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Solicitation Addendum

Addendum No.: 3
Solicitation No.: 18-TA002764JP
Project No.: 6086160
Solicitation Title: Rye Road Functional Improvements and Master Lift Station
Addendum Date: June 19, 2018
Procurement Contact: Joe Pretorius, johannes.pretorius@mymanatee.org

IFBC NO. 18-TA002764JP IS AMENDED AS SET FORTH HEREIN. RESPONSES TO QUESTIONS POSED BY PROSPECTIVE BIDDERS ARE PROVIDED BELOW. THIS ADDENDUM IS HEREBY INCORPORATED IN AND MADE A PART OF IFBC NO. 18-TA002764JP.

Replace:

ATTACHMENT 2, TECHNICAL SPECIFICATIONS

Attachment 2 is replaced with the attached Attachment 2, Technical Specifications revised per this Addendum No. 3. Revisions have been made as follows:

1. Section 01150 – Bid Item No. 24 – ~~(ABB-DN300-McCrometer UM08 or equal)~~
2. Section 02640 – 2.01 F Gate Valves – All stems, stem extensions, bonnet bolts, nuts and studs shall be 316 stainless steel.
3. Section 13340 – 1.01B.1 Above-ground Valve Assembly – All gate valves must have stainless steel shafts.
4. Section 13340 - 1.01.D.1 Sewage Pumping Assemblies - Pumping station shall have ~~two~~ three identical, totally submersible sewage pump assemblies rated and suitable for continuous duty, underwater operation with a space for a third future pump as shown on the Contract Plans.
5. Section 13340 - D.7.i. Rye Road Pump Station Specific Pump Requirements – (Class 1, Division 1).
6. Section 13340 - 1.01.E Risers and Fittings - The pipe support system shall be constructed using 4-inch 316 stainless steel angle.
7. Section 13340 - 1.01.G. Painting and Coating – Above ground piping to be painted per Section 09900, ~~color green~~ per Manatee County standards.
8. Section 13340 - 1.01.I. Magnetic Flow Meter - Model shall be ~~ABB-model-DN300~~ McCrometer model UM08, unless otherwise approved by the County.

9. Section 13340 - 2.01.K. Alarms – ~~An automatic shutoff timer for the horn (variable setting 0-20 minutes) is to be installed in the control panel.~~
10. Section 13340 - 2.01.N. TCU / VFD Panel - The remote terminal/pump control unit shall be a complete TCU/ VFD Panel ~~Pack~~ system as manufactured by Data Flow Systems, Inc.
11. Section 13350 - 1.01.A Pumps – 6. Explosion Proof (X) (Class 1, Division 1)

QUESTIONS AND RESPONSES:

Q1. Referencing the response to question 10 that was issued in addendum 2. The response mentions that “the contractor shall probe the area in front of the end wall prior to sheet pile installation to determine the presence of a footer. If a footer in front of the end wall is found, the contractor shall submit a wall installation detail to the engineer for approval”. Most likely there is a footer with this end wall as I have not come across one through the years that did not have a footer. Why would the burden and cost of designing a wall installation detail be pushed onto the contractor, when the County has hired an engineer to design the project? It is not possible to put a number on an unknown. With the answer provided, one could speculate that if a footer is encountered, any work the contractor has to perform relating to this issue would be dealt with via a change order. Would this be correct? Please clarify

R1. The response provided was to allow the contractor to construct the closure at the end wall using their preferred methods. One possible solution would be that the contractor can notch the footing to the face of the end wall wide enough to allow the installation of the sheet piling and install the piling as close to the wall and construct the closure as shown in Detail 2. However, other methods may be more appropriate depending upon the contractor’s preference per approval.

Q2. Existing Bridge plans, though hard to read, show single mat of reinforcing steel in the (topping) yet nothing in the precast deck units. Are you sure these are not Pre-stressed precast deck slabs?? If so wouldn’t the 2’4” demo expose and compromise the integrity of the remaining deck slab not removed?? Please advise.

R2. The plans provided were only for deck rehabilitation. Original plans are not available. Bridge inspection reports have shown spalls with exposed longitudinal reinforcing to be reinforcing steel and not pre-stressed steel and the inspections and load ratings have been provided since 1985 as reinforced concrete slabs.

Q3. Has any as-built data been reviewed to ensure that the saw cut line doesn’t land at an odd location?? For example, leaving less than stipulated 2’2” development length at precast deck slab units?? Please advise

R3. Reviews of the survey and bridge inspection data and from field inspections did not indicate unusual conditions as to the locations of the proposed cut lines. During construction, if the contractor encounters differing conditions, the contractor will need to submit an RFI for clarification.

Q4. Note 5 on plan sheet B1-8 and note 6 on B2-10 state that the contractor is to verify elevations shown on this sheet including the batter of existing exterior piles. What will be the protocol if a differing condition is found? RFI and wait for response?? Please advise.

R4. If the contractor determines that a significant variation is found as compared to the proposed plans, yes, they will need to inform the engineer through an RFI for a resolution.

Q5. Are the pumps that are to be provided, with standard motors or with Explosion Proof motors?

Per Specification Section 13340, Lift Station Specification, Page 294, Par. 7 (a) the specified Model S8LA is a standard motor. Par. 7 (i) specifies Explosion Proof which would be a Model S8LAX. Both models are VFD compatible. Which model is to be furnished and installed? Please clarify.

R5. Specification Section 13340 has been revised to confirm the use of explosion proof motors per NEC requirements.

The deadline for questions and clarifications established in Article A.49 of the bidding documents has passed, and no further questions or requests for clarifications will be accepted.

NOTE: Items that are ~~struck through~~ are deleted. Items that are underlined have been added or changed. All other terms and conditions remain as stated in IFBC No. 18-TA002764JP.

End of Addendum

INSTRUCTIONS:

Receipt of this addendum must be acknowledged as instructed in the solicitation document. Failure to acknowledge receipt of this Addendum may result in the response being deemed non-responsive.

AUTHORIZED FOR RELEASE: 

SECTION 01150 MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE

- A. The scope of this section of the Contract Documents is to further define the items included in each Bid Item in the Bid Form section of the Contract Documents. Payment will be made based on the specified items included in the description in this section for each bid item.
- B. All contract prices included in the Bid Form section will be full compensation for all shop drawings, working drawings, labor, materials, tools, equipment and incidentals necessary to complete the construction as shown on the Drawings and/or as specified in the Contract Documents to be performed under this Contract. Actual quantities of each item bid on a unit price basis will be determined upon completion of the construction in the manner set up for each item in this section of the Specifications. Payment for all items listed in the Bid Form will constitute full compensation for all work shown and/or specified to be performed under this Contract.

1.02 ESTIMATED QUANTITIES

The quantities shown are approximate and are given only as a basis of calculation upon which the award of the Contract is to be made. The County does not assume any responsibility for the final quantities, nor shall the Contractor claim misunderstanding because of such estimate of quantities. Final payment will be made only for satisfactorily completed quantity of each item.

1.03 WORK OUTSIDE AUTHORIZED LIMITS

No payment will be made for work constructed outside the authorized limits of work.

1.04 MEASUREMENT STANDARDS

Unless otherwise specified for the particular items involved, all measurements of distance shall be taken horizontally or vertically.

1.05 AREA MEASUREMENTS

In the measurement of items to be paid for on the basis of area of finished work, the lengths and/or widths to be used in the calculations shall be the final dimensions measured along the surface of the completed work within the neat lines shown or designated.

1.06 LUMP SUM ITEMS

Where payment for items is shown to be paid for on a lump sum basis, no separate payment will be made for any item of work required to complete the lump sum items. Lump sum contracts shall be complete, tested and fully operable prior to request for final payment. Contractor may be required to provide a break-down of the lump sum totals.

1.07 UNIT PRICE ITEM

- A. Separate payment will be made for the items of work described herein and listed on the Bid Form. Any related work not specifically listed, but required for satisfactory completion of the work shall be considered to be included in the scope of the appropriate listed work items.
- B. No separate payment will be made for the following items and the cost of such work shall be included in the applicable pay items of work. Final payments shall not be requested by the Contractor or made by the County until as-built (record) drawings have been submitted and approved by the County.
1. Shop Drawings, Working Drawings.
 2. Clearing, grubbing and grading except as hereinafter specified.
 3. Trench excavation, including necessary pavement removal and rock removal, except as otherwise specified.
 4. Dewatering associated with removal from water main and force main, as well as, ground dewatering associated with the ten (10) inch water main relocation at the bridge and disposal of surplus water. Dewatering of ground associated with the pump station construction is to be paid for under Bid Item 32 Dewatering.
 5. Structural fill, backfill, and grading.
 6. Replacement of unpaved roadways, and shrubbery plots.
 7. Foundation and borrow materials, except as hereinafter specified.
 8. Testing and placing system in operation.
 9. Any material and equipment required to be furnished, installed and utilized for the tests.
 10. Pipe, structures, pavement replacement, asphalt and shell driveways and/or appurtenances included within the limits of lump sum work, unless otherwise shown.
 11. Maintaining the existing quality of service during construction.
 12. Maintaining or detouring of traffic.
 13. Appurtenant work as required for a complete and operable system.
 14. Seeding and hydromulching unless covered under a bid item.
 15. As-built Record Drawings and Operation and Maintenance Manuals.
 16. Surveying and geotechnical engineering.
 17. Permitting other than the Florida Department of Environmental Protection (FDEP) permits, such as, building permits, right-of-way permits, NPDES dewatering permits, etc.

1.08 BID ITEMS

Bid Item No. 1 MOBILIZATION, DEMOBILIZATION, BONDS, AND PERMITS

1. Measurement and payment for this Bid Item shall include full compensation for the required 100 percent (100%) Performance Bond, 100 Percent (100%) Payment Bond, all required insurance for the project and the Contractor's mobilization and demobilization costs as shown in the Bid Form. Mobilization includes, but is not limited to: preparation and movement of personnel, equipment, supplies and incidentals such as safety and sanitary supplies/ facilities
2. The cost of permits and any required insurance and any other preconstruction expense necessary for the start of the work, excluding the cost of construction

materials, shall also be included in this item. The costs for audio-visual documentation, indemnification, and for provision of the field office (if erected) shall be included in this item. This bid item shall also include demobilization at the end of the Contract.

3. Payment for this bid item shall not exceed 10 percent (10%) of the total Contract cost unless the Contractor can prove to the County that his actual mobilization cost exceeds 10 percent (10%).
4. Partial payments for this Bid Item will be made in accordance with the following schedule:

| Percent of Original Contract Amount: | Percent Allowable Payment of Mobilization/Demobilization Bid Item Price: |
|--------------------------------------|--|
| 5 | 25 |
| 10 | 35 |
| 25 | 45 |
| 50 | 50 |
| 75 | 75 |
| 100 | 100 |

5. These payments will be subject to the standard retainage provided in the Contract. Payment of the retainage will be made after completion of the work and demobilization.

Bid Item No. 2 MAINTENANCE OF TRAFFIC AND PEDESTRIAN SAFETY

1. Maintenance of traffic and pedestrian safety within the limits of the project for the duration of the construction period will be in accordance with the requirements of Section 102 of the Florida Department of Transportation's "Standard Specifications for Road & Bridge Construction," latest edition and the State of Florida's "Manual of Traffic Control and Safe Practices for Street and Highway Construction, Maintenance and Utility Operations," applicable edition, except as amended by these Contract Specifications (Section 01570 Traffic Regulations).
2. The work specified under this Section shall include furnishing all labor, materials, and equipment necessary to maintain public roadway and pedestrian traffic including flag men, uniformed police officers, temporary barricades of whatever type required, warning lights/flashers, safety ropes, and for such duration as may be required by the Engineer. This will also include all materials and construction necessary for temporary connections and driveway maintenance. Also included is furnishing, installing and maintaining a Traffic Control Plan, control and safety devices, control of dust, temporary crossing structures over trenches, any necessary detour facilities, and other special requirements for the safe and expeditious movements of traffic.
3. The Contractor will take all necessary precautions for the protection of the Work and safety of the public for the duration of the construction period.

4. The Contractor will provide barriers to prevent unauthorized entry to construction areas and to protect persons and property from damage due to construction operations. Contractor will provide temporary fencing where needed to protect the Work or Contractor's office, materials, and equipment.
5. This item will be paid for at the applicable contract unit price of lump sum (LS) as listed in the Contract Plans and paid monthly based on the Work completed as part of the pay application.

Bid Item No. 3 EROSION AND SEDIMENTATION CONTROL

1. Erosion and Sedimentation Control within the limits of the project for the duration of the construction period will be in accordance with the requirements of Manatee County Public Works Standards Manual, latest edition, and Section 104 of the Florida Department of Transportation's "Standard Specifications for Road & Bridge Construction," latest edition. Contractor to develop erosion and sedimentation control plan and receive County approval prior to construction. Install silt fences, rock bags, and other erosion and sedimentation control devices as depicted in the Contractor developed erosion and sedimentation control plan or as directed by the Engineer or County.
2. The work specified under this Bid Item will include furnishing all labor, materials, and equipment to control and prevent sediment transportation from the Work area to adjacent properties, including installation, maintenance, and removal of temporary erosion and sediment controls for such duration as may be required by the Engineer or County.
3. The Contractor will clean up the site to preconstruction condition, as described in Section 01710.
4. This item will be paid for at the applicable contract unit price of lump sum (LS) as listed in the Contract Plans.

Bid Item No. 4 CLEANUP AND MISCELLANEOUS WORK

1. Payment for all work included in this Bid Item will be made at the applicable unit price of lump sum (LS) as an allowance permitted by the County. Payment shall include the furnish and installation of sodding, sprigging and seeding of disturbed areas not specifically covered under other bid items. Payment shall include site preparation, clean up and restoration not specifically covered under other bid items. Payment shall include trash disposal and dust control. Contractor shall minimize dirt/earth from site from being transferred onto Rye Road via work truck tires. Contractor shall remove dirt/earth or other work related elements from Rye Road as needed and at County's request. Payment shall include development of record drawings; development and submittal of operation and maintenance manuals for equipment, instrumentation and appurtenances; development and submittal of shop drawings. Payment shall include work and coordination efforts not specifically noted within other bid items that are necessary to complete work as noted in the Contract Documents, complete and satisfactory by the County.

**Bid Item No. 5 HYDROMATIC PUMP AND APPURTENANCES REPLACEMENT
[PS-355 REHABILITATION]**

1. Payment for work under this Bid Item shall be made at the Contract unit price bid of lump sum (LS) for the replacement of existing pumps, discharge elbow, guide rails and appurtenances and install pump base mounting plate, as well as, replacement of existing pump breakers and overloads located at the existing pump station 355; existing to be removed and disposed and new to be furnished and installed complete and operational. Payment shall include removal and disposal of existing pumps, discharge elbow, guide rails and appurtenances and furnish and install pump base mounting plate. Payment shall include the furnish and installation of two (2) Hydromatic S4N, 5 hp, 6.70" impeller pumps, BPIU discharge elbow, stainless steel lifting chain, pump base mounting plate, guide rails, mounting brackets, rail supports and appurtenances from Barney's pumps. Contractor to coordinate with Barney's Pumps and County with respect to item lead times, delivery, station shutdown, station testing and startup at pump station 355. Payment shall include removal and disposal of existing pump breakers and overloads and furnish and installation of new pump breaker and overloads compatible with the new Hydromatic S4N pumps. Payment shall include all necessary vacuum trucks and temporary bypass pumps and piping necessary to bypass the pump station 355 and affected upstream pump stations. Contractor to coordinate with the County to determine bypass pumping flow and head requirements. Bypass plan must be submitted and accepted by the County prior to starting construction. Payment shall include all other labor, equipment, and materials needed to remove and replace the existing pumps and pump appurtenances as well as remove and replace the existing breakers and overloads and place pump station 355 back into service.

**Bid Item No. 6 ENCLOSURE GATE REPLACEMENT [PS-355
REHABILITATION]**

1. Payment for work under this Bid Item shall be made at the Contract unit price bid for each (EA) existing double swing chain link fence gate located at the existing pump station 355 removed, disposed, and furnish and install of new swing gate. New double swing chain gate shall meet requirements of these Specifications and Detail US-19 on the Contract Plans. Contractor to measure existing gate prior to placing order. Payment shall include all labor, equipment and materials required to remove the existing gate, dispose of existing gate per federal, state and local regulations, and furnish and install the new gate. Payment shall include relocation of signs (if any) from the existing gate to the new gate, attached via same methodology as existing.

Bid Item No. 7 VALVE VAULT RECOAT [PS-355 REHABILITATION]

1. Payment for work under this Bid Item shall be made at the Contract unit price bid of lump sum (LS) for the rehabilitation of the existing valve vault located at existing pump station 355. Payment to include cleaning (pressure washing) interior of existing valve vault taking care to protect the existing piping and valve paint, removal of pitted concrete to structurally sound concrete, repair of voids with SewperCoat (see Section 09920), interior coating of System No. 120-1 Vinester per Section 09900. Payment shall include all necessary labor, equipment, and

materials needed to rehabilitated the interior of the existing valve vault at pump station 355. Payment to include repainting of existing piping and valves within the valve vault if paint damaged during rehabilitation of valve vault

Bid Item No. 8 CLEARING AND GRUBING OF FENCE LINE [PS-355 REHABILITATION]

1. Payment for work under this Bid Item shall be made at the Contract unit price bid of lump (LS) for the removal and disposal of vegetation from the chain link fence and within the existing pump station 355 site, as well as, removal and disposal of vegetation (except grass/sod which is to remain) within three (3) feet of chain link fence.

Bid Item No. 9 GENERATOR AND FUEL TANK REHABILITATION [PS-355 REHABILITATION]

1. Payment for work under this Bid Item shall be made at the Contract unit price bid of lump sum (LS) for the rehabilitation of the existing generator fuel tank and enclosure located at PS 355. Payment to include the removal and disposal of the existing coating from the existing generator fuel tank and enclosure at pump station 355 (visible surfaces only) and coat with System No. 73-1: Epoxy/High Build Urethane per Section 09900; final coat color to match existing as close as possible (off white). Payment shall include all necessary labor, equipment, and materials needed to remove existing coating and re-coat the existing generator fuel tank at pump station 355. Contractor to follow coating manufacturer's recommended application means and methods.

Bid Item No. 10 ABOVE GRADE WATER MAIN/MASTER METER ASSEMBLY REPAINT [PS-355 REHABILITATION]

1. Payment for work under this Bid Item shall be made at the Contract unit price bid of lump sum (LS) for the rehabilitation of the existing above grade water main/backflow preventer assembly located at existing pump station 355. Payment to include the removal and disposal of the existing paint from the existing above grade water main/master meter assembly at pump station 355 (visible surfaces only) and painting with System No. 73-1: Epoxy/High Build Urethane per Section 09900; color to be water main blue. Payment shall include all necessary labor, equipment, and materials needed to repaint the existing water main/backflow preventer assembly at pump station 355.

Bid Item No. 11 BACKFLOW PREVENTER AND HOSE BIBB REPLACEMENT [PS-355 REHABILITATION]

1. Payment for work under this Bid Item shall be made at the Contract unit price bid of lump sum (LS) for the replacement of the existing water service backflow preventer and hose bibb at pump station 355. Payment to include the removal and disposal of the existing ¾-inch backflow preventer and hose bibb and furnish and installation of new back flow preventer and hose bib in accordance with these Specifications and the Contract Plans. Payment shall include the furnish and installation of a hose rack and thirty (30) foot hose near the hose bibb. Payment shall include all necessary labor, equipment, and materials needed to replace the

existing backflow preventer and hose bibb and install a hose rack and hose at pump station 355.

Bid Item No. 14 PUMP AND APPURTENANCES [*RYE ROAD PUMP STATION*]

1. Payment for work included under this Bid Item shall be made at the applicable Contract unit price bid per each (EA) submersible pump installed. Payment shall include the furnish and installation of a Hydromatic pumps (Model S8LA12500M4-4, 125 HP, 8-inch discharge) (or equal), 8-inch BPIU discharge elbow (Hydromatic Part No. 134420083); Type 316 stainless steel pump guide rail; Type 316 stainless steel upper guide rail bracket (Hydromatic Part No. 518330045); Type 316 pipe supports; Type 316 stainless steel 1/2" pump lifting chain with grip eye (or equal); Type 316 stainless steel anchor bolts; and all other Type 316 stainless steel hardware necessary to complete installation. Payment shall include furnish and installation of 3/4-inch stainless steel elbow mounting plate under discharge elbow (Hydromatic Part No. 2426-75). Payment shall include start-up and testing. Payment shall include the cost of all labor, materials, and equipment required for the complete installation of the pump including testing and associated items.

Bid Item No. 15 WET WELL AND STATION APPURTENANCES [*RYE ROAD PUMP STATION*]

1. Wet well and station appurtenances bid item will be paid for at the applicable contract unit price of lump sum (LS) as listed in the Bid Form. Payment shall include the wet well precast sections; three (3) aluminum hatches in a single frame; 8-inch schedule 80 PVC (below grade) and schedule 80 CPVC (above grade) air vent piping and fittings starting 48-inches below grade within wet well to one foot above grade next to odor control slab with cap for connection by odor control vendor (Evoqua); one Type 304L stainless steel cable holder rack (with minimum 6 hooks); necessary length of 8-inch HDPE (DR 11, DIP size) discharge piping (with one end fused and one flanged end with ductile iron back-up ring) and 8-inch 90 degree molded HDPE (DR11, DIP size) elbows (with one fused end and one flanged end with ductile iron back-up ring); concrete required to create wet well slopes indicated on the Contract Plans; Type 316 stainless steel pipe supports within wet well; Type 316 stainless steel anchor bolts; all other Type 316 stainless steel hardware necessary to complete installation; five (5) back up mercury floats (Model S50NO Rotofloat level controls or equal); Type 316 SST flange pipe supports for above grade flange piping and connection hardware; Coordination with Evoqua (odor control vendor), furnish and installation of water line from the proposed backflow preventer, ball valve and meter box to be installed on southwest side of Odor Control slab for connection to Odor Control Unit (Odor Control Unit to be installed by Evoqua) and, furnish and installation of power conduit from electrical building to odor control slab for connection to Odor Control Unit, furnish and installation of three (3) inch PVC drain line from 6-8 inches above grade at odor control slab to 3 feet below grade discharging into wet well (minimum 1% slope) with end cap above grade for connection by odor control vendor; emergency eye wash and shower station area (Detail 3, C-206); rain gauge, signal and power lines and conduits, and appurtenances as depicted on Detail 2, C-204; excavation, including rock as necessary, bedding, backfill; complete system (pump station) testing and start-up; and all other items called for or necessary for a complete installation in accordance with the Contract Documents and County Standards. Payment shall include a Pump Station

Identification/Emergency Contact Sign with phone number and "No Trespassing sign" to be installed on the new/proposed fence that faces Rye Road. Payment shall include the cost of all labor, materials and equipment, all surveying, excavation, sheet and shoring, dewatering, backfilling, compaction, and all items necessary and as shown on the Contract Drawings to construct the wet well and station appurtenances noted within this bid item description complete and ready for service.

Bid Item No. 16 MANHOLES, LINED [*RYE ROAD PUMP STATION*]

1. Payment for work under this Bid Item shall be made at the Contract unit price bid for each (EA) manhole furnished and installed including frame and cover, liner, construction of invert, all protective coatings, drop connections if applicable, sealing of lift holes, rainwater protector, etc.
2. Measurement shall be for each manhole installed complete and accepted. All stubs and plugs shown or called for on the Contract Drawings shall be included in the unit price bid for manholes. Excavation, including rock as necessary, bedding, backfill, dewatering, sheeting, testing and any and all other items necessary for a completed system in accordance with the Contract Documents and County Standards shall be included. Payment shall represent full compensation for all labor, materials, equipment and incidental items necessary to complete each concrete manhole structure, ready for approval and service by the County.

Bid Item No. 17 12-INCH, DIP, FLANGE [*RYE ROAD PUMP STATION*]

1. Payment for all work included in these Bid Items shall be made at the applicable Contract unit price bid per linear foot (LF) for furnishing and installing the listed diameter of ductile iron flanged pipe (Class 53) as shown on the Contract Drawings and listed in the Bid Form. Measurement and Payment shall be made for the actual length of the listed diameter pipe installed and will represent full compensation for all labor, materials, testing and equipment required to complete these Bid Items. Payment shall include Protecto 401 epoxy liner (or equal). Payment shall include all labor, material, testing and equipment required to complete these Bid Items.

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| Bid Item No. 12 | 6-INCH, C900 PVC, RJ [<i>PS-355 REHABILITATION</i>] |
| Bid Item No. 18 | 6-INCH, C900 PVC, RJ [<i>RYE ROAD PUMP STATION</i>] |
| Bid Item No. 19 | 12-INCH, C900 PVC, RJ [<i>RYE ROAD PUMP STATION</i>] |
| Bid Item No. 20 | 24-INCH, C905 PVC, GRAVITY SANITARY [<i>RYE ROAD PUMP STATION</i>] |

1. Payment for all work included in these Bid Items shall be made at the applicable Contract unit price bid per linear foot (LF) for furnishing and installing the listed diameter PVC force main and gravity sewer main (AWWA C-900 DR18, CL-150 or C-905 DR18, CL-235) as shown on the Contract Drawings and listed on the Bid Form. Measurement and Payment shall be made for the actual length of the listed diameter pipe and installed and will represent full compensation for all labor, materials, excavation, including rock, dewatering, bedding, backfill, compaction, connecting to existing mains, marking tape, locate wire, locate wire stations (2), testing and equipment required to complete these Bid Items. No additional

compensation shall be made for excavation below the bottom of the pipe, for rock removal or bedding and backfill material, or for repair of any trench settlement.

2. All force main (pressure) C-900 and C-905 is to be restrained joint installed as part of this project. Mechanical restraints are to be polyethylene wrapped.
3. Payment for 6-inch PVC, C-900 PVC, RJ, includes tying into existing 6-inch force main, existing 6-inch force main removal and disposal as shown on the Contract Drawings. Payment shall also include the locating of the existing 6-inch force main, furnish and installing 6-inch stainless steel line stops or utilizing existing isolation valves to facilitate existing force main shut down and tie-in of proposed main, removing and disposing wastewater from the 6-inch force main in preparation for tie-ins, cutting and disposing of necessary section of six (6) inch force main, bypassing the wastewater flow within the existing 6-inch force main with vacuum trucks at upstream lift stations and/or temporary bypass pumping piping. Contractor must provide adequate bypassing to allow for tie-ins. Contractor to coordinate with the County to determine available shut down time for the 6-inch force main and upstream affected stations. Bypass plan must be submitted and accepted by the County prior to starting construction.

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|------------------------|--|
| Bid Item No. 21 | 8-INCH GATE VALVES [<i>RYE ROAD PUMP STATION</i>] |
| Bid Item No. 22 | 12-INCH GATE VALVES [<i>RYE ROAD PUMP STATION</i>] |
| Bid Item No. 23 | 8-INCH CHECK VALVES [<i>RYE ROAD PUMP STATION</i>] |
| Bid Item No. 55 | 10-INCH, GATE VALVE, CUT IN [<i>WATER MAIN REPLACEMENT</i>] |

1. Payment for all work included in these Bid Items shall be made at the applicable Contract unit price bid per each (EA) valve for furnishing and installing the listed diameter valve, box, cover and concrete pad as shown on the Contract Drawings and listed on the Bid Form. Payment shall represent full compensation for all labor, material, excavation, including rock as necessary, bedding, backfill, compaction, testing and disinfection and equipment required to complete these Bid Items.
2. Above grade gate and check valves do not require valve box, cover or concrete pad. Above grade gate and check valves to include hand actuators and shall be painted per specifications, see Section 09900 (color Green for Wastewater).

Bid Item No. 24 FLOW METER [*RYE ROAD PUMP STATION*]

1. Payment for magnetic flow meter (McCrometer UM08 or equal) shall be based on the actual number of units installed in the locations shown on the Contract Drawings at the unit price of each (EA) as listed in the Bid Form. Flow meter shall include all labor, materials and equipment necessary to install the meter above grade per Manufacturer's recommendations and requirements. Payment shall also include furnish and installation of control wiring (length as needed) and conduit from the meter to the control/monitor system located in the electrical room, installation of power line as necessary to provide power to the meter and controller/monitor, excavation, including rock as necessary, bedding, backfill, compaction, testing removing excess material, testing, clean-up, and all items necessary to furnish and install the flow meter complete and ready for service.

Bid Item No. 25 LEVEL TRANSDUCER [RYE ROAD PUMP STATION]

1. Payment for level transducer (Model GXS3 Dylix level transducer or equal) shall be based on the actual number of units installed in the locations shown on the Contract Drawings at the unit price of each (EA) as listed in the Bid Form. Level transducer shall include all labor, materials and equipment necessary to furnish and install the level transducer and stilling well within the proposed wet well per Manufacturer's recommendations and requirements. Payment shall also include furnish and installation of control wiring (100 feet) and conduit from the transducer to the control/monitoring system, installation of power line and conduit as necessary to provide power to the transducer, excavation, including rock as necessary, bedding, backfill, compaction, testing, removing excess material, testing, clean-up, and all items necessary to furnish and install the level transducer complete and ready for service.

Bid Item No. 13 6-INCH DIP FITTINGS, WASTEWATER [PS-355 REHABILITATION]

Bid Item No. 26 6-INCH DIP FITTINGS, WASTEWATER [RYE ROAD PUMP STATION]

Bid Item No. 27 12-INCH DIP FITTINGS, WASTEWATER [RYE ROAD PUMP STATION]

Bid Item No. 28 24-INCH DIP FITTINGS, WASTEWATER [RYE ROAD PUMP STATION]

1. Payment for all work included in these Bid Items will be made at the applicable Contract unit price bid each (EA) for furnishing and installing each listed ductile iron fitting (Protecto 401 epoxy lined) and cam-lok fittings as shown on the Contract Drawings and listed on the Bid Form. Payment will be made for each fitting installed and will represent full compensation for all labor, material, excavation, including rock, bedding, backfill, compaction, testing and equipment required to complete these Bid Items.
2. The 6-inch DIP fittings include the cost of post restraining the required length of existing 6-inch force main. Pump station-355 6-inch fittings include the cost to plug the existing influent line to the pump station-355 upstream manhole to be furnished and installed per County Standards, no separate payment for the manhole influent line plug will be made.

Bid Item No. 29 ASPHALT DRIVEWAY [RYE ROAD PUMP STATION]

1. Proposed driveway shall be paid for at the applicable contract unit price per square foot (SF). Payment shall include roadway base, compaction, asphalt and other materials and appurtenances necessary to install the U-shaped driveway from Rye Road through the pump station fenced areas as shown on the Contract Drawings. Payment shall include all labor, materials, and equipment necessary to install the driveway, road base, asphalt, all surveying, development of record drawings, clearing and grubbing, excavation, sheet and shoring, dewatering, backfilling, compaction, removal of excess material, testing, clean-up, and all items necessary to construct the asphalt driveway complete and ready for service. The payment shall include the removal of waste material produced, and necessary backfill and compaction required to fill holes left by the removal of vegetation.

Bid Item No. 30 WATER SERVICE [RYE ROAD PUMP STATION]

1. Water service bid item will be paid for at the applicable contract unit price of lump sum (LS) as listed in the Bid Form. Payment for the water service for the pump station shall include the necessary length of polyethylene service line and casing furnished installed from the existing water main and extending as shown on the Contract Drawings. Payment shall include the furnishing of all labor, materials, and equipment necessary to complete the work, including all surveying, excavation, sheet and shoring (as needed), dewatering, pipe laying, jointing, backflow preventer, meter, double strap stainless steel saddle, valves, fittings, marking tape, locating wire, locate wire stations (2), backfilling, compaction, connections to existing water main, removing excess material, testing, clean-up, and all items necessary to construct the piping systems complete and ready for service. Payment shall also include a 1" spigot and hose bibb with support, a 2" spigot and cam-lock connection with support, hose rack and heavy duty blue nylon hose (2 x50 foot hoses) with pressure nozzle, hose rack, one (foot) semi circle of gravel/stones around spigot, furnishing, installation, testing, clean-up, and all items, labor, materials, and equipment necessary to construct the water service (wash down station) complete and ready for service.

Bid Item No. 31 GATES AND FENCING [RYE ROAD PUMP STATION]

1. Payment for the chain link fence and two (2) double swing gates, and posts will be paid for at the applicable contract unit price of lump sum (LS). Payment price shall include the furnishing of all labor, materials, and equipment necessary to complete the work, including line posts and corner posts (with caps), truss bars/rods, chain link fence fabric, tie wire, top rail, bottom tension wire, galvanize clips, HDPE fence slants and blinds (green) by Top Lock or Equal, two (2) double swing gates, concrete for post anchoring, gate center stops; all surveying, excavation, backfilling, compaction, removing excess material, clean-up, and all items necessary to construct the fence and gates complete and ready for service unless specifically covered by other pay items specified under this Contract.

Bid Item No. 32 NO. 57 STONE [RYE ROAD PUMP STATION]

1. Payment for all work included in these Bid Items will be made at the applicable Contract unit price bid per cubic yard (CY) for furnishing and installing number 57 stone within the County owned pump station fence lines. Contractor is to assume all areas within the fence line that is not asphalt driveway or concrete slab shall be number 57 stone at a minimum depth of 3-inches. Payment shall represent full compensation for all labor, materials, necessary equipment, and incidentals necessary to complete the work, ready for approval and acceptance by the County.

Bid Item No. 33 SITE GRADING, LANDSCAPING, IRRIGATION [RYE ROAD PUMP STATION]

1. Payment for site grading, landscaping, and irrigation lines for the proposed pump station shall be paid for at the contract unit price of lump sum (LS) as an allowance; County to approve landscaping and irrigation plan prior to construction. Landscape general requirements are noted on Contract Drawing details. Payment shall consist of all labor, material, equipment and all operations necessary for the

furnish and installation of the bushes. Payment shall include the installation of a reclaimed water irrigation line from the existing reclaimed water main located within the right of way on the southeast side of Rye Road, double strap stainless steel service saddle, irrigation meter at the fence line (or as directed by the County), irrigation piping, sprinklers, and rain sensor as requested by the County. Payment shall include coordination with the County concerning irrigation line locations and spacing of sprinkler heads and landscaping preferences.

2. Payment shall include side grading as needed to obtain site slope as noted on the Contract Drawings, site to drain from center to fence line. The lump sum price shall also include any off-site material required to establish finish grade and the removal and off-site disposal of any unsuitable excavated material or debris. Payment shall include all labor, materials, and equipment necessary to grade the site, furnish and install irrigation lines, and landscape pump station.

**Bid Item No. 34 ELECTRICAL BUILDING, PREMANUFACTURED, AND
APPURTENANCES [RYE ROAD PUMP STATION]**

1. Payment for site premanufactured electrical building and appurtenances for the proposed pump station shall be paid for at the contract unit price of lump sum (LS). Payment shall include all items noted within the electrical building specification and as shown on the electrical building layout provided by others, including but not limited to heating, ventilation and air conditioning (HVAC), lighting, two (2) doors with panic push bars, fire extinguisher and mounting equipment (to be mounted to interior wall), red alarm light (exterior), and other appurtenances as shown on the building layout provided by others. Payment shall include all necessary permits necessary to construct and place building into operation. Payment shall include all labor, materials, and equipment necessary to furnish and install the electrical building and appurtenances complete and operational. Electrical Building and appurtenances to meet requirements noted in Appendix A.

Bid Item No. 35 DEWATERING [RYE ROAD PUMP STATION]

1. Contractor shall supply all necessary pumps, sheeting and shoring, conduits and other equipment to dewater ground in which work is to be performed for the installation of the new pump station. Dewatering for the water main and force main is to be paid for under respective pipe installation Bid Item. Dewatering system shall be of sufficient capacity to handle keep trench / pit dry minimum three feet below proposed installation elevation of respective pump station component (e.g manhole, wet well, etc). The Contractor shall be responsible for furnishing the necessary labor and supervision required to set up and operate the dewatering wells and pumping system. Payment for dewatering shall be based at the contract unit price of lump sum (LS), assessed as an allowance. Dewatering shall include all labor, materials, furnish and installation of materials, equipment, tools, all necessary permits, and incidentals for well and pump setup, sheeting and shoring, excavation, including rock, bedding, backfill, compaction, water discharge, water treatment (as needed), discharge piping, power or gasoline/diesel fuel, and maintenance. Payment shall include site cleanup and removal of all dewatering wells, pumps, equipment, and surface restoration.

Bid Item No. 36 CONCRETE SLABS [RYE ROAD PUMP STATION]

1. Payment for work under this Bid Item shall be made at the Contract unit price bid of lump sum (LS) at the proposed pump station. Measurement shall be for all concrete slabs shown on the Contract Plans constructed complete and accepted. Payment shall include excavation, site preparation, dewatering, concrete, rebar, rebar ties, and other appurtenances necessary for the construction of the pump station concrete slabs. Excavation, including rock as necessary, bedding, backfill, rebar inspection, strength testing, and any and all other items necessary, in accordance with the Contract Documents shall be included. Payment shall represent full compensation for all labor, materials, equipment and incidental items necessary to complete each concrete slab, ready for approval and service by the County.

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|------------------------|--|
| Bid Item No. 37 | SERVICE ENTRANCE DISCONNECT, 480V, 3PH, 600A, NEMA 4X [RYE ROAD PUMP STATION] |
| Bid Item No. 38 | ATS, 480V, 3-PHASE, 600A [RYE ROAD PUMP STATION] |
| Bid Item No. 39 | GENERATOR, 480V, 3-PHASE, 350 KW [RYE ROAD PUMP STATION] |
| Bid Item No. 40 | GENERATOR, CONNECTION CABINET [RYE ROAD PUMP STATION] |
| Bid Item No. 41 | POWER PANEL, 480/277V, 600A, 42KAIC, NEMA 3R [RYE ROAD PUMP STATION] |
| Bid Item No. 42 | VFD, 480V, 3PH, 125HP [RYE ROAD PUMP STATION] |
| Bid Item No. 43 | DISCONNECT SWITCH, 480V, 3PH, 200A [RYE ROAD PUMP STATION] |
| Bid Item No. 44 | PUMP CONTROL PANEL, ANTENNA [RYE ROAD PUMP STATION] |
| Bid Item No. 45 | PUMP LOCAL CONTROL PANEL [RYE ROAD PUMP STATION] |
| Bid Item No. 46 | CABLE, CONDUIT [RYE ROAD PUMP STATION] |
| Bid Item No. 47 | LIGHT, POLE [RYE ROAD PUMP STATION] |

1. Electrical work Bid Items shall be paid for at the contract unit price as noted in Bid Form, for respective Bid Item. Payment for each Bid Item shall include all conduit and electrical wiring, furnishing of all labor, materials, and equipment necessary to complete the work, including all surveying, excavation, conduit laying, jointing, marking tape and locating wire, threading of wire through conduit(s), pull boxes (as needed), connections of existing electrical systems to new transformer, testing, backfilling, compaction, removing excess material, clean-up, and all items necessary to construct the conduit, electrical and control systems complete and ready for service. This item shall include payment for all temporary electrical work and wiring necessary during construction, shown on the Contract Drawings and noted within these Specifications.
2. Pay item (Power Panel) includes the furnish and installation of the power line within casing under Rye Road via horizontal directional drill. Payment shall include all labor, materials, excavation (including rock), horizontal directional drilling equipment, materials and trucks, vacuum trucks, disposal of bentonite fluid, butt heat fusion of HDPE casing pipe per ASTM D3261, dewatering, sheeting and shoring, bedding, backfill, compaction, testing and equipment required to complete the installation.

Bid Item No. 48 EXPLOSION PROOF Y-TYPE ALUMINUM CONDUIT SEAL [*RYE ROAD PUMP STATION*]

1. Payment for Explosion Proof Y-type Aluminum Conduit Seals will be paid for at the applicable contract unit price of each (EA). Payment price shall include the furnishing of all labor, materials, tools, and equipment necessary to furnish and install the explosion proof y-type aluminum conduit seals, size to be dictated by conduit size furnished and installed by Contractor which is minimum 2-inch SCH 80 PVC, complete and operational to the satisfaction of the Engineer and County. Payment includes removing excess material and clean-up.

Bid Item No. 49 EXISTING WATER MAIN REMOVAL [*WATER MAIN REPLACEMENT*]

1. Measurement will be based on linear feet of pipe removed and disposed at locations called out in the Contract Documents. Payment will be at the applicable contract unit price of linear feet (LF) and shall include all labor, materials and equipment.
2. The work specified in these items consists of taking existing pipes out of service, removing and disposing as shown in the plans. The unit price will include all cost of excavation, backfill and compaction, dewatering, disposing of chlorinated water, sheeting and shoring, backfill, compaction, testing and equipment required to complete the installation all labor, equipment and materials necessary to perform all the work associated with removal and disposal of the of existing water as indicated on the Construction Drawings. The unit price will include trench safety.

Bid Item No. 50 12-INCH, HDPE, HDD [*WATER MAIN REPLACEMENT*]

1. Payment for all work included in this Bid Item shall be made at the applicable Contract unit price per linear foot (LF) for furnishing and installing the listed diameter HDPE DR11, ductile iron pipe size, water main (AWWA C906) installed via horizontal directional drill method as shown on the Contract Drawings and listed on the Bid Form. Payment shall be made for the linear foot of actual length of the listed diameter pipe and installed and will represent full compensation for all labor, materials, excavation (including rock), horizontal directional drilling equipment, materials and trucks, vacuum trucks, disposal of bentonite fluid, butt heat fusion of HDPE pipe per ASTM D3261, development of frac out plan, dewatering, sheeting and shoring, bedding, backfill, compaction, testing, disinfection, and equipment required to complete this Bid Item. No additional compensation shall be made for excavation below the bottom of the pipe, for rock removal or bedding and backfill material, or for repair of any trench settlement.

**Bid Item No. 51 12-INCH, C900 PVC, RJ [*WATER MAIN REPLACEMENT*]
Bid Item No. 52 10-INCH, C900 PVC, RJ [*WATER MAIN REPLACEMENT*]**

1. Payment for all work included in this Bid Item shall be made at the applicable Contract unit price bid per linear foot (LF) for furnishing and installing the listed diameter PVC water main (AWWA C-900 DR18, CL-150) pipe as shown on the Contract Drawings and listed in the Bid Form. Measurement and Payment shall be made for the actual length of the listed diameter pipe installed and will

represent full compensation for all labor, materials, excavation, including rock, dewatering, bedding, backfill, compaction, testing and disinfection and equipment required to complete these Bid Items. No additional compensation will be made for excavation below the bottom of the pipe, for rock removal or bedding and backfill materials, or for repair of any trench settlement.

Bid Item No. 53 10-INCH DIP FITTINGS, POTABLE WATER [*WATER MAIN REPLACEMENT*]

Bid Item No. 54 12-INCH DIP FITTINGS, POTABLE WATER [*WATER MAIN REPLACEMENT*]

1. Payment for all work included in these Bid Items will be made at the applicable Contract unit price bid of each (EA) for furnishing and installing each ductile iron fitting (cement-lined) as shown on the Contract Drawings and listed on the Bid Form. Payment shall represent full compensation for all labor, material, equipment, excavation, including rock, bedding, backfill, compaction, testing and disinfection required to complete these Bid Items.
2. Ductile iron fittings connecting to HDPE water main shall include the furnishing and installing HDPE (ductile iron pipe size) to ductile iron (DI) transition adapters, size as required, in accordance with Detail UG-6 of the Contract Drawings.

PART 2 PRODUCTS (NOT USED)
PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 02640 VALVES AND APPURTENANCES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment and incidentals required and install complete and ready for operation all valves and appurtenances as shown on the Drawings and as specified herein.
- B. All valves and appurtenances shall be of the size shown on the Drawings and, to the extent possible, all equipment of the same type on the Project shall be from one manufacturer.
- C. All valves and appurtenances shall have the name of the manufacturer and the working pressure for which they are designed cast in raised letters upon some appropriate part of the body.
- D. All valves shall have a factory applied, fusion bonded epoxy coating on interior and exterior unless noted otherwise in the plans or this specification.
- E. All valves are to be holiday free and have current testing certification papers stating the valve passed holiday free testing.
- F. The equipment shall include, but not be limited to, the following:
 - 1. Gate valves (Sec. 2.01)
 - 2. Ball Valves (Sec. 2.02)
 - 3. Valve Actuators (Sec. 2.03)
 - 4. Air Release Valves (Sec. 2.04)
 - 5. Valves Boxes (Sec. 2.05)
 - 6. Corporation Cocks (Sec. 2.06)
 - 7. Flange Adapter Couplings (Sec. 2.07)
 - 8. Hose Bibs (Sec. 2.08)
 - 9. Check Valves (Sec. 2.09)
 - 10. Restrained Joints (Sec. 2.10)

1.02 DESCRIPTION OF SYSTEMS

All of the equipment and materials specified herein are intended to be standard for use in controlling the flow of potable water, reclaim water, wastewater, etc., depending on the applications.

1.03 QUALIFICATIONS

All of the types of valves and appurtenances shall be products of well established reputable firms who are fully experienced and qualified in the manufacture of the particular equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these Specifications as applicable. Valves shall be as covered under mechanical devices in Section 8 of ANSI/NSF Standard 61.

1.04 SUBMITTALS

- A. Submit to the County within 30 days after execution of the contract a list of materials to be furnished, the names of the suppliers and the date of delivery of materials to the site.
- B. Complete shop drawings of all valves and appurtenances shall be submitted to the County for approval in accordance with the Specifications.

1.05 TOOLS

Special tools, if required for normal operation and maintenance shall be supplied with the equipment.

PART 2 PRODUCTS

2.01 GATE VALVES

- A. All valves shall have cast or ductile iron three (3) piece valve bodies.
- B. When installed underground, gate valves shall be provided with a box cast in a concrete slab and a box cover. Length of box shall include slab thickness. Box cover opening shall be for valve stem and nut. Valve wrenches and extension stems shall be provided by the manufacturer to actuate the valves. The floor box and cover shall be equal to those manufactured by Rodney Hunt Machine Company, Orange, Massachusetts, Clow, DeZurik or approved equal.
- C. Gate valves with 3"-20" diameters shall be resilient seated, manufactured to meet or exceed the requirements of AWWA C509 or C515 and UL/FM of latest revision and in accordance with the following specifications. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of the valve. Gate valves shall have internal coating of Protecto 401 (or approved equal).
- D. Wrench nut shall be provided for operating the valve.
- E. Gate valves meeting AWWA C509 requirements shall be rated for an operating pressure of 200 psi and shall be tested in accordance with AWWA C509. Valves meeting AWWA C515 requirements shall be rated for an operating pressure of 250 psi and shall be tested in accordance with AWWA C515. Flanged valves shall be faced and drilled to the ANSI 150 lb. standard.
- F. All stems, stem extensions, bonnet bolts, nuts and studs shall be 316 stainless steel.
- G. Above grade gate valves shall be supplied with hand actuators.

2.02 BALL VALVES FOR PVC PIPE

- A. Ball valves for water and reclaimed water, in sizes 3/4-inch through 2-inch, shall be brass body, stem and ball per ASTM B 62, alloy 85-5-5-5, full port, full flow, 1/4-turn check, ball curb valves, rated for 300 psi, Mueller 300 (as specified in the table below), Ford B-Series, or approved equal, with compression, pack joint, flare, threaded or

flanged ends as required. Ball valves for wastewater, 2-inch through 3-inch, shall be 316 stainless steel body, cap, stem and ball per ASTM A351, full port, full flow, 1/4-turn check, ball valves, steam rated for 150 psi, pressure rating 1,000 psi CWT, Apollo 76F or approved equal, with threaded or flanged ends as required.

Curb Stops for Water and Reclaimed Water

| Pipe Material | Type of Connection | Model |
|---|--------------------|-----------|
| HDPE | Compression x FIP | B-25170 * |
| HDPE | Pack Joint x FIP | P-25170 * |
| Copper | Compression x FIP | B-25170 |
| Copper | Flare x FIP | B-25166 |
| Stainless Steel | FIP x FIP Thread | B-20200 |
| * Insert required, part number per manufacturer product information | | |

- B. All valves shall be mounted in such a position that valve position indicators are plainly visible. Above grade ball valves shall have a vinyl coated lever handle. Lever handle, handle nut, and lever packing gland shall be 304 or 316 stainless steel.
- C. Potable plastic service pipe material and compression and pack joint connectors shall not be used in soil that is contaminated with low molecular-weight petroleum products, aromatic hydrocarbons, chlorinated hydrocarbons or organic solvents. Appropriate service tubing shall apply.

2.03 VALVE ACTUATORS

A. General

1. All valve actuators shall conform to Section 3.8 of the AWWA Standard Specification and shall be either manual or motor operated.
2. Actuators shall be capable of seating and unseating the disc against the full design pressure and velocity, as specified for each class, into a dry system downstream, and shall transmit a minimum torque to the valve. Actuators shall be rigidly attached to the valve body.
3. Butterfly valve actuators shall conform to the requirements of Section 3.8 of the AWWA Standard specifications for Rubber Seated Butterfly Valves, Designated C504, insofar as applicable and as herein specified.

B. Manual Actuators

1. Manual actuators shall have permanently lubricated, totally enclosed gearing with handwheel and gear ratio sized on the basis of actual line pressure and velocities. Actuators shall be equipped with handwheel, position indicator, and mechanical stop-limiting locking devices to prevent over travel of the disc in the open and closed positions. They shall turn counter-clockwise to open valves. Manual actuators shall be of the traveling nut, self-locking type and shall be designed to hold the valve in any intermediate position between fully open and fully closed without creeping or fluttering. Actuators shall be fully enclosed and designed to produce the specified torque with a maximum pull of 80 pounds on the handwheel or chainwheel. Actuator components shall withstand an input of

450 foot pounds for 30" and smaller and 300 foot pounds for larger than 30" size valves at extreme actuator positions without damage. Valves located above grade shall have handwheel and position indicator, and valves located below grade shall be equipped with a two inch (2") square AWWA operating nut located at ground level and cast iron extension type valve box. Valve actuators shall conform to AWWA C504, latest revision.

2.04 AIR RELEASE VALVES

The air release valves for use in water or force mains shall be installed as shown on the Drawings. The valves shall have a ductile iron body cover and baffle, stainless steel float, bronze water diffuser, Buna-N or Viton seat, and stainless steel trim. The fittings shall be threaded. Reference the Manatee County Public Works Standards for acceptable models.

2.05 VALVE BOXES

- A. Buried valves shall have adjustable cast iron or HDPE valve boxes. Lids shall be cast iron drop type, and shall have "WATER", "SEWER", or "RECLAIM", as applicable, cast into the top. Lids will be painted "safety" blue for potable, purple for reclaimed, and green for sanitary sewer.
- B. Cast iron boxes shall be two-piece, or three-piece, as required, screw type, Tyler Pipe, 6850 Series, Box 461-S through 668-S, with extensions, as required to make the desired box length, or an approved equal. Bottom barrel shall be 5-1/4 inches inside diameter, with a flanged bottom with sufficient bearing area to prevent settling.
- C. HDPE boxes shall be two-piece, adjustable, 1/4-inch thick minimum heavy wall, high-density polyethylene, with cast iron top and galvanized steel adjustable stem, Trench Adapter, as manufactured by American Flow Control, or an approved equal. Bottom barrel shall have flanged bottom to prevent settling. All bolts, screws and pins shall be stainless steel.
- D. Reclaimed Valve Boxes shall be square 9-inch x 9-inch load bearing marked "Reclaimed Water" and painted Pantone 522C purple.
- E. All valves shall either have operating nuts within 4 feet below the top of the lid or shall have extension stems with centering guides to provide an extended operating nut within 4 feet below the lid. Extension stems shall be fixed to the valve operating nut with a stainless steel fastener.
- F. All potable water, sewer, and reclaimed water grade-adjustment risers shall be cast iron material just like the valve box.
- G. A centering device AFC part no. B 59434 or equal shall be installed in the valve box.
- H. Stand pipe shall match color code of the system being installed, (blue for potable, Pantone purple 522 C for reclaimed, and green for sanitary sewer).

2.06

CORPORATION STOPS

- A. Corporation stops for connections to ductile iron and PVC water and reclaimed water mains shall be all red brass, alloy 85-5-5-5, per ASTM B 62, and shall conform to AWWA C800. 1-inch through 2-inch corporation stops shall be ball type, 300 psi working pressure rated, with AWWA MIP threaded inlets and compression, pack joint, flare, or FIP threaded joint outlets, Mueller as shown in the table below, or an approved equal. All joints made to CTS size HDPE tubing shall use stainless steel insert stiffeners.

Corporation Stops

| Pipe Material | Type of Connection | Mueller 300 Model |
|-----------------|---------------------------------|------------------------|
| HDPE | Compression x AWWA IP Thread | B-25028 (Saddle) * |
| HDPE | Compression x AWWA Taper Thread | B-25008 (Direct Tap) * |
| HDPE | Pack Joint x AWWA IP Thread | P-25028 (Saddle) * |
| HDPE | Pack Joint x AWWA Taper Thread | P-25008 (Direct Tap) * |
| Copper | Compression x AWWA IP Thread | B-25028 (Saddle) |
| Copper | Pack Joint x AWWA Taper Thread | B-25008 (Direct Tap) |
| Copper | Pack Joint x AWWA IP Thread | P-25028 (Saddle) |
| Copper | Pack Joint x AWWA Taper Thread | P-25008 (Direct Tap) |
| Copper | Flare x AWWA IP Thread | B-25028 (Saddle) |
| Copper | Flare x AWWA Taper Thread | B-25008 (Direct Tap) |
| Stainless Steel | FIP Thread x AWWA IP Thread | B-20046 (Saddle) |
| Stainless Steel | FIP Thread x AWWA Taper Thread | B-20045 (Direct Tap) |

* Insert required, part number per manufacturer product information

- B. Potable plastic service pipe material and compression and pack joint connectors shall not be used in soil that is contaminated with low molecular-weight petroleum products, aromatic hydrocarbons, chlorinated hydrocarbons or organic solvents. Appropriate service tubing shall apply.
- C. Water and reclaimed water service connections to PVC and DIP mains shall be made using red brass saddles, alloy 85-5-5-5, per ASTM B 62. Straps, washers and nuts shall be brass or stainless steel. No ductile iron, cast iron or steel saddles will be allowed. Saddles shall be Smith Blair 325 Bronze saddles with Stainless Steel or brass extra wide strap or equivalent.
- D. Connections to PVC sanitary force mains for services up to 2 inches shall be made using Romac Style 306 double bolt stainless steel service saddles or equivalent.
- E. Service and air release valve (ARV) connections to HDPE water, reclaimed water and sewer mains may be made using Romac Style 306H saddle or approved equal. All saddles shall be properly sized per the manufacturer product information and be installed according to the manufacturer's written instructions. Connections to HDPE mains shall not be made using narrower saddles similar to the Smith-Blair 325.

2.07

FLANGE ADAPTER COUPLINGS

Plain end couplings and adapters shall be fusion-bonded epoxy coated carbon steel with Ethylene Propylene Diene Monomer (EPDM) rubber gaskets and stainless steel

nuts, bolts and spacers. Acrylonitrile butadiene (NBR) gaskets shall be used for potable water mains that are located in soil that is contaminated with low molecular-weight petroleum products or non-chlorinated organic solvents or non-aromatic organic solvents. Fluorocarbon (FKM) gaskets shall be used for potable water mains that are located in soil that is contaminated with aromatic hydrocarbons or chlorinated hydrocarbons. Fluorocarbon (FKM) gaskets shall be used for potable water mains if the soil is contaminated with aromatic hydrocarbons or chlorinated hydrocarbons, and is also contaminated with low molecular-weight petroleum products or organic solvents. Couplings shall be Dresser Style 38, or another approved equal. Flange adapters shall have a plain end compression seal similar to the style 38, with an ANSI 125 Class flange on the opposite end, and shall be Dresser Style 128W or an approved equal. Stainless steel backup rings shall be used for force mains that are located in corrosive environments including wet wells and valve vaults.

2.08 HOSE BIBS

Hose bibs shall be 3/4" or 1" brass, polished chromium plated brass, with vacuum breaker as noted on the drawings.

2.09 CHECK VALVES

- A. Check valves shall be swing type, weighted lever, conforming to AWWA C508. Valves shall be iron-body, bronze-mounted, single disk, 175 psi working pressure for 2-through 12-inch, 150 psi for 14- through 30-inch, with ANSI B16.1 Class 125 flanged ends, by Mueller; No. A-2600-6-01 (sewer), No. A-2602-6-01 (water), or AVK Series 41, or an approved equal.
- B. When there is no flow through the line, the disc shall hang lightly against its seat in practically a vertical position. When open, the disc shall swing clear of the waterway.
- C. Check valves shall have bronze seat and body rings, extended bronze hinge pins and stainless steel nuts on the bolts of bolted covers
- D. Valves shall be so constructed that disc and body seat may easily be removed and replaced without removing the valve from the line. Valves shall be fitted with an extended hinge arm with outside lever and weight.

2.10 RESTRAINED JOINTS

- A. Pipe joints shall be restrained by poured-in-place concrete thrust blocks or by other mechanical methods, including stainless steel tie rods, Stargrip and Allgrip, as manufactured by Star Pipe Products or Megaflange and 2000 PV, as manufactured by EBAA Iron Sales. Flanged joints may be used above ground.
- B. Restrained joints may also be Lok-Ring, as manufactured by American Cast Iron Pipe Company, or an approved equal.
- C. Restrained joint designs which require wedges and/or shims to be driven into the joints in order to disassemble the pipe shall not be allowed.

PART 3 EXECUTION

3.01 INSTALLATION

- A. All valves and appurtenances shall be installed in the location shown, true to alignment and rigidly supported. Any damage occurring to the above items before they are installed shall be repaired to the satisfaction of the County.
- B. After installation, all valves and appurtenances shall be tested at least two hours at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. If any joint proves to be defective, it shall be repaired to the satisfaction of the County.
- C. Install all floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Drawings that are in masonry floors or walls, and install concrete inserts for hangers and supports as soon as forms are erected and before concrete is poured. Before setting these items, the Contractor shall check all plans and figures which have a direct bearing on their location and he shall be responsible for the proper location of these valves and appurtenances during the construction of the structures.
- D. Pipe for use with flexible couplings shall have plain ends as specified in the respective pipe sections.
- E. Flanged joints and mechanical joints shall be made with high strength, low alloy Corten or 316 stainless steel bolts, nuts and washers.
- F. Prior to assembly of split couplings, the grooves as well as other parts shall be thoroughly cleaned. The ends of the pipes and outside of the gaskets shall be moderately coated with petroleum jelly, cup grease, soft soap or graphite paste, and the gasket shall be slipped over one pipe end. After the other pipe has been brought to the correct position, the gasket shall be centered properly over the pipe ends with the lips against the pipes. The housing sections then shall be placed. After the bolts have been inserted, the nuts shall be tightened until the housing sections are firmly in contact, metal-to-metal, without excessive bolt tension.
- G. Prior to the installation of sleeve-type couplings, the pipe ends shall be cleaned thoroughly for a distance of 8". Soapy water may be used as a gasket lubricant. A follower and gasket, in that order, shall be slipped over each pipe to a distance of about 6" from the end.
- H. Valve boxes with concrete bases shall be installed as shown on the Drawings. Mechanical joints shall be made in the standard manner. Valve stems shall be vertical in all cases. Place cast iron box over each stem with base bearing on compacted fill and the top flush with final grade. Boxes shall have sufficient bracing to maintain alignment during backfilling. Knobs on cover shall be parallel to pipe. Remove any sand or undesirable fill from valve box.

3.02 HYDRANTS

- A. Hydrants shall be set at the locations designated by the County and/or as shown on the Drawings and shall be bedded on a firm foundation. A drainage pit on crushed stone

as shown on the Drawings shall be filled with gravel or crushed stone and satisfactorily compacted. During backfilling, additional gravel or crushed stone shall be brought up around and 6" over the drain port. Each hydrant shall be set in true vertical alignment and shall be properly braced. Concrete thrust blocks shall be placed between the back of the hydrant inlet and undisturbed soil at the end of the trench. Minimum bearing area shall be as shown on the plans. Felt paper shall be placed around the hydrant elbow prior to placing concrete. CARE MUST BE TAKEN TO INSURE THAT CONCRETE DOES NOT PLUG THE DRAIN PORTS. Concrete used for backing shall be as specified herein.

- B. When installations are made under pressure, the flow of water through the existing main shall be maintained at all times. The diameter of the tap shall be a minimum of 2" less than the inside diameter of the branch line.
- C. The entire operation shall be conducted by workmen thoroughly experienced in the installation of tapping sleeves and valves, and under the supervision of qualified personnel furnished by the manufacturer. The tapping machine shall be furnished by the Contractor if tap is larger than 12" in diameter.
- D. The Contractor shall determine the locations of the existing main to be tapped to confirm the fact that the proposed position for the tapping sleeve will be satisfactory and no interference will be encountered such as the occurrence of existing utilities or of a joint or fitting at the location proposed for the connection. No tap will be made closer than 30" from a pipe joint.
- E. Tapping valves shall be set in vertical position and be supplied with a 2" square operating nut for valves 2" and larger. The valve shall be provided with an oversized seat to permit the use of full sized cutters.
- F. Tapping sleeves and valves with boxes shall be set vertically or horizontally as indicated on the Drawings and shall be squarely centered on the main to be tapped. Adequate support shall be provided under the sleeve and valve during the tapping operation. Sleeves shall be no closer than 30" from water main joints. Thrust blocks shall be provided behind all tapping sleeves. Proper tamping of supporting earth around and under the valve and sleeve is mandatory. After completing the tap, the valve shall be flushed to ensure that the valve seat is clean.

3.03 SHOP PAINTING

Ferrous surfaces of valves and appurtenances shall receive a coating of rust-inhibitive primer. All pipe connection openings shall be capped to prevent the entry of foreign matter prior to installation.

3.04 FIELD PAINTING

All metal valves and appurtenances specified herein and exposed to view shall be painted.

All above ground potable water main valves shall be painted safety blue.

3.05

INSPECTION AND TESTING

Completed pipe shall be subjected to hydrostatic pressure test for two hours at 180 psi. All leaks shall be repaired and lines retested as approved by the County. Prior to testing, the pipelines shall be supported in an approved manner to prevent movement during tests.

END OF SECTION

DIVISION 13 SPECIAL CONSTRUCTION

SECTION 13340 LIFT STATION SPECIFICATION

PART 1 GENERAL

- A. Furnish all labor, materials, equipment and incidentals required to install complete automatic, underground lift stations with all required equipment installed in a concrete wet well and adjacent above-ground valve assembly (and meter). The principal items of equipment shall include three submersible motor-driven sewage pumps, valves, internal piping, automatic pumping level controls, control panel and telemetry. All materials shall be new, without defects and of the best quality. All materials furnished and all work done shall be in strict accordance with the National Electrical Code and all local requirements and codes.
- B. All lift stations that re-pump sewage from five (5) other lift stations and/or have a discharge flow 500 gpm or greater shall have an on-site generator equipped with an automatic power transfer switch, transducer level controls with backup float switches, submersible inline magnetic flow meter, and wet well level transmitter, along with an onsite fuel tank of no more than 540 gallons.

1.01 STRUCTURES AND EQUIPMENT

A. Lift Station Wet Well

The wet well shall be precast concrete with a full protective liner designed to accommodate the peak hour developmental flow from all contributing areas. See Contract Plans for wet well depth and elevation requirements.

Wet well shall be 12 feet in diameters with minimum 12 inch wall thickness.

All lift stations shall have a single gravity-flow influent pipe discharging into the wet well. Multiple gravity pipelines and force mains upstream shall all terminate at a separate manhole before flowing into the lift station wet well.

B. Above-ground Valve Assembly

- 1. Tri-plex stations have four gate valves and three check valves. The pump-out connection shall be equipped with a gate valve and a male aluminum quick-coupler, as shown on the Contract Plans. All valves shall have factory applied, fusion bonded epoxy coating on interior and exterior. All bolt, nuts and washers in or on the wet well or valve assembly shall be 316 stainless steel. All gate valves must have stainless steel shafts.

C. Access Doors (Hatches)

The lift station wet well valve shall be equipped with an aluminum access cover of adequate size to permit easy removal and installation of sewage pumps and equipment. All access covers shall be constructed of aluminum with a minimum load rating of 300 lbs/sq. ft. and equipped with stainless steel hinges, a recessed lifting

handle which lies flush with the door surface, and a stainless steel staple which may be used to secure the door with a padlock when closed. The doors shall have a raised diamond thread pattern to provide a skid-resistant surface and shall open to 90 degrees and lock automatically in that position, with a handle to release the doors for closing. The hatch assemblies shall be as manufactured by Bilco, Halliday or an approved equal.

D. Sewage Pump Assemblies

1. Pumping station shall have three (3) identical, totally submersible sewage pump assemblies rated and suitable for continuous duty, underwater operation as shown on the Contract Plans. These units and their associated power and signal cables shall have watertight integrity to a depth of 65 feet. The pump, pump motor and associated components shall all be the products of the same manufacturer. Pump assemblies shall be painted after assembly with an approved air dry enamel which will adequately protect the exterior housings from the corrosive environment in the wastewater sewer system; see Section 09900. Coating thickness shall be a minimum of 4 mils.
2. Factory testing of the pump assemblies shall be required and as a minimum, shall include:
 - a. All tests recommended by the manufacturer.
 - b. Verify the integrity of assembly and connections (no leaks, tightness of hardware, proper alignment, assembly, etc.) and that the nameplate and specified pump and pump motor (HP, Voltage, Phase and HZ) correspond.
 - c. The motor windings and seal housing chambers shall be hi-potted to test for insulation defects and moisture content. Check the resistance of the stator windings with a bridge to verify that the readings of all three phases are basically equal and within tolerance.
 - d. Energize pump motor, verify direction of rotation and that it corresponds to the nameplate.
 - e. Provide a written report of all testing with the shipped pump.
3. All pumps assemblies shall be warranted against defects in workmanship and materials for whichever is the greater of: a minimum period of 18 months from the date of purchase or as provided in the Defect Security Agreement with the County.
4. Furnish and install submersible non-clog wastewater pump(s). Each pump shall be equipped with a 125 HP submersible electric motor, connected for operation on 460 volts, 3 phase service, see Section 16152 for motor requirements, with 100 feet of submersible cable (SUBCAB) suitable for submersible pump applications. The power cable shall be sized according to NEC and ICEA standards and also meet with P-MSHA Approval.
5. The pump shall be supplied with a mating cast iron 8 inch discharge connection and be capable of delivering 779 GPM at 204.7 FT. TDH and 1500 GPM at 180 FT. TDH. The pump(s) shall be automatically and firmly connected to the discharge connection, guided by no less than two guide bars extending from the top of the station to the discharge connection; see Contract Plans for discharge piping support requirements and spacing. There shall be no need for personnel to enter the wet-well. Sealing of the pumping unit to the discharge connection shall be

accomplished by a machined metal to metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable. No portion of the pump shall bear directly on the sump floor. Each pump shall be fitted with 50 feet of 1/2 inch lifting stainless steel chain or stainless steel cable. The working load of the lifting system shall be 50% greater than the pump unit weight.

6. Chains shall be attached to the pump lifting bails using 316 stainless steel shackles and shall extend to the inside top of the wetwell. All rails and mounting hardware shall be 316 stainless steel. All stainless steel furnished and installed within the wetwell is to be 316 stainless steel.

7. RYE ROAD PUMP STATION SPECIFIC PUMP REQUIREMENTS:

- a. Make/Model: Hydromatic (Model S8LAXP12500FC)
- b. Horse power: 125 HP
- c. Discharge Size: 8-inch
- d. Pump Speed: 1750 RPM
- e. Impeller Diameter: 14.38 inch
- f. Shutoff Head: 236 FT
- g. Curve Point 1: 779 GPM at 204.7 FT TDH, 54.55% Pump Efficiency minimum
- h. Curve Point 2: 1500 GPM at 180 FT TDH
- i. Modifications: Explosion Proof (X) (Class 1, Division 1)
- j. See Section 16152 for motor requirements.

8. PUMP CONSTRUCTION

- a. Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. The lifting handle shall be of stainless steel. All exposed nuts or bolts shall be of stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.
- b. Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile rubber O-rings. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.
- c. Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.
- d. Each pump motor shall be sufficiently cooled by submergence in the pumped media.

9. CABLE ENTRY SEAL

- a. The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of dual cylindrical elastomer grommets, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter. The grommets shall be compressed by the cable entry unit, thus providing a strain relief function. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be sealed from each other, which shall isolate the stator housing from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered equal.

10. BEARINGS

- a. The integral pump/motor shaft shall rotate on two bearings. The motor bearings shall be sealed and permanently grease lubricated with high temperature grease. The upper motor bearing shall be a two row angular contact ball bearing. The lower bearing shall be a two row angular contact ball bearing to handle the thrust and radial forces. The minimum L10 bearing life shall be 50,000 hours at any usable portion of the pump curve.

11. MECHANICAL SEALS

- a. Each pump shall be provided with a positively driven dual, tandem mechanical shaft seal system consisting of two seal sets, each having an independent spring. The lower primary seal, located between the pump and seal chamber, shall contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide ring. The upper secondary seal, located between the seal chamber and the seal inspection chamber shall be a leakage-free seal. The upper seal shall contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide seal ring. The rotating seal ring shall have small back-swept grooves laser inscribed upon its face to act as a pump as it rotates, returning any fluid that should enter the dry motor chamber back into the lubricant chamber. All seal rings shall be individual solid sintered rings. Each seal interface shall be held in place by its own spring system. The seals shall not depend upon direction of rotation for sealing. Mounting of the lower seal on the impeller hub is not acceptable. Shaft seals without positively driven rotating members or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces are not acceptable. The seal springs shall be isolated from the pumped media to prevent materials from packing around them, limiting their performance.
- b. Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and shall provide capacity for lubricant expansion. The seal lubricant chamber shall have one drain and one inspection plug that are accessible from the exterior of the motor unit. The seal system shall not rely upon the pumped media for lubrication.

- c. The area about the exterior of the lower mechanical seal in the cast iron housing shall have cast in an integral concentric spiral groove. This groove shall protect the seals by causing abrasive particulate entering the seal cavity to be forced out away from the seal due to centrifugal action.
- d. A separate seal leakage chamber shall be provided so that any leakage that may occur past the upper, secondary mechanical seal will be captured prior to entry into the motor stator housing. Such seal leakage shall not contaminate the motor lower bearing. The leakage chamber shall be equipped with a float type switch that will signal if the chamber should reach 50% capacity.
- e. Seal lubricant shall be non-hazardous.

12. PUMP SHAFT

- a. The pump and motor shaft shall be a single piece unit. The pump shaft is an extension of the motor shaft. Shafts using mechanical couplings shall not be acceptable. The shaft shall be ASTM/AISI 431 stainless steel. Shaft sleeves will not be acceptable.

13. IMPELLER

- a. The impeller shall be of ASTM A-532 (Alloy III A) 25% chrome cast iron, dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, able to pass 3-inch solid. The impeller leading edges shall be mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction. The leading edges of the impeller shall be hardened to Rc 60 and shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The screw shape of the impeller inlet shall provide an inducing effect for the handling of up to 5% sludge and rag-laden wastewater. The impeller to volute clearance shall be readily adjustable by the means of a single trim screw. The impeller shall be locked to the shaft, held by an impeller bolt and shall be coated with alkyd resin primer.

14. VOLUTE / SUCTION COVER

- a. The pump volute shall be a single piece grey cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified. The volute shall have a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide trash release pathways and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed. The insert ring shall be cast of ASTM A-532 (Alloy III A) 25% chrome cast iron and provide effective sealing between the multi-vane semi-open impeller and the volute housing.

15. PROTECTION

- a. Each pump motor stator shall incorporate three thermal switches, one per stator phase winding and be connected in series, to monitor the temperature of the motor. Should the thermal switches open, the motor shall stop and activate an alarm. A float switch shall be installed in the seal leakage chamber and will activate if leakage into the chamber reaches 50% chamber capacity, signaling the need to schedule an inspection.
- b. The thermal switches and float switch shall be connected to a control and status monitoring unit.
- c. All electrical components used in or in conjunction with the sewage pump assembly shall be UL approved when UL approval is available for that type component. Temperature/moisture monitor shall be shipped separately to VFD supplier for installation in VFD.

E. Riser and Fittings

1. All force main piping and fittings within the wetwell from the pump base elbow to the check valve, shall be DR11 HDPE. Ductile iron and cast iron flanged fittings installed inside the wetwell shall be painted for submergence within corrosive environment per Section 09900. All connections of HDPE to iron bodied flange fittings in the wetwell shall be made using HDPE flange adapters with 316 stainless steel backup rings. All HDPE connections shall be thermal fused. All piping above grade shall be flanged ductile iron and all piping below grade shall be PVC DR 14 C-900 restrained via mechanical restraint.
2. All flanged fittings inside the wetwell shall use 316 stainless steel bolts, nuts and washers. All threads shall be treated with Bostik Never-Seez anti-seizing compound or approved equal. All bolts on the flange connection at the pump base elbows shall have two nuts with a lock washer between them or a nylon lock nut.
3. All stainless steel fasteners shall be treated with Never-Seez prior to assembly and torque according to the fitting manufacturer's recommendation. The bands around the piping shall be constructed from a minimum of 1 inch wide by 12 gauge stainless steel strap stock, shaped to fit the piping and sized to grip the piping without deforming the pipe when bolted to the braces.
4. The pipe support system shall be constructed using 4-inch 316 stainless steel angle.

F. Hardware

Six (6) 316 stainless steel cable hooks shall be installed inside the wet well access opening for supporting the float switches and pump electric cables. The hook connection point shall be constructed from ¼" x 2" type 316 stainless steel flat stock with individual hooks constructed of ¼" type 316 stainless steel rod stock. Individual hooks shall be installed opposite on each side of the upper guide rail bracket for each pump to support the pump lifting chain and power cable. Hooks for the floats are to be installed on the opposite side from the pump guide rails. The pump power cable hook shall be constructed from ¼" x 1" type 316 stainless steel flat stock.

G. Painting and Coating

All paint and other coatings shall be applied in accordance with the product manufacturer's specifications for the surfaces being coated. All iron body valves shall have a factory applied fusion bonded epoxy coating inside and outside. All ductile iron fittings shall have a 40-mil Protecto 401 or equal epoxy on the inside in accordance with manufacturer's specifications and an asphaltic coating on the outside. Above ground piping to be painted per Section 09900, color per Manatee County standards.

H. Stilling Well

Stilling well shall be a 6" PVC stilling well mounted such that the top is available to an open hatch cover. The bottom of the stilling well shall have two 316 stainless steel bolt all the way through both sides, passing through the center of the pipe, approximately 4" from the base of the pipe. It shall have ½" diameter holes drilled around the circumference at a rate of one hole per inch of length for at least the full wetted height. All mounting hardware shall be 316 stainless steel.

I. Magnetic Flow Meter

Flow meter shall be rated for 0.05% accuracy with a polyurethane liner, flush electrodes, FM Class 1, Division 2, Groups A,B,C&D and shall be constructed for a flanged mount. Meter shall be supplied with a like size spool piece. The exterior control module/transmitter shall be mounted inside the control panel in the electrical building. Model shall be McCrometer model UM08, unless otherwise approved by the County.

J. Level Transducer

See 2.01.J of this Section for level sensor requirements.

K. Emergency Eye Wash and Shower Station

Emergency Eye Wash and Shower Station to be HAWS 8300CRP, or approved equal. Emergency Eye Wash and Shower Station to be installed with drain and drain area as shown in detail 4 on sheet C-206.

L. Rain Gauge

1. Type - Tipping bucket
2. Functional/Performance - Measure rainfall volume and/or rate at a resolution of
3. 0.01 mm. Measurement accuracy is +/-0.5% at a rate of 0.5 inch per hour.
4. Physical - All components shall be corrosion resistant
5. Manufacturers: Allweatherinc - 6011 series - Model 6011-A
6. Appurtenances as depicted on the detail 2 on sheet C-204.

2.01 ELECTRICAL

A. Service and Metering

The Contractor shall be responsible and shall pay for any permits, fees, and inspections required by the local power company for service installations. Three phase

power shall be used unless otherwise approved by the County. The service voltage shall be 460V. No phase converters will be accepted. All lift stations shall be equipped with a knife-type fused safety switch in a NEMA 4X stainless steel enclosure, lockable in the ON and OFF position, between the service meter and the power panel to permit servicing of the main breaker without removing the service meter. All meter bases shall be aluminum. Minimum service size shall be 600 amp. Conduit connections to the disconnect shall be sealed using Myers conduit hub connectors (disconnect side).

B. Conductors

All power conductors shall be single conductor, 600 volt, type THW or THHN stranded copper. Minimum conductor size shall be #12 AWG. ALUMINUM WIRE IS NOT PERMITTED. All control wiring shall be single conductor #14 AWG, 600 volt, type THHN stranded copper. All terminations and interconnections of control wiring shall be by means of compression-type lugs of the nylon self insulated type with an inner bronze insulation grip sleeve on identified terminal strips. All control wiring shall be color coded as indicated on the standard details.

C. Conduit

All power conductors from the utility source to the service meter shall be enclosed in PVC Schedule 80 conduit below ground (NO I.M.C. ALLOWED). All lift stations shall be equipped with one conduit to the wet well for each pump power cables and a separate conduit to the wet well for the control (floatball) and signal cables. In lift stations with large horsepower pumps and pumps equipped with sensor cables, the conduit size and quantity shall be determined by the County. All conduit to the lift station wet well shall be minimum 2" Schedule 80 PVC and shall be run by the shortest route possible. Minimum burial depth is 36". All terminations shall be made per the Drawings. No junction boxes mounted under control panel for pump and float cables will be accepted. All flexible conduit shall be non-metallic.

Duct Spacers/Supports:

1. High density polyethylene or high impact polystyrene.
2. Interlocking.
3. Provide 2 IN minimum spacing between conduits.
4. Accessories, as required:
 - a. Hold down bars.
 - b. Ductbank strapping.

Direct-Buried Conduit(s):

1. Install so that the top of the uppermost conduit, at any point:
 - a. Is not less than 30 IN below grade.
 - b. Is below pavement sub-grading.
2. Provide a uniform minimum clearance of 2 IN between conduits.
 - a. Maintain the separation of multiple planes of conduits by one of the following methods:
 - 1) Install multilevel conduits with the use of conduit supports and separators to maintain the required separations, and backfill with flowable fill (100 PSI).
 - 2) Install the multilevel conduits one level at a time.
 - a) Each level is backfilled with the appropriate amount of soil and compaction to maintain the required separations.

D. Control Panel

1. All lift stations shall have one automatic control panel. The control panel enclosure shall be NEMA 4X and shall be made of 304 stainless steel. It shall be continuously welded at the seams and the welds are to be ground smooth. The enclosure shall be equipped with a rain shield and the door shall be sealed with a closed-cell neoprene door gasket. The outer door shall be held in the closed position with a 1/4-turn handle that has a minimum of three latching points. The door shall be padlock lockable in the closed position. The inner swing panel (dead front door) shall be stainless steel or aluminum with a continuous stainless steel piano type hinge, and shall have 1/4-turn handles at the top and bottom with single latch contact points each. Both doors shall be hinged on the same side. The enclosure backplate shall be 12 gage or thicker aluminum or stainless steel.
2. No fittings shall enter from the top or back of the control panel. All fittings shall enter the side or bottom of the control panel and shall penetrate the control panel with either sealing locknuts or Myers Hubs.
3. The overall control panel shall be a minimum of 30"x36"x12" deep and of adequate size to completely cover (without crowding) all wiring and components mounted inside it. It shall have provisions for the mounting of all basic and optional controls and instrumentation. Install engraved nameplates defining door mounted hardware. The electrical control panel shall have a complete wiring schematic which is laminated in plastic and attached to the inside of the outer control panel door.
4. All components shall be installed per the most current NEMA and NEC regulations and standards. The components shall be industrial NEMA rated (I.E.C. is not acceptable) and UL approved when UL approval is available for that particular type component. The components of the panel shall be held in place with stainless steel, slotted, pan head machine screws with star type washers. The panel shall be tapped to accept the mounting screws of the components and no self-tapping type screws shall be used. The control panel shall have the following items installed on the back plane or on aluminum high hats attached to the back plane, so the body of the component is flush with the dead front door to allow operation and reset of the components without opening the dead front door: main power breaker, control circuit breaker, G.F.I. duplex receptacle circuit breaker, and TCU-Pack telemetry/motor controller. The control panel shall have the following items installed directly to the back plane: grounding bar/lugs, terminal strips, RTU battery case, Input/Output device (RIO128), 2 inch PVC conduit for control and telemetry wiring and fuses, surge suppressor, and resistors for telemetry/controller. The control panel shall have one G.F.I. duplex receptacle installed on the dead front door. The exterior of the control panel shall have one flashing red light, and one audible alarm with reset button. The individual placement of all the components of the control panel shall be installed as indicated in the standard details.

E. Ratings

The controls shall be rated for 120V single-phase, 60Hz supply voltage. All control voltage to the wet well shall not exceed 24 volts d.c.

F. Wiring Method

All electrical panel components shall have individual neutral wires. All neutral wiring shall be connected via a Square D model SN12-125 neutral assembly. Wiring is to be continuous with no splices between connections. Provide a Square D model PK9GTA grounding bar at the bottom of the backplate. This grounding bar will be the central connection point of all ground wires for the system with the exception of the pump power cords and surge arresters. The pump power cords and surge arresters shall be grounded via individual ground lugs that are to be attached to the control panel back plane. Provide two 12 terminal, Ideal model 6YH68 terminal strips to make electrical connections in the control panel. One terminal strip shall be used exclusively for 24 volt DC connections (TB-1) and the other shall be used exclusively for 120 volt AC connections (TB-2). The power distribution block, neutral assembly, grounding bar and terminal strips shall be located as indicated in the standard details. Use stainless steel screws and fasteners for all wiring connections.

G. Circuit Breakers

The power panel shall be equipped with a main circuit breaker for a minimum size of service of 600 amps. The control panel shall be equipped with a main circuit breaker, a 20 amp circuit breaker for the flow meter and a minimum 20 amp circuit breaker for the 120 volt GFI protected convenience outlet that is mounted on the inner control panel door. All circuit breakers shall be mounted in the control panel. The circuit breakers shall be of the heavy duty thermal magnetic trip variety. For circuit breakers up to 100 amps, use Square D series QOU or County approved equal. For circuit breakers greater than 100 amps, use Square D Mag Guard series with adjustable trip.

H. Variable Frequency Drives

Pump motors shall each have a Variable Frequency Drive (VFD) as called for on the construction plans. The drives shall be equipped with under voltage release and overload protection on all three phases. See Section 16370.

I. Lightning Arresters

There shall be a Ditek DTK Series, Category B lightning arrester/surge suppressor installed on the incoming power source. It shall be mounted on the bottom exterior of the safety switch enclosure and connected to the LOAD SIDE of the safety switch and overload reset.

The RTU circuit breaker shall also have a Ditek CM+Series lightning arrester/surge suppressor connected to the load side of the breaker wiring. These lightning arresters/surge suppressors shall be mounted with the supplied adhesive strip on the back of the high hat supporting the breakers. The exact model lightning arresters/surge suppressors shall be based on the voltage and number of phases of the protected circuits.

J. Liquid Level Switches and Sensors

Two float switches are to be installed in the wetwell to alarm and provide backup to the level transmitter. The switches shall be a single pole mechanical type switch (as manufactured by MDI, Connerly Manufacturing or approved equal). They shall be designed to actuate when the longitudinal axis of the float is horizontal, and deactuate when the liquid level falls one inch below the actuation elevation. The switching arrangement shall be normally open when deactivated. The output leads shall be connected in the control panel as shown in the Drawings. The control voltage to the level switches shall be 24 volts DC. and the switches shall be sized to operate at that voltage. In addition to the above, the lift station shall have a Dylix Model GXS3 level transducer transmitter mounted inside a stilling well as the primary level sensor.

The wiring connecting the control panel to the wet well floats shall be a continuous length (no splices) of flexible rate 600 volt, minimum diameter of #18, type S.O. cable for each instrument or switch point. The float switches shall have all connections made inside the control panel. The wiring shall be installed so there is a minimum of four feet, and a maximum of 6 feet, of excess cable in the wetwell for relocation of the float switches.

K. Alarms

Each lift station shall have one flashing red light to signal high level conditions. A flasher unit shall be installed in the control panel to operate the flashing light. These components shall be mounted to the control panel.

L. Seal Leak Moisture Detector

Provide for each pump a moisture sensing sensor which will detect when moisture has penetrated the seal chamber. An indicating lamp is to be mounted on the VFD to also signal the seal failure.

N. TCU / VFD Panel

The remote terminal/pump control unit shall be a complete TCU/VFD Panel system as manufactured by Data Flow Systems, Inc. The unit is to be a fully programmable, dual function device. It shall be used to monitor and control SCADA equipment and it shall have all the necessary hardware and software to control three pump VFDs. Its operation is based on level inputs from a level transmitter and backup float ball switches in the wet well. It shall have the ability to control pump alternation, activate and deactivate remote and local alarms, and communicate with the TAC II SCADA System. It shall be equipped with RTU surge protection and a transient filter shield. The unit shall have an Uninterruptible Power Source and contain all the components and be electrically connected as indicated in the standard details. It shall be equipped with an antenna with supporting mast and coaxial cable that is required by the manufacturer for that particular system. The installation shall include the required FCC licensing. The antenna and mast shall be rated for 150 MPH winds. Lift stations that re-pump sewage flows from other lift stations will also require an Analog Monitor Module to receive input from the flow meter.

Provide foundation(s) adequate for the tower(s) and/or mast(s) including any specified future expansion. Provide all masts, supports, lightning suppressors, and other apparatus required to make a complete and operable radio telemetry system.

O. **Grounding**

Install 5/8" x 10' copper-clad ground rod for the electrical service. Connect to the ground rod with a ground clamp and run a #6 bare copper wire to connect with the control panel grounding bar. Provide another, separate ground rod, clamp and #6 bare copper wire to connect directly to the antenna mast.

P. **Site Lighting**

An LED light shall be mounted on the tower for illumination of the lift station area. The light shall be a RAB, WPLED18N, 4000K, 120VAC or equal, mounted on ¾" galvanized rigid conduit connected to the tower using 90 degree korns clamps. Fixture shall be equipped with photoelectric control.

4.01 WATER SERVICE

All lift stations shall be equipped with a 3/4" lock shield and loose key water service (hose bib) adjacent to the valve assembly. Each water service shall be equipped with a 5/8" water meter, a reduced-pressure principle backflow preventer (Watts Model 909 or Equal) and a 3/4" brass hose bib. The water meter and backflow preventer shall be located within two feet of the lift station easement (or property) line. All water meters shall be obtained from the Manatee County Meter Department.

5.01 PERMITS

The Contractor shall be responsible for obtaining and shall pay for any permits and/or inspections required.

6.01 SHOP DRAWINGS AND INSPECTIONS

When calling for inspection, the Contractor shall have these approved shop drawings available on-site for review by the inspectors. The Contractor shall also deliver to the Lift Station Section inspector, the pump manufacturer's technical manual with the model number, serial number, and certified pump curve, for each pump prior to acceptance by the County for maintenance.

7.01 EASEMENTS

An easement for ingress and egress to the lift station and an easement for the lift station must be granted and recorded before the lift station can be accepted by the County for operation and maintenance.

8.01 LANDSCAPING

The Contractor shall be responsible for providing a landscaped screening or buffer with irrigation and shall maintain the lift station site in accordance with the Manatee County Land Development Code Section 715 unless a waiver is requested and approved by the Department of Public Works Director or his designee.

9.01 FLOODING

Wastewater pumping station structures and electrical and mechanical equipment shall be fully protected from physical damage and flood water intrusion by the 100 year flood. Wastewater pumping stations should remain fully operational and accessible during the 25 year flood. Regulations of state and federal agencies regarding flood plain obstructions shall be considered.

10.01 ACCESSIBILITY AND SECURITY

The pumping station shall be readily accessible by maintenance vehicles during all weather conditions and during all stages of development construction. The facility shall be located off the traffic way of streets and alleys. Security fencing and access hatches with locks shall be provided.

END OF SECTION

SECTION 13350 PS-355 LIFT STATION REHABILITATION

PART 1 GENERAL

The Contractor shall furnish all labor, materials, equipment and incidentals required to remove / replace and install the pumps and appurtenances and perform other rehabilitation work as noted on the drawings and within these specifications. The principal items of equipment shall include replacement of two submersible motor-driven sewage pumps and existing control panel upgrades as needed for new pump installation. Existing vault to be re-coated, vegetation to be removed from fence line, above ground piping to be repainted, and double swing gate replaced. The existing generator is to be salvaged and slab to be demolished.

All materials shall be new, without defects and of the best quality and be ordered from Barney's Pumps. All materials furnished and all work done shall be in strict accordance with all local requirements and codes.

1.01 EQUIPMENT, MATERIALS AND WORK

A. Pumps

1. Make/Model: Hydromatic S4N
2. Horsepower: 5 HP
3. Discharge Size: Match Existing
4. Impeller: 6.70 inch
5. Operating Point: 210 gpm at 30 ft TDH
6. Modifications: Explosion Proof (X) (Class 1, Division 1)

See Section 13340 (1.01.D) for additional pump requirements.

B. Pump Appurtenances:

Contractor to remove and replace discharge elbow, pump base mounting plate, guide rails, mounting brackets, rail supports, lifting chains, and appurtenances necessary for pump replacement. Parts are to be ordered from Barney's Pumps. Contractor to coordinate with Barney's pumps and County with respect to item lead times, station shutdown, station testing and startup.

1. Lifting chains shall be 3/8" stainless steel type 316 attached to the pump lifting bail using stainless steel shackles.
2. All pump mounting systems shall be of the front loading slide rail type BPIU, from Barney's Pump.
3. All rails and mounting hardware and other hardware shall be 316 stainless steel.
4. All nuts, bolts, washer, fasteners, brackets, and other hardware installed in the wetwell shall be type 316 stainless steel.
3. Pump base plate to be per installed if not currently present and reusable and meet same requirements as noted for the Rye Road MPS detail.

C. Painting and Coating

1. All paint and other coatings shall be applied in accordance with the project manufacturer's specifications for the surfaces being coated. The interior surfaces of the vault shall be coated with two coats of Tnemec Series 69 Hi-Build epoxy coating or equal.
2. The exterior of all ductile iron pipe, fittings and valves shall be per sections 02615 or 02640 and 09900 of these specifications.

D. Water backflow preventer assembly to be replaced and painted.

E. Gate to be replaced, see drawings for detail.

F. Fence line to be de-vegetated.

G. Existing generator and fuel tank to be salvaged. Generator slab foundation to be demolished and disposed.

2.01 ELECTRICAL

A. Conduit: Contractor to install new conduits if needed but will reuse existing if possible. Cost of new conduit would be considered incidental to the work effort and covered under the cost for the new pump furnish and installation.

B. Control Panel is existing. Contractor to coordinate with Barney's pumps for pump breaker and overload replacement within the existing control panel.

3.01 PERMITS

The Contractor shall be responsible for and shall pay for any permits and/or inspections required; such as, the County building department permit.

4.01 SHOP DRAWINGS AND INSPECTIONS

Shop drawings shall be submitted for approval in accordance with these Specifications prior to construction. When calling for inspection, the contractor should have these approved drawings available for review by the inspectors prior to acceptance by the County for maintenance. All inspections shall be arranged by contacting the Project Manager.

5.01 LANDSCAPING

The Contractor shall grade and fill the construction area to its original lines and grades and sod all disturbed or damaged grassed areas. Unless noted otherwise on the plans, the County shall restore the landscaping and shrubs around the lift station.

6.01 LINER REPAIRS

The contractor shall repair all existing liners in accordance with the manufacturer's recommendations. All HDPE and PVC liner repairs shall be performed by a contractor certified by the liner manufacturer to install and repair the liner.

END OF SECTION