



Drilling of a production Deep Well in Turra Ramtha District Irbid Governorate

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Subject: Production deep well in Turra/ Ramtha District/ Irbid Governorate

1. Technical Specifications

1.1 Introduction – Section 1 Specifications

ACTED is soliciting bids for drilling an 860 meters' deep production well in the subject area, (end of B2/ A7 layer) subject to the geologist and Engineer recommendations.

Experienced firms in this field are invited to submit their bids as per the attached B.o.Q.s

1.2 Scope of Work

First: Drilling a 26" diameter and encasing it with a 20" diameter casing pipes (conductor pipe) fixed and supported by a solid layer and concrete mix to protect the upper layers from falling. 48 hours will be allocated for curing the concrete, in addition to treating the concrete with a fast curing agent like Gypson or Calcium chloride. (CaCl₂).

Second: Continue drilling a 17 ½ " bore till reaching depth of a 413 meters (20 meters below the B3 layer) as per the Geological Engineer Satisfaction where the B3 layer ends.

Third: Perform a Geophysics photography for the drilled layers. And perform the analysis of the photographs to decide about the openings (perforations or cutting) of the casing pipe in the B2/ A7 in a value of 2 %.

Forth: Supply and install 14" diameter casing pipes welded according to the requirements derived from Geophysics photography.

Fifth: Isolation by cementation of the B3 layer extended 20 meters into the B2/A7. Thickness of cementing will be decided by the Geological Engineer in light of the Geophysical photography.

Sixth: Continue drilling a 12 ¼ " bore till reaching a depth of 863 (10 meters deeper than end of B2/A7).

Seventh: Supply and install a 10 ¾ " diameter casing pipes welded according to the requirements derived from Geophysics photography.

Eighth: The Contractor undertakes to encase the well till the final depth (10 meters deeper than the end of B2/A7 layer).

Ninth: The Contractor will perform all the required works in coordination with the supervising engineer. Moving from any phase of the construction to the next phase, entails the written approval of the supervising engineer.

1.3 Explanatory Specifications

1.3.1 Casing Pipes: As per American Society for Testing and Materials (ASTM) & The American Petroleum Institute (API) International standards.

1.3.2 Air lifting: In case the drilling is by using Bentonite only: - Two lines of pipes are descended in phases similar to the cut casing pipes an outer of 4" to 5" diameter, and 1" inner pipe. This activity will last for 60 hours to the engineer's satisfaction.

1.3.3 The concrete mix casted around the 20" casing pipe should have a composition of 5 tins (100 cubic decimeters) of sand for 50 Kgs of cement.

1.3.4 Well Final Test:

After the completion of the well pump test; a temperature log test to examine the final depth of the well will be performed by the Contractor and attended by the supervising committee.

The well deposits thickness should not exceed 1.5 % of the well final depth.

Otherwise the Contractor has to clean the well from the deposits at his own expense.

1.3.5 Geophysical Photography:

Comprises:

- a) Short log resistivity.
- b) Long log, resistivity.
- c) Self-potential.
- d) Single point resistance.
- e) Gamma ray.

The data will be kept on a CD. Two copies are to be submitted to the Engineer.

A minimum of 24 hours will be granted to the engineer to review the CDs and decide about the positioning of cut parts in the saturated layers.

1.3.6 Well Washing

If Bentonite drilling was adopted, the well should be washed with water first by a perforated pipe.

The quantity of washing water should be double the well volume.

The washing of 7 Kg of Hexa Mita Poly Phosphate water should contain additives or (Tri Sodium Poly Phosphate) will be added to each 100 gallons of water, in addition to 0.9 Kg of Sodium Hypochlorite.

The washing water should be injected at the perforated parts of well casing.

Perforated (cut) parts length depends on the productive layers.

6 hours are needed to complete the reaction of the washing water with the Bentonite.

After that another water washing of the well will be performed till the produced water from the well becomes clear.

This activity should be completed to the Engineer's satisfaction at no extra cost to the Owner.

1.3.7 Well Pump Test

- a) A five stage test, three hours each followed by a 24 hours recovery.
- b) The pump capacity should be approved by the engineer.
- c) Well pump test period is 96 hours.

1.3.8 Well Head Arrangement

A concrete base of 3X3X0.5 meters will be installed at the well head.

1.3.9 Water Samples

During the pump test, samples will be taken to realize the Jordan Standard for potable water comprising the Bacteriological, Physics, Chemist, Radioactive Tests. For three consequent days.

After running the well for 48 hours to the wash out outlet, and the absence of torpidity.

Productive well at Turra-Ramtha-Irbid Governorate

2. Bill of Quantities B.O.Q.

No.	Description	Unit	Quantity	Unit Price (JOD)	Total (JOD)
1.	26" Drilling	Meter	10		
2.	Supply and install welded 20" diam casing pipes	Meter	10		
3.	Concrete poured behind the 20" diam casing pipes	L.S	1		
4.	17 ½ " Drilling	Meter	403		
5.	Perform the geophysical photography	L.S	1		
6.	Supply and install welded 14" diam casing pipes	Meter	403		
7.	12 ¼ " Drilling	Meter	450		
8.	Supply and install welded 10 ¾ " diam casing pipes	Meter	450		
9.	Cut (perforate) 10 ¾ " casing pipes in the appropriate length	Meter	200		
10.	Well head arrangement as described in item 3.8 of the explanatory specifications	L.S	1		
11.	Well washing as described in item 3.6, 3.2, as per explanatory specifications	Hour	60		
12.	Well pump test as per item 3.7 of the explanatory specifications	L.S	1		
13.	Long term pump test as per item 3.7	Hour	96		
14.	Lab tests as per item 3.9	L.S	1		

3. Special Conditions

- 1- The Contractor will complete the works comprising drilling, incasing and testing the well within 90 days of the commencement order.
- 2- The ACTED engineer has the right to change the works by 20 % of the B.O.Q (except for items No. 12, 13, and 14). And ACTED is not obliged to buy any surplus material after the project completion.
- 3- The Contractor will observe and be responsible for the well safety and will be responsible for any damages during the construction period and responsible to repair any damage that could occur consequent to his acts.
- 4- The Contractor is responsible to supply the water necessary for drilling or drinking purposes as well as any other material or requirements for the completion of the job on his own expense.
- 5- The Contractor will supply all required materials for drilling such as foam, Bentonite, Polymer and casing pipes and accessories as well as testing ... etc.
- 6- The Contractor should provide a current valid licensed, by the Water Authority of Jordan, drilling machine with the capacity of 100,000 lb minimum within one weeks from order to commence. Otherwise a replacement drilling machine should be secured.
- 7- The Contractor should, in case that Bentonite is used for drilling, provide a good quality liquid (density 1.08/ cm³), viscosity = 37 – 42 / seconds, loss of leakage 8 – 10 mL.
The partial or full leakage will be repaired as per the engineer's satisfaction of the added materials and his written approval in advance.
- 8- The Contractor should keep daily records comprising the rate of drilling, type of the drilled material, materials used in the well and casing pipes particulars, as well as a final report comprising the well specifications and contents.
- 9- The Contractor should collect samples of the drilled material and keeping it in nylon bags every meter.
- 10- The Contractor should keep the well plumpness (verticality).
- 11- The Contractor could use any standard known manner for drilling (foam, airlifting or Bentonite). In case of Bentonite drilling, washing and cleaning of the well will be performed as per item 3.2 and 3.6 of the Explanatory Specifications.
- 12- The Contractor should provide a full time on site drilling engineer or geologist to follow up the works and submit the daily reports otherwise the Contractor will be subject to penalty of deducting a sum proportional to the days of absence recommended by the supervision committee as per conditions of contract for structural projects.
- 13- Upon the works completion and equipping the well the Contractor should clean the site and remove all residual of the materials, level and reinstate the site.
- 14- The Contractor will observe all rules and law of Hashemite Kingdom of Jordan.
- 15- The contract price includes site levelling, any excavations needed to complete the job.
- 16- The Contractor will prepare a daily report, comprising the depth and soil type layer, copy to the Engineer.
- 17- The Contractor will deliver a deep well drilled and completed to the final well depth as specified, in the manner he finds necessary, at no extra cost or financial (obligations to the owner).
- 18- Well pump test will be attended and supervised by the Contractor and the Engineer. Samples will be taken and timely sent to the laboratory for analysis.
- 19- The Contractor will submit a final report comprising a well cross sections with casing pipes data, pumping test, laboratory tests immediately after works completion.
- 20- The Contractor will provide for the pumping test a suitable pump unit in coordination with the Owner, the pump test should commence in a maximum of 5 days from the well completion and cleaning.
- 21- Geophysical photography will be performed after each phase of well construction.
The Owner geologist will review the report and issue the casing construction approval and instructions.
- 22- Delays beyond the Contractor's or the Owner's control, could be compensated as time extension at no extra cost to the Client, extension will be assessed by the Engineer.

- 23- The Tender Committee has the right to inspect the Contractors Assets. Prior to contract award to check the Contractor ability to perform well.
- 24- The Contractor will submit for approval of the Engineer and Owner a list of his technical staff.

Please note that ACTED will need to follow EuropAid’s Guidelines concerning the origin of supplies. For more information, Europeaid procurement guidelines are fully detailed in **PRAG** (http://ec.europa.eu/europeaid/prag/welcome.do?header_description=Manuel+DEVCO+des+procedures+financi%C3%A8res+et+contractuelles+Applicable+aux+actions+ext%C3%A9rieures+financ%C3%A9es+par+le+budget+g%C3%A9n%C3%A9ral+de+LUE+et+du+11e+FED&header_keywords=ePrag+%2C+europa&locale=en). In particular, rules of origin & nationality are detailed in section 2.3.1 of PRAG2015, and further in annex A2A.

Name of Bidder’s Authorized Representative: _____

Authorized signature and stamp: _____

Date: _____