

Rehabilitation of Agricultural Wells-Nablus and Qalqiliyah Districts

Bill of Quantities (BoQ):

- Unit prices of all items shall include but not limited to cleaning the site from all surplus, backfill material, or result of excavation, repairing all damages of concrete or stone walls, existing water pipeline, cables...etc. that may occur in the course of executing the work. Unit prices also include testing, flushing, disinfections and commissioning of well pump and piping work components, all according to the technical specification and as shown on the drawings and as directed by the engineer.
- Mechanical works: The contractor shall, when pricing the rates of this bill take into consideration including and allow for the costs or expenses of all requirements stipulated in the preambles, drawings and technical specifications of the contract. The following notes should be considered when pricing.
 - The price shall include all connections to existing piping.
 - The contractor should consider prior to pricing the contract, visiting the site and be fully aware for the requirements and the installation procedures of all the mechanical and electrical items, equipments and civil work items.
 - Dismantle and disposal of canceled existing piping network, fittings, valves, were shown on drawings and /or interferes with the new installation. The rate includes delivery of dismantled material to client storage area or disposal to an approved dumping location. All works should be done in close coordination with client engineer.
 - Any manufacturer's names, trade names, brand names or catalogue numbers used in the specifications are for the purpose of describing and establishing general performance and quality levels. Such references are not intended to be restrictive. Bids are invited on these and comparable brands or products provided the quality of the proposed products meet or exceed the quality of the specifications listed for any item.
 - Submittals for equipments may include equivalent brands/makes of equal or better quality than those mentioned in the BoQ. However, during the evaluation stage, UNDP has the right to ask the potential successful bidder to **change any brand/make which does not meet the required quality level**. If the contractor fails to change the proposed brand/make as per UNDP' request, while keeping the same quoted price, then UNDP has the right to **reject** his bid.
 - The Bidders shall quote reasonable prices for BoQ items, including for Provisional items, with an acceptable margin of deviation in comparison to the real local market prices at the time of bids preparation. UNDP, however, reserves the right either to implement or cancel the Provisional items subject to funds availability. In case of Unbalanced pricing (i.e. despite an acceptable total evaluated price, the price of one or more BoQ line items is significantly over or understated), UNDP had the right to reject the unbalanced bid if it determines that the lack of balance does pose an unacceptable Risk. The lowest priced Bidder is the one who quoted the lowest Grand Total including the provisional items (total of column (C) in BoQ summary page)
- Below BoQ should be priced in United States Dollars (USD) currency.

Proposed Development Needs:

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1		18-18/013			
A.Hadi		Unit	QTY	Unit Price (USD)	Total (USD)
	Item				
1	Carefully dismantle the existing vertical turbine pump unit, motor, pipes and any other parts inside and outside the pump room and to be removed and delivered as instructed by the engineer. The work shall also include all needed equipment (hoist, tripod, crane... etc.)To complete the work as required. The work shall be complete according to the contract conditions, technical specifications and the engineer approval.	LS	1		
2	Supply, transport, install and operate at site a vertical Turbine pump with none return valve and all the accessories it needs to get a working system as described in attached technical specifications Q =40m ³ /hr ,T.d.H=80m at best efficiency .Pump setting =30m.b.g.l , At max. Speed (n) = 1500 r.p.m. Recommended O.D of pump = 7.5", Shut off head not less than 130 m. Min. efficiency not less than 70% at operating point. Vertical Turbine Assembly: Bowls-Cast Iron A48 CI.30, internally porcelain, externally coated with backed epoxy, bowl maximal diameter 7.5". Impellers-Zinc Free Bronze (Enclosed type). Bowl Bearings- High-lead Tin bronze B584 C937. Turbine Shaft Stainless steel-SS A276 17-4PH Grade 630, with diameter >= 35 mm. Bowl Bolts-SS A276 Type 316. Suction Strainer-SS A276 type 316.	LS	1		
3.1	Supply and install a discharge head with 90/6" steel elbow, Cast Iron A48 CI.30 5"-6" discharge flange dimensions according to ASA 150 internally and externally coated with baked epoxy, including Stuffing box and SS 17-4PH head shaft complete with all necessary parts and fittings needed to connect it to the top existing 5" rising pipes column and vertical electric motor and it must have (2) openings for 1" P.V.C pipes. And high pressure gland packing sealing arrangement, with Burgmann Buraflon type PTFE impregnated robes shall be installed between the sole plate and the discharge head.	LS	1		
3.2	Discharge head plate: Supply and install a suitable discharge head base plate UNS G 10200-ST.37 plate ,dimensions 1000-1000-20 mm, coated with backed epoxy ,matched to the discharge head. With 2 holes 1" to be fixed at the concrete foundation of the well .The steel plate shall be welded with the well casing. The 5x5x3mm steel angle shall be welded with the steel plate and connected with the well head pad by SS anchors.	LS	1		
4	Supply and install a well column pipe 5"(3m.l/each piece), schedule 40 ,10' threaded A53 GR.B welded pipes, internally and externally coated with backed epoxy, including threaded couplings of same material as pipe with any other accessories to complete the work.	LM	30		

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1		18-18/013			
A.Hadi		Unit	QTY	Unit Price (USD)	Total (USD)
	Item				
5	Supply, install and operate a vertical shaft 3phase induction motor with enclosed fan cooling (squirrel cage) n= 1500 RPM, 23 horse power , 380Vrms,50Hz, Efficiency>83%, P.F>0.87 water proof with all protections needed, suitable to drive the above mentioned pump without over loading with thermistors, drive shaft, nut and key...etc, and all fittings. The price includes the cable and all necessary accessories for the installation.	LS	1		
6	Supply and install a 416 Stainless steel shaft 35 mm in diameter-10' threaded A582 SS416 hardened and tempered, heat treated and polished H08 shafts, including A582 SS416 threaded coupling(extra strong).Bearing retainer-threaded bronze B584-836 retainers, including Neoprene rubber C462-65 bearing and any other parts needed to complete the work.	LM	30		
7	Electric Power Control, Switch and Distribution Board: Supply, Install, Connect and complete in place and perfect operational manner a main power control switch and distribution board built in a dust tight, water proof IP65 steel sheet cabinet (2mm thick) rust free, factory made with front door and lock (gray thermally painted). The top of this cabinet is 180cm from slap on grade and its base is protected by 10cm cement block. All wiring, busbars and marking terminal unit and electric company kWh meter are to be in this power cabinet. Change over power switch (to enable supplying the power cabinet from 2 different 3 phase power sources), On/Off push button, emergency button, warning lamps, alarm, 3 analog ammeters and 1 volt meter (phase voltage indication with selector switch). For measuring the input ampere and volt of the motor have to be installed on the front door of the cabinet. Cabinet's body must be connected to earthing electrodes. Cabinet's shop drawing and measurements must be submitted and approved before fabrication. the cabinet should include a soft starter (appropriate for the motor power) with all protection relays timers, Fuses, circuit breakers, bypass contactors and any other components necessary for protection of the 3 phase motor and the pump according to the attached technical drawings and the engineer's directions. All circuit breakers must be secured through thermal and magnetic combination action while over load release should be of thermal type with calibration adjustable between 0.8 and 1.5 of the motor full current. Relays, circuit breakers, contactors, timers and any other protection components should be of best quality as Merlin Gerlin, Moeller, ABB or equivalent. In addition the cabinet should include at least the followings:	LS	1		

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1		18-18/013			
Item	Unit	QTY	Unit Price (USD)	Total (USD)	
7.1	Over load protection adjustable 0.8 – 1.5 Nominal motor current, short circuit capacity 4PX25 KA surge arrestors of replicable type.				
7.2	Protection relays for: phase failure, phase sequence, short circuit and earth leakage.				
7.3	Digital multimeter for measuring: V, A, kW, Hz, PF.				
7.4	Warning lamps for soft star fault, over load, No flow, High pressure, Low pressure and Low water level.				
7.5	Capacitor bank with discharge resistors, reactors and contactor operating at 3phase 400 V, 50 Hz to improve the power factor of the motor to achieve 0.95 lagging according to drawings and engineers directions.				
7.6	Earthing unit: Earth equalizer, Comprising C14 box, Copper B.B. 70 mm ² foundation line 3 earth electrodes (D> 19 mm, L = 1.5m) and any other necessary material or components to achieve an earthing resistance of R _{Earth} <1.5 Ohm for the whole pumping station. Earthing unit should be properly connected to the power cabinet in the well house and to other components according to the technical drawings.				
8	Supply and install a pressure switch 1-15 bar and connect it with the control panel unit. Price includes all required cables and accessories in accordance with Specifications, drawings and/or engineer's directions.	LS	1		
9	Supply and install an electric flow switch suitable for 6" pipe powered by a 24 V source, including all cables and accessories to connect it to the control unit in accordance with technical specifications, drawings and/or engineer's directions.	LS	1		
10	Supply and install two PVC pipe sleeves 1" in diameter, schedule 40 to be used as sleeves in the well for the level measurements and level monitoring using a sensor and a cable. To be connected with the control board. PVC pipes shall be perforated below static water surface elevations and their bottom ends are plugged. Perforations should be at least 6 mm holes at a spacing of 15 cm should be drilled above the plugged end of each pipe. The PVC pipes shall be appropriately attached in place to column pipe using suitable clamps every 2 meters or less. The PVC pipe shall extend into the discharge head plate according to engineer's directions.	LM	60		

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1 A.Hadi		18-18/013			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
11	Supply and install a water level sensor includes cable to connect with electric control board in accordance with technical Specifications and/or engineer's directions.	LS	1		
12	Supply and install 6" water meter (16 bar) complete with flanges, gaskets, bolts and nuts all according to ISO standards, drawings and engineer's directions.	LS	1		
13	Supply and install 6" strainer upstream the water meter in accordance with technical specifications, drawings and engineer's directions.	LS	1		
14.1	Supply and install 6" one way valve (check valve, 16 bar) in accordance with attached technical specifications, drawings and engineer's directions.	LS	1		
14.2	6" Rising stem gate valve for 16 bar complete with flanges, gaskets, bolts and nuts according to ISO standards and drawings.	LS	1		
15	Supply and install pressure gages in accordance with technical specifications, drawings and engineers directions	LS	1		
16	Supply and install 2" gate and air release valves in accordance with technical specifications, drawings and engineer's directions.	LS	1		
17	Supply and install 2" gate valve and a pressure relief valve with adjustable setting to allow relieving pressure when pressure exceeds an adjustable setting in accordance with technical specifications, drawings and engineer's directions. Price includes all piping needed as shown in drawings.	LS	1		
18.1	Supply and install 6" steel pipe 4mm thick internally and externally coated with backed epoxy for connecting pump, with meters, valves and old network in an around the pump station in accordance with technical specifications, drawings and engineer's directions. Price includes all jacks, accessories, material and supports needed to connect and support the pipe in place and its connections.	LM	10		
18.2	6" Flanged dresser complete for (16 bar) with two tie rods 60 cm. long diameter of 5"/8 and 4 ears for each dresser.	LS	2		
18.3	Wash out: Executing the main wash out end as drawings. The work shall be completed according to the contract condition, technical specifications and the engineer approval. Price shall include all work and material needed including a heavy duty 3" flanged gate valve (16 bar), all piping and	LS	1		

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1		18-18/013			
A.Hadi		Unit	QTY	Unit Price (USD)	Total (USD)
Item					
	all accessories, fittings and joints needed as shown in drawings.				
18.4	Supplying, transporting, delivering and fixing in the room or on the roof where it is possible of the well building 1000 liter PVC tank with suitable steel base and anchors with all required fittings (floats, valves, pipes ,...etc.) for cooling of shaft bearings. The work shall be complete according to the contract conditions, technical specifications, technical drawings and the engineer approval.	LS	1		
19	Lighting Fixtures and Accessories Note: work for lighting fixtures is to include supply of the fixtures specified, installation of same connection, wiring, commissioning, lamps, tubes, starter louvers, duct and all other details, for a complete lighting system in the station. All wiring shall be placed in PVC hoses installed in the walls and covered with plaster. Parts to be installed include the following:				
19.1	Type (A) 2x36w fluorescent surface mounted light fixture IP65 according to technical drawings.	No.	2		
19.2	Type (B) 1x20w emergency 10 hours duration lighting fixture according to technical drawings.	LS	1		
19.3	Type (c) 200w halogen outdoor light fixture IP54 according to technical drawings.	LS	1		
19.4	A single phase 220 volts power outlet water resistant according to technical drawings.	LS	2		
19.5	A three phase 380V power outlet water resistant according to drawings.	LS	1		
20	Supply and install internal plastering for walls, columns, arches drop beams, soffits of slabs & beams, shaft walls and ceiling composed of 3 coats, a bond coat 1cement:3 sand, base coat 1:4, and finish coat 1:5. The price includes material and labor and subject to Engineer Approval.	SM	160		
21	Supply and install emulsion paint for plastered walls composed of one coat of Tambour fill, 2 coats of putty and 3coats of emulsion.	SM	130		
22	Supply and apply polycid paint for ceiling and walls wherever required, composed of one coat of Tambour fill and minimum2 coats of polycid.	SM	30		
23	Supply and apply superlac paint for all existing and proposed steel works (existing door, 3 windows, hoist, etc) and wherever required, composed of one coat of base coat and minimum 2 coats of superlac paint.	LS	1		

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1		18-18/013			
A.Hadi					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
24	Supply and cast Reinforced concrete B250 for floor slab with minimum thickness 10cm, the price includes supply and install steel reinforcement 8mm bars @20 cm c/c in both directions. The price shall include surface leveling, mechanical/manual finishing, curing and all related works and subject to Engineer's Approval.	CM	3		
25	Supply and install two 3 metal screen windows each 1x1.1 m. Screen should be galvanized wires at least 0.5 mm thick, screen openings 1x1 cm, reinforced by steel plates of 2 cmx 2mm in both directions. Spacing between reinforcing plates shall not exceed 30 cm in both horizontal and vertical directions. Steel plates shall be placed on both sides of the screen and welded to the frame of the window which should be formed of steel angles of 3cmx3cmx2mm or more. All steel work shall be painted with one coat of base coat and minimum of 2 coats of superlac paint.	LS	3		
	Sub total				
	Provisional item				
1	Supply and install a diesel electric generator, 3 phase, 380 volts, 50 Hz and 46 horse power, 30 KVA, 46 Amp.	LS	1		
	Total Amount				

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2		18-18/014			
A.Yaesh					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
1	Carefully dismantle the existing vertical turbine pump unit, motor, pipes and any other parts inside and outside the pump room and to be removed and delivered as instructed by the engineer. The work shall also include all needed equipment (hoist, tripod, crane... etc.)To complete the work as required. The work shall be complete according to the contract condition, technical specification and the engineer approval.	LS	1		
2	Supply, transport, install and operate at site a vertical Turbine pump with none return valve and all the accessories it needs to get a working system as described in attached technical specifications Q=40m ³ /hr ,T.d.H-70m at best efficiency .Pump setting =16m.b.g.l , At max. Speed (n) = 1500 r.p.m. Recommended O.D of pump = 7.5" ,Shut off head not less than 130 m. Min. Efficiency not less than 70% at operating point. Vertical Turbine Assembly. Bowls-Cast Iron A48 CI.30, internally porcelain, externally coated with backed epoxy, bowl maximal diameter 7.5". Impellers-Zinc Free Bronze (Enclosed type). Bowl Bearings- High-lead Tin bronze B584 C937. Turbine Shaft (stainless steel)-SS A276 17-4PH Grade 630.with diameter>=35 mm. Bowl Bolts-SS A276 Type 316. Suction Strainer-SS A276 type 316.	LS	1		
3.1	Supply and install a discharge head with 90/6" steel elbow, Cast Iron A48 CI.30 5"-6" discharge flange dimensions according to ASA 150 internally and externally coated with baked epoxy, including Stuffing box and SS 17-4PH head shaft complete with all necessary parts and fittings needed to connect it to the top existing 5" rising pipes column and vertical electric motor and it must have (2) openings for 1" PVC pipes. And high pressure gland packing sealing arrangement, with Burgmann Buraflon type PTFE impregnated robes shall be installed between the sole plate and the discharge head.	LS	1		
3.2	Discharge head plate: Supply and install a suitable discharge head base plate UNS G 10200-ST.37 plate ,dimensions 1000-1000-20 mm, coated with backed epoxy ,matched to the discharge head. With 2 holes 1" to be fixed at the concrete foundation of the well .The steel plate shall be welded with the well casing. The 5x5x3mm steel angle shall be welded with the steel plate and connected with the well head pad by SS anchors.	LS	1		
4	Supply and install a well column pipe 5"(3m.l/each piece), schedule 40 ,10' threaded A53 GR.B welded pipes, internally and externally coated with backed epoxy, including threaded couplings of the same material as pipe with any other accessories to complete the work.	LM	16		

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2		18-18/014			
A.Yaesh					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
5	Supply, install and operate a vertical shaft 3phase induction motor with enclosed fan cooling (squirrel cage) n= 1500 RPM, 20 horse power , 380Vrms,50Hz, Efficiency>83%, P.F>0.87 water proof with all protections needed, suitable to drive the above mentioned pump without over loading with thermistors, drive shaft, nut and key...etc, and all fittings. The price includes the cable and all necessary accessories for the installation.	LS	1		
6	Supply and install a 416 Stainless steel shaft 35 mm in diameter-10' threaded A582 SS416 hardened and tempered, heat treated and polished H08 shafts ,including A582 SS416 threaded coupling(extra strong). Bearing retainer-threaded bronze B584-836 retainers, including Neoprene rubber C462-65 bearing and any other parts needed to complete the work.	LM	16		
7	<p>Electric Power Control, Switch and Distribution Board:</p> <p>Supply, Install, Connect and complete in place and perfect operational manner a main power control switch and distribution board built in a dust tight, water proof IP65 steel sheet cabinet (2mm thick) rust free, factory made with front door and lock (gray thermally painted). The top of this cabinet is 180cm from slap on grade and its base is protected by 10cm cement block. All wiring, busbars and marking terminal unit and electric company kWh meter are to be in this power cabinet. Change over power switch (to enable supplying the power cabinet from 2 different 3 phase power sources), On/Off push button, emergency button, warning lamps, alarm, 3 analog ammeters and 1 volt meter (phase voltage indication with selector switch). For measuring the input ampere and volt of the motor have to be installed on the front door of the cabinet. Cabinet's body must be connected to earthing electrodes. Cabinet's shop drawing and measurments must be submitted and approved before fabrication. the cabinet should include a soft starter (appropriate for the motor power) with all protection relays timers, Fuses, circuit breakers, bypass contactors and any other components necessary for protection of the 3 phase motor and the pump according to the attached technical drawings and the engineer's directions. All circuit breakers must be secured through thermal and magnetic combination action while over load release should be of thermal type with calibration adjustable between 0.8 and 1.5 of the motor full current. Relays, circuit breakers, contactors, timers and any other protection components should be of best quality as Merlin Gerlin, Moeller, ABB or equivalent.</p> <p>In addition the cabinet should include at least the followings:</p>	LS	1		
7.1	Over load protection adjustable 0.8 – 1.5 Nominal motor current, short circuit capacity 4PX25 KA surge arrestors of replicable type.				

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2 A.Yaesh		18-18/014			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
7.2	Protection relays for: phase failure, phase sequence, short circuit and earth leakage.				
7.3	Digital multimeter for measuring: V, A, kW, Hz, PF.				
7.4	Warning lamps for soft star fault, over load, No flow, High pressure, Low pressure and Low water level.				
7.5	Capacitor bank with discharge resistors, reactors and contactor operating at 3phase 400 V, 50 Hz to improve the power factor of the motor to achieve 0.95 lagging according to drawings and engineers directions.				
7.6	Earthing unit: Earth equalizer, Comprising C14 box, Copper B.B. 70 mm ² foundation line 3 earth electrodes (D> 19 mm, L = 1.5m) and any other necessary material or components to achieve an earthing resistance of R _{Earth} <1.5 Ohm for the whole pumping station. Earthing unit should be properly connected to the power cabinet in the well house and to other components according to the technical drawings.				
8	Supply and install a pressure switch 1-15 bars and connect it with the control panel unit. Price includes all required cables and accessories in accordance with Specifications, drawings and/or engineer's directions.	LS	1		
9	Supply and install an electric flow switch suitable for 6" pipe powered by a 24 V source, including all cables and accessories to connect it to the control unit in accordance with technical specifications, drawings and/or engineers directions.	LS	1		
10	Supply and install two PVC pipe sleeves 1" in diameter, schedule 40 to be used as sleeves in the well for the level measurements and level monitoring using a sensor and a cable. To be connected to the control board. PVC pipes shall be perforated below static water surface elevations and bottom ends plugged. Perforations should be at least 6 mm holes at a spacing of 15 cm above the plugged end of each pipe. The PVC pipes shall be appropriately attached in place to column pipe using suitable clamps every 2 meters or less. The PVC pipe shall extend into the discharge head plate according to engineers directions.	LM	32		
11	Supply and install a water level sensor includes cable to connect with electric control board in accordance with technical Specifications and/or engineer's directions.	LS	1		
12	Supply and install 6" water meter (16 bar) complete with flanges, gaskets, bolts and nuts all according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		
13	Supply and install 6" strainer upstream the water meter in accordance with technical specifications, drawings and engineer's directions.	LS	1		

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2		18-18/014			
A.Yaesh					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
14.1	Supply and install 6" one way valve (check valve) in accordance with attached technical specifications, drawings and engineer's directions.	LS	1		
14.2	6" Rising stem gate valve for 16 bar complete with flanges, gaskets, bolts and nuts according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		
15	Supply and install pressure gages in accordance with technical specifications, drawings and engineers directions.	LS	1		
16	Supply and install 2" gate and air release valves in accordance with technical specifications, drawings and engineer's directions.	LS	1		
17	Supply and install 2" gate valve and a pressure relief valve with adjustable setting to allow relieving pressure when pressure exceeds an adjustable setting in accordance with technical specifications, drawings and engineer's directions.	LS	1		
18.1	Supply and install 6" steel pipe 4mm thick internally and externally coated with backed epoxy for connecting pump, with meters, valves and old network in an around the pump station in accordance with technical specifications, drawings and engineer's directions. Price includes all jacks, accessories, materials and supports needed to connect and support the pipe in place and its connections.	LM	10		
18.2	6" Flanged half dresser complete for (16 bar) with two tie rods 60 cm. long diameter of 5"/8 and 4 ears for each dresser.	LS	2		
18.3	Wash out: Executing the main wash out end as drawings. The work shall be complete according to the contract conditions, technical specifications and the engineer approval. Price shall include all work and material needed including a heavy duty 3" flanged gate valve (16 bar) and 2" flanged gate valve (16 bar), all piping and all accessories, fittings and joints needed as shown in drawings.	LS	1		
18.4	Supplying, transporting, delivering and fixing in the room or on the roof where it is possible of the well building 1000 liter PVC tank with suitable steel base and anchors with all required fittings (floats, valves ,pipes ,...etc.) for cooling of shaft bearings. The work shall be complete according to the contract conditions, technical specifications, technical drawings and the engineer approval.	LS	1		
19	Lighting Fixtures and Accessories Note: work for lighting fixtures is to include supply of the fixtures specified, installation of same connection, wiring, commissioning, lamps, tubes, starter louvers, duct and all other details, for a complete lighting system in the station. All wiring shall be placed in PVC hoses installed in the walls and covered with plaster. Parts to be installed include the following:				

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2		18-18/014			
A.Yaesh		Unit	QTY	Unit Price (USD)	Total (USD)
	Item				
19.1	Type (A) 2x36w fluorescent surface mounted light fixture IP65 according to technical drawings.	LS	2		
19.2	Type (B) 1x20w emergency 10 hours duration lighting fixture according to technical drawings.	LS	1		
19.3	Type (c) 200w halogen outdoor light fixture IP54 according to technical drawings.	LS	1		
19.4	A single phase 220 volts power outlet water resistant according drawings.	LS	2		
19.5	A three phase 380V power outlet water resistant according to drawings.	LS	1		
20	Supply and install internal plastering for walls, columns, arches drop beams, soffits of slabs & beams, shaft walls and ceiling composed of 3 coats, a bond coat 1cement:3 sand, base coat 1:4, and finish coat 1:5. The price includes material and labor and subject to Engineer Approval.	SM	160		
21	Supply and install emulsion paint for plastered walls composed of one coat of Tambour fill, 2 coats of putty and 3coats of emulsion.	SM	130		
22	Supply and apply polycid paint for ceiling and walls wherever required, composed of one coat of Tambour fill and minimum2 coats of polycid.	SM	30		
23	Supply and cast Reinforced concrete B250 floor slab with minimum thickness 10cm, the price includes supply and install steel reinforcement 8mm bars @20 cm c/c in both directions. The price shall include surface leveling, mechanical/manual finishing, curing and all related works and subject to Engineer's Approval.	CM	3		
24	Supply and build hollow concrete blocks 20 cm thick for walls according to specifications and as shown in drawings, the price includes supply and cast B200 concrete lintel 20 cm high for doors and windows and the supply & installation of steel reinforcement 4 bars 12 mm diameter with stirrups (8 mm @ 20 cm c/c). The price includes supply and cast B300 concrete for columns 25x25 cm as shown in drawings & installation of steel reinforcement 6 bars 12 mm diameter with stirrups 8mm @20cm c/c, all related works as per drawings ,specifications and Engineer Approval.	SM	60		
25	Supply and cast Reinforced concrete B300 for: 1) Roof slab with minimum thickness 15cm, the price includes supply and install steel reinforcement 10mm bars @ 15 cm c/c in both directions. 2) Strip footings under walls (50x50 cm), price includes excavation and steel reinforcement as shown in drawings. 3) Reinforced concrete for two columns extended over the roof to be used for maintenance purposes with height of 3 meters, cross section of 25x25 cm, steel reinforcement 6-12mm with stirrups 8mm	CM	7		

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2		18-18/014			
A.Yaesh		Unit	QTY	Unit Price (USD)	Total (USD)
Item					
	@ 20 cm c/c as shown in drawings. The price shall include surface leveling, mechanical finishing, curing and all related works according to drawings and subject to Engineer's Approval.				
26	Fabricate supply and install a steel door on steel angel 5*5 cm and steel sheet 2mm thick complete with all accessories such as heavy duty roller hinges, water flushing, Wally cylinder locks, and all fixing accessories, The price includes supply and apply 2 coats of anti rust primer, Tambour synthetic patch putty and 3 coats of Tambour superlac. Shop drawings must be submitted and approved before fabrication. Dimensions 220 cm x 140cm two panels.	LS	1		
27	Supply, fabricate and install 2 steel windows 1.4 x 1.1 meters and 2x1.1 meters as shown in drawings. Each window shall include: steel panels for the interior side with thickness at least 2mm and enough reinforcement around panels of at least 2x2 cm steel bars, frame of 3x3 cm angles with a thickness of 2mm. The exterior side of the each window shall be a metal screen window with screens of galvanized wires at least 0.5 mm thick, screen openings 1x1 cm, reinforced by steel plates of 2 cm x 2mm in both directions. Spacing between reinforcing plates shall not exceed 30 cm in both horizontal and vertical directions. Steel plates shall be placed on both sides of the screen and welded to the frame of the window which should be formed of steel angles of 3cmx3cmx2mm or more. All steel work shall be painted with one coats of base coat and minimum of 2 coats of superlac paint.	LS	2		
28	Supply and install 12" casing and fill old traditional well with compacted fill around the casing and cleaning the area around the well, price includes all weldings and work needed to connect new casing with old one and align them in vertical direction	LM	9		
	Subtotal				
	Provisional item				
1	Supply and install a diesel electric generator, 3 phase, 380 volts, 50 Hz and 40 horse power, 27KVA, 40 Amp.	LS	1		
	Total Amount				

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3 N.Shakaa		18-18/019A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
1	Carefully dismantle the existing vertical turbine pump unit, motor, pipes and any other parts inside and outside the pump room and to be removed and delivered as instructed by the engineer. The work shall also include all needed equipment (hoist, tripod, crane... etc.)To complete the work as required. The work shall be complete according to the contract condition, technical specification and the engineer approval.	LS	1		
2	Supply, transport, install and operate at site a vertical Turbine pump with none return valve and all the accessories it needs to get a working system as described in attached technical specifications Q=45m3/hr ,T.d.H-125m at best efficiency .Pump setting =84m.b.g.l , At max. Speed (n) = 1500 r.p.m, Recommended O.D of pump = 7.5", Shut off head not less than 160 m. Min. Efficiency not less than 70% at operating point. Vertical Turbine Assembly. Bowls-Cast Iron A48 CI.30, internally porcelain, externally coated with backed epoxy, bowl maximal diameter 7.5". Impellers-Zinc Free Bronze (Enclosed type). Bowl Bearings- High-lead Tin bronze B584 C937. Turbine Shaft stainless steel -SS A276 17-4PH Grade 630 with diameter >35 mm. Bowl Bolts-SS A276 Type 316. Suction Strainer-SS A276 type 316.	LS	1		
3.1	Supply and install a discharge head with 90/6" steel elbow, Cast Iron A48 CI.30 5"-6" discharge flange dimensions according to ASA 150 internally and externally coated with baked epoxy, including Stuffing box and SS 17-4PH head shaft complete with all necessary parts and fittings needed to connect it to the top existing 5" rising pipes column and vertical electric motor and it must have (2) openings for 1" PVC pipes. And high pressure gland packing sealing arrangement, with Burgmann Buraflon type PTFE impregnated robes shall be installed between the sole plate and the discharge head.	LS	1		
3.2	Discharge head plate: Supply and install a suitable discharge head base plate UNS G 10200-ST.37 plate ,dimensions 1000-1000-20 mm, coated with backed epoxy ,matched to the discharge head. With 2 holes 1" to be fixed at the concrete foundation of the well. The steel plate shall be welded with the well casing. The 5x5x3mm steel angle shall be welded with the steel plate and connected with the well head pad by SS anchors.	LS	1		
4	Supply and install a well column pipe 5"(3m.l/each piece), schedule 40, 10' threaded A53 GR.B welded pipes, internally and externally coated with backed epoxy, including threaded couplings with any other accessories to complete the work.	LM	84		

3 N.Shakaa		18-18/019A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
5	Supply, install and operate a vertical shaft 3phase induction motor with enclosed fan cooling (squirrel cage) n= 1500 RPM, 41 horse power, 380Vrms,50Hz, Efficiency>83%, P.F>0.87 water proof with all protections needed, suitable to drive the above mentioned pump without over loading with thermistors, drive shaft, nut and key...etc, and all fittings. The price includes the cable and all necessary accessories for the installation.	LS	1		
6	Supply and install a 416 Stainless steel shaft 35 mm in diameter-10' threaded A582 SS416 hardened and tempered, heat treated and polished H08 shafts, including A 582 SS416 threaded coupling(extra strong).Bearing retainer-threaded bronze B584-836 retainers, including Neoprene rubber C462-65 bearing and any other parts needed to complete the work.	LM	84		
7	Electric Power Control, Switch and Distribution Board: Supply, Install, Connect and complete in place and perfect operational manner a main power control switch and distribution board built in a dust tight, water proof IP65 steel sheet cabinet (2mm thick) rust free, factory made with front door and lock (gray thermally painted). The top of this cabinet is 180cm from slap on grade and its base is protected by 10cm cement block. All wiring, busbars and marking terminal unit and electric company kWh meter are to be in this power cabinet. Change over power switch (to enable supplying the power cabinet from 2 different 3 phase power sources), On/Off push button, emergency button, warning lamps, alarm, 3 analog ammeters and 1 volt meter (phase voltage indication with selector switch). For measuring the input ampere and volt of the motor have to be installed on the front door of the cabinet. Cabinet's body must be connected to earthing electrodes. Cabinet's shop drawing and measurments must be submitted and approved before fabrication. the cabinet should include a soft starter (appropriate for the motor power) with all protection relays timers, Fuses, circuit breakers, bypass contactors and any other components necessary for protection of the 3 phase motor and the pump according to the attached technical drawings and the engineer's directions. All circuit breakers must be secured through thermal and magnetic combination action while over load release should be of thermal type with calibration adjustable between 0.8 and 1.5 of the motor full current . Relays , circuit breakers, contactors, timers and any other protection components should be of best quality as Merlin Gerlin, Moeller, ABB or equivalent. In addition the cabinet should include at least the followings:	LS	1		

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3 N.Shakaa		18-18/019A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
7.1	Over load protection adjustable 0.8 – 1.5 Nominal motor current, short circuit capacity 4PX25 KA surge arrestors of replicable type.				
7.2	Protection relays for: phase failure, phase sequence, short circuit and earth leakage.				
7.3	Digital multimeter for measuring: V, A, kW, Hz, PF.				
7.4	Warning lamps for soft star fault, over load, No flow, High pressure, Low pressure and Low water level.				
7.5	Capacitor bank with discharge resistors, reactors and contactor operating at 3phase 400 V, 50 Hz to improve the power factor of the motor to achieve 0.95 lagging according to drawings and engineers directions.				
7.6	Earthing unit: Earth equalizer, Comprising C14 box, Copper B.B. 70 mm ² foundation line 3 earth electrodes (D> 19 mm, L = 1.5m) and any other necessary material or components to achieve an earthing resistance of R _{Earth} <1.5 Ohm for the whole pumping station. Earthing unit should be properly connected to the power cabinet in the well house and to other components according to the technical drawings.				
8	Supply and install a pressure switch 1-15 bars and connect it with the control panel unit. Price includes all required cables and accessories in accordance with Specifications, drawings and/or engineer's directions.	LS	1		
9	Supply and install an electric flow switch suitable for 6" pipe powered by a 24 V source, including all cables and accessories to connect it to the control unit in accordance with technical specifications, drawings and/or engineers directions.	LS	1		
10	Supply and install two PVC pipe sleeves 1" in diameter, schedule 40 to be used as sleeves in the well for the level measurements and level monitoring using a sensor and a cable to be connected to the control board. PVC pipes shall be perforated below static water surface elevations and bottom ends plugged. Perforations should be at least 6 mm holes at a spacing of 15 cm above the plugged end of each pipe. The PVC pipes shall be appropriately attached in place to column pipe using suitable clamps every 2 meters or less. The PVC pipe shall extend into the discharge head plate according to engineer's directions.	LM	168		
11	Supply and install a water level sensor includes cable to connect with electric control board in accordance with technical Specifications and/or engineer's directions.	LS	1		

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3 N.Shakaa		18-18/019A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
12	Supply and install 6" water meter (16 bar) complete with flanges, gaskets, bolts and nuts all according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		
13	Supply and install 6" strainer upstream the water meter in accordance with technical specifications, drawings and engineer's directions	LS	1		
14.1	Supply and install 6" one way valve (check valve 16 bar) in accordance with attached technical specifications, drawings and engineer's directions.	LS	1		
14.2	6" Rising stem gate valve for 16 bar complete with flanges, gaskets, bolts and nuts according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		
15	Supply and install pressure gages in accordance with technical specifications, drawings and engineers directions.	LS	1		
16	Supply and install 2" gate and air release valves in accordance with technical specifications , drawings and engineer's directions	LS	1		
17	Supply and install a 2" gate valve and a pressure relief valve with adjustable setting to allow relieving pressure when pressure exceeds an adjustable setting in accordance with technical specifications, drawings and engineer's directions	LS	1		
18.1	Supply and install 6" steel pipe 4mm thick internally and externally coated with backed epoxy for connecting pump, with meters, valves and old network in an around the pump station in accordance with technical specifications, drawings and engineer's directions. Price includes all jacks, accessories, materials and supports needed to connect and support the pipe in place and its connections.	LM	10		
18.2	6" Flanged dresser complete for (16 bar) with two tie rods 60 cm. long diameter of 5"/8 and 4 ears for each dresser.	LS	2		
18.3	Wash out: Executing the main wash out end as shown in drawings. The work shall be completed according to the contract conditions, technical specifications, drawings and the engineer's approval. Price shall include all work and material needed including a heavy duty 3" flanged gate valve (16 bar) all piping and all accessories and pipes with their fittings and joints needed as shown in drawings.	LS	1		

3 N.Shakaa		18-18/019A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
18.4	Supplying, transporting, delivering and fixing in the room or on the roof where it is possible of the well building 1000 liter PVC tank with suitable steel base and anchors with all required fittings (floats, valves ,pipes ,...etc.) for cooling of the shaft bearings. The work shall be complete according to the contract conditions, technical specifications, technical drawings and the engineer approval.	LS	1		
19	Lighting Fixtures and Accessories Note: work for lighting fixtures is to include supply of the fixtures specified, installation of same connection, wiring, commissioning, lamps, tubes, starter louvers, duct and all other details, for a complete lighting system in the station. All wiring shall be placed in PVC hoses installed in the walls and covered with plaster. Parts to be installed include the following:				
19.1	Type (A) 2x36w fluorescent surface mounted light fixture IP65 according to technical drawings.	LS	4		
19.2	Type (B) 1x20w emergency 10 hours duration lighting fixture according to technical drawings.	LS	2		
19.3	Type (c) 200w halogen outdoor light fixture IP54 according to technical drawings.	LS	1		
19.4	A single phase 220 volts power outlet water resistant according to technical drawings.	LS	2		
19.5	A three phase 380V power outlet water resistant according to drawings.	LS	1		
20	Supply and install internal plastering for walls, columns, arches drop beams, softies of slabs & beams, shaft walls and ceiling composed of 3 coats, a bond coat 1cement:3 sand, base coat 1:4, and finish coat 1:5. The price includes material and labor and subject to Engineer Approval.	SM	230		
21	Supply and install emulsion paint for plastered walls composed of one coat of Tambour fill, 2 coats of putty and 3coats of emulsion.	SM	180		
22	Supply and apply polycid paint for ceiling and walls wherever required, composed of one coat of Tambour fill and minimum2 coats of polycid.	SM	40		
23	Supply and apply superlac paint for all existing steel works (windows, hoist , ...etc) and wherever required ,composed of one coat of base coat and minimum 2 coats of superlac paint	LS	1		
24	Supply and cast Reinforced concrete B250 for floor slab with minimum thickness 10cm, the price includes supply and install steel reinforcement 8mm bars @20 cm c/c in both directions. The price shall include surface leveling, mechanical/manual finishing, curing and all related works and subject to Engineer's Approval.	CM	4		

3 N.Shakaa		18-18/019A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
25	Supply, fabricate and install 3 steel windows 1.2 x 1.1 meters, 1.7 x 1.1 and 1.6x1.1 meters as shown in drawings. Each window shall include: steel panels for the interior side with thickness at least 2mm and enough reinforcement around panels of at least 2x2 cm steel bars, frame of 3x3 cm angles with a thickness of 2mm. The exterior side of the each window shall be a metal screen window with screens of galvanized wires at least 0.5 mm thick, screen openings 1x1 cm, reinforced by steel plates of 2 cm x 2mm in both directions. Spacing between reinforcing plates shall not exceed 30 cm in both horizontal and vertical directions. Steel plates shall be placed on both sides of the screen and welded to the frame of the window which should be formed of steel angles of 3cmx3cmx2mm or more. All steel work shall be painted with one coats of base coat and minimum of 2 coats of superlac paint.	LS	3		
26	Fabricate supply and install two steel doors on steel angel 5*5 cm and steel sheet 2mm thick complete with all accessories such as heavy duty roller hinges, water flushing, Wally cylinder locks, and all fixing accessories, The price includes supply and apply 2 coats of anti rust primer, Tambour synthetic patch putty and 3 coats of Tambour superlac. Shop drawings must be submitted and approved before fabrication. Dimensions for exterior door 220 cm x 100cm, 220 cm x 140 cm for interior, both to be two panels. Price includes cutting in the concrete wall to increase the height of the door and plastering around the door for a smooth and straight look of door.	LS	2		
27	Supply and build hollow concrete blocks 20 cm thick for partition wall according to specifications and as shown in drawings, the price includes supply and cast B200 concrete lintel 20 cm high for doors and windows and the supply & installation of steel reinforcement 4 bars 12 mm diameter with stirrups (8 mm @ 20 cm c/c). The price includes supply and cast B300 concrete for columns 25x25 cm as shown in drawings & installation of steel reinforcement 6 bars 12 mm diameter with stirrups 8mm @20cm c/c, all related works as per drawings ,specifications and Engineer Approval.	SM	15		
	Subtotal				

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3 N.Shakaa		18-18/019A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
	Provisional item				
1	Supply and install a diesel electric generator, 3 phase, 380 volts, 50 Hz and 80 horse power, 42KVA, 64 Amp.	LS	1		
	Total Amount				

4 N.Ab.Hadi		18-18/031			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
1	Carefully dismantle the existing vertical turbine pump unit, motor, pipes and any other parts inside and outside the pump room and to be removed and delivered as instructed by the engineer. The work shall also include all needed equipment (hoist, tripod, crane... etc.)To complete the work as required. The work shall be complete according to the contract condition, technical specification and the engineer approval.	LS	1		
2	Supply, transport, install and operate at site a vertical Turbine pump with none return valve and all the accessories it needs to get a working system as described in attached technical specifications Q=50m ³ /hr ,T.d.H=110m at best efficiency .Pump setting =38m.b.g.l , At max. Speed (n) = 1500 r.p.m. Recommended O.D of pump = 7.5", Shut off head not less than 160 m. Min. Efficiency not less than 70% at operating point. Vertical Turbine Assembly. Bowls-Cast Iron A48 CI.30, internally porcelain, externally coated with backed epoxy, bowl maximal diameter 7.5". Impellers-Zinc Free Bronze (Enclosed type).Bowl Bearings- High-lead Tin bronze B584 C937. Turbine Shaft stainless steel-SS A276 17-4PH Grade 63 with diameter >35 mm. Bowl Bolts-SS A276 Type 316.Suction Strainer-SS A276 type 316.	LS	1		
3.1	Supply and install a discharge head with 90/6" steel elbow, Cast Iron A48 CI.30 5"-6" discharge flange dimensions according to ASA 150 internally and externally coated with baked epoxy, including Stuffing box and SS 17-4PH head shaft complete with all necessary parts and fittings needed to connect it to the top existing 5" rising pipes column and vertical electric motor and it must have (2) openings for 1" PVC pipes. And high pressure gland packing sealing arrangement, with Burgmann Burafalon type PTFE impregnated robes shall be installed between the sole plate and the discharge head.	LS	1		
3.2	Discharge head plate: Supply and install a suitable discharge head base plate UNS G 10200-ST.37 plate ,dimensions 1000-1000-20 mm, coated with backed epoxy ,matched to the discharge head. With 2 holes 1" to be fixed at the concrete foundation of the well .The steel plate shall be welded with the well casing. The 5x5x3mm steel angle shall be welded with the steel plate and connected with the well head pad by SS anchors.	LS	1		
4	Supply and install a well column pipe 5"(3m.l/each piece), schedule 40, 10' threaded A53 GR.B welded pipes, internally and externally coated with backed epoxy, including threaded couplings with any other accessories to complete the work.	LM	38		

4 N.Ab.Hadi		18-18/031			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
5	Supply, install and operate a vertical shaft 3phase induction motor with enclosed fan cooling (squirrel cage) n= 1500 RPM, 40 horse power, 380Vrms,50Hz, Efficiency>83%, P.F>0.87 water proof with all protections needed, suitable to drive the above mentioned pump without over loading with thermistors, drive shaft, nut and key...etc, and all fittings. The price includes the cable and all necessary accessories for the installation.	LS	1		
6	Supply and install a 416 Stainless steel shaft 35 mm in diameter-10' threaded A582 SS416 hardened and tempered, heat treated and polished H08 shafts ,including A 582 SS416 threaded coupling(extra strong).Bearing retainer-threaded bronze B584-836 retainers, including Neoprene rubber C462-65 bearing and any other parts needed to complete the work.	LM	38		
7	<p>Electric Power Control, Switch and Distribution Board:</p> <p>Supply, Install, Connect and complete in place and perfect operational manner a main power control switch and distribution board built in a dust tight, water proof IP65 steel sheet cabinet (2mm thick) rust free, factory made with front door and lock (gray thermally painted). The top of this cabinet is 180cm from slap on grade and its base is protected by 10cm cement block. All wiring, busbars and marking terminal unit and electric company kWh meter are to be in this power cabinet. Change over power switch (to enable supplying the power cabinet from 2 different 3 phase power sources), On/Off push button, emergency button, warning lamps, alarm, 3 analog ammeters and 1 volt meter (phase voltage indication with selector switch). For measuring the input ampere and volt of the motor have to be installed on the front door of the cabinet. Cabinet's body must be connected to earthing electrodes. Cabinet's shop drawing and measurments must be submitted and approved before fabrication. the cabinet should include a soft starter (appropriate for the motor power) with all protection relays, timers, Fuses, circuit breakers, bypass contactors and any other components necessary for protection of the 3 phase motor and the pump according to the attached technical drawings and the engineer's directions. All circuit breakers must be secured through thermal and magnetic combination action while over load release should be of thermal type with calibration adjustable between 0.8 and 1.5 of the motor full current. Relays, circuit breakers, contactors, timers and any other protection components should be of best quality as Merlin Gerlin, Moeller, ABB or equivalent.</p> <p>In addition the cabinet should include at least the followings:</p>	LS	1		

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4 N.Ab.Hadi		18-18/031			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
7.1	Over load protection adjustable 0.8 – 1.5 Nominal motor current, short circuit capacity 4PX25 KA surge arrestors of replicable type.				
7.2	Protection relays for: phase failure, phase sequence, short circuit and earth leakage.				
7.3	Digital multimeter for measuring: V, A, kW, Hz, PF.				
7.4	Warning lamps for soft star fault, over load, No flow, High pressure, Low pressure and Low water level.				
7.5	Capacitor bank with discharge resistors, reactors and contactor operating at 3phase 400 V, 50 Hz to improve the power factor of the motor to achieve 0.95 lagging according to drawings and engineers directions.				
7.6	Earthing unit: Earth equalizer, Comprising C14 box, Copper B.B. 70 mm ² foundation line 3 earth electrodes (D> 19 mm, L = 1.5m) and any other necessary material or components to achieve an earthing resistance of REarth <1.5 Ohm for the whole pumping station. Earthing unit should be properly connected to the power cabinet in the well house and to other components according to the technical drawings.				
8	Supply and install a pressure switch 1-15 bars and connect it with the control panel unit. Price includes all required cables and accessories in accordance with Specifications, drawings and/or engineer's directions.	LS	1		
9	Supply and install an electric flow switch suitable for 6" pipe powered by a 24 V source, including all cables and accessories to connect it to the control unit in accordance with technical specifications, drawings and/or engineers directions.	LS	1		
10	Supply and install two PVC pipe sleeves 1" in diameter, schedule 40 to be used as sleeves in the well for the level measurements and level monitoring using a sensor and a cable to be connected to control board. PVC pipes shall be perforated below static water surface elevations and bottom ends plugged. Perforation should be at least 6 mm holes with spacing of 15 cm above the plugged end of each pipe. The PVC pipes shall be appropriately attached in place to column pipe using suitable clamps every 2 meters or less. The PVC pipe shall extend into the discharge head plate according to engineer's directions.	LM	76		
11	Supply and install a water level sensor includes cable to connect with electric control board in accordance with technical Specifications and/or engineer's directions.	LS	1		

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4 N.Ab.Hadi		18-18/031			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
12	Supply and install 6" water meter (16 bar) complete with flanges, gaskets, bolts and nuts all according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		
13	Supply and install 6" strainer upstream the water meter in accordance with technical specifications, drawings and engineer's directions.	LS	1		
14.1	Supply and install 6" one way valve (check valve, 16 bar) in accordance with attached technical specifications, drawings and engineer's directions.	LS	1		
14.2	6" Rising stem gate valve for 16 bar complete with flanges, gaskets, bolts and nuts according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		
15	Supply and install pressure gages in accordance with technical specifications, drawings and engineers directions.	LS	1		
16	Supply and install 2" gate and air release valves in accordance with technical specifications, drawings and engineer's directions.	LS	1		
17	Supply and install a 2" gate valve and a pressure relief valve with adjustable setting to allow relieving pressure when pressure exceeds an adjustable setting in accordance with technical specifications, drawings and engineer's directions	LS	1		
18.1	Supply and install 6" steel pipe 4mm thick internally and externally coated with backed epoxy for connecting pump, with meters, valves and old network in an around the pump station in accordance with technical specifications, drawings and engineer's directions. Price includes all jacks, accessories, materials and supports needed to connect and support the pipe in place and its connections.	LM	10		
18.2	6" Flanged half dresser complete for (16 bar) with two tie rods 60 cm. long diameter of 5"/8 and 4 ears for each dresser.	LS	2		
18.3	Wash out: Executing the main wash out end as shown in drawings. The work shall be complete according to the contract condition, technical specification and the engineer approval. Price shall include all work and material needed including a heavy duty 3" flanged gate valve (16 bar) and all piping and and all accessories, fittings and joints needed as shown in drawings.	LS	1		

4 N.Ab.Hadi		18-18/031			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
18.4	Supplying, transporting, delivering and fixing in the room or on the roof where it is possible of the well building 1000 liter PVC tank with suitable steel base and anchors with all required fittings (floats, valves ,pipes ,...etc.) for cooling of shaft bearing. The work shall be complete according to the contract condition, technical specification, technical drawings and the engineer approval.	LS	1		
19	Lighting Fixtures and Accessories Note: work for lighting fixtures is to include supply of the fixtures specified, installation of same connection, wiring, commissioning, lamps, tubes, starter louvers, duct and all other details, for a complete lighting system in the station. All wiring shall be placed in PVC hoses installed in the walls and covered with plaster. Parts to be installed include the following:				
19.1	Type (A) 2x36w fluorescent surface mounted light fixture IP65 according to technical drawings.	LS	4		
19.2	Type (B) 1x20w emergency 10 hours duration lighting fixture according to technical drawings.	LS	2		
19.3	Type (c) 200w halogen outdoor light fixture IP54 according to technical drawings.	LS	1		
19.4	A single phase 220 volts power outlet water resistant according to technical drawings.	LS	2		
19.5	A three phase 380V power outlet water resistant according to drawings.	LS	1		
20	Supply and install internal plastering for walls, columns, arches drop beams, soffits of slabs & beams, shaft walls and ceiling composed of 3 coats, a bond coat 1cement:3 sand, base coat 1:4, and finish coat 1:5. The price includes material and labor and subject to Engineer Approval.	SM	230		
21	Supply and install emulsion paint for plastered walls composed of one coat of Tambour fill, 2 coats of putty and 3coats of emulsion.	SM	200		
22	Supply and apply polycid paint for ceiling and walls wherever required, composed of one coat of Tambour fill and minimum2 coats of polycid.	SM	30		
23	Supply and apply superlac paint for all existing and proposed steel works (doors , windows, hoist , ...etc) and wherever required ,composed of one coat of base coat and minimum2 coats of superlac paint	LS	1		
24	Supply and cast Reinforced concrete B250 for floor slab with minimum thickness 10cm, the price includes supply and install steel reinforcement 8mm bars @20 cm c/c in both directions. The price shall include surface leveling, mechanical/manual finishing, curing and all related works and subject to Engineer's Approval.	CM	4		

4 N.Ab.Hadi		18-18/031			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
25	Fabricate supply and install one steel doors on steel angel 5*5 cm and steel sheet 2mm thick complete with all accessories such as heavy duty roller hinges, water flushing, Wally cylinder locks, and all fixing accessories, The price includes supply and apply 2 coats of anti rust primer, Tambour synthetic patch putty and 3 coats of Tambour superlac. Shop drawings must be submitted and approved before fabrication. Dimensions are 220 cm x 100cm, to be two panels. Price includes cutting in the concrete wall to increase the height of the door and plastering around the door for a smooth and straight look of door.	LS	1		
26	Supply and build hollow concrete blocks 20 cm thick for partition wall according to specifications and as shown in drawings, the price includes supply and cast B200 concrete lintel 20 cm high for doors and windows and the supply & installation of steel reinforcement 4 bars 12 mm diameter with stirrups (8 mm @ 20 cm c/c). The price includes supply and cast B300 concrete for columns 25x25 cm as shown in drawings & installation of steel reinforcement 6 bars 12 mm diameter with stirrups 8mm @20cm c/c, all related works as per drawings ,specifications and Engineer Approval.	SM	15		
	Subtotal				
	Provisional Item				
1	Supply and install a diesel electric generator, 3 phase, 380 volts, 50 Hz and 62 horse power, 42KVA, 63 Amp.	LS	1		
	Total Amount				

5 S.Ab.Hadi		18-18/031A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
1	Carefully dismantle the existing vertical turbine pump unit, motor, pipes and any other parts inside and outside the pump room and to be removed and delivered as instructed by the engineer. The work shall also include all needed equipment (hoist, tripod, crane... etc.)To complete the work as required. The work shall be complete according to the contract condition, technical specification and the engineer approval.	LS	1		
2	Supply, transport, install and operate at site a vertical Turbine pump with none return valve and all the accessories it needs to get a working system as described in attached technical specifications $Q=40m^3/hr$,T.d.H=160m at best efficiency .Pump setting =38m.b.g.l , At max. Speed (n) = 1500 r.p.m. Recommended O.D of pump = 7.5", Shut off head not less than 200 m. Min. Efficiency not less than 70% at operating point. Vertical Turbine Assembly. Bowls-Cast Iron A48 CI.30, internally porcelain, externally coated with backed epoxy, bowl maximal diameter 7.5".Impellers-Zinc Free Bronze (Enclosed type). Bowl Bearings- High-lead Tin bronze B584 C937. Turbine Shaft stainless steel-SS A276 17-4PH Grade 630 with diameter >35 mm. Bowl Bolts-SS A276 Type 316.Suction Strainer-SS A276 type 316.	LS	1		
3.1	Supply and install a discharge head with 90/6" steel elbow, Cast Iron A48 CI.30 6"-6" discharge flange dimensions according to ASA 150 internally and externally coated with baked epoxy, including Stuffing box and SS 17-4PH head shaft complete with all necessary parts and fittings needed to connect it to the top existing 6" rising pipes column and vertical electric motor and it must have (2) openings for 1" PVC pipes. And high pressure gland packing sealing arrangement, with Burgmann Buraflon type PTFE impregnated robes shall be installed between the sole plate and the discharge head.	LS	1		
3.2	Discharge head plate: Supply and install a suitable discharge head base plate UNS G 10200-ST.37 plate ,dimensions 1000-1000-20 mm, coated with backed epoxy ,matched to the discharge head. With 2 holes 1" to be fixed at the concrete foundation of the well .The steel plate shall be welded with the well casing. The 5x5x3mm steel angle shall be welded with the steel plate and connected with the well head pad by SS anchors.	LS	1		
4	Supply and install a well column pipe 6"(3m.l/each piece), schedule 40, 10' threaded A53 GR.B welded pipes, internally and externally coated with backed epoxy, including threaded couplings with any other accessories to complete the work.	LM	38		

5 S.Ab.Hadi		18-18/031A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
5	Supply, install and operate a vertical shaft 3phase induction motor with enclosed fan cooling (squirrel cage) n= 1500 RPM, 47 horse power, 380Vrms,50Hz, Efficiency>83%, P.F>0.87 water proof with all protections needed, suitable to drive the above mentioned pump without over loading with thermistors, drive shaft, nut and key...etc, and all fittings. The price includes the cable and all necessary accessories for the installation.	LS	1		
6	Supply and install a 416 Stainless steel shaft 35 mm in diameter-10' threaded A582 SS416 hardened and tempered, heat treated and polished H08 shafts ,including A 582 SS 416 threaded coupling(extra strong). Bearing retainer-threaded bronze B584-836 retainers, including Neoprene rubber C462-65 bearing and any other parts needed to complete the work.	LM	38		
7	Electric Power Control, Switch and Distribution Board: Supply, Install, Connect and complete in place and perfect operational manner a main power control switch and distribution board built in a dust tight, water proof IP65 steel sheet cabinet (2mm thick) rust free, factory made with front door and lock (gray thermally painted). The top of this cabinet is 180cm from slap on grade and its base is protected by 10cm cement block. Al wiring, busbars and marking terminal unit and electric company kWh meter are to be in this power cabinet. Change over power switch (to enable supplying the power cabinet from 2 different 3 phase power sources), On/Off push button, emergency button, warning lamps, alarm, 3 analog ammeters and 1 volt meter (phase voltage indication with selector switch). For measuring the input ampere and volt of the motor have to be installed on the front door of the cabinet. Cabinet's body must be connected to earthing electrodes. Cabinet's shop drawing and measurments must be submitted and approved before fabrication. the cabinet should include a soft starter (appropriate for the motor power) with all protection relays timers, Fuses, circuit breakers, bypass contactors and any other components necessary for protection of the 3 phase motor and the pump according to the attached technical drawings and the engineer's directions. All circuit breakers must be secured through thermal and magnetic combination action while over load relays should be of thermal type with calibration adjustable between 0.8 and 1.5 of the motor full current. Relays, circuit breakers, contactors, timers and any other protection components should be of best quality as Merlin Gerlin, Moeller, ABB or equivalent. In addition the cabinet should include at least the followings:	LS	1		

5 S.Ab.Hadi		18-18/031A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
7.1	Over load protection adjustable 0.8 – 1.5 Nominal motor current, short circuit capacity 4PX25 KA surge arrestors of replicable type.				
7.2	Protection relays for: phase failure, phase sequence, short circuit and earth leakage.				
7.3	Digital multimeter for measuring: V, A, kW, Hz, PF.				
7.4	Warning lamps for soft star fault, over load, No flow, High pressure, Low pressure and Low water level.				
7.5	Capacitor bank with discharge resistors, reactors and contactor operating at 3phase 400 V, 50 Hz to improve the power factor of the motor to achieve 0.95 lagging according to drawings and engineers directions.				
7.6	Earthing unit: Earth equalizer, Comprising C14 box, Copper B.B. 70 mm ² foundation line 3 earth electrodes (D> 19 mm, L = 1.5m) and any other necessary material or components to achieve an earthing resistance of R _{Earth} <1.5 Ohm for the whole pumping station. Earthing unit should be properly connected to the power cabinet in the well house and to other components according to the technical drawings.				
8	Supply and install a pressure switch 1-20 bars and connect it with the control panel unit. Price includes all required cables and accessories in accordance with Specifications, drawings and/or engineer's directions.	LS	1		
9	Supply and install an electric flow switch suitable for 6" pipe powered by a 24 V source, including all cables and accessories to connect it to the control unit in accordance with technical specifications, drawings and/or engineers directions.	LS	1		
10	Supply and install two PVC pipe sleeves 1" in diameter, schedule 40 to be used as sleeves in the well for the level measurements and level monitoring using a sensor and a cable to be connected to the control board. PVC pipes shall be perforated below static water surface elevations and bottom ends plugged. Perforation shall be at least 6 mm holes in distance of 15 cm above the plugged end of each pipe. The PVC pipes shall be appropriately attached in place to column pipe using suitable clamps every 2 meters or less. The PVC pipe shall extend into the discharge head plate according to engineer's directions.	LM	76		
11	Supply and install a water level sensor includes cable to connect with electric control board in accordance with technical Specifications and/or engineer's directions.	LS	1		

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5 S.Ab.Hadi		18-18/031A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
12	Supply and install 6" water meter (16 bar) complete with flanges, gaskets, bolts and nuts all according to ISO standards and in accordance with drawings and engineer's directions	LS	1		
13	Supply and install 6" strainer upstream the water meter in accordance with technical specifications, drawings and engineer's directions	LS	1		
14.1	Supply and install 6" one way valve (check valve, 16 bar) in accordance with attached technical specifications, drawings and engineer's directions	LS	1		
14.2	6" Rising stem gate valve for 16 bar complete with flanges, gaskets, bolts and nuts according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		
15	Supply and install pressure gages in accordance with technical specifications , drawings and engineers directions	LS	1		
16	Supply and install 2" gate and air release valves in accordance with technical specifications, drawings and engineer's directions.	LS	1		
17	Supply and install a 2" gate valve and pressure relief valve with adjustable setting to allow relieving pressure when pressure exceeds an adjustable setting in accordance with technical specifications, drawings and engineer's directions	LS	1		
18.1	Supply and install 6" steel pipe 4mm thick internally and externally coated with backed epoxy for connecting pump, with meters, valves and old network in an around the pump station in accordance with technical specifications, drawings and engineer's directions. Price includes all jacks, accessories, materials and supports needed to connect and support the pipe in place and its connections.	LM	10		
18.2	6" Flanged dresser complete for (16 bar) with two tie rods 60 cm. long diameter of 5"/8 and 4 ears for each dresser.	LS	2		
18.3	Wash out: Executing the main wash out end as drawings. The work shall be complete according to the contract conditions, technical specifications and the engineer approval. Price shall include all work and material needed including a heavy duty 3" flanged gate valve (16 bar), piping and all accessories, fittings and joints needed as shown in drawings.	LS	1		

5 S.Ab.Hadi		18-18/031A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
18.4	Supplying, transporting, delivering and fixing in the room or on the roof where it is possible of the well building 1000 liter PVC tank with suitable steel base and anchors with all required fittings (floats, valves ,pipes ,...etc.) for column shaft bearings. The work shall be complete according to the contract condition, technical specification, technical drawings and the engineer approval.	LS	1		
19	Lighting Fixtures and Accessories Note: work for lighting fixtures is to include supply of the fixtures specified, installation of same connection, wiring, commissioning, lamps, tubes, starter louvers, duct and all other details, for a complete lighting system in the station. All wiring shall be placed in PVC hoses installed in the walls and covered with plaster. Parts to be installed include the following:				
19.1	Type (A) 2x36w fluorescent surface mounted light fixture IP65 according to technical drawings.	LS	4		
19.2	Type (B) 1x20w emergency 10 hours duration lighting fixture according to technical drawings.	LS	2		
19.3	Type (c) 200w halogen outdoor light fixture IP54 according to technical drawings.	LS	1		
19.4	A single phase 220 volts power outlet water resistant according to technical drawings.	LS	2		
19.5	A three phase 380V power outlet water resistant according to drawings.	LS	1		
20	Supply and install internal plastering for walls, columns, arches drop beams, soffits of slabs & beams, shaft walls and ceiling composed of 3 coats, a bond coat 1cement:3 sand, base coat 1:4, and finish coat 1:5. The price includes material and labor and subject to Engineer Approval.	SM	290		
21	Supply and install emulsion paint for plastered walls composed of one coat of Tambour fill, 2 coats of putty and 3coats of emulsion.	SM	240		
22	Supply and apply polycid paint for ceiling and walls wherever required, composed of one coat of Tambour fill and minimum2 coats of polycid.	SM	50		
23	Supply and apply superlac paint for all existing and proposed steel works (doors , windows, hoist , ...etc) and wherever required ,composed of one coat of base coat and minimum2 coats of superlac paint	LS	1		
24	Supply and cast Reinforced concrete B250 for floor slab with minimum thickness 10cm, the price includes supply and install steel reinforcement 8mm bars @20 cm c/c in both directions .The price shall include surface leveling, mechanical/manual finishing, curing and all related works and subject to Engineer's Approval.	CM	5		

5 S.Ab.Hadi		18-18/031A			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
	Subtotal				
	Provisional Item				
25	Supply and install a diesel electric generator, 3 phase, 380 volts, 50 Hz and 90 horse power, 60KVA, 90 Amp.	LS	1		
	Total Amount				

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6 Al –Razazah					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
1	Carefully dismantle the existing vertical turbine pump unit, motor, pipes and any other parts inside and outside the pump room and to be removed and delivered as instructed by the engineer. The work shall also include all needed equipment (hoist, tripod, crane... etc.)To complete the work as required. The work shall be complete according to the contract condition, technical specification and the engineer’s directions and approval.	LS	1		
2	Supply, transport, install and operate at site a vertical Turbine pump with none return valve and all the accessories it needs to get a working system as described in attached technical specifications $Q=40m^3/hr$,T.d.H=180m at best efficiency .Pump setting =94m.b.g.l , At max. Speed (n) = 1800 r.p.m. Recommended O.D of pump = 8”, Shut off head not less than 220 m. Min. Efficiency not less than 70% at operating point. Vertical Turbine Assembly Bowls-Cast Iron A48 CI.30, internally porcelain, externally coated with backed epoxy, bowl maximal diameter 8". Impellers-Zinc Free Bronze (Enclosed type). Bowl Bearings- High-lead Tin bronze B584 C937. Turbine Shaft stainless steel -SS A276 17-4PH Grade 630 with diameter >35 mm. Bowl Bolts-SS A276 Type 316.Suction Strainer-SS A276 type 316.	LS	1		
3.1	Supply and install a spiral bevel right angle gear drive (65HP), Hollow shaft, with heavy thrust capacity 1500 RPM, (1:1.2 ratio), service factor 1.5, Including non-reverse ratchet, drive shaft nut and key. The motor (rated speed 1500 RPM) shall be connected with the gear box through the horizontal drive shaft. Alignment need to be according to manufacturer recommendations.	LS	1		
3.2	Supply and install Cast Iron A48 CI.30 6"-6" discharge flange dimensions according to ASA 150 internally and externally coated with baked epoxy, including Stuffing box and SS 17-4PH head shaft complete with all necessary parts and fittings needed to connect it to the top existing 6" rising pipes column and electric motor with horizontal shaft (existing), and it must have (2) openings for 1" PVC pipes and high pressure gland packing sealing arrangement, with Burgmann Buraflon type PTFE impregnated robes shall be installed between the sole plate and the discharge head.	No.	1		
3.3	Supply and install a suitable discharge head base plate UNS G 10200-ST.37 plate, dimensions 1000-1000-20 mm, coated with backed epoxy, matched to the discharge head. With 2 holes 1" to be fixed at the concrete foundation of the well .The steel plate shall be welded with the well casing.	No.	1		

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6 Al –Razazah					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
4	Supply and install a well column pipe 6"(3m.l/each piece), schedule 40, 10' threaded A53 GR.B welded pipes, internally and externally coated with backed epoxy, including threaded couplings with any other accessories to complete the work.	LM	94		
5	Supply and install a 416 Stainless steel shaft 35 mm in diameter-10' threaded A582 SS416 hardened and tempered, heat treated and polished H08 shafts, including A 582 SS416 threaded coupling(extra strong). Bearing retainer-threaded bronze B584-836 retainers, including Neoprene rubber C462-65 bearing and any other parts needed to complete the work.	LM	94		
6	<p>Electric Power Control, Switch and Distribution Board:</p> <p>Supply, Install, Connect and complete in place and perfect operational manner a main power control switch and distribution board built in a dust tight, water proof IP65 steel sheet cabinet (2mm thick) rust free, factory made with front door and lock (gray thermally painted). The top of this cabinet is 180cm from slap on grade and its base is protected by 10cm cement block. All wiring, busbars and marking terminal unit and electric company kWh meter are to be in this power cabinet. Change over power switch (to enable supplying the power cabinet from 2 different 3 phase power sources), On/Off push button, emergency button, warning lamps, alarm, 3 analog ammeters and 1 volt meter (phase voltage indication with selector switch). For measuring the input ampere and volt of the motor have to be installed on the front door of the cabinet. Cabinet's body must be connected to earthing electrodes. Cabinet's shop drawing and measurments must be submitted and approved before fabrication. the cabinet should include a soft starter (appropriate for the motor power) with all protection release timers, Fuses, circuit breakers, bypass contactors and any other components necessary for protection of the 3 phase motor and the pump according to the attached technical drawings and the engineer's directions. All circuit breakers must be secured through thermal and magnetic combination action while over load relays should be of thermal type with calibration adjustable between 0.8 and 1.5 of the motor full current. Relays, circuit breakers, contactors, timers and any other protection components should be of best quality as Merlin Gerlin, Moeller, ABB or equivalent. In addition the cabinet should include at least the followings:</p>	LS	1		
6.1	Over load protection adjustable 0.8 – 1.5 Nominal motor current, short circuit capacity 4PX25 KA surge arrestors of replicable type.				

6 Al –Razazah					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
6.2	Protection relays for: phase failure, phase sequence, short circuit and earth leakage.				
6.3	Digital multimeter for measuring: V, A, kW, Hz, PF.				
6.4	Warning lamps for soft star fault, over load, No flow, High pressure, Low pressure and Low water level.				
6.5	Capacitor bank with discharge resistors, reactors and contactor operating at 3 phase 400 V, 50 Hz to improve the power factor of the motor to achieve 0.95 lagging according to drawings and engineers directions.				
6.6	Earthing unit: Earth equalizer, Comprising C14 box, Copper B.B. 70 mm ² foundation line 3 earth electrodes (D> 19 mm, L = 1.5m) and any other necessary material or components to achieve an earthing resistance of R _{Earth} <1.5 Ohm for the whole pumping station. Earthing unit should be properly connected to the power cabinet in the well house and to other components according to the technical drawings.				
7	Supply and install a pressure switch 1-20 bars and connect it with the control panel unit. Price includes all required cables and accessories in accordance with Specifications, drawings and/or engineer's directions.	LS	1		
8	Supply and install an electric flow switch suitable for 6" pipe powered by a 24 V source, including all cables and accessories to connect it to the control board in accordance with technical specifications, drawings and/or engineers directions.	LS	1		
9	Supply and install two PVC pipe sleeves 1" in diameter, schedule 40 to be used as sleeves in the well for the level measurements and level monitoring using a sensor and a cable to be connected to the control board. PVC pipes shall be perforated below static water surface elevations and bottom ends plugged. Perforation should be at least 6 mm holes at a spacing of 15 cm should be drilled above the plugged end of each pipe. The PVC pipes shall be appropriately attached in place to column pipe using suitable clamps every 2 meters or less. The PVC pipe shall extend into the discharge head plate.	LM	188		
10	Supply and install a water level sensor includes cable to connect with electric control board in accordance with technical Specifications and/or engineer's directions.	LS	1		
11	Supply and install 6" water meter (16 bar) complete with flanges, gaskets, bolts and nuts all according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		

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6 Al –Razazah					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
12	Supply and install 6" strainer upstream the water meter in accordance with technical specifications, drawings and engineer's directions.	LS	1		
13.1	Supply and install 6" one way valve (check valve, 16 bar) in accordance with attached technical specifications, drawings and engineer's directions.	LS	1		
13.2	6" Rising stem gate valve for 16 bar complete with flanges, gaskets, bolts and nuts according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		
14	Supply and install pressure gages in accordance with technical specifications, drawings and engineers directions.	LS	1		
15	Supply and install 2" gate and air release valves in accordance with technical specifications, drawings and engineer's directions.	LS	1		
16	Supply and install 2" gate and a pressure relief valve with adjustable setting to allow relieving pressure when pressure exceeds an adjustable setting in accordance with technical specifications, drawings and engineer's directions.	LS	1		
17.1	Supply and install 6" steel pipe 4mm thick internally and externally coated with backed epoxy for connecting pump, with meters, valves and old network in an around the pump station in accordance with technical specifications, drawings and engineer's directions. Price includes all jacks, accessories, materials and supports needed to connect and support the pipe in place and its connections.	LM	10		
17.2	6" Flanged dresser complete for (16 bar) with two tie rods 60 cm. long diameter of 5"/8 and 4 ears for each dresser.	LS	2		
17.3	Wash out: Executing the main wash out end as shown in drawings. The work shall be completed according to the contract condition, technical specification and the engineer's approval. Price shall include all work and material needed including a heavy duty 3" flanged gate valve (16 bar) all piping and all accessories, fittings and joints needed as shown in drawings.	LS	1		
17.4	Supplying, transporting, delivering and fixing in the room or on the roof where it is possible of the well building 1000 liter PVC tank with suitable steel base and anchors with all required fittings (floats, valves ,pipes ,...etc.) for cooling shaft bearings. The work shall be complete according to the contract condition, technical specification, technical drawings and the engineer approval.	LS	1		

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6 Al –Razazah					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
18	Lighting Fixtures and Accessories Note: work for lighting fixtures is to include supply of the fixtures specified, installation of same connection, wiring, commissioning, lamps, tubes, starter louvers, duct and all other details, for a complete lighting system in the station. All wiring shall be placed in PVC hoses installed in the walls and covered with plaster. Parts to be installed include the following:				
18.1	Type (A) 2x36w fluorescent surface mounted light fixture IP65 according to technical drawings.	LS	3		
18.2	Type (B) 1x20w emergency 10 hours duration lighting fixture according to technical drawings.	LS	1		
18.3	Type (c) 200w halogen outdoor light fixture IP54 according to technical drawings.	LS	1		
18.4	A single phase 220 volts power outlet water resistant according to technical drawings.	LS	2		
18.5	A three phase 380V power outlet water resistant according to drawings.	LS	1		
	Subtotal				
	Provisional Items				
1	Supply and install internal plastering for walls, columns, arches drop beams, soffits of slabs & beams, shaft walls and ceiling composed of 3 coats, a bond coat 1cement:3 sand, base coat 1:4, and finish coat 1:5. The price includes material and labor and subject to Engineer Approval.	SM	240		
2	Supply and install emulsion paint for plastered walls composed of one coat of Tambour fill, 2 coats of putty and 3coats of emulsion.	SM	190		
3	Supply and apply polycid paint for ceiling and walls wherever required, composed of one coat of Tambour fill and minimum2 coats of polycid.	SM	50		
4	Supply and cast Reinforced concrete B250 for floor slab with minimum thickness 10cm, the price includes supply and install steel reinforcement 8mm bars @20 cm c/c in both directions .The price shall include surface leveling, mechanical/manual finishing, curing and all related works and subject to Engineer's Approval.	CM	5		
5	Supply and build hollow concrete blocks 20 cm thick for walls according to specifications and as shown in drawings, the price includes supply and cast B200 concrete lintel 20 cm high for doors and windows and the supply & installation of steel reinforcement 4 bars 12 mm diameter with stirrups (8 mm @ 20 cm c/c). The price includes supply and cast B300 concrete for 6 columns 25x25 cm as shown in drawings & installation of steel reinforcement 6 bars 12 mm diameter with	SM	60		

6 Al –Razazah					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
	stirrups 8mm @20cm c/c, all related works as per drawings ,specifications and Engineer Approval.				
6	Supply and cast Reinforced concrete B250 for roof slab with minimum thickness 20 cm, the price includes supply and install steel reinforcement 10mm bars @ 15 cm c/c in both directions .The price shall include surface leveling, mechanical finishing, curing and all related works according to drawings and subject to Engineer's Approval.	CM	5		
7	Fabricate supply and install steel doors on steel angel 5*5 cm and steel sheet 2mm thick complete with all accessories such as heavy duty roller hinges, water flushing, Wally cylinder locks, and all fixing accessories, The price includes supply and apply 2 coats of anti rust primer, Tambour synthetic patch putty and 3 coats of Tambour superlac. Shop drawings must be submitted and approved before fabrication. Dimensions as shown in drawings	LS	2		
8	Supply and cast Reinforced concrete B300 for: <ol style="list-style-type: none"> 1) Roof slab with minimum thickness 20cm, the price includes supply and install steel reinforcement 10mm bars @ 15 cm c/c in both directions. 2) Strip footings under walls (50x50 cm), price includes excavation and steel reinforcement as shown in drawings. 3) Reinforced concrete for two columns extended over the roof to be used for maintenance purposes with height of 3 meters, cross section of 25x25 cm, steel reinforcement 6-12mm with stirrups 8mm @ 20 cm c/c as shown in drawings. The price shall include surface leveling, mechanical finishing, curing and all related works according to drawings and subject to Engineer's Approval.	CM	8		

6 Al –Razazah					
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
9	Supply, fabricate and install 5 steel windows 1.3 x 1.1, 1.1x1.1 meters and 1.1x1.1 meters as shown in drawings. Each window shall include: steel panels for the interior side with thickness at least 2mm and enough reinforcement around panels of at least 2x2 cm steel bars, frame of 3x3 cm angles with a thickness of 2mm. The exterior side of the each window shall be a metal screen window with screens of galvanized wires at least 0.5 mm thick, screen openings 1x1 cm, reinforced by steel plates of 2 cm x 2mm in both directions. Spacing between reinforcing plates shall not exceed 30 cm in both horizontal and vertical directions. Steel plates shall be placed on both sides of the screen and welded to the frame of the window which should be formed of steel angles of 3cmx3cmx2mm or more. All steel work shall be painted with one coats of base coat and minimum of 2 coats of superlac paint.	LS	3		
	Provisional Items Subtotal				
	Total Amount				

7 H.Salman		15-17/015			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
1	Carefully dismantle the existing vertical turbine pump unit, motor, pipes and any other parts inside and outside the pump room and to be removed and delivered as instructed by the engineer. The work shall also include all needed equipment (hoist, tripod, crane... etc.)To complete the work as required. The work shall be complete according to the contract condition, technical specification and the engineer approval.	LS	1		
2	Supply, transport, install and operate at site a vertical Turbine pump with none return valve and all the accessories it needs to get a working system as described in attached technical specifications Q=100m ³ /hr ,T.d.H=110m at best efficiency .Pump setting =73m.b.g.l , At max. Speed (n) = 1500 r.p.m .Recommended O.D of pump = 8", Shut off head not less than 160 m. Min. Efficiency not less than 70% at operating point. Vertical Turbine Assembly Bowls-Cast Iron A48 CI.30,internally porcelain, externally coated with backed epoxy, bowl maximal diameter 8".Impellers-Zinc Free Bronze(Enclosed type).Bowl Bearings- High-lead Tin bronze B584 C937. Turbine Shaft stainless steel-SS A276 17-4PH Grade 630 with diameter > 35 mm. Bowl Bolts-SS A276 Type 316. Suction Strainer-SS A276 type 316.	LS	1		
3.1	Supply and install a discharge head with 90/6" steel elbow, Cast Iron A48 CI.30 6"-6" discharge flange dimensions according to ASA 150 internally and externally coated with baked epoxy, including Stuffing box and SS 17-4PH head shaft complete with all necessary parts and fittings needed to connect it to the top existing 6" rising pipes column and vertical electric motor and it must have (2) openings for 1" p.v.c pipes. And high pressure gland packing sealing arrangement, with Burgmann Buraflon type PTFE impregnated robes shall be installed between the sole plate and the discharge head.	LS	1		
3.2	Discharge head plate: Supply and install a suitable discharge head base plate UNS G 10200-ST.37 plate ,dimensions 1000-1000-20 mm, coated with backed epoxy ,matched to the discharge head. With 2 holes 1" to be fixed at the concrete foundation of the well .The steel plate shall be welded with the well casing. The 5x5x3mm steel angle shall be welded with the steel plate and connected with the well head pad by SS anchors.	LS	1		
4	Supply and install a well column pipe 6"(3m.l/each piece), schedule 40, 10' threaded A53 GR.B welded pipes, internally and externally coated with backed epoxy, including threaded couplings with any other accessories to complete the work.	LM	73		

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7 H.Salman		15-17/015			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
5	Supply, install and operate a vertical shaft 3 phase induction motor with enclosed fan cooling (squirrel cage) n= 1500 RPM, 80 horse power, 380Vrms,50Hz, Efficiency>83%, P.F>0.87 water proof with all protections needed, suitable to drive the above mentioned pump without over loading with thermistors, drive shaft, nut and key...etc, and all fittings. The price includes the cable and all necessary accessories for the installation.	LS	1		
6	Supply and install a 416 Stainless steel shaft 35 mm in diameter-10' threaded A582 SS416 hardened and tempered, heat treated and polished H08 shafts ,including A582 SS416 threaded coupling(extra strong).Bearing retainer-threaded bronze B584-836 retainers, including Neoprene rubber C462-65 bearing and any other parts needed to complete the work.	LM	73		
7	<p>Electric Power Control, Switch and Distribution Board</p> <p>Supply, Install, Connect and complete in place and perfect operational manner a main power control switch and distribution board built in a dust tight, water proof IP65 steel sheet cabinet (2mm thick) rust free, factory made with front door and lock (gray thermally painted).</p> <p>The top of this cabinet is 180cm from slap on grade and its base is protected by 10cm cement block. All wiring, busbars and marking terminal unit and electric company kWh meter are to be in this power cabinet. Change over power switch (to enable supplying the power cabinet from 2 different 3 phase power sources), On/Off push button, emergency button, warning lamps, alarm, 3 analog ammeters and 1 volt meter (phase voltage indication with selector switch). For measuring the input ampere and volt of the motor have to be installed on the front door of the cabinet. Cabinet's body must be connected to earthing electrodes. Cabinet's shop drawing and measurements must be submitted and approved before fabrication. the cabinet should include a soft starter (appropriate for the motor power) with all protection relays timers, Fuses, circuit breakers, bypass contactors and any other components necessary for protection of the 3 phase motor and the pump according to the attached technical drawings and the engineer's directions. All circuit breakers must be secured through thermal and magnetic combination action while over load relays should be of thermal type with calibration adjustable between 0.8 and 1.5 of the motor full current. Relays, circuit breakers, contactors, timers and any other protection components should be of best quality as Merlin Gerlin, Moeller, ABB or equivalent. In addition the cabinet should include at least the followings:</p>	LS	1		
7.1	Over load protection adjustable 0.8 – 1.5 Nominal motor current, short circuit capacity 4PX25 KA surge arrestors of replicable type.				
7.2	Protection relays for: phase failure, phase sequence, short circuit and earth leakage.				
7.3	Digital multimeter for measuring: V, A, kW, Hz, PF.				

7 H.Salman		15-17/015			
	Item	Unit	QTY	Unit Price (USD)	Total (USD)
7.4	Warning lamps for soft star fault, over load, No flow, High pressure, Low pressure and Low water level.				
7.5	Capacitor bank with discharge resistors, reactors and contactor operating at 3 phase 400 V, 50 Hz to improve the power factor of the motor to achieve 0.95 lagging according to drawings and engineers directions.				
7.6	Earthing unit: Earth equalizer, Comprising C14 box, Copper B.B. 70 mm ² foundation line 3 earth electrodes (D> 19 mm, L = 1.5m) and any other necessary material or components to achieve an earthing resistance of R _{Earth} <1.5 Ohm for the whole pumping station. Earthing unit should be properly connected to the power cabinet in the well house and to other components according to the technical drawings.				
8	Supply and install a pressure switch 1-15 bars and connect it with the control panel unit. Price includes all required cables and accessories in accordance with Specifications, drawings and/or engineer's directions.	LS	1		
9	Supply and install an electric flow switch suitable for 6" pipe powered by a 24 V source, including all cables and accessories to connect it to the control board in accordance with technical specifications, drawings and/or engineers directions.	LS	1		
10	Supply and install two PVC pipe sleeves 1" in diameter, schedule 40 to be used as sleeves in the well for the level measurements and level monitoring using a sensor and a cable to be connected to the control board. PVC pipes shall be perforated below static water surface elevations and bottom ends plugged. Perforations should be at least 6 mm holes at spacing of 15 cm should be drilled above the plugged end of each pipe. The PVC pipes shall be appropriately attached in place to column pipe using suitable clamps every 2 meters or less. The PVC pipe shall extend into the discharge head plate according to engineer's directions.	LM	146		
11	Supply and install a water level sensor includes cable to connect with electric control board in accordance with technical Specifications and/or engineer's directions.	LS	1		
12	Install existing flow meter inside well room and supply and install 6" water meter (16 bar) complete with flanges, gaskets, bolts and nuts all according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		
13	Supply and install 6" strainer upstream the water meter in accordance with technical specifications, drawings and engineer's directions.	LS	1		

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	Item	Unit	QTY	Unit Price (USD)	Total (USD)
14.1	Supply and install 6" one way valve (check valve, 16 bar) in accordance with attached technical specifications, drawings and engineer's directions.	LS	1		
14.2	6" Rising stem gate valve for 16 bar complete with flanges, gaskets, bolts and nuts according to ISO standards and in accordance with drawings and engineer's directions.	LS	1		
15	Supply and install pressure gages in accordance with technical specifications, drawings and engineers directions.	LS	1		
16	Supply and install 2" gate and air release valves in accordance with technical specifications, drawings and engineer's directions.	LS	1		
17	Supply and install 2" gate valve and a pressure relief valve with adjustable setting to allow relieving pressure when pressure exceeds an adjustable setting in accordance with technical specifications, drawings and engineer's directions	LS	1		
18.1	Supply and install 6" steel pipe 4mm thick internally and externally coated with backed epoxy for connecting pump, with meters, valves and old network in an around the pump station in accordance with technical specifications and engineer's directions.	LM	10		
18.2	6" Flanged dresser complete for (16 bar) with two tie rods 60 cm. long diameter of 5"/8 and 4 ears for each dresser.	LS	2		
18.3	Wash out: Executing the main wash out end as drawings. The work shall be complete according to the contract conditions, drawings, technical specifications and the engineer approval. Price shall include all work and material needed including a heavy duty 3" flanged gate valve (16 bar) and all piping and accessories, their fittings and joints needed as shown in drawings.	LS	1		
18.4	Supplying, transporting, delivering and fixing in the room or on the roof where it is possible of the well building 1000 liter PVC tank with suitable steel base and anchors with all required fittings (floats, valves ,pipes ,...etc.) for shaft cooling. The work shall be complete according to the contract condition, technical specifications, technical drawings and the engineer approval.	LS	1		
19	Lighting Fixtures and Accessories Note: work for lighting fixtures is to include supply of the fixtures specified, installation of same connection, wiring, commissioning, lamps, tubes, starter louvers, duct and all other details, for a complete lighting system in the station. All wiring shall be placed in PVC hoses installed in the walls and covered with plaster. Parts to be installed include the following:				

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	Item	Unit	QTY	Unit Price (USD)	Total (USD)
19.1	Type (A) 2x36w fluorescent surface mounted light fixture IP65 according to technical drawings.	LS	3		
19.2	Type (B) 1x20w emergency 10 hours duration lighting fixture according to technical drawings.	LS	1		
19.3	Type (c) 200w halogen outdoor light fixture IP54 according to technical drawings.	LS	1		
19.4	A single phase 220 volts power outlet water resistant according to technical drawings.	LS	2		
19.5	A three phase 380V power outlet water resistant according to drawings.	LS	1		
	Subtotal				
	Provisional Items				
20	Repair existing plaster at locations requiring repairs and edges of windows and doors as directed by engineer. The price includes material and labor and subject to Engineer Approval.	LS	1		
21	Supply and install emulsion paint for plastered walls composed of one coat of Tambour fill, 2 coats of putty and 3coats of emulsion.	SM	220		
22	Supply and apply polycid paint for ceiling and walls wherever required, composed of one coat of Tambour fill and minimum 2 coats of polycid.	SM	80		
23	Supply and apply superlac paint for all existing and proposed steel works (doors , windows, hoist , ...etc) and wherever required ,composed of one coat of base coat and minimum2 coats of superlac paint	LS	1		
24	Supply and cast Reinforced concrete B250 for floor slab with minimum thickness 7cm, the price includes supply and install steel reinforcement 8mm bars @20 cm c/c in both directions .The price shall include surface leveling, mechanical/manual finishing, curing and all related works and subject to Engineer's Approval.	CM	5		
	Provisional Items Subtotal				
	Total Amount				

Main Summary			
Well	(A) Sub Total	(B) Provisional Items Total	(C) Total Amount (A+B)
A.Hadi			
A.Yaesh			
N.Shakaa			
N.Ab.Hadi			
S.Ab.Hadi			
Al -Razazah			
Salman			
Grand Total (USD) – Excluding Value Added Tax			

Grand total sum– total of Column (C) - (in words):

Contractor Name:

Authorized Person Name & Title :

Signature & stamp:

Date :