

**SECTION 22 67 19.16
REVERSE-OSMOSIS WATER EQUIPMENT**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide modifications to existing reverse osmosis (RO) water treatment system as applicable to contract design drawings .

1.2 RELATED WORK

- A. Section 01 00 00, GENERAL REQUIREMENTS.
- B. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- C. SECTION 22 05 11, COMMON WORK RESULTS FOR PLUMBING1.3 APPLICABLE PUBLICATIONS
- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by their basic designation only.
- B. American Society of Mechanical Engineers (ASME):
B40.100-2013.....Pressure Gauges and Gauge Attachments
- C. ASTM International (ASTM):
A269/A269M-2014e1.....Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service
D1785-2012.....Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
- D. American Water Works Association (AWWA):
B300-2010.....Hypochlorites
B301-2010.....Liquid Chlorine
C651-2014.....Disinfecting Water Mains
- E. National Electrical Manufacturers Association (NEMA):
ICS 6-1993 (R2001, R2006) Industrial Control and Systems Enclosures
- F. National Fire Protection Association (NFPA):
70-2014.....National Electrical Code
- G. Department of Health and Human Services, Food and Drug Administration (FDA):
CFR 21, Chapter 1, Part 175.300, Resinous and Polymeric Coatings

1.4 SUBMITTALS

- A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Information and material submitted under this section shall be marked "SUBMITTED UNDER SECTION 22 67 19.16, REVERSE-OSMOSIS WATER EQUIPMENT", with applicable paragraph identification.
- C. Complete detailed layout, setting, arrangement, and installation drawings including. Drawings shall also show all parts of the apparatus including relative positions, dimensions, and sizes and general arrangement of connecting piping.

1.5 QUALITY ASSURANCE (NOT USED)**1.6 PROJECT CONDITIONS (NOT USED)****1.7 AS-BUILT DOCUMENTATION**

- A. Submit manufacturer's literature and data updated to include submittal review comments and any equipment substitutions.
- B. The installing contractor shall maintain as-built drawings of each completed phase for verification; and, shall provide the complete set at the time of final systems certification testing. As-built drawings are to be provided, and a copy of them in Auto-CAD version 14 provided on compact disk or DVD. Should the installing contractor engage the testing company to provide as-built or any portion thereof, it shall not be deemed a conflict of interest or breach of the 'third party testing company' requirement.
- D. Certification documentation shall be provided to COR 10 working days prior to submitting the request for final inspection. The documentation shall include all test results, the names of individuals performing work for the testing agency on this project, detailed procedures followed for all tests, and a certification that all results of tests were within limits specified.

PART 2 - PRODUCTS**2.1 RO SYSTEM**

- A. Manual Valves:
 - 1. Pump Throttle Valve: Type 316 stainless steel ball valve, socket welded.

2. Concentrate Throttle Valve, Recycle Throttle Valve: In-line needle style, stainless steel, rated for 300 psig minimum.
 3. Inlet Isolation Valve, Product and Concentrate Check Valves: PVC with EPDM seats and seals.
 4. Feedwater Sample Valve, Product Water Sample Valve: PVC plug valve with EPDM seats and seals.
 5. High Pressure Sample Valve: Type 316 stainless steel plug valve.
- B. Automatic Valves:
1. Automatic Inlet Shut Off Valve: Solenoid type, diaphragm actuated, normally closed, constructed of glass-filled Noryl thermoplastic.
 2. Automatic Membrane Flush Valve: Provide for purging the membranes with fresh water upon machine shut down.
- C. Piping:
1. Low Pressure Feed, Reject and Recycle Piping 75 psig and under: ASTM D1785, Schedule 80 PVC, socket welded and flanged.
 2. RO Product Tubing From Each Membrane Housing: ASTM D1785, Schedule 80 PVC, socket welded and flanged.
 4. High Pressure Reject and Recycle Piping above 75 psig: ASTM A269/A269M, Type 304 Schedule 10 stainless steel with butt welded joints.

2.2 PRE-FILTER (NOT USED)**2.3 ACTIVATED CARBON FILTER (NOT USED)****2.4 RO WATER STORAGE TANK (NOT USED)****2.5 PRESSURE GAGES (NOT USED)****2.6 WATER TESTING EQUIPMENT (NOT USED)****PART 3 - EXECUTION****3.1 REQUIRED TECHNICAL SERVICES (NOT USED)****3.2 FLUSHING AND DISINFECTING (NOT USED)****3.3 STARTUP AND TESTING (NOT USED)****3.4 DEMONSTRATION AND TRAINING (NOT USED)**

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