HIGH COURT OF SINDH, KARACHI.

TECHNICAL BID EVALUATION REPORT

1	Name of Procuring Agency	High Court of Sindh, Karachi.
2	Tender Reference No:	NO.PD/Tender-04/2019
3	Tender Description:	Supply, installation and fixing of R.O plant at Kamber Shahdadkot, Sanghar & Umerkot
4	Method of Procurement:	Single Stage Two-Envelopes Method
5	Tender Published in newspapers:	Jang, Dawn and Kawish
6	Tender Hoisted on SHC website	30-04-2019
7	Tender Hoisted on SPPRA website	30-04-2019
8	Technical Bid Opening Date:(if applicable)	21st May, 2019
9	Total Bids received:	01
10	Number of Bid technically qualified (if applicable)	01
11	Total Bids rejected:	00
12	Financial Bid Opening Date	25th July, 2019 at 10:30 a.m.

13. **Bid Evaluation Report**

Supply, installation and fixing of R.O plant at Kamber Shahdadkot, Sanghar & Umerkot:

Ultra Filtration Plant At Kamber Shahdadkot		
UF plant should be installed where TDS ≤ 500 ppm. These UF plants shall be powered by grid energy as primary source. The design methodology for all UF Filtration Plants shall be rendered to the Engineer for Approval.		
S.No.	Description	Modern Technology & Traders
1	Feed Pump Flow: 2000 Liters / Hour (2 m3/hr) Efficiency> 90%	KSB, ABB(EU), Siemens (EU)
2	Pre-filtration /Sand Filter/Anthracite Filter Media: Anthracite/Silica Sand Backwash: 30m/hr Backwash Time: Digital Auto Control Valve Sand Effective Size: 0.8- 10mm Bed Depth: 0.6 - 1m Anthracite: 0.8 to 1.6 mm	Minimum Standards Suspended solid removal: Below 100 microns Vessel Material: FRP Make: wave cyber, Pentair Pressure: 150 PSI Size: 16"x 65"
3	Activated Carbon Filter Base Material: Coconut shell, Make Haycarb Surface area: 800 m2/g Backwash Time: Digital Auto Controller Valve/PLC Iodine No.: Minimum 1000 Bulk density: 0.5 g/cm3 Ash content: 4 %	Minimum Standards Vessel Material: FRP Make: Wave cyber, Pentair Pressure: 150 PSI Size: 16"x65" Replacement: On depletion of the adsorption capacity
4	Ultra Filtration Membranes Ultra-filtration consists of a multi bore membrane. The purpose of Ultra-filtration is to remove all types of micro-organisms as well as TSS. The technical specifications shall meet / exceed to following requirements. 1. UF modules: Scalable in accordance with the site flow rates 2. Water Quality characteristics as well as NSF rating. 3. Type of membranes: Hollow Fiber 4. Material of membranes: PES or PVDF 5. Bacteria removal efficiency: 99.9999% (log 6) 6. Viruses removal efficiency: 99.99% (log 4)	Minimum Standards/ Manufacturers INGE BSF Dow Film Tech (USA) GE Osmonics (USA) Koch (EU),Toyobo (JAPAN) Axeon Water (U+B23SA), INGE BSF

5	UF Module Specifications Membrane Type Permeate flux (Pressurized) Trans membrane pressure (TMP) Area of membrane per module Modules per rack Backwash Duration Pressure Backwashing Time Time between chemical cleaning Duration of Chemical Cleaning Cleaning chemicals	Hollow Fiber membrane (PES or PVDF) 100-175 L/m2 h <1,0 bar 6 m2per module As per vendor design 45-60 seconds 2-4 bar Adjustable by PLC 10 -150 d 1 - 5 h Citric acid and Sodium hypochlorite
6	Frame/Skid Stainless Steel shall be used for Reverse Osmosis/ UF Skid meeting minimum following specification can also be used:	Minimum Standards Stainless Steel Grade: SS-201
7	Flow Meters A variable area Rota meter shall be installed to measure the flow of feed/permeate water. Flow meter shall be of transparent acrylic	Minimum Standards Maximum Flow: 35GPM
8	Pressure Gauges All installed pressure gauges shall be bourdon spring type with Stainless Steel (SS), 304 casing and a minimum diameter of 2.5". All gauges shall be damping fluid filled having back connection and border for easy fitting on the panel.	Minimum Standards Minimum diameter: 2.5"
9	Micron Pre-Filters Pre-Filter before UF Membrane	Minimum Standards Filter: 50microns
10	UF System Controlled By PLC UF system should be controlled by PLC programming Display on Front panel via HMI System should be SCADA enabled The controller shall display the permeate operating hours along with the operating status of the UF unit. Low- and high-pressure switches, auto Flushing, auto cleaning, tank levels, and pretreatment equipment shall be monitored through a PLC controller. All breakers, relays, timers etc	Minimum Standards PLC: Siemens(EU),ABB), Schneider(EU) HMI: Siemens(EU), Mitsubishi(Japan), Schneider(EU) Siemens(EU), Mitsubishi(Japan), Schneider(EU), LS
11	Storage Tanks for Product & Feed Water Product water tank should be food grade.	Minimum Standards Material: High Density polyethylene, anti UV Material Class: Food Grade Working Temperature: -20 to 60°C Wall Thickness: Approx. 4 to 5.0 mm Storage Capacity: 2000 Liters Each
12	Tube Well Boring submersible pump Blind Pipes for Bore Pump House Room (16'*12') Open Surface Drains External Electrical Wiring/Connections Internal Electrical Wiring/Connections A.C Unit MCU Panel U.F Plant 10,000 GPD Water Tank SCADA PLC System Enabled Chlorine Operation Maintenance for 1 Year	As per Requirement

Note: All components must be new and from above listed companies		
At Sanghar Reverse Osmosis (RO) plants shall be powered by Grid as prime energy source. R.O Design will be based on feed water with total dissolved solids (TDS) for brackish water with a maximum of 5000 ppm. The rejected brine from the plant and drainage water shall be disposed into drainage system. Demineralization of R.O product water may be carried out by blending an appropriate fraction of pretreated raw water. The R.O plant shall be designed with minimum of 50% recovery of permeates up to maximum 5000 ppm TDS in Raw water.		
1	The vendor must submit the projection/simulation based on complete feed water analysis before installation of Plant. The following membrane manufacture software projections are acceptable. Reduced energy consumption Reduce Chemical Consumption Increased life span of membranes and filter parts NSF Certified equipments should be used	ROSA/Equivalent IMS-Design/Equivalent KSB, ABB(EU), Siemens (EU) Pressure: 4-6 Bar
2	Flow: 6000 Liters / Hour (6 m^3/hr) Pressure: 6 Bar	Minimum Standards / Manufacturers. KSB, ABB(EU), Siemens (EU) Pressure 4-6 Bars
3	Flow: 6000 Liters / Hour (6 m^3/hr) Pump and motor shall be of reputed efficiency above 80%.	KSB, ABB(EU) Pressure: 6-12 Bar
4	Reverse Osmosis Membranes Membrane Type: Polyamide Thin Film Composite, Membrane element Size: 4" x 40" and quantity 12N0, Maximum Applied Pressure: 300psi, Nominal Salt rejection: 98.5% pH range, short term cleaning: 1-13 pH range, continuous operation: 2-11.	Minimum Standards/ Manufacturers Axeon Water (USA) GE Osmonics (USA) Koch (EU),Toyobo (JAPAN)
5	Membrane Pressure Vessels Heavy duty reverse osmosis pressure vessel housings shall be made of fiberglass, tested and certified by the American Society of Mechanical Engineers (ASME) and the boiler association of the USA as per ASME's Boiler and Pressure Vessel Code (BPVC):2013. Enamel coated white. Easy membrane removal, inspection, and installation should be allowed.	Minimum Standards/ Manufacturers Material: FRP Make: wave cyber, Code Line Pentair Pressure: 300 PSI Size: 4'
6	Frame/Skid Stainless Steel shall be used for Reverse Osmosis Skid meeting minimum following specification can also be used.	Minimum Standards Stainless Steel Grade: SS-304
7	Flow Meters A variable area Rota meter shall be installed to measure the flow of feed/permeate water. Flow meter shall be of transparent acrylic material with Stainless Steel float with graduations on them to show proper flow. Flow meter shall be capable of covering the full range of flow.	Minimum Standards Maximum Flow: 35GPM
8	Water Meter Water meter shallbe of multi jet submersible with a pulse Generator with a maximum frequency of 1pulse/ 10 Liters. Body of water meter shall be of Cast iron with threaded connections and a minimum pressure rating of PN10. Water meter shall have a totalizer installed on permeate line.	
9	Pressure Gauges All installed pressure gauges shall be bourdon spring type with Stainless Steel (SS), 304 casing and a minimum diameter of 2.5'. All gauges shall be damping fluid filled having back connection and border for easy fitting on the panel.	Minimum Standards Minimum diameter: 2.5'

10	Dosing Pump For addition of chemicals like Antiscalant, Acid	Minimum Standards Made: seko, Etatron Itally, Pentair or Equaling Flow: As needed 80 liter Tank for Dosing
11	Multimedia Filter Filtration Rate: 15m/hr Backwash: 30m/hr Backwash Time: Backwash through controller Sand Effective Size: 0.8-10mm Bed Depth: 0.6 - 1m Filtration Rate: 15m/hr Backwash: 30m/hr Activated Carbon Effective Size: 0.6-2.36mm Empty bed contact time: 5 minutes Base Material: Coconut shell, Wood, bituminous coal, lignite	Minimum Standards Vessel Material: FRP Make: Pentair Pressure: 150 PSI Size: 24'x72' Vessel Material: FRP Activated Carbon: Haycarb Replacement: On depletion of the adsorption capacity
12	Micron Pre-Filters Pre-Filter before High Pressure Pum	Filter: 5microns
13	RO System Controlled By Controller RO system should be controlled by Automatic controller Display on Front panel via HMI. The controller shall display the permeate TDS/Conductivity, and operating hours along with the operating status of the RO unit. Low and high-pressure switches, Auto flushing, tank levels, and pretreatment equipment shall be monitored through a controller.	
14	Storage Tanks for Product & Feed Water Product water tank should be food grade.	Minimum Standards Material: High Density Polyethylene, anti UV Material Class: Food Grade Working Temperature: -20 to 60°C Wall Thickness: Approx. 4 to 5.0 mm, Storage Capacity: 2000 Liters Each
15	Tube Well Boring submersible pump Blind Pipes for Bore Chlorine Pump House Room (12*15') Open Surface Drains External Electrical Wiring/Connections Internal Electrical Wiring/Connections A.C Unit MCU Panel R.O Plant 10,000 GPD Water Tank Chlorine Operation Maintenance 1 Years	As per requirement
Note: All components must be new and from above listed companies		
At Umerkot Reverse Osmosis (RO) plants shall be powered by Grid as prime energy source. R.O Design will be based on feed water with total dissolved solids (TDS) for brackish water with a maximum of 5000 ppm. The rejected brine from the plant and drainage water shall be disposed into drainage system. Demineralization of R.O product water may be carried out by blending an appropriate fraction of pretreated raw water. The R.O plant shall be designed with minimum of 50% recovery of permeates up to maximum 5000 ppm TDS in Raw water.		
1	The vendor must submit the projection/simulation based on complete feed water analysis before installation of Plant. The following membrane manufacture software projections are acceptable	ROSA/Equivalent IMS-Design/Equivalent

	Reduced energy consumption Reduce Chemical Consumption Increased life span of membranes and filter parts NSF Certified equipments should be used	KSB, ABB(EU), Siemens (EU) Pressure: 4-6 Bar
2	Flow: 4000 Liters / Hour (4 m^3/hr) Pressure: 6 Bar	Minimum Standards / Manufacturers. KSB, ABB(EU), Siemens (EU) Pressure 4-6 Bars
3	Flow: 4000 Liters / Hour (4 m^3/hr) Pump and motor shall be of reputed efficiency above 80%	KSB, ABB(EU) Pressure: 6-12 Bar
4	Reverse Osmosis Membranes Membrane Type: Polyamide Thin Film Composite, Membrane element Size: 4" x 40" and quantity 8N0, Maximum Applied Pressure: 300psi, Nominal Salt rejection: 98.5% pH range, short term cleaning: 1-13 pH range, continuous operation: 2-11	Minimum Standards/ Manufacturers Axeon Water (USA) GE Osmonics (USA) Koch (EU),Toyobo (JAPAN)
5	Membrane Pressure Vessels Heavy duty reverse osmosis pressure vessel housings shall be made of fiberglass, tested and certified by the American Society of Mechanical Engineers (ASME) and the boiler association of the USA as per ASME's Boiler and Pressure Vessel Code (BPVC):2013. Enamel coated white. Easy membrane removal, inspection, and installation should be allowed	Minimum Standards/ Manufacturers Material: FRP Make: wave cyber, Code Line Pentair Pressure: 300 PSI Size: 4'
6	Frame/Skid Stainless Steel shall be used for Reverse Osmosis Skid meeting minimum following specification can also be used:	Minimum Standards Stainless Steel Grade: SS-304
7	Flow Meters A variable area Rota meter shall be installed to measure the flow of feed/permeate water. Flow meter shall be of transparent acrylic material with Stainless Steel float with graduations on them to show proper flow. Flow meter shall be capable of covering the full range of flow.	Minimum Standards Maximum Flow: 35GPM
8	Water Meter Water meter shallbe of multi jet submersible with a pulse Generator with a maximum frequency of 1pulse/ 10 Liters. Body of water meter shall be of Cast iron with threaded connections and a minimum pressure rating of PN10. Water meter shall have a totalizer installed on permeate line.	
9	Pressure Gauges All installed pressure gauges shall be bourdon spring type with Stainless Steel (SS), 304 casing and a minimum diameter of 2.5'. All gauges shall be damping fluid filled having back connection and border for easy fitting on the panel.	Minimum Standards Minimum diameter: 2.5'
10	Dosing Pump For addition of chemicals like Antiscalant, Acid	Minimum Standards Made: seko, Etatron Itally, Pentair or Equaling Flow: As needed 80 liter Tank for Dosing
11	Multimedia Filter Filtration Rate: 15m/hr Backwash: 30m/hr Backwash Time: Backwash through controller Sand Effective Size: 0.8-10mm Bed Depth: 0.6 - 1m Filtration Rate: 15m/hr Backwash: 30m/hr Activated Carbon Effective Size: 0.6-2.36mm Empty bed contact time: 5 minutes Base Material: Coconut shell, Wood, bituminous coal, lignite	Minimum Standards Vessel Material: FRP Make: Pentair Pressure: 150 PSI Size: 24'x72' Vessel Material: FRP Activated Carbon: Haycarb Replacement: On depletion of the adsorption capacity
12	Micron Pre-Filters Pre-Filter before High Pressure Pum	Minimum Standards Filter: 5microns

13	RO System Controlled By Controller RO system should be controlled by Automatic controller Display on Front panel via HMI. The controller shall display the permeate TDS/Conductivity, and operating hours along with the operating status of the RO unit. Low and high-pressure switches, Auto flushing, tank levels, and pretreatment equipment shall be monitored through a controller.	
14	Storage Tanks for Product & Feed Water Product water tank should be food grade.	Minimum Standards Material: High Density Polyethylene, anti UV Material Class: Food Grade Working Temperature: -20 to 60°C Wall Thickness: Approx. 4 to 5.0 mm, Storage Capacity: 2000 Liters Each
15	Tube Well Boring submersible pump Blind Pipes for Bore Pump House Room (12*15') Open Surface Drains External Electrical Wiring/Connections Internal Electrical Wiring/Connections A.C Unit MCU Panel R.O Plant 15,000 GPD Water Tank Chlorine Operation Maintenance 1 Year	As per Requirement
Note: All components must be new and from above listed companies.		
	TECHNICALLY QUALIFIED (YES/NO)	YES

Member Inspection Team (M.I.T-II)
Chairman

MEMBER INSPECTION TEAM-II
HIGH COURT OF SINDH
KARACHI

Director General (F & A)
Member

Kamran Ahmed Hamidi
Director General (F&A)
High Court of Sindh

(NADEEM IFTIKHAR)
Divisional Accounts Officer
Federal Buildings Division

Nominee of A.G Sindh
Member