**المواصفات الفنية**

**The specifications and bill of quantities were used for construction of new groundwater supply project. The unit price in any item in the tables below must include the following notes and conditions as follows:**

* The exact lengths of the required pipes, the exact number of the required fittings and the exact quantities of any other materials will be determined during the implementation of the works.
* The prices of all items and works that will includes (supply, distribution, installation) and include all the costs of all types of materials and all works as man or machines works. This should include all works materials that are necessary to carry on the connections on the main supply water network and connect the chlorination unit.
* The project shall be implemented according to PWA general technical specification for water supply system 1999, and pipes specifications as ISO 4435, Ps 9 -2011.
* Standards specified in these Specifications shall be of the latest editions or shall be according to standards and references which are equivalent
* The requirements of the latest editions of Standard sand References to be taken into consideration without contradiction with these mentioned in the technical specifications.
* For the equivalent standards, certificate of equivalence issued by Palestine Standards Institution (PSI) should be submitted by the contractor at his own expense.
* All the works should be done by coordination with Jayyous Municiplaity and any relevant institution, Submission of shop drawing to be approved by the supervisor engineer before starting any work activity.
* All the works should be include repair any damage of any service at full satisfaction of relevant Contracting Authority, Restoring the existing surface to original status and approval of the Engineer, Testing and flushing of the new pipeline.
* The wining contractor should submit a program of his work capacity based on the available staff and equipments. The price of the materials an installation includes the water pipes tests including the pump Test.
* Supply and Installing a new pumping sets, fitting accessories, Electrical Control Panel, as described in the specifications and The BOQ including all needed instruments that may be needed according to the Engineer

**The total price in this tender includes all the costs to carry on the following works (even if they are not mentioned in BoQ items.**

* Carry out pump unit miscellaneous electrical and mechanical works as in the BOQ.
* Submit as built drawings for implemented pipelines and other works
* All necessary works to carry the main connection and for all types of fittings between the water source (groundwater well) and main transmission pipeline at the site.
* Installing all fitting and make all connections according to the attached BOQ and drawings.

**Terms of Executions – Commitments of Works**

* 1.1 The Contractor shall commence work within 3 (three) days from the date of the start-up order.
* 1.2 The Contractor shall execute and complete the Works and in accordance with generally accepted construction practices, observing all local standards and implementing all regulations in force. The Contractor guarantees that the principles and methods of construction and the materials used are suitable for the local conditions.
* 1.3 The Contractor shall supply main submersible pump and all the pipes and equipment and fittings needed to the implementation of works according to the tender documents.
* 1.4 The Contractor shall supply all needed materials, coordinating with the supervisor engineer and according the specifications mentioned in the tender documents.
* 1.5 The Contractor shall supply and assemble the valves and needed parts according the specifications mentioned in the tender documents and according the directions of supervising engineers.
* 1.6 All the goods and supplies purchased for the implementation of the works must be new and renewed.
* 1.7 The Contractor will receive all the work instructions from the supervising engineer.
* 1.8 Before proceeding with the order of the needed materials, the Contractor shall get a written approval from the supervising engineers.
* 1.9 All fittings and equipments must be subject to in site testing and approved in writing by supervising engineer. The supervising engineer will make sure that all the fittings and equipment match with the specifications agreed in this contract, then they will issue a written approval.
* 1.10 The Contractor shall be responsible of substituting any part or material, or disjoin and assemble other parts, if these are not conforming to the specifications stated in this contract.
* 1.11 The Contractor shall complete all works including testing and operating all parts of the project. The Contractor shall check and operate the pump and the control panel for all possible modes of operation.
* 1.12 The Contractor will complete all works in all parts and he shall not leave any parts not achieved.
* 1.13 The Contractor shall submit a weekly plan of activities and locations in which he will work.
* 1.15 The Contractor shall document (photos, and/or video films) all works phases - before, during and after finishing the works - in all locations by photographic pictures.
* 1.16 The Contractor shall be responsible of guarding and safety the materials and location during the implementation process.
* 1.17 The Contractor shall clean and remove all rubbishes and transfer it to the suitable place out of project location.
* 1.18 The Contractor shall prepare and fix logo panel in project locations according the mentioned specifications in agreement conditions of tender documents (see. Visibility Panels).
* 1.19 The contractor should prepare materials samples, according to the attached specifications and drawing. Then the supervisor engineer will inspect its details and see if there is any thing missing or requires modification. After making all changes, the contractor will get an approval letter by the supervisor engineer to supply the materials with specified quantities and should be exactly as the final approved sample.
* 1.20 The contractor should handle all the traffic safety measures during work and insure secure working times.
* 1.21 The prices in this tender include the reparation and/or compensation for any damage that may happen to the surrounding environment during the project implementation. This includes damages to the roads, stonewalls, asphalt and concrete structures, cesspits…etc. The contractor should bring back the effected structure to its original conditions and function.
* 1.22 This project will be implemented at new ground water well in Jayyous, therefore; the contractor is responsible to get all ways of access and supply the materials and implement the project in this area; moreover the contactor must be aware that he may face work stoppage or seizing of his equipment; the contractor must be prepared for all that and the contracting authority is not responsible for any kind of loss or damages (and with no financial compensation) that may happen to the contractor working staff or equipment and power plant and machines. The contractor should put a flexible work plan (choose the suitable times and machines of work) that takes into consideration the worksite conditions and avoid as possible all such warns to stop the work.

###### **The Electrical Mechanical Works :-**

1. Supplying, delivering, and installing for Jayyous work site an electrical full automatic control panel and the price includes all types and sizes of electric cables to connect with the main power source (Municipality Transformer) and control panel. It includes inverter (with minimum harmonics) and being water proof electrical board (control panel) to drive the motor of the booster pumping unit and shall be used to start, run, stop, protect and control the above mentioned motor . The electrical board shall be made of steel frame 2.0 mm, thermal paint and insulation IP66 of three compartments.
2. The main board shall be constructed in a form of three cabinets separated, located together against the wall and anchored to the floor by concrete foundation. The first cabinet for utility's Electric meter, and the second for pump electrical motor, and the third for control.
3. The main elect. Panel shall be painted in accordance with the rules for paintings and painted with two coats of zinc chromate primer and red oxide antirust pained at least 60 microns thick, and final light green or other color paint at least 30 microns thick.
4. Executing all connection between the various compartments and from the compartment to the doors and all the output connections shall be made by means of terminals corresponding is size and cross-section of conductors.
5. Nameplates and as built drawings shall be mounted at the front of the board behind the doors and above every switch and group of lamps.
6. Executing an earthing unit (4 connections) complete by using suitable electrical bass bars as needed and fixed a cable bridges between the fittings and the main earth connections, and the all earthing resistant not increase than 2 ohm. Only.
7. Executing all electrical connections complete between the Power Supply, main Electrical panel. , Electrical Motor and other fitting to complete the work as needed
8. The work also include supplying all materials, cables and wires needed to finish all the work

###### **Conditions of Control.**

* The proposed new pump unit shall pump water directly from the aquifer, through pumping pipe line 6" to the main elevated distribution tank in the town
* Power Supply (3ph-380/440 v - 50 Hz).
* The control scheme shall utilize a pressure barrel with 2- pressure switches to sense the pump outlet state and the upper Res. State.
* The pump must stop when the flow switch indicates that there is no water flow after a time delay (1-60 sec) and it should not be permitted to work again without manual start (Reset).
* The electrical motor for the pump must stop after a time delay (1-60sec) when the high pressure switch indicates that high pressure on the outlet line is more than must be and it should be started automatically after a time delay (1-10hr).
* The elect. Motor for the pump must stop after a time delay (1-60 sec) when the pressure out let comes down and the pressure switch indicate that the pressure is less than it must be and it should not be permitted to work again without manual start (Reset).
* The pumping unit could be operated automatically or manually, with or without a timing clock as desired with all protection control.
* The wiring inside the main electrical board should utilize numbered connect plug and trenches.
* The electrical panel for the control system must be supplied with DC current at 24v.
* Install suitable capacitor at full load, with complete protection as needed (3ph-380/440 v+ H.R.C fuses).
* The contractor should handle an (As Built Drawing) to the supervision Engineer.