

Proj: PRESIDENTIAL PALACE	Date: 01/09/2025	Proj. Type: PRESIDENTIAL
Job:	Sheet: BL01	Activity Type: CONSTRUCTION
Sep: Bill of Quantities	Rev: 0	Location: BAABDA-LEBANON
Div: MECHANICAL - HVAC	Phase: TENDER	Built-up Area:
BILL NO. 01		

Div.	Item No.	Description		Total Cost (USD)
	-	<p>MECHANICAL</p> <p>A <u>The rates inserted against the descriptions in the Bill of Quantities shall include but not be limited to:</u></p> <p>1 All labour, tools, plant, machinery, equipment and transport</p> <p>2 Protection of all mechanical work</p> <p>3 All testing of materials and testing of the complete systems after installation including necessary materials, electrical power and fuel</p> <p>4 All overhead expenses and profit</p> <p>5 All incidentals and accessories whether indicated, mentioned or not but necessary for the proper completion of the work and in accordance with the Specifications and Contract Documents</p> <p>6 Instruction manuals</p> <p>7 Labelling and identification plates for appliances and pipelines</p> <p>8 Assembling and jointing including jointing materials</p> <p>9 Fixing, including nails, bolts, nuts holes, screws, plugs and the like</p> <p>10 Painting as specified</p> <p>11 Cutting and pinning including all making good as required</p> <p>12 Forming or cutting holes, chases, channels, etc.. in reinforced concrete structures and blockwork in power tools only and properly plumb and aligned</p> <p>13 Cleaning</p> <p>14 Coordination with other trades</p> <p>15 Flashing, waterproofing, weatherproofing and jacketing for all pipes, ducts and equipment installed outdoor, and pipes and ducts crossing walls and slabs</p> <p>16 Connection to plumbing works as necessary</p> <p>17 Jointing, saddles, clamps, unions, flanges, dielectric unions, coupling, brackets, hangers and supports, providing steel pipe sleeves with plates</p> <p>18 Expansion Joints</p> <p>19 Preparation of plans or diagrams as fitted, shop drawings, and as-built drawings</p> <p>20 Builders work in connection with mechanical works</p>		

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	B	<p><u>Rates for equipment shall include for:</u></p> <p>1 Certificates, samples, tests, commissioning, balancing, supply of all information and services called for in the Specification, for items of equipment to be fully connected up and set in good working order</p> <p>2 Flexible connections, valves, thermometers, gauges and all items and accessories as per Specifications</p> <p>3 Supports, hangers, vibration isolators, anchoring devices, reinforced concrete bases, and all civil works required for the installation of the new equipment (Chillers, Cooling Towers, Pumps...) to suit the site conditions, etc...</p> <p>4 Sound attenuation</p> <p>5 Electrical connections to the nearest disconnection switch including all clamps, fixing accessories</p> <p>6 Flushing with all necessary chemicals and materials of all installed chilled water and cooling tower pipes to ensure the removal of any clogging and debris, allowing smooth water circulation.</p>		
	C	<p><u>The rates for pipework shall include for:</u></p> <p>1 Bends, fittings, junctions, flanges, connections, clamps, etc...</p> <p>2 Pipe hangers and supports</p>		
	TOTAL PREAMBLES - MECHANICAL			

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Div: MECHANICAL - HVAC	Phase: TENDER	Built-up Area:
BILL NO. 03: MAIN CONSTRUCTION WORKS - DD		

Div.	Item No.	Description of Material	Unit	Quantity	Unit Cost (USD)	Total Cost (USD)
23		MECHANICAL-HVAC Section 236426 - Chillers Dismantle and remove the existing chillers. Supply, install and test Chillers including fixing accessories, fittings, thermometers, gauges, flow switches, flow meters, balancing valves, control motorized valves, automatic air vents, flexible connections, all needed valves, strainers, sensors and controls, antivibration mountings complete as specified				
	A 1	Water cooled screw chillers Inverter CH-1: 790Kw = 225 Tons of Refrigeration (Chiller water leaving temperature 5.5°C and entering water temperature 11°C)	Item	2.0		
		Section 232123 - Hydronic pumps Dismantle and remove the existing pumps. Supply, install and test pumps including fixing accessories, fittings, thermometers, gauges, balancing valves, control motorized valves, automatic air vents, flexible connections, all needed valves, strainers, sensors and controls, antivibration mountings complete as specified N.B: Pumps head must be confirmed by the contractor on site as per site conditions.				
	A 1	Chilled water pumps (VFD): Close-coupled, in-line centrifugal PCH-1 (2 duty and 1 standby): each pump 35 l/s @ 20m	Item	3.0		
	B 1	Cooling towers condenser water pumps (VFD): Close-coupled, end-suction centrifugal PCT-1 (2 duty and 1 standby): each pump 42 l/s @ 20m	Item	3.0		
		Section 236514.14 - Open circuit, induced draft, crossflow cooling towers Dismantle and remove the existing pumps. Supply, install and test pumps including fixing accessories, fittings, thermometers, gauges, balancing valves, control motorized valves, automatic air vents, flexible connections, all needed valves, strainers, sensors and controls, antivibration mountings, draft prevention complete as specified with all necessary options for a quite and safe operation				
	A 1	Cooling towers CT-1: 1055Kw (Condenser water leaving temperature 39°C and entering water temperature 33°C)	Item	2.0		

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Div.	Item No.	Description of Material	Unit	Quantity	Unit Cost (USD)	Total Cost (USD)
		Section 232116 - Hydronic piping specialties Supply, install and test Air Separators and Closed Expansion Tanks and including fixing accessories, fittings, thermometers, gauges, balancing valves, automatic air vents, all valves , complete as specified				
	A	Air separators				
	1	AS-1 (replacing the existing)	Item	1.0		
	B	Closed expansion tanks				
	1	CET-1 (replacing the existing)	Item	1.0		
		Section 232116 - Hydronic piping specialties Supply, install and test Chemical Pot Feeders including fixing accessories, fittings, gauges, balancing valves, flow indicators, automatic air vents, all valves and controls, complete as specified				
	A	Chemical pot feeders				
	1	CPF-1 (replacing the existing)	Item	1.0		
		Section 232513 - Water Treatment For Closed Loop Hydronic Systems Supply, install and test Water Softner including fixing accessories, fittings, gauges, all valves and controls, complete as specified				
	A	Water softeners				
	1	WS-1 (replacing the existing)	Item	1.0		
		Section 230519 - Meters and Gauges for HVAC Piping Supply, install and test the following Fittings complete as specified				
	1	Pressure gauges (replacing the existing where needed)	Item	1.0		
	2	Temperature gauges (replacing the existing where needed)	Item	1.0		
	3	Flow meters (replacing the existing where needed)	Item	1.0		
		Section 230923.11 - Control Valves Supply, install and test the following Control Motorized Valves complete as specified				
	1	Control Motorized valves (replacing the existing where needed)	Item	1.0		

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Div.	Item No.	Description of Material	Unit	Quantity	Unit Cost (USD)	Total Cost (USD)
	A	<u>Section 232113 - Hydronic Piping</u>				
	A	Black steel pipes <u>Supply, lay, connect and test the following Black Steel pipes including fixing accessories and fittings complete as specified</u> Black steel pipes on chillers, chilled water pumps, cooling towers and condenser pumps where needed; the below prices are based on linear meter and will be counted as per site materials replacement.				
	1	15mm diameter	m	1.0		
	2	20mm diameter	m	1.0		
	3	25mm diameter	m	1.0		
	4	32mm diameter	m	1.0		
	5	40mm diameter	m	1.0		
	6	50mm diameter	m	1.0		
	7	65mm diameter	m	1.0		
	8	80mm diameter	m	1.0		
	9	100mm diameter	m	1.0		
	10	125mm diameter	m	1.0		
	11	150mm diameter	m	1.0		
	12	200mm diameter	m	1.0		
	A	<u>Section 230719 - HVAC Piping Insulation</u>				
	A	Insulation for chilled water pipes and cooling tower pipes <u>Supply and cover chilled water and cooling water pipes with insulation similar to the existing including all fixing accessories as per specs</u> Pipes insulation on chillers, chilled water pumps, cooling towers and condenser pumps where needed; the below prices are based on linear meter and will be counted as per site materials replacement.				
	1	15mm diameter	m	1.0		
	2	20mm diameter	m	1.0		
	3	25mm diameter	m	1.0		
	4	32mm diameter	m	1.0		
	5	40mm diameter	m	1.0		
	6	50mm diameter	m	1.0		
	7	65mm diameter	m	1.0		
	8	80mm diameter	m	1.0		
	9	100mm diameter	m	1.0		
	10	125mm diameter	m	1.0		
	11	150mm diameter	m	1.0		
	12	200mm diameter	m	1.0		

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Div.	Item No.	Description of Material	Unit	Quantity	Unit Cost (USD)	Total Cost (USD)
	A 1	<u>Section 230923 - Direct Digital Control System for HVAC</u> DDC system for chillers plant and cooling towers plant Controls and instrumentation for the chillers plant and cooling towers plant systems	Item	1.0		
		TOTAL MECHANICAL - AC				

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Div.	Item No.	Description of Material	Unit	Quantity	Unit Cost (USD)	Total Cost (USD)
25		MECHANICAL- INTEGRATED AUTOMATION 255000- Integrated Automation Facility Controls <u>Supply, install and test new BMS system complete as specified with all needed accessories, thermostats, controls, cables, DDCs, software, interfaces and latest computer work station with laser jet color printer</u> 1 BMS station located in Control Room for the chillers, chilled water pumps, cooling towers, cooling towers pumps, water softener and all components in the plant room for the good operation of the system.				
		TOTAL MECHANICAL-BMS	Item	1.0		