

REPUBLIC OF LEBANON

MINISTRY OF ENERGY AND WATER

**COUNCIL FOR DEVELOPMENT AND
RECONSTRUCTION**

**REHABILITATION OF HERMEL
EXISTING RESERVOIRS**

TENDER DOCUMENTS - VOLUME III

BILL OF QUANTITIES

SEPTEMBER 2020



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REHABILITATION WORKS FOR EXISTING RESERVOIRS (3*2000m3) & VALVE CHAMBER

ITEM No.	ITEM DESCRIPTION	QUANTITY	UNIT	RATE USD	AMOUNT USD
A- Civil Works					
A.1- Earthwork					
A.1.1	<u>CLEANING OF EXISTING VALVE CHAMBER & RESERVOIRS</u>				
	<p>The unit price shall include valve chamber / reservoirs cleaning to be carried out as deemed necessary for the execution of the works. It is intended to include, but is not limited to, the following work:</p> <ul style="list-style-type: none"> - Removal of overburden. - Cleaning with water jetting, wire brushing, or other approved means. - Removing of any sand and debris from bases. - Dredging or any other necessary cleaning process - Flushing with water - Removing of all sand and debris jetted or dredged from the chamber / reservoirs and disposal of same to an approved location. <p>This item shall include all reasonable precautions to be taken by the Contractor in the use of cleaning equipment to prevent damage to pipes or the flooding of public or private property. The equipment shall be capable of removing dirt, rocks, concrete blocks, steel bars, sand, corrosion products, debris, and other materials, or obstructions removable by proper cleaning equipment.</p> <p>This item shall be paid by lump sum.</p> <p><i>Unit Rate in Letters</i></p>	1	L.S.		-
A.2- Waterproofing Works					
A.2.1	<u>WATERPROOF PROTECTIVE COATING INSIDE WATER TANKS</u>				
	<p>This item shall consists of supplying, transporting, storing, protecting and placing multiple coats of waterproof material in conformity with the technical specifications, material technical sheet and as approved by the Engineer on the interior bottom slab, interior walls and roof of water tanks. The works under this item shall also include surface preparation (including cracks and holes treatment) prior to the application of the coating and chemical tests on water after the application of the coating. The waterproof material shall be suitable for use with potable water. The number of coats to be applied, the manner of application, and the total thickness of the coating shall be according to the manufacturer's requirements and shall be subject to the approval of the Engineer as well.</p> <p>This item shall be measured in square meter and shall be the net area in accordance to the drawings as directed and approved by the Engineer.</p> <p><i>Unit Rate in Letters</i></p>	4,000	m ²		-
TOTAL					

ITEM No.	ITEM DESCRIPTION	QUANTITY	UNIT	RATE USD	AMOUNT USD
A.2.2	<u>WATERPROOFING SYSTEM WITH THERMAL ISOLATORS</u>				
	<p>This item shall consist of furnishing, transporting and placing waterproofing system with thermal isolators for horizontal roofs and terraces as required and as directed by the Engineer. This item shall include the following works:</p> <ul style="list-style-type: none"> - Cleaning the surface and plugging all holes with a non-shrink mortar type Vandex Uni-mortar or equivalent, - Applying of G.P. primer 0.125 l/m² type Rooftex or equivalent, - Applying of polyurethane resin 1.5 kg/m² type Rooftex or equivalent, - Installation of geotextile protection 150 gr/m², - Placing 5 cm thick thermal insulation extruded polystyrene, - Placing polyane film, - Placing a protection layer of 5cm. thick of sand when needed - Casting minimum 5cm thick (90 x 90cm) reinforced concrete screed (350kg of cement/m³) laid to fall with a slope of 0.5% including 1x1 cm groove, - All the necessary for the proper completion of works as per specification. <p>This item shall be measured in square meter of waterproofing membrane, thermal isolator and concrete screed quantity as indicated on the drawings and as directed and approved by the Engineer.</p> <p>Note: The measurement shall be according to the horizontal surfaces only and no excess shall be paid for vertical surfaces.</p> <p><i>Unit Rate in Letters</i></p>	1,400	m ²		-
TOTAL					
CARRIED TO COLLECTION					

ITEM No.	ITEM DESCRIPTION	QUANTITY	UNIT	RATE USD	AMOUNT USD
A.3- Finishes					
A.3.1	<u>CEMENT PLASTER WORK</u>				
	<p>This item shall consist of furnishing, transporting, and placing streaked or flat plaster with a minimum thickness of 15 mm for internal plastering and 20mm for external plastering, in two or three layers where needed and as directed by the Engineer. Plaster for this item shall be composed of 600 kg cement per cubic meter of sand.</p> <p>This item shall include the following works:</p> <ul style="list-style-type: none"> - cleaning the existing surface if needed, - Mixing plaster components without using lime, - Providing plaster protecting by special mastering, - Wetting the plaster components with water. <p>This item shall be measured in square meter and shall be the net area in accordance with the drawings, as directed and approved by the Engineer.</p> <p><i>Unit Rate in Letters</i></p>	640	m ²		-
A.3.2	<u>CLEANING NATURAL STONE CLADDING</u>				
	<p>This item shall consist of cleaning Natural Stone Cladding Smooth and Rough Finish.</p> <p>This item shall include the following works:</p> <ul style="list-style-type: none"> - Make small test strips to try out the cleaner and make sure not to damage the stone. Select the preferred cleaner. It is easier to bring it in spray bottles or small containers. - Spray the cleaner on a manageable area and work from the bottom up in small, circular motions. This will allow the cleaner to get into all the crevices. - Working from the bottom up minimizes streaking on the stone surface. - Keep the stone wet while cleaning; remember to rinse after cleaning each area and to thoroughly rinse the stone - Don't power wash with anything over 300 psi. - Do follow manufacturer's recommendations - Do follow manufacturer's safety guidance <p>This item shall be measured per square meter and shall be in accordance with the drawings, as directed and approved by the Engineer.</p> <p><i>Unit Rate in Letters</i></p>	1,420	m ²		-
TOTAL					

ITEM No.	ITEM DESCRIPTION	QUANTITY	UNIT	RATE USD	AMOUNT USD
A.3.3	<u>NATURAL STONE CLADDING ROUGH FINISH 5cm THICK</u>				
	<p>This item shall consist of supplying, transporting, storing and placing 5 cm thick natural stone cladding with rough finish and light ivory color or other color approved by the Engineer.</p> <p>This item shall include:</p> <ul style="list-style-type: none">- 3 cm mortar, where needed and as directed by the Engineer.- Removal of damaged or loosen parts. <p>For new cladding works, this item shall have a 2cm wide area of smooth finish all around the stone edges and the rest of the face area shall be rough finished.</p> <ul style="list-style-type: none">- Stones shall be fixed taking into consideration horizontal linearity of 20 or 30 cm height and width 1x1 cm groove (where requested) in between,- 5x5 cm horizontal galvanized steel angles fixed on reinforced concrete, <p>For cladding replacement works, the stones types and installation could be the same as the existing installed cladding.</p> <p>This item shall be measured in square meter and shall be the net area (without including opening surfaces) in accordance with the drawings, as directed and approved by the Engineer.</p> <p>Unit Rate in Letters</p>	40	m ²		-
A.3.4	<u>COARSE SCRATCHED PAINT</u>				
	<p>This item shall consist of supplying, transporting, storing and executing paints without counting for openings and gaps internal and external finishes needed in compliance with the technical specifications, the drawings and as directed by the Engineer.</p> <p>This item shall include the following works:</p> <ul style="list-style-type: none">- Cleaning before and after paint,- Applying two base coats,- Applying minimum two coats of paints on concrete with or without concrete plaster with or without two layers of mastic,- All the necessary for proper completion of the works. <p>This item shall be measured in square meter and shall be the actual painted surface area without including opening surfaces in accordance with the drawings, as directed and approved by the Engineer.</p> <p>Unit Rate in Letters</p>	160	m ²		-
TOTAL					

ITEM No.	ITEM DESCRIPTION	QUANTITY	UNIT	RATE USD	AMOUNT USD
A.3.5	<u>COLORED EPOXY PAINT FOR THE PIPES, FITTINGS & ACCESSORIES</u>				
	<p>This item consists of painting all the pipes (Double Flanged, transition pipe...), fittings (Bends, Tees, reducers...) and accessories (non-return valve, gate valve, butterfly valve, water meter, straightner...) with the same type and color paint as the existing ones, to be approved by the Engineer.</p> <p>This item will be paid as lump sum.</p> <p>Unit Rate in Letters</p>	1	L.S.		-
A.4- Metal Works					
A.4.1	<u>GALVANIZED STEEL CAT LADDER</u>				
	<p>This item shall consist of fabricating, supplying, transporting, storing, and fixing a galvanized steel cat ladder where needed and as directed by the Engineer.</p> <p>This item shall be composed of:</p> <ul style="list-style-type: none"> - 2 numbers of 3" galvanized steel tube fixed to concrete with anchors and steel plates, - 1" galvanized steel steps welded to steel tube at 35cm center to center, - 2 numbers of 2" galvanized steel tube, - 1" galvanized steel ring at 50cm center to center for protection, - All steel to be powder coated, - All the necessary (manpower, equipment, materials and accessories...) for proper completion of the works as per specification. <p>This item shall be measured per linear meter of galvanized steel cat ladder installed as indicated on drawings and as directed and approved by the Engineer correspondent related appropriate.</p> <p>Unit Rate in Letters</p>	7	l.m.		-
TOTAL					

ITEM No.	ITEM DESCRIPTION	QUANTITY	UNIT	RATE USD	AMOUNT USD
A.4.2	<u>STEEL REPAIR WORKS</u>				
	<p>This item shall consist of repairing all kind of steel works such as: Access openings frames and covers, access ladders, steel footbridge, air vent pipes etc... as shown on drawings and as deemed to be necessary and as requested by the Engineer on site. The works shall include the following:</p> <ul style="list-style-type: none"> - Submission of application details and revision thereto if any subject to Engineer consent. - Cleaning, repairing, removal of existing paint and repainting of all the installed steel works including functioning adjustments, welding, bolting, dismantling and reinstallation where needed, The repainting works shall include galvanizing or Zink coating or enamel painting (Two minimum corrosion protection coats and two minimum final coats of colour designated by the Engineer). - Instalallation of steel ring at 50cm center to center for protection for two reservoirs (where we have internal ladders) - All necessary welding works and piping works with fitting and supports. - All necessary fixation works where needed in the concrete/parapet. - All that is necessary for proper execution and completion of the works. <p><i>This item will be paid as lump sum</i> <i>Unit Rate in Letters</i></p>	1	L.S.		-
A.4.3	<u>DRAINAGE PIPES FOR WATER TANKS</u>				
	<p>This item shall consist of fabricating, supplying, transporting, storing, and installing galvanized steel pipes in the location of the broken/removed or PVC drainage pipes for rain water drainage for each water tank, including pipe connections, tools, labor and all necessary requirements to make a complete installation. All water tanks shall be drained properly to the nearest stream without damaging property as approved by the Engineer. The number, diameter of drainage pipes shall be as indicated on water tank drawings.</p> <p>This item shall be measured by set of drainage pipes for each water tank completely installed to the approval of the Engineer.</p> <p><i>Unit Rate in Letters</i></p>	3	set		-
CARRIED TO COLLECTION					

ITEM No.	ITEM DESCRIPTION	QUANTITY	UNIT	RATE USD	AMOUNT USD
A.5- External Works					
A.5.1	<u>FENCE</u> This item shall be measured in linear meter of fence installed as indicated on drawings and as directed and approved by the Engineer. <i>Unit Rate in Letters</i>	400	l.m.		-
A.5.2	<u>GATE</u> This item shall consist of fabricating, supplying, transporting, storing, and fixing a metallic gate. - All steel to be powder coated, - Including all the necessary for proper completion of the works as per specification. - Two reinforced concrete columns This item shall be measured per unit of gate installed as indicated on drawings and as directed and approved by the Engineer.				
a.	<u>500x240</u> This item shall be measured per unit of gate installed as indicated on drawings and as directed and approved by the Engineer. <i>Unit Rate in Letters</i>	1	unit		-
Sub-Total A - Civil Works (USD)					-

ITEM No.	ITEM DESCRIPTION	QUANTITY	UNIT	RATE USD	AMOUNT USD
B- Mechanical Works					
B.1	<u>WATER TANK TEST</u>				
	<p>This item shall be applied for all the existing water tanks subjected to rehabilitation works. The Contractor must arrange for all necessary water supply, power supply, equipment, tools and manpower to carry out the water tank test. All preparation works for the test shall be in liaison with the Engineer and submitted to him for approval.</p> <p>The purpose of this test is to detect any defaults in the water tank structure such as leakage and to test all mechanical equipment (pipes, fittings and accessories). This item includes minor repairing works necessary to perform the test including supply and installation of missing hand wheels for installed gate valve. The installation or replacement works of missing or defected mechanical parts are included in separate items.</p> <p>This item includes: A visual inspection of civil and mechanical works, filling the water tank with water, testing for leakage or any defect and submittal of a test report including the contractor observation, findings and a list of the proposed works.</p> <p>All safety measures for the protection of the equipment and the whole installation as well as the personnel must be available on site.</p> <p>This item shall be paid as a lump sum for a complete water tank test and necessary repairs to accomplish this test, including supplying all necessary equipment, water supply, power supply, according to the technical specifications, tender drawings and as directed by the Engineer.</p> <p>Unit Rate in Letters</p>	1	L.S.	-	

ITEM No.	ITEM DESCRIPTION	QUANTITY	UNIT	RATE USD	AMOUNT USD
B.2	<u>DISCHARGING THE OVERFLOW AND WASHOUT PIPE (12") OF THE RESERVOIRS OUTSIDE THE VALVE CHAMBER</u>				
	The purpose of this item is to cover the cost which may arise in discharging of existing overflow and washout 12" to the outside of the valve chamber including all the materials necessary such as: piping, fittings, accessories, waterproofing materials, ... This item shall be paid as a lump sump for a complete installation. <i>Unit Rate in Letters</i>	1	L.S.		-
Total Mechanical Works (USD)					-
	Total Bill of REHABILITATION WORKS FOR EXISTING RESERVOIRS IN HERMEL				-

Only

UNITED STATES DOLLARS