SPECIFICATION SECTION XXX

PRODUCT: Lync WQ-RS Commercial Reverse Osmosis System

1.0 GENERAL Furnish a commercial reverse osmosis system (RO) as specified here in this section and as called for in the equipment schedule for the reduction of total dissolved solids. The RO shall be supplied complete and assembled entirely by one manufacturer. System to include all components required for proper operation of the system. These components include system control package, flow meters, high pressure pump, membranes, pre-filter, adjustment valves, pressure gauges, automatic inlet valve, and frame. The RO shall be a Lync brand model number WQRS-XXX-R manufactured by Lync.

2.0 RELATED SECTIONS XXX

3.0 COMPONENTS

 3.1 System Support Frame

 All components of the reverse osmosis (RO) system will be mounted on a single support frame. The support frame shall be constructed of welded carbon steel with an exterior powder coat finish. The frame will consist of: the frame base constructed of 1 ½” structural angle iron and 2” channel iron and a membrane housing rack constructed of 2” channel iron risers. The 2” channel iron in the frame base will provide the mounting surface for the high-pressure pump.

 3.2 Pre-Filter

 The pre-filter housing shall be a single element type constructed of FDA grade reinforced polypropylene and certified to NSF/ANSI standard 42. The housing will have a 90 PSI maximum working pressure and a maximum temperature rating of 100 deg. F (37 deg. C). The housing will have 1” NPT inlet and outlet and accept a 4 ½” X 20” single replaceable filter cartridge element. The housing will be sized to flow 15 GPM at a pressure drop of 3 PSI using a five micron pleated cartridge. The replaceable filter element shall be a pleated type five micron nominally rated cartridge with plastisol end caps. The pleated filter fabric shall be composed of 100% polyester to resist the growth of microbiologic films.

3.3 High Pressure Pump

 A high-pressure pump will be provided, mounted on the RO frame, to boost the membrane feed water pressure to a maximum of 250 psi. The pump shall be a vertical multi-stage type. Connecting flanges/couplings, impellers, intermediate housing, and pump housing shall be constructed of 304 or 316 stainless steel. All motors must be 230/460 volt 3 phase with TEFC motor housings. Systems will use a 5 horsepower motor to ensure adequate membrane feed water volume and pressure.

 3.4 Membrane and Membrane Housings

The membrane housings shall be constructed of fiberglass reinforced plastic for superior corrosion resistance, with glass reinforced polypropylene end caps. The maximum operating pressure of the housings shall be 300 psi. The housing’s maximum operating temperature will be 100 deg. F (37 deg. C). Membranes shall be Watts brand high rejection thin film composite 4”X40” model W-4040-TW. Membranes must have a minimum average salt rejection of 95% under the standard test conditions of 225 psi feed pressure, and 77 deg. F (25 deg. C), with a 2000 ppm Na Cl feed solution at a pH of 7.0.

 3.5 System Controls

The system will include electronic and hydraulic controls for automatic operation and manual adjustment. The electronic controller shall be a micro processor based controller with inputs and outputs for automation of the RO components. Input signals shall be: low feed water pressure, tank level full, and pretreatment interlock, and tank full shutdown. Output signals shall be: open/close automatic inlet valve, start/stop high-pressure pump, automatic fast flush, and high permeate conductivity divert to drain/high conductivity alarm. The controller will have a backlit LCD screen to display operating data and separate LED indicators for specific alarm and operation status. LED indicators will indicate the operating condition of: on/off, output overload condition, low permeate water quality, tank full, pretreatment interlock, and low feed water pressure. The controller must be able to operate at temperatures between 32 deg. F (0 deg. C) minimum to 140 deg. F (60 deg. C) maximum. Manual hydraulic control valves will be provided on the RO system to regulate pump discharge volume, reject recycle volume, and reject water volume. The reject water and recycle water valves shall be globe valves, constructed of brass, and rated for 300 psi maximum working pressure. The pump discharge valve will be a brass ball valve with a 600 psi rating.

3.6 Flow indicators and Gauges

 The RO system will be supplied with pressure gauges to indicate the pressure of the pre-filter inlet, pre-filter outlet, pump discharge, membrane feed water, and reject water. All pressure gauges shall be glycerin filled, 304 stainless steel cased, with an acrylic window. Flow meters will be provided to give an indication of product, reject, and recycle water flow rates. Flow meter flow rate scales are to be calibrated to gallons per minute and liters per minute within 3 percent accuracy. Flow meters shall be variable area inline type with union style connectors at each end to ease internal cleaning of the meter body. Meter bodies are to be constructed of polysulfone or acrylic, with 316 stainless steel float and float rod, and Viton O-rings. Pump discharge, membrane feed, and reject water pressure gauges and all flow meters are to be mounted next to the electronic controller so that all are in plain view of the operator while the system is running.

3.7 System Piping

 The high-pressure pump discharge header shall be constructed of 150 class brass NPT fittings. High pressure membrane feed water piping shall be high pressure hose. Membrane interconnecting piping shall be close coupled 316 stainless steel with victaulic clamps. Pump suction piping will be schedule 80 PVC and high purity braided PVC hose. Permeate piping will be polyethylene tubing feeding a central permeate header constructed of schedule 80 PVC.

3.8 Test Kit

 Provide a Myron L model 6 P hand held water quality meter along with pH 4 and pH 10 calibration solutions and conductivity KCl- 7000 (7 mS), 442-3000 TDS calibration solutions. Each calibration solution shall be provided in a one quart quantity. Also provide a silt density index test kit, Watts model number T3031, for testing RO feed water SDI.

4.0 SERVICES

 4.1 Warranty

 Provide a 1 year parts and labor warranty for the system to protect against manufacturers defects. System shall not be subjected to water temperatures above 100 deg. F (37 deg. C), below 35 deg. F (2 deg. C), iron, hardness, or chlorine.

 4.2 Start Up

 The Contractor providing the equipment shall provide start up of the RO system, a complete set of operating, maintenance, and installation instructions, one complete set of spare pre-filter cartridges for the pre-filter housing, and operator training.