



Addendum No. 2



Date: Tuesday, September 29, 2026

Subject: Bid 2026-1 Dunes CDD Reverse Osmosis Feed Pump Replacement – Addendum No. 2

Dear Prospective Bidder:

The following supplementary information encompasses project drawings, specifications, responses to questions, and any necessary clarifications related to the initial bid documents for Bid 2026-1 Dunes CDD Reverse Osmosis Feed Pump Replacement.

Questions:

1. Per our walk-through, can you please ask about the available Ethernet ports in the existing switches in MCP-1? The drawings show that the four VFD's plug into the second switch in the panel but as you and I saw, there are only two available ports.

Response: All controls in SCADA will be hardwired. However, the Contractor is to provide a new ethernet switch. The revised Control System Block Diagram is provided as Attachment 1 indicating "Spare" Ethernet Switch shown as new, connected to the (4) new VFDs and specified as "N-Tron 7018FX2-ST". The "N-Tron 7018FX2-ST" has 14 ethernet ports to accommodate the additional connections as well as providing spares for future expansion. Additionally, this switch has the same footprint as the existing switch.

2. Afton Pump provided comment that Section 432331.41 Vertical In-Line Multistage Centrifugal Pump was written around a multistage Grundfos pump. Afton Pump requested clarification that the Afton Pump vertical in-line pump is single stage and indicated differences in the specification?

Response: Section 432331.41 Vertical In-Line Multistage Centrifugal Pump has been modified to clarify that the Afton Pump is a single stage pump and additional specifications for single stage pumps were added per Afton Pumps comments. The revised Section 432331.41 is included as Attachment 2 and will be incorporated into the Conformed Contract Documents. The design intent has not changed; Afton Pump Inc. is still the primary manufacturer with Grundfos Pump as the bid alternative. The following modifications were made to the specification:

- **Where the document states "Vertical In-Line Multistage Centrifugal Pump" language was revised to read "Vertical In-Line Centrifugal Pump". This was changed in Parts 1.12.C. and 2.4.A.**

- **Corrected 2.2.A.8. Allowable Motor Horsepower to 125 HP.**
- **Modified 2.4.C.2. to read, "The suction/discharge base shall have ANSI Class 300 raised face flange connections as indicated in the drawings or a slip ring (rotating flange) design." Afton states that their pump flange is integral of the case casting and does not rotate.**
- **Modified 2.4.D Impeller to include D.1. for Single Stage Design and D.2. Multistage Design.**
- **Added 2.4.E.1, "Single stage thrust compensation shall be accomplished by the pump motor."**
- **Added 2.4.F.1 for single stage pump shaft material to be 316 Stainless Steel.**
- **Added language to 2.4 I.1. Motors, "and shall be designed to accept all upthrust loads imposed by the pump during starting and running."**
- **Removed from 2.4.I.2.d. Motor Shaft, "protected by a bronze or stainless-steel shaft sleeve secured to the shaft to prevent rotation."**
- **Deleted 3.5.A, "Manufacturer's representative is required to attend the submittal kick-off workshop." However, Dunes CDD recommends that contractors and manufacturers plan time for a meeting to address submittal comments.**
- **Removed from 3.5.A., "PLC and OIT programming, VFD settings" and added to the end of the sentence, "and coordinate with the PCSS for PLC and OIT programming and VFD settings."**
- **Deleted Man-hour requirements. Manufacturers are still required to provide startup up services for all four pumps to be installed sequentially.**
- **Revised D. Impeller to indicate that the "Impeller shall be dynamically balanced to ISO G2.5.**
- **Revised Part 3.5.C.e. to read, "Perform vibration testing and other manufacturer-recommended operational checks necessary to verify satisfactory operation. Provide manufacturer's certification that the impeller(s) or rotating assembly are dynamically balanced to ISO G2.5.**

- 1. Prefix = F- Firesafe**
- 2. Valve Series = VD9 – Direct Mount Flanged V-Port**
- 3. Body/Ball/Stem = R – 316 SST Body/Monel Ball & Stem**
- 4. End Connection = F3 – 300# Flanged Ends**
- 5. Valve Size:**
 - a. Flushing Bypass Valve = 0300 – 3 inches**
 - b. Feed Valve = 0400 – 4 inches**
- 6. Seat, Lining & Trim Materials = S – 50/50 STFE Seats**
- 7. Special Designations = X – No Specials / Series Standard Handle**
- 8. Additional Specials = X – No Specials, Series Standard**
- 9. Special Designations:**
 - a. Flushing Bypass Valve = 3 – 30 deg V-Port Ball**
 - b. Feed Valve = Blank – No Designation, Valve Series Standard.**
- 10. O-Ring: not specified**
- 11. Additional Specials: not specified**

4. Provide, if possible, the original product data and shop drawings for the RO skids.

Response: A separate file containing extended design data, used in part, to inform the design is provided on SharePoint and a link included in the transmission of this addendum for Contractor review and download as needed. Much of the data available is from the 2015 Water Treatment Plant expansion and so is applicable primarily to RO skids 3 and 4 specifically. RO Skids 1 and 2 are very similar to RO Skids 3 and 4, but there are differences. Contractor is required to confirm as-built conditions.

5. Per notes on Photograph 2 and Note 8 on sheet M-3, 4"x2" reducers and 2" flanges on skids 3 and 4 are to be demolished and new 4" flanges to be added. Verify the cutting and welding does not have to be performed in place and this part of the skid can be removed by way of the nearest coupling before performing this work.

Response: Yes, this section of pipe can be removed by way of the nearest coupling.

6. Section 400523-2.1.C.6 lists both Class 150 and Class 300 flanges. Please clarify the required flange class, as the information provided in this section appears to be incomplete.

Response: Section 400523 revised (included as Attachment 2) to indicate Class 300 flanges under part 2.4.C.2.

7. Sheet E-4 shows modifications to existing MCC-1. Please provide manufacturer, model, and FO Number for this MCC.

Response: Eaton/Cutler-Hammer, Freedom 2100 is the MCC manufacturer and model. The factory order number for the original MCC is SOR11032. The order numbers for the additional MCC sections added in 2014 are SOR0357572 and SOR0541269.

8. I could not find the specification for the (4 each) 4" SS Butterfly Valve in the bid documents.

Response: Specification is provided in Note 7 on Sheet M-4.

7. PROVIDE STAINLESS STEEL AWWA C504 SHORT BODY FLANGED BUTTERFLY VALVE BY DEZURIK, VALMATIC, KENNEDY, M&H, PRATT OR APPROVED EQUAL. VALVE SHALL BE NSF61 COMPLIANT.

9. The specifications Section 400531 Part 2.2.A.1. calls for SDR 26 PVC Pipe, while the drawings appear to indicate Schedule 40/80 PVC. Please confirm the required PVC pipe material/schedule.

Response: Section 400531 Part 2.2.A.1. revised to read, "Pipe: ASTM D1785, Schedule 80." Section 400531 Part 2.2.A.4 revised to read, "Flanges: ASTM D2467, Schedule 80." Revised Section 400531 included in Attachment 4.

Attachment 1:

Revised Sheet I-3 Control System Block Diagram

Attachment 2:

Revised Section 432331.41

SECTION 432331.41 – VERTICAL IN-LINE MULTISTAGE CENTRIFUGAL PUMP

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes vertical in-line centrifugal pumps.

- 1. RO Feed Pumps: A total of four duty RO feed pumps are to be provided, with each pump dedicated to an individual RO skid (Skids 1 through 4). The system operates with variable flow using VFDs.

- B. Related Requirements:

- 1. Section 007200 – Standard General Conditions of the Construction Contract.
 - 2. Section 013300 – Submittals.
 - 3. Section 013513.24 – Special Procedures for Maintenance of Plant Operations and Construction
 - 4. Section 014000 – Quality Requirements
 - 5. Section 016100 – Common Product Requirements
 - 6. Section 017823 – Operation and Maintenance Data

1.3 COORDINATION

- A. See Section 013513.24 “Special Procedures for Maintenance of Plant Operations and Construction” for coordination requirements.

1.4 ACTION SUBMITTALS

- A. See Section 013300 “Submittals” for submittals requirements.

- B. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for vertical in-line centrifugal pump.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
 - 3. Manufacturer's rating curves showing pump characteristics of head, brake horsepower, discharge, efficiency and NPSHR. This information shall be prepared specially for the pumps proposed. Catalog sheets showing a family of curves will not be acceptable.

4. Manufacturer's rating curves showing pump characteristics of head, brake horsepower, discharge, efficiency and NPSHR. This information shall be prepared specially for the pump proposed. Catalog sheets showing a family of curves will not be acceptable.
 5. Data on motors and power factor correction capacitors.
 6. Descriptive literature, bulletins and/or catalogs of the equipment.
 7. The total weight of equipment including the weight of the single largest item or component and including the maximum weight "wet".
- C. Shop Drawings: Shop and erection drawings showing materials, details of construction, dimensions and anchor bolt locations.
1. Provide control panel showing clearly all safety switches, disconnects, wires, contacts, lights, buttons, switches, terminals, pressure gauges, devices etc. and complete wiring schematics.
 - a. Completely illustrate the equipment to be supplied.
 - b. Typical diagrams are not acceptable. Each unit shall have its own wiring interconnection diagram and materials list.
- D. A complete total bill of materials for all equipment.
- E. A list of the manufacturer's recommended spare parts.
- F. Written confirmation that submitted system can be installed in location required.
- G. Description of surface preparation and shop painting.

1.5 DELEGATED DESIGN SUBMITTALS

- A. Delegated Design Submittals: Signed and sealed detailed dimensional Shop Drawings with design calculations and assumptions confirming required suction and discharge pressures and flows are acceptable for these pumps.
1. Included with Shop Drawings will be data for materials and equipment, including wiring and control diagrams, performance charts and curves, installation and anchoring requirements, fasteners, and other details as specified.
 2. Complete description of surface preparation and shop prime painting.

1.6 INFORMATIONAL SUBMITTALS

- A. Manufacturer's Certificates:
1. Products meet or exceed specified requirements.
 2. Installation is completed according to manufacturer's instructions.
- B. Manufacturer's Instructions: Detailed instructions on installation requirements, including storage and handling procedures.

- C. Source Quality-Control Submittals: Results of factory tests and inspections.
- D. Field Quality-Control Submittals: Results of Contractor-furnished tests and inspections.

1.7 CLOSEOUT SUBMITTALS

- A. See Section 017000 “Execution and Closeout Requirements” for submittals requirements.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. See Section 017000 “Execution and Closeout Requirements” for maintenance materials requirements.
- B. Spare Parts: One set of manufacturer's recommended spare parts.
- C. Tools: Special tools and other devices required for Owner to maintain equipment.

1.9 QUALITY ASSURANCE

- A. The feed pumps shall be furnished by a manufacturer who is fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The system supplier shall be fully responsible for the proper operation and performance of the system. The system as a whole and the pumping units shall be designed, constructed and installed in accordance with the best practices and methods and shall operate satisfactorily when installed where indicated on the Drawings.
- B. Manufacturer Qualifications: At least 5 years of manufacturing specified products and at least 10 installations in Florida.
- C. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept materials on Site in Manufacturer’s original packaging and inspect for damage. As necessary, provide inspection report to Manufacturer identifying any damage and rework necessary prior to installation.
- B. Storage: Store pumps and all appurtenances according to Manufacturer’s instructions.
- C. Do not disassemble factory assembled parts and components for shipment unless written permission received from Engineer.
- D. Protection
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to Manufacturer’s instructions.

3. Protect unpainted finished iron and steel surfaces to prevent rust and corrosion.
4. Protect finished surfaces of exposed flanges with wood or equivalent blank flanges.
5. Protect bearings against formation of rust in accordance with bearing manufacturer's recommendations. Apply lubricant or corrosion inhibiting treatment during transportation, storage, handling, installation, and lapse of time prior to start-up. Intermittently manually rotate equipment prior to start-up to ensure distribution of lubricant/protection

1.11 SITE CONDITIONS

- A. Ambient Temperature Range: minus 10 to 50 degrees C.
- C. Field Measurements: As applicable confirm field measurements and interferences prior to fabrication. Indicate field measurements on Shop Drawings.

1.12 WARRANTY

- A. The manufacturer shall provide warranty: Section 017000 "Execution and Closeout Requirements" specifies requirements for warranties
- B. If Installer is included as signer of the warranty, the maximum warranty period that sureties will allow is two years. Use specified form of special warranty only when it is included at the end of the Section.
- C. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of Vertical In-Line Centrifugal Pump that fail(s) in materials or workmanship within specified warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Afton Pumps Inc.
2. Grundfos Pump. (Bid alternative)

2.2 SYSTEM DESCRIPTION

- A. RO Feed pump for Skid No.1 (P-22-1), Skid No. 2 (P-22-2), Skid No. 3 (P-22-3) and Skid No. 4 (P-22-4)
 1. Description: RO skid feed pump No. 1, 2, 3 and 4.
 2. Location: As shown in the drawing
 3. Equipment Tag Number: P-22-1, P-22-2, P-22-3 and P-22-4.
 4. Number of Pumps (operating/ standby): 4(4/0)
 5. Liquid Pumped: Cartridge filtered raw water
 6. Suction Condition: Pressurized

7.	Maximum Speed:	3600 rpm
8.	Allowable Motor Horsepower:	125 HP
9.	Motor Design Voltage/Phase/Frequency:	460/3/60 V/Ph/Freq.
10.	Anticipated Pumped Fluid Temperature:	20–60°F minimum
11.	Pump Suction Nozzle Size:	2 inches minimum, flanged.
12.	Pump Discharge Nozzle Size:	3 inches minimum, flanged.
13.	Pump Shut Off Head at Motor FLS Range:	750–770 feet
14.	Design Point Flow Rate:	295 gal per min.
15.	TDH At Design Point:	690 feet
16.	Flow Rate at Secondary Operation Point:	265 gal per min.
17.	TH at Secondary Operation Point:	460 feet minimum.
18.	Efficiency at Design Point:	53-70 percent minimum.
19.	NPSH3 at Design Point:	11-12 feet maximum.
20.	Best Efficiency Point (BEP) Flow Rate Range:	320 – 325 gpm (min/max).
21.	Efficiency at BEP:	54-72 percent minimum.
22.	BEP Location Relative to Design Point:	Above
23.	Flow Rate at Run-out Point:	380 gal per min minimum.
24.	Drive: VFD.	

2.3 PERFORMANCE REQUIREMENTS

- A. Design and proportion of all parts as to have liberal strength, stability and stiffness and to be especially adapted for the work to be done. Provide the room and facilities for inspection, repairs and adjustment.
- B. Furnish the water booster pumps complete with all pumps, motors, suction and discharge manifolds, shut-off valves, control valves, controls, control panel and motor starters required. Factory install all components on a steel skid base and wired, such that only external connections of piping and wiring shall be required in the field.
- C. Provide all necessary foundation bolts, plates, nuts, and washers by the equipment manufacturer. Provide items to be embedded in concrete for installation by others.
 - 1. Anchor Bolts: Type 316 stainless steel.
- D. Nameplates: Attach brass or stainless steel indicating the name of the manufacturer, the rated capacity, head, speed and all other pertinent data to each pump.
- E. Design and construct the pumps and motors to avoid the generation of objectionable noise or vibration. The noise limitations shall apply to the entire system, regardless of the number of pumps running.

2.4 PUMPS

- A. Type: In-line, non-self-priming, vertical centrifugal pump coupled to a standard motor, with flow and head defined in the specification, manufactured according to the standards of the Hydraulic Institute.

B. Pumps and motors designed and built for 24-hour continuous service at any and all points within the required range of operation, without overheating, excessive vibration or strain.

C. Casing:

1. Material: Cast Type 316 stainless steel (ASTM CF-8M).
2. The suction/discharge base shall have ANSI Class 300 raised face flange connections as indicated in the drawings or a slip ring (rotating flange) design.
3. Maximum working pressure 740 psig.
4. The connection size: Minimum 2-inch suction and 3-inch discharge connections.
5. Mating Parts: Register fit to ensure alignment.

D. Impeller

1. Single Stage Design:
 - a. The impeller made from a solid hub casting. The impeller shall be attached to the pump shaft by means of a 316 SS impeller cap screw and washer which is specifically designed to prevent disturbances in the impeller eye. And locked in place by a 316 SS straight key to prevent the impeller from turning on the shaft.
 - b. The impeller shall be fitted with 316ss wear rings front and back. Clearances between the stationary and rotating wear rings shall be per Table 3 of API-610 12th Edition.
 - c. Impeller wear rings shall be pinned to the impeller.
 - d. Material: Type 316 Stainless Steel
 - e. Impeller shall be dynamically balanced to ISO G2.5
2. Multistage Design:
 - a. Enclosed, reverse vanes.
 - b. Laser welded, profiled leading edge blades.
 - c. Secured directly to the pump shaft by means of a split cone and nut design.
 - d. Impeller design characteristics shall be focused on achieving optimum pump hydraulic efficiency.
 - e. Material: Type 316 Stainless Steel.
 - f. Impeller shall be dynamically balanced to ISO G2.5

E. Pump Thrust Compensation:

1. Single stage thrust compensation shall be accomplished by the pump motor.
2. Multistage thrust compensation shall be accomplished by either:
 - a. For pumps fitted with a motor 100 hp or larger, the axial thrust created by pump operation shall be borne primarily by a maintenance-free, thrust handling device of the thrust bearing type, as opposed to a piston type, which is lubricated and cooled by the pumped liquid and is located in the pump base.
 - b. The axial thrust shall be borne primarily by an external bearing flange mounted between the pump and the motor.

F. Single Stage Pump Shaft

1. 316 Stainless Steel

G. Multistage Pump Shaft:

1. 316 Stainless Steel, AISI 431 or 318 LN.
2. Tapered and keyed at both ends.

H. Pump Shaft Seal Design:

1. Shaft seal shall be single cartridge type design with balanced cartridge O-ring arrangement.
2. Standard shaft seal replacement will be possible without removal of any pump components other than the coupling guard, motor couplings and seal cover.
3. Pumps will have adequate space within the motor stand so that shaft seal replacement is possible without motor removal.

I. Motors:

1. Provide motors rated for operation on 480-volt, 3 phase and 60 hertz power and shall be designed to accept all upthrust loads imposed by the pump during starting and running.
2. Pump motors: United States manufacture, close-coupled, totally enclosed, fan cooled type, with rodent screens on all ventilating passages.
 - a. 1.15 service factor, and Class F insulation.
 - b. Wound for the starting configuration as called out in the technical data sheet.
 - c. Design pump brake horsepower at duty point shall not exceed 100 percent of motor horsepower exclusive of service factor, and service factor shall not be exceeded at any point on the pump head-capacity curve.
 - d. Motor Shaft: High-strength steel.
 - e. Manufacturer listed in 400493.23 - 3
3. Motors furnished with winding temperature detectors for each phase. Embedded bi-metallic temperature thermostat switches with normally closed contacts and leads terminating in the main conduit box.

J. Variable-Speed Drive: As specified in 262923.25 "Variable-Frequency Motor Controllers Industrial."

2.5 GENERAL FINISH REQUIREMENTS

A. All surfaces prepared and prime painted in the manufacturer's shop.

1. Surface preparation and painting in accordance with the manufacturer's recommendations.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish products after assembly.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Reference Section 017400 "Execution and Closeout Requirements".
- B. Field verify all pertinent data and dimensions to determine exact location and arrangement for equipment to be installed.
- C. Verify that items provided by other Sections of Work are ready to receive Work of this Section.
- D. Verify layout, orientation and connections.
- E. Coordinate with other trades, equipment and systems to the fullest extent possible.

3.2 INSTALLATION

- A. Installation shall be in strict accordance with the manufacturer's instructions and recommendations in the locations indicated on the Drawings. Installation shall include furnishing the required oil and grease for initial operation. The grades of oil and grease shall be in accordance with the manufacturer's recommendations. Anchor bolts shall be set in accordance with the manufacturer's recommendations.
- B. Comply with requirements for pipe hangers and supports specified in Section 40 05 07 "Hangers and Supports for Process Piping" in Division 40.

3.3 FIELD QUALITY CONTROL

- A. Furnish the services of a factory representative for one day who has complete knowledge of proper installation, operation and maintenance to inspect the final installation and supervise a test run of the equipment.
- B. After pump has been completely installed, conduct in the presence of the Engineer, such tests as are necessary to indicate that the pump efficiency and discharge conform to the specifications. Field tests shall include all pumps included under this Section. Supply all electric power and water to complete the field tests.
- C. If the pump performance does not meet the requirements specified, corrective measures shall be taken or pumps shall be removed and replaced with pumps, which satisfy the conditions specified. A seven-day operating period of the pumps will be required before acceptance. During this seven-day operating period, supply all power necessary.
- D. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- E. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- F. Prepare test and inspection reports.

3.4 ADJUSTING

- A. Refer to Section 017500 “Starting and Adjusting”.
- B. Adjust hardware and moving parts to function smoothly and lubricate as recommended by manufacturer.

3.5 MANUFACTURER'S SERVICES

- A. Provide the services of a factory-certified service engineer who has complete knowledge of proper installation, startup, testing, operation, and maintenance of specified equipment and coordinate with the PCSS for PLC and OIT programming and VFD settings. Submit qualifications of service representative for approval who is a direct, full-time employee of the manufacturer.
- B. Manufacturer shall advise, consult, and instruct the Contractor on:
 - 1. Installation procedures and adjustments and inspect the equipment during installation as a condition of acceptance of the work.
 - 2. Startup and testing of the finished installation.
- C. Manufacturer shall provide the services of a qualified factory representative for installation review, start-up, adjustment, testing, and Owner training. The work will be performed sequentially for four pumps so that three skids can remain in operation while each individual skid is taken out of service, replaced, tested, and returned to service.
 - 1. Provide a minimum of four (4) onsite start-up visits by the manufacturer’s factory representative, one for each pump, coordinated with the Contractor’s installation sequence.
 - 2. During each start-up visit, the manufacturer’s factory representative shall, at a minimum:
 - a. Review the completed installation of the applicable pump skid for conformance with the manufacturer’s requirements.
 - b. Verify pump and motor alignment, including final alignment after piping connections are complete.
 - c. Verify lubrication, rotation, mechanical connections, electrical connections, controls, and other manufacturer-required pre-start checks.
 - d. Supervise initial start-up and adjustment of the pump.
 - e. Perform vibration testing and other manufacturer-recommended operational checks necessary to verify satisfactory operation. Provide manufacturer’s certification that the impeller(s) or rotating assembly are dynamically balanced to ISO G2.5.
 - f. Assist with functional testing of the pump and verify that operating conditions are acceptable prior to placing the skid into normal service.
 - g. Identify and document any deficiencies requiring correction before the pump is placed into service.

3. Each pump shall be inspected, started, tested, and accepted by the manufacturer's factory representative before that skid is placed into normal service and work proceeds to the next skid, unless otherwise approved by the Engineer.
 4. Owner training may be conducted during either the initial pump start-up visit or the final pump start-up visit, at the Contractor's discretion and subject to coordination with the Owner and Engineer. Training shall include, at a minimum, proper start-up, shutdown, operation, routine maintenance, and basic troubleshooting of the equipment.
 5. Following successful start-up and testing of each skid, the manufacturer's factory representative shall provide written documentation confirming that the applicable pump has been installed, aligned, tested, and started in accordance with the manufacturer's recommendations and is suitable for operation. Following completion of all four start-ups, provide a final certification covering all four pumps.
 6. The Contractor shall coordinate the manufacturer's representative visits with the installation sequence to minimize onsite time and avoid unnecessary mobilizations or standby time.
 7. Additional onsite manufacturer services beyond the four start-up visits specified above shall only be provided when requested or authorized by the Owner.
- D. Provide Owner's training including operational and maintenance instruction to two separate operational and maintenance teams over two separate time periods. Give training at times convenient to operational or maintenance teams being trained in coordination with the Owner. Accordingly, some training may be conducted during hours outside a normal Monday through Friday, 7:00 a.m. to 3:30 p.m. workday. Include following operational training as a minimum:
1. Theory of operation.
 2. Process flow description.
 3. Unit capacity and design criteria.
 4. Operational troubleshooting and diagnostics procedures.
 5. Step-by-step startup and shutdown procedures.
 6. System operation and optimization practices.
 7. Control set point modification procedures.
 8. Overall installed control system to include PLC/OIT controls functionality and control panel hardware operations.
 9. PLC and OIT program backup procedures.
- E. Minimum maintenance training topics:
1. Step-by step, "hands-on" assembly and disassembly procedural instructions.
 2. Replacement part identification and ordering procedures.
 3. Lubrication procedures, including drain-down and refill procedures.
 4. Recommended routine maintenance procedures.
Troubleshooting and diagnostic procedures.

END OF SECTION 432331.41

Attachment 3:

V-Port Ball Valve Revisions Sheet M-4 Markup



1. PUMP PADS TO BE INSTALLED PRIOR TO DEMOLITION. REFER TO SECTION 013513.24 FOR SEQUENCING AND MAINTENANCE OF PLANT OPERATIONS.
2. LAYOUT IS BASED ON PUMP MODEL 2x3-13 ILVS-E BY AFTON CONTRACTOR TO COORDINATE FOR LAYOUT IF OTHER PUMP MODEL/MANUFACTURER IS SELECTED.
3. PIPE SUPPORTS SHOWN ARE INDICATIVE AND TO BE DESIGNED PER SPECIFICATION SECTION 400507.
4. REFER TO ELECTRICAL DRAWINGS FOR CONTROL PANEL MODIFICATION DETAILS.
5. * INDICATES PUMP PAD DIMENSIONS TO BE COORDINATED BY THE CONTRACTOR WITH THE MANUFACTURER OF THE APPROVED EQUIPMENT PRIOR TO FABRICATION AND CONSTRUCTION. REFER TO DETAIL A/S-1 FOR EQUIPMENT PAD DETAILS.
6. THE DRAWING SHOWS TYPICAL ARRANGEMENT OF TWO RO SKIDS AND ASSOCIATED FEED PUMPS. EACH OF THE FOUR RO SKIDS FEED PUMPS TO BE REPLACED.
7. PROVIDE STAINLESS STEEL AWWA C504 SHORT BODY FLANGED BUTTERFLY **VALVE** BY DEZURIK, VALMATIC, KENNEDY, M&H, PRATT OR APPROVED EQUAL. VALVE SHALL BE NSF61 COMPLIANT.
8. FLUSHING BYPASS LINE ALIGNMENT AND ROUTING TO BE FIELD VERIFIED AND CONFIRMED PRIOR TO INSTALLATION.
9. ROTORK IQTM-125 7010-100-04 ACTUATOR OR ROTORK EQUIVALENT.
A-T CONTROLS FVD9 ASME CLASS 300 FLANGED CONTROL VALVES (OR APPROVED EQUAL):
3" SS FLUSHING BYPASS VALVE A-T CONTROLS MODEL: FVD9R-F3-0300-SXX-3
4" SS FEED VALVE A-T CONTROLS MODEL: FVD9R-0400-SXX-

 $\triangle 2$

4" SS FEED VALVE, FULL PORT BALL VALVE (TYP OF 4) - SEE NOTE 9

RO SKID FEED PUMP, INSTRUMENTS AND VALVE TAGS

4" SS FEED VALVE, FULL PORT BALL
VALVE (TYP OF 4) - SEE NOTE 9

2

DESIGNED BY: _____ B. DIVYA
DRAWN BY: _____ G. HARI
SHEET CHK'D BY: _____ A. MARATHE
CROSS CHK'D BY: _____ B. DIVYA
APPROVED BY: _____ K C COLE
DATE: _____ SEPTEMBER 2026

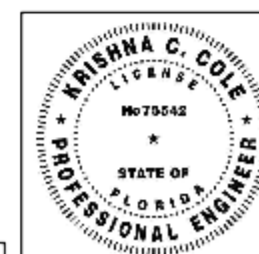


DUNES COMMUNITY DEVELOPMENT DISTRICT

REVERSE OSMOSIS
MEMBRANE FEED PUMP REPLACEMENT

RO SKID FEED PUMPS MODIFICATION TYPICAL PLAN

This item has been digitally signed and sealed by Krishna C. Cole on the date adjacent to the seal. Signature must be verified on any electronic copies.



DATE: 91112026
KRISHNA C. COLE
PE NO. 75542

SHEET NO

M-4

REFs: [CDMS_2436, MEP001TR, MWP002RO] Images: [KRISHNA PE SIGN]
 Last saved by: SREEKUMAR Time: 8/28/2026 2:21:42 PM
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 CDM SMITH ALL RIGHTS RESERVED.

Attachment 4:

Revised Section 400531

SECTION 400531 - THERMOPLASTIC PROCESS PIPE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. PVC pipe.
 - 2. Fittings.

- B. Related Requirements:

- 1. Section 400506 "Couplings, Adapters, and Specials for Process Piping": Pipe penetrations, restrained joints, flexible connections, expansion joints and loops, and sleeve-type couplings.
 - 2. Section 400507 "Hangers and Supports for Process Piping": Hangers, anchors, sleeves, and sealing of piping to adjacent structures.

1.3 SUBMITTALS

- A. Section 013300 "Submittal Procedures": Requirements for submittals.
- B. Product Data: Submit manufacturer's catalog information regarding pipe and fittings.
- C. Shop Drawings: Indicate layout of piping systems, including equipment, critical dimensions, sizes, materials lists, location of all fittings, valves, and in-line accessories.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's recommended butt fusion welding procedures identifying all quality control checks during the fusion procedure including the minimum and maximum allowable bead formation during the heat soak process and the final weld roll back process for the various size pipes.
- F. Manufacturer to provide a sample joint for each size pipe to be supplied that is 12-in long and has two heat fusion welds that identifies the manufacturer's minimum and maximum allowable bead thicknesses. Provide documentation that the sample was pressure tested to 150 psi or the specified pressure.
- G. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for pipe sizes and sizing methods.

- H. Source Quality-Control Submittals: Indicate results of shop factory tests and inspections.
- I. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- J. Qualifications Statements:
 - 1. Submit qualifications for manufacturer, installer, and licensed professional.
 - 2. Submit manufacturer's approval of installer.

1.4 CLOSEOUT SUBMITTALS

- A. Section 017700 "Closeout Procedures": Requirements for submittals.
- B. Project Record Documents: Record actual locations of piping, valves and other appurtenances, connections, and invert or centerline elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

- A. Permanently mark each length of pipe with manufacturer's name or trademark and indicate conformance to standards.
- B. Materials in Contact with Potable Water: Certified according to NSF 61.
- C. Maintain copy of each standard affecting Work of this Section on Site.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.
- B. Installer: Company specializing in performing Work of this Section with minimum five years' documented experience and approved by manufacturer.
- C. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of Florida .

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 "Product Requirements": Requirements for transporting, handling, storing, and protecting products.
- B. Inspection:
 - 1. Accept materials on Site in manufacturer's original packaging and inspect for damage.
 - 2. Manufacturer's Packaging: Comply with ASTM D3892.

- C. Storage: Store materials according to manufacturer instructions.
- D. Protection:
 - 1. Protect materials from puncture, abrasion, moisture, dust, and UV by storing in clean, dry location remote from construction operations areas.
 - 2. Protect piping and appurtenances by storing off ground.
 - 3. Provide additional protection according to manufacturer instructions.

1.8 AMBIENT CONDITIONS

- A. Section 015000 “Temporary Facilities and Controls”: Requirements for ambient condition control facilities for product storage and installation.
- B. Minimum and Maximum Temperatures: Do not install pipe when temperature is below 40 degrees F or above 90 degrees F if pipe is exposed to direct sunlight.
- C. UV Protection: Provide pipe installed above ground or outside with UV protection.

1.9 EXISTING CONDITIONS

- A. Field Measurements:
 - 1. Verify field measurements prior to fabrication.
 - 2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Van Stone flanges shall not be used with pinch valves, industrial butterfly valves; elastomer bellows style expansion joints or other piping system components having an elastomer liner (rubber seat) that is used as a gasket.

2.2 PVC PIPE, TUBE, AND FITTINGS

- A. PVC Pipe and Fittings:
 - 1. Pipe: ASTM D1785, Schedule 80
 - 2. Fittings: ASTM D2467, Schedule 80, socket.
 - 3. Joints: ASTM D2855, socket, solvent welded.
 - 4. Flanges: ASTM D2467, Schedule 80

2.3 ACCESSORIES

- A. PVC Piping:

1. Flange Bolting:
 - a. Hex-Head Bolts: Stainless steel; ASTM F593 Grade 316.
 - b. Hex-Head Nuts: Stainless steel; ASTM F594 Grade 316.
2. Flange Gaskets:
 - a. Type: Full faced.
 - b. Material: EPDM.
 - c. Comply with ASME B16.21.
3. Push-On Joint Seals:
 - a. Material: EPDM .
 - b. Comply with ASTM F477.
4. Solvent Cement:
 - a. Comply with ASTM D2564.
 - b. Formulated for use with sodium hypochlorite and other caustic solutions.
 - c. manufactured by the solvent weld cement manufacturer.

2.4 SOURCE QUALITY CONTROL

- A. Section 014000 “Quality Requirements”: Requirements for testing, inspection, and analysis.
- B. Provide shop inspection and testing of completed pipe sections.
- C. Owner Inspection:
 1. Make completed pipe sections available for inspection at manufacturer's factory prior to packaging for shipment.
 2. Notify Owner at least seven days before inspection is allowed.
- D. Owner Witnessing:
 1. Allow witnessing of factory inspections and test at manufacturer's test facility.
 2. Notify Owner at least seven days before inspections and tests are scheduled.
- E. Certificate of Compliance:
 1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
 2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 017300 “Execution”: Requirements for installation examination.
- B. Verify that field dimensions are as indicated on Shop Drawings.
- C. Inspect existing flanges for nonstandard bolt hole configurations or design and verify that new pipe and flange mate properly.

3.2 PREPARATION

- A. Section 017300 “Execution”: Requirements for installation preparation.
- B. Ream pipe ends, remove burrs, and bevel plain-end pipe.
- C. Thoroughly clean pipe and fittings before installation.
- D. Cleaning: Clean surfaces to remove foreign substances.

3.3 INSTALLATION

- A. Comply with ASME B31.3 and B31.9.
- B. Run piping straight along alignment as indicated on Shop Drawings, with minimum number of joints.
- C. Fittings:
 - 1. According to manufacturer instructions.
 - 2. Gaskets:
 - a. Clean seats thoroughly.
 - b. Wipe gaskets clean prior to installation.
 - 3. Tighten bolts progressively, drawing up bolts on opposite sides until bolts are uniformly tight; use torque wrench to tighten bolts to manufacturer instructions.
- D. Provide required upstream and downstream clearances from devices as indicated.
- E. Install piping with sufficient slopes for venting or drainage of liquids and condensate to low points.
- F. Support exposed piping as specified in Section 400507 “Hangers and Supports for Process Piping”.

- G. Provide expansion joints as specified in Section 400506 “Couplings, Adapters, and Specials for Process Piping”, and provide pipe guides as specified in Section 400507 “Hangers and Supports for Process Piping”, to compensate for pipe expansion due to temperature differences.
- H. Field Cuts: According to pipe manufacturer instructions.
- I. Joining:
 - 1. Heat Joining: Comply with ASTM D2657.
 - a. Butt-fusion joints to be done by a factory-qualified joining technician as designated by the pipe manufacturer.
 - b. Field Samples: join two sample welds on each size of pipe to be installed using the same fusion welding equipment that will be used for completion of the entire work. These sample welds will be compared to the manufacturer’s sample previously submitted in accordance with Part 1.
 - c. Pipe joints with beads in excess of 3/16-in will not be approved by the Engineer.
 - 2. Electrofusion: Comply with ASTM F1290.
 - 3. Primers and Cleaners: Comply with ASTM F402.
 - 4. PVC Solvent-Cemented Joints: Comply with ASTM D2855.
- J. Insulation: As indicated on Drawings.

3.4 TOLERANCES

- A. Section 014000 “Quality Requirements”: Requirements for tolerances.
- B. Laying Tolerances: As specified in Section 331116 “Site Water Utility Distribution Piping”.

3.5 FIELD QUALITY CONTROL

- A. Section 014000 “Quality Requirements”: Requirements for inspecting and testing.
- B. Inspection:
 - 1. Inspect for piping defects that may be detrimental as determined by the Engineer.
 - 2. Repair damaged piping, or provide new, undamaged pipe.
 - 3. After installation, inspect for proper supports and interferences.
- C. Pressure Testing:
 - 1. Test Pressure: Not less than 150 psig or 1.5 times the system’s working pressure, whichever is greater.
 - 2. Conduct hydrostatic test for minimum two hours.
 - 3. Filling:
 - a. Fill section to be tested with water slowly and expel air from piping at high points.
 - b. Install corporation cocks at high points.
 - c. Close air vents and corporation cocks after air is expelled.

- d. Raise pressure to specified test pressure.
- 4. Observe joints, fittings, and valves under test.
- 5. Remove and renew cracked pipe, joints, fittings, and valves showing visible leakage and retest.
- 6. Leakage:
 - a. Correct visible deficiencies and continue testing at same test pressure for additional two hours to determine leakage rate.
 - b. Maintain pressure within plus or minus 5 psi of test pressure.
 - c. Leakage is defined as quantity of water supplied to piping necessary to maintain test pressure during period of test.
 - d. Correct visible leaks and repeat test to verify no leaks at the required test pressures.

3.6 CLEANING

- A. Sections 017300 “Execution” and 017700 “Closeout Procedures”: Requirements for cleaning.
- B. Keep pipe interior clean as installation progresses.
- C. Clean pipe interior of soil, grit, shavings, and other debris after pipe installation.

END OF SECTION 400531

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