M	1		
3.5	Supply and weld of stainless bottom plate of thickness 5 mm minimum 12" diameter	No.	1		
3.6	Supply and lower graded gravel packing quartz material of size (1.5-2.5) mm.	Ton	5		
3.7	Supply and Install 160 mm diameter ,PN10,UPVC pipes. The price should include Supply and install all required fittings (Tees, elbows, Flanges, reducers/extruders, couplings, spigots, gaskets, bolts, ... etc., to satisfaction of the engineer.	L.M	30		
3.8	Transport to the site the contractor's owned vertical turbine pumping equipment required to carry out detailed cleaning and pumping test for the new borehole. The works and assembly must include for assembly and dismantling that equipment and cleaning the well by pumping to the satisfaction of the Engineer.	LS	1		
3.9	Carry out cleaning and pumping test and arrange for all required measurement tools for water level and quality including detailed bacteriological and chemical analysis tests from certified laboratory approved by the engineer in charge including detailed hydrological report including borehole disinfection. as per Engineer instructions and approval.	Hr	20		
3.10	Transport to the site inspect and complete maintenance for PIEFZA submersible pump by the contractors owned . The works and assembly must include for assembly and dismantling that equipment and cleaning the well by pumping to the satisfaction of the Engineer.the work including full maintenance for motor and pupm with all needed (impeller , bearings, couplings, gaskets, bolts, ... etc.).	LS	1		
3.11	Supply, install, and test 6" diameter, schedule 40 epoxy painted, threaded carbon steel pipes with all associated threaded sockets to connect pump discharge riser comprising of pipes segments each of 3 meters length. The works and prices should include for all associated electrical and mechanical installations including, pipe work fittings, borehole 20mm top flange cover with 6" diameter steel elbow, 80 meters, 4x25mm flexible cable required to connect submersible pumping set down the borehole up to the panel board.	L.M	70		
<b>Total of Mechanical Works (Page-1) - US\$</b>					

Item No.	Description	Unit	QTY	Rate \$	Total \$
	<b>Water Well Manifold and Connections:</b> GENERAL : The works include Supply and install the complete new and complete epoxy painted carbon steel, Sch.40, Ø4" diameter pumping manifold according to the attached drawings. The new manifold shall include all needed works and required items including, flanges, fittings, couplings, reducers, connections, SS bolts, nuts, gaskets, jack supports, thrust blocks ... etc., complete all as described in the Specifications and as shown on the Drawings and as directed by the Engineer. The works also include all requirements to reconnect the new manifold piping system to the existing distribution pipes. The height of manifold will have to be compatible with the pump header and at least 80 cm from the finished floor level for maintenance .				
3.12	Supply and install 2" double action PN 16 Air Release Valve A.R.I type or equivalent with all necessary fittings including 2" ball valve (to be connected to the electrical boards).	No.	1		
3.13	Supply and install Ø4" PN16 ARI or equivalent non-return valve. The non-return valve should be supplied and installed with counter weight, limit switch connected to the control panel, and any required connections fittings and accessories.	No.	1		
3.14	Supply and install 4" water hydro cyclone PN16 of AYTOK type. Its wall is 8mm min. thick steel with all required pipes of 3/16 inch steel pipes wall thickness or equivalent approved type with all below associated fittings: 3 butterfly flanged valves and stainless steel bolts and nuts 3 steel dresser coupling 3 steel elbows 90 degree 2" ARV A.R.I type 2" flushing ball valve B 250 Plain Concrete base 120X75X30 cm and all needed accessories and couplings according to drawings, specifications and the instructions of the Engineer (the cyclone should be checked from inside before closure).	L.S.	1		
3.15	Supply and install 100 mm diameter, 0-15 bar, GORDON type or equivalent approved Pressure Gauge with all associated 1/2" isolating valve and other pipe work connection and accessories.	No.	2		
3.16	Supply and install Danfos type hand adjusted modulating High & Low pressure switch (0-10bar), (0-2 bar) respectively and connect it to the electrical board including all required pipes , fittings, conduits , cables....etc. necessary to complete the works .	No.	1		
3.17	Supply and install Flow Meter, Ø4" – PN 16 bar ARAD type or equivalent with all associated fittings, flanges, connections as per specifications, drawings and as directed by Specifications and the Engineer's instructions.	No.	1		
3.18	Supply, and install aboveground Gate Valve Ø4" – PN16 Hakokhav type or equivalent. complete including but not limited to the following: flanges, couplings, extruder, adjustable jack support with rubber base, stainless steel bolts and gaskets	No.	1		
3.19	Supply and install above ground schedule 40 Ø4" 45 Steel Elbow X 3/16" thickness Steel pipes complete all as shown on the Drawings and as directed by the Engineer.	No.	1		
3.20	Supply and install non-buried Ø4" diameter X 3/16" thickness Steel pipes schedule 40 with required adjustable jack supports, dressers, necessary flanges and including all required works.	L.M	15		
3.21	Connect the new pump manifold to the existing 6"Dia pipe. with. The price should include Supply and install all required fittings (Tees, elbows, Flanges,sokets, reducers/extruders, couplings, spigots, required steel pipes, gaskets, SS bolts, ... etc., to satisfaction of the engineer.	L.S.	1		
3.22	Chlorine Disinfection system <input type="checkbox"/> Supply, Installation, Commissioning and Testing of complete chlorination system including the following: <input type="checkbox"/> Complete Sodium hypochlorite dosing system comprising of solenoid, adjustable dosing and injection pump of PROMINENT type or equivalent approved type with dosing capacity range 0-2 Liter/hour at 16 bar back pressure. <input type="checkbox"/> 500 Liter polyethylene white chlorination tank filled with 500 liters of sodium hypochlorite with built in factory made manual fiber glass mixer in addition to motorized mixer. The works and installations should include for all associated fittings and accessories required to accommodate and connect the desired tank feeding point through underground ½" stainless steel pipe, all according to specifications and instructions by the Engineer. The work includes painted galvanized steel base 120x120x100 cm comprised of 4 mm thick angles 4x4 cm topped with wooden base 5 cm thick under the tank. The chlorine pump works will include stainless steel 316 base with dimensions of 20x15x .3 cm and 40x40x 20 cm closed galvanized box with louvered door and WALI type lock to put the pump and plate inside it. The box will be anchored to concrete base under the box.	L.S.	1		
3.23	Supply and Install 160 mm diameter ,PN10,UPVC pipes. The price should include Supply and install all required fittings (Tees, elbows, Flanges, reducers/extruders, couplings, spigots, gaskets, bolts, ... etc., to satisfaction of the engineer.	L.M	100		
<b>Total of Mechanical Works (Page-2) - US\$</b>					
<b>Total of Mecanical Works - US\$</b>					

Item No.	Description	Unit	QTY	Rate \$	Total \$
<b>4</b>	<b>Electrical Works for Water Well.</b>				
	<p>*The contractor shall submit complete and detailed method statement for all relevant electrical installations of the pump for approval prior to the work commencement. The contractor has to take into account that the working hours are limited to six hours maximum daily and coordination will be needed for allowing to work.</p> <p>*The price shall include but not limited to the following:</p> <p>*The contractor must visit the site before tender pricing.</p> <p>*The exact quantities that be executed, will be determined during implementation .</p> <p>*The price of the items in general shall include conduits, connection boxes, controls, cables, connectors, clamps, bolts, cable trays if required, pvc ducts and connecting the cables to switchboards. in addition to all testing required, approvals by service providers specially for main distribution board ready for connection to mains along with all relevant costs and fees necessary connection."</p> <p>**The contractor should repair any damage of the existing infrastructures.</p> <p>*Contractor shall submit shop drawings for all electrical works to be approved by the Engineer before executing the work."</p> <p>* The price should include commissioning works for the complete control and power systems and operating all the new and the existing equipment's to complete the job according to the specifications.</p> <p>*The price in the following items also include removal of any damaged Mechanical, civil and Electrical materials according to engineer instructions"</p> <p>* As-built drawings for all electrical works shall be submitted after handing over the work.</p> <p>*All the electrical works shall be executed according to Standards, specifications and engineer instructions.</p> <p>*The prices will be deemed to include for the full cost as described in all Documents.</p>				
4.1	Supply, install, connect and test water proof LED lighting fixture 2x16w complete with LED lighting tubes 16 watt, 1600 Lumen, external PVC conduits with joints , J. boxes, fixing screws (Galv.) and cables and all needed accessories to complete the job. (Type is GA'ASH or equivalent).	No.	6		
4.2	Supply and install , external water proof one way, one gang switch , including all needs cable 3*1.5mm ,external PVC conduits with joints , J. boxes, fixing screws (Galv.) and all needed accessories to complete the job. (Type is GEWISS or equivalent).	No.	2		
4.3	Ditto, but one way, two gang switch	No.	2		
4.4	Supply and install external water proof single phase socket outlet 16A, 220v, 2p+E for flush or surface mounting, complete with PVC conduits, junction boxes, xlpe cables 3*2.5, and all necessary accessories. (Type is GEWISS or equivalent)	No.	2		
4.5	Supply, install and connect, MDB switch board as specified and shown on drawings, the panel sizes should be 210 cm height, 40 cm depth while the width to be determined after shop drawings and that all internal components were agreed upon. The price includes 2mm galv. steel frame with antistatic paint including: bus bars, neutral bus bar and earthing bus bar, all needed cables , wires , and accessories and all necessary accessories to make it operate properly and to operate all the components of the MDB. The unit rates include All needed civil works like trench , sleeves , ... lockable type with key switch for one lock for each panel.All panels must be water proof The panel size shall include but not limited to the followings:	Set	1		
4.6	Supply and install Over-load, current limiting switch, with over load and short circuit releases, adjustable 4-10A. (Type is MOELLER PKZM0-10 or equivalent).	No.	3		
4.7	Supply and install Signal indication lamp R S T with resistance 220V,with LTL fuse3x36/6A	Set	1		
4.8	Supply and install Current transformer (100/5A).	No.	15		
4.9	Supply and install Kwh meter 3 phase 3x5A.(Type is ISKRA or equivalent)	No.	1		
4.10	Supply and install KVAR meter, 3 phase 3x5A(Type is ISKRA or equivalent)	No.	1		
4.11	Supply and install Kwh meter, 1 phase 1x5A.(Type is ISKRA or equivalent)	No.	3		
4.12	Supply and install Digital Ampere Meter with LTL fuse3x36/6A (Type is ENTES or equivalent).	No.	3		
4.13	Supply and install Digital Multi Meter with selector and with LTL fuse3x36/6A (Type is ENTES or equivalent).	No.	2		
4.14	Supply and install LTL fuse 3x160A/100A with 100A fuses.(Type is JEAN MUELLER or equivalent)	No.	1		
4.15	Supply and install main breaker MCCB 3x100 A. (Type is MOELLER NZMN1-AE100 or equivalent with external panel handle.	No.	1		
4.16	Supply and install RCCB 3*40/0.03A.	No.	1		
4.17	Ditto but MCB 3X32A. (Type is MOELLER FAZ-C32/3 or equivalent).	No.	2		
4.18	Ditto but MCB 3X25A. (Type is MOELLER FAZ-C25/3 or equivalent).	No.	2		
4.19	Ditto but MCB 1X10/16/20A. (Type is MOELLER FAZ-B 10,16,20/1 or equivalent).	No.	3		
4.20	Supply and install Isolating transformer 380/220V,24V of 750VA capacity.	No.	1		
4.21	Supply and install Contactor 4 poles,220V, with auxiliary contacts,220V coil, AC3 category (Type is MOELLER DILM-10 or equivalent).	No.	2		
4.22	Supply and install Three phase static capacitor bank 10-15Kvar (Type is Ducati or equivalent).	No.	1		
4.23	Supply and install Toggle switch 10A, 230VAC (1,0,2) (Type is MOELLER or equivalent).	No.	2		
4.24	Supply and install MCCB 3x80A/3X80TA. (Type is MOELLER NZMB1-A80 or equivalent).	No.	2		
4.25	Supply and install Three-phase solid state reduced voltage starter,40 HP, for pump, fully featured, digital microprocessor based, with its control, as per specifications and engineer's instructions (Type is Solcon. RVS-DN-72 ).	No.	1		
<b>Total of Electrical Works (Page-1) - US\$</b>					

Item No.	Description	Unit	QTY	Rate \$	Total \$
4.26	Supply and install Three poles, 380V, 40 HP, with 2 auxiliary contacts,220V coil, AC3 category (By-pass). (Type is MOELLER DILM/ 80 or equivalent).	No.	1		
4.27	Supply and install Electrical digital hour counter 3.5 digits, supply voltage 24V dc and/or 230V ac, panel mounting.(Type is MOELLER or equivalent).	No.	1		
4.28	Supply and install Emergency push button switch.(Type is MOELLER or equivalent).	No.	1		
4.29	Supply and install Phase failure, loss of phase, under voltage, and phase sequence relay adjustable type, with LTL fuse3x36/6A and all necessary accessories .(Type is MOELLER or equivalent).	Unit	1		
4.30	Supply and install Time delay electronic relay, with one N.O. and one N.C. 10A output contacts, and 2 sensor input points, supply voltage 24V dc and/or 230V ac, according to specifications and engineer's instructions.(Type is KRK or equivalent).	No.	5		
4.31	Supply and install Control relay, with N.O. and N.C. 10A output contacts, supply voltage 24V dc and/or 230V ac, according to specifications and engineer's instructions.(Type is Finder or equivalent).	No.	5		
4.32	Supply and install Push button switch with N.C. and N.O. contacts 10A, 24V and/or 230V AC(Type is MOELLER or equivalent).	set	2		
4.33	Supply and install Humidity sensitive control unit , the price includes supply and install Humidity relay, with N.O. and N.C. 10A output contacts, supply voltage 24V dc and/or 230V ac, with contactor 16A, thermostat sensors for cabinets, 2 panel fans, mcb 1x10 A and with all needed wires, conduits and accessories to complete the job according to specifications, drawings and engineer's instructions.	Unit	1		
4.34	Supply and install Temperature control relay, with N.O. and N.C. 10A output contacts, supply voltage 24V dc and/or 230V ac, according to specifications and engineer's instructions.(Type is MOELLER EMT6 or equivalent).	No.	1		
4.35	Supply, install signal lamp, 24v dc and/or 230V AC, 22mm diam.	No.	20		
4.36	Ditto, but 80 cm Power Manhole with 8 Ton Iron cover	No.	1		
4.37	Ditto, but 60 cm Power Manhole with 8 Ton Iron cover	No.	3		
4.38	Supply, install, connect (3X50+25) mm2 XLPE copper cable ; The unit rates include all needed civil works like excavation trench with depth 90cm min, in any type of soil with supply and lay of UPVC Pipes 4" along the trench from MDB inside water well location to the nearest transformer room low voltage side panel , backfilling with safia sand, first layers 25cm for each layer , with warning tape. then backfilling with safia sand up to existing level,watering & compaction to 100% each layer with maximum 25cm depth. The price includes Dismantling and reinstating the existing pavement layers (Interlock, cement tiles , asphalt, grass...etc.) as well as the soil layers at the places of excavation of cables, supplying and replacing the damaged interlock tiles, asphalt, base course, grass .. etc by new materials to match the existing one as per Engineer's instruction.	L.M	70		
4.39	Ditto, but 3*35+16 mm2 XLPE copper power cable .	L.M	30		
4.40	Ditto, but 5x10 mm2 XLPE copper power cable .	L.M	35		
4.41	Ditto, but 5X6 mm2 .	L.M	45		
4.42	ditto but 5x4 mm2 .	L.M	30		
4.43	Ditto, but 5x1.5.	L.M	50		
4.44	Ditto, but control cable 8x1.5 mm2.	L.M	50		
4.45	Ditto, but 12x1.5mm2 control cable	L.M	50		
4.46	Supply and install complete earthing system including 2 manholes ( 60cm ) around all the site with wire copper50 mm2, electrodes dia 18 mm, L= 1.5m. The resistance of earthing must be <=5 ohm	L.S.	1		
4.47	Supplying and erecting micro-switches connected to NVRs on the check valves.	No.	1		
4.48	Supply and install Danfos type hand adjusted modulating High & Low pressure switch (0-10bar), (0-2 bar) respectively and connect it to the electrical board.	No.	1		
4.49	Supply and install a solenoid stainless steel valve with 12-24V for automatic cooling purposes of approved type at the pump cooling system in parallel with the existing manual tap. The installation includes all pipe fittings( valves, elbows, nipples etc.) and control circuitry ( timers, relays, wires, etc.)	L.S.	1		
4.50	Supply and install a solenoid stainless steel valve with 12-24V for automatic cooling purposes of approved type at the pump cooling system in parallel with the existing manual tap. The installation includes all pipe fittings( valves, elbows, nipples etc.) and control circuitry ( timers, relays, wires, etc.)	Set	1		
4.51	Supply and install Digital Flow transmitter with 0-20mA remote signal to be connected with the R-Log for monitoring the flow and the flow rate. The ratings of the transmitter shall be suitable for the Existing conditions. All Pipes works and fittings are included. All electrical connections are also included in the unit price.	No.	1		
4.52	MCB 2x6/10/16A (Type is Eaton or equivalent).	No.	3		
4.53	Supply, install and connect electrical serine, 24v DC or 220v AC, IP65, for external use (including connecting cables and protection).	No.	2		
4.54	Supply and install Contactor 4 poles,380V, 12kVAr, with 2 auxiliary contacts,220V coil, AC3 category (Type is MOELLER DIL00MK-12 or equivalent).	No.	1		
4.55	Supply and install MCB 2x10/16A (Type is Eaton or equivalent).	No.	2		
<b>Total of Electrical Works (Page-2) - US\$</b>					
<b>Total of Electrical Works - US\$</b>					



<b>GRAND SUMMARY</b>		
1	<b>Concrete Works</b>	
2	<b>Metal Works</b>	
3	<b>Mechanical Works</b>	
4	<b>Electrical Works</b>	
<b>TOTAL AMOUNT OF THE GENERAL SUMMARY</b>		

**Total in numbers** .....  
**Total in letters** .....  
**Name of the contractor** .....  
**Authorized signature** .....  
**Signature and Sealing**.....  
**Title** .....  
**Telephone**.....  
**Fax** .....  
**Mobile** .....