



**United Nations Development Programme  
Programme of Assistance To the  
Palestinian People**

**Emergency Water Supply and Rehabilitation Programme  
PAL 10-00052737**

**CONSTRUCTION OF RAFAH TAL EL-SULTAN AREA WATER TANK**

**Bill of Quantities**

**Center for Engineering and Planning (CEP)  
&  
Engineering & Management and Planning (EMCC)**

**CONSTRUCTION OF RAFAH TAL EL-SULTAN AREA WATER TANK**

## CONSTRUCTION OF RAFAH TAL EL-SULTAN AREA WATER TANK

ITEM No	DESCRIPTION	UNIT	QTY.	RATE (US\$)	AMOUNT (US\$)				
<b>B1 - EARTH &amp; EXTERNAL WORKS</b>									
*	<p><b><u>Notes:</u></b></p> <ul style="list-style-type: none"> <li>• <i>Prices for Excavation item shall include the removal of any buried structure not to be part of the proposed construction, including transport of excavated, surplus material and buried structure (not to be part of the proposed construction) to a location approved by the engineer or his representative outside the site, workmanship and any where else, needed, all according to drawings, specifications, conditions and directed instructions by the Engineer or his representative.</i></li> <li>• <i>Quantities of Excavation shall be measured according to the elements' dimensions mentioned in the drawings(engineering measurements)</i></li> <li>• <i>Back-filling item should be in layers (25cm max. each &amp; compaction test 98%). Prices shall includes supply, watering, compacting, transporting, testing and anywhere else, needed, all according to drawings, specifications, conditions and directed instructions by the Engineer or his representative.</i></li> <li>• <i>Suitable Clean Sand should be used for back-filling in layers (25cm max. each &amp; compaction test 98%), selected from the approval excavated soil or imported. Prices shall includes supply, watering, compacting, transporting, testing and anywhere else, needed, all according to drawings, specifications, conditions and directed instructions by the Engineer or his representative.</i></li> <li>• <i>Price should include minimum amount of 15% labour content.</i></li> </ul>								

ITEM No	DESCRIPTION	UNIT	QTY.	RATE (US\$)	AMOUNT (US\$)
1.1	Bulk Excavation of any soil according to the elements' dimensions mentioned in the drawings with all required works.	M <sup>3</sup>	100		
1.2	Backfill at areas as shown on the drawing by using approved Clean Sand with all required works. This item includes the backfilling under the granular base course to maintain the levels of the tank and backfilling of the whole area of the tank land inside and outside retaining walls. All as shown in the drawings, specifications and directed by the Engineer, using suitable material (25cm max. each & compaction test 98%) according to Eng. instructions and specifications.	M <sup>3</sup>	100		
1.3	Supply and install two layers of 25 cm thick granular base course under the tank foundations, well spread, leveled and compacted, including preparation of subgrade, all as according to drawings, specifications, and the engineer's instructions.	M <sup>2</sup>	530		
<b>B1</b>	<b>TOTAL OF BILL B1 (EARTH &amp; EXTERNAL WORKS) - US\$</b>				

ITEM No	DESCRIPTION	UNIT	QTY.	RATE (US\$)	AMOUNT (US\$)
<b>B2 - CONCRETE WORKS</b>					
*	<p><b><u>Notes:</u></b></p> <ul style="list-style-type: none"> <li>Prices for all concrete items shall include shuttering, steel reinforcement, testing for steel reinforcement and concrete, supply and placing of concrete, vibrating, curing, striking, polyethylene sheet (for any concrete contact with the soil), painting for hot bitumen (one coat of primer &amp; min. 2-coats of hot bitumen) underground concrete for external surfaces, workmanship, all ducts, sleeves, opening areas and the concrete surface shall be finished with mechanical steel trowel and the price shall include steel trowelling with smooth face (fair face) and any where else, needed, all according to drawings, specifications, conditions and directed instructions by the Engineer or his representative.</li> <li>The Contractor shall use tie bolts 8mm in the wall shuttering (Battant, minimum cover space 5 cm).</li> <li>Price should include minimum amount of 15% labour content.</li> </ul>				
*	<b><u>CONCRETE (B - 200) :</u></b>				
2.1	Plain concrete B 200, 10cm thick below foundation (base slab) or likes with all required works	M <sup>2</sup>	585		
*	<b><u>CONCRETE (B - 400) :</u></b>				
2.2	Reinforced concrete in Raft Foundations (Base Slab) with all required works	M <sup>3</sup>	290		
2.3	Ditto, but for Walls	M <sup>3</sup>	270		
2.4	Ditto, but for roof slab (Dome)	M <sup>3</sup>	88		
2.5	Ditto, but for Ring Beam	M <sup>3</sup>	25		
*	<b><u>CONCRETE (B - 250) :</u></b>				
2.6	Reinforced concrete for Apron (surface treated with mechanical steel trowel led finish). The price includes Polyethylene sheets, reinforcement T8@15 cm, preparation, compaction, supplying and spreading 15 cm compacted base coarse. All according to the drawings, specifications and engineer's instructions.	M <sup>3</sup>	14		
<b>B2</b>	<b>TOTAL OF BILL B2 (CONCRETE WORKS) - US\$</b>				

ITEM No	DESCRIPTION	UNIT	QTY.	RATE (US\$)	AMOUNT (US\$)
<b>3 - INSULATION WORKS</b>					
*	<b>Notes:</b>				
	<ul style="list-style-type: none"> <li>All the following items shall be completed according to drawings, specifications, conditions and instructions by the Engineer or his representative.</li> <li>Price should include minimum amount of 15% labour content.</li> </ul>				
3.1	Supply and install fix water stopper swelled hydrophilic solid rubber strip (FOSROC type FB253 or equivalent) size 10x250mm cross section construction joint. The price shall include workmanship with all required works	MR	150		
3.2	Supply and install painting for internal faces (walls, footings, ring beams and roof slab) at minimum 2-coats of Epoxy painting (FOSROC type Nito Coat CM210 or equivalent) for wetted surfaces (water). The price includes water testing and workmanship. All according to the specifications, conditions and instructions of the supervisory engineer or his representatives.	M <sup>2</sup>	1400		
3.3	Supply and install painting for external faces (walls, roof slab and ring beam) with one coat of repellent material (Nitro coat SN 522 or equivalent) to fill voids as approved and two coats of Dekguard FC (FOSROC or equivalent) with 200 microns total thickness. The price includes water testing and workmanship. All according to the specifications, conditions and instructions of the supervisory engineer or his representatives.	M <sup>2</sup>	1110		
3.4	Supply and install sheets (Buto Cill FOSROC or equivalent) 400 mm wide and 18 mm thick for joint between wall & ring beam. All according to the drawings, specifications, conditions and instructions of the supervisory engineer or his representatives.	MR	80		
<b>B3</b>	<b>TOTAL OF BILL B3 (INSULATION WORKS) - US\$</b>				

ITEM No	DESCRIPTION	UNIT	QTY.	UNIT PRICE (US\$)	AMOUNT (US\$)
<b>B4</b>	<b>MECHANICAL WORKS</b>				
	<p><b>Note:</b></p> <ul style="list-style-type: none"> <li>The Contractor shall when pricing this Bill take into consideration, include and allow for costs or expenses of all requirements stipulated in the section entitled "General and Preambles" preceding this Bill.</li> <li>The exact lengths of the required pipes, the exact number of the required valves and the exact quantities of concrete will be determined during the implementation of the Works.</li> <li>Price should include all excavation, warning tape backfilling, supporting of trenches and all associated works.</li> <li>The price includes all fittings and supports required for finishing the works.</li> <li>Price should include minimum amount of 15% labour content.</li> </ul>				
4.1	Install 18" diameter X 3/16" thickness steel pipes coated externally with primer and two layers of polyethylene coating and internal cement mortar lining including all required elbows and other fittings as described in the Specifications and as shown on the Drawings and directed by the Engineer ( install only).	<b>LM</b>	12		
4.2	Supply and install 12" diameter X 3/16" thickness steel pipes coated externally with primer and two layers of polyethylene coating and internal cement mortar lining including all required elbows and other fittings as described in the Specifications and as shown on the Drawings and directed by the Engineer.	<b>LM</b>	75		
4.3	Supply and install 8" diameter X 3/16" thickness, galvanized steel pipe for ventilation, including stainless steel insect screen, fittings, supports and elbows. All according to the specifications, drawings and instructions of the supervisory engineer or his representatives.	<b>LM</b>	4		
4.4	Supply and install 8" diameter (SN 8). UPVC pipe including the required elbows and water leakage preventive material (Elastoseal Pack or equivalent) as described in Specifications and as shown in Drawings and directed by the Engineer.	<b>LM</b>	60		
4.5	Ditto, but 4" diameter (SN8) pipes.	<b>LM</b>	70		

ITEM No	DESCRIPTION	UNIT	QTY.	UNIT PRICE (US\$)	AMOUNT (US\$)
4.6	Supply and install 18" gate valve Rafael type or equivalent including all the required fittings (reducer, flange coupling, etc...), joining and supports as shown on the Drawings and described in the Specifications or directed by the Engineer.	NO	1		
4.7	Ditto, but 12" diameter gate valve.	NO	3		
4.8	Ditto, but 4" diameter gate valve.	NO	2		
4.9	Supply and install 12" Altitude Control Valve Rafael type or equivalent including all the required pipes and tank level float, water tubing between the tank and the Altitude control valve as shown on Drawings and described in the Specifications or directed by the Engineer.	NO	2		
4.10	Supply and install air release valve, pressure gauge, all steel piping and fittings, vent pipe, flange adaptors, steel flanges, dresser couplings, supports, steel cover, all as shown by mechanical drawings for inlet chamber. This item also includes laying, jointing, building in, testing and commissioning complete as specified and shown on the drawings.	NO	2		
<b>B4</b>	<b>TOTAL OF BILL B4 (MECHANICAL WORKS) - US\$</b>				

ITEM No	DESCRIPTION	UNIT	QTY.	UNIT PRICE (US\$)	AMOUNT (US\$)
<b>B5</b>	<b>MISCELLANEOUSE WORKS</b>				
	<p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• The Contractor shall when pricing this Bill take into consideration, include and allow for costs or expenses of all requirements stipulated in the section entitled "General and Preambles" preceding this Bill.</li> <li>• The exact lengths of the required pipes, the exact number of the required valves and the exact quantities of concrete will be determined during the implementation of the Works.</li> <li>• Price should include all excavation, backfilling, supporting of trenches and all associated works.</li> <li>• Price should include minimum amount of 15% labour content.</li> </ul>				
5.1	Supply and install stainless steel water scale as according to drawings, specifications and engineer's instructions. Scale should be mechanically and clearly marked using permanent paint and according to engineer's instructions..	NO	1		
5.2	Supply and install galvanized steel external access ladder with cage to the tank, installed complete and including all supports to the concrete base and skeleton of the tank, steel cover with frame and lock, cage, painting, accessories, all as specified and shown on drawings.	NO	1		
5.3	Supply and install stainless steel internal access ladder, installed complete and including all supports to the concrete base and skeleton of the tank, steel cover with frame and lock, cage, painting, accessories, all as specified and shown on drawings.	NO	1		
5.4	Supply and construct B250 rectangular reinforced concrete water manhole for inlet chamber (4.1m*2.1m) as shown in drawings and described in the Specifications and directed by the Engineer. The item includes excavation, supporting the trench sides, primer coating with two coats of bitumen for underground and backfilling using clean sand with watering, compaction after approval of the engineer	NO	2		
5.5	Ditto but for outlet chamber (2 m*2m).	NO	1		

ITEM No	DESCRIPTION	UNIT	QTY.	UNIT PRICE (US\$)	AMOUNT (US\$)
5.6	Supply and install complete precast concrete manhole of 1m diameter with cast iron cover 25 tones as per specifications and drawings. The item includes excavation, supporting the trench sides and backfilling using clean sand with watering, compaction after approval of the engineer.	NO	5		
5.7	Supply, fix and paint galvanized steel main gate with the dimensions and thickness shown on the Drawings complete with the lock (WALLY type), including Reinforced concrete columns ,anchors , angle plates to fix, ironmongery and all necessary accessories according to drawing, specifications, conditions and instructions of the supervisory engineer or his representatives.	NO	1		
5.8	Supply and build hollow cement blocks 40x20x20cm with compressive strength 35 kg/cm2 including expansion joints, concrete columns 20x20cm each 4m and top beams 20x20cm with all requirements according to the drawing, as specification and Engineer instructions.	M <sup>2</sup>	600		
<b>B5</b>	<b>TOTAL OF BILL B5 (MISCELLANEOUSE WORKS) - US\$</b>				

## CONSTRUCTION OF RAFAH TAL EL-SULTAN AREA WATER TANK

### Summary:

Item	Description	Total (US\$)
1.	Total for Item #B1	
2.	Total for Item #B2	
3.	Total for Item #B3	
4.	Total for Item #B4	
5.	Total for Item #B5	
	Total (US\$)	
	Vat (0%)	
	Grand Total (US\$)	

Grand Total (in letters):-----

Contractor's Name:-----

Signature and Stamp:-----

Date:-----