2021 SUMMARY OF MAJOR CHANGES
Yellow highlighted sections are additions, Red highlighted strikethroughs are deletions

EFFECTIVE 4/1/20
1) SUBMERSIBLE WASTEWATER PUMPING STATIONS – SECTION 433

III.5 MATERIALS

III.5.3.1 Piping within and external of the wet well shall be 316 stainless steel: flanged, schedule 40. Butt-welding of any piping (except for the emergency suction pipe in the wet well) is not allowed. All bolts, washers and nuts shall be 316 stainless steel, threaded bolts and nuts shall be coated with “Never Seize” type coating.

III.5.3.2 Pipe outside of the wet well and above ground shall be 316 stainless steel, (schedule 40, one-piece construction all bolts, washers and nuts shall be 316 stainless steel, threaded bolts and nuts shall be coated with “Never Seize” type coating.

EFFECTIVE 4/10/20

IV.7. SOLID HANDLING PUMP CONSTRUCTION (WET-PIT AND DRY-PIT PUMPS)

IV.7.1 IMPELLER

The impeller shall be dynamically balanced and securely locked to the shaft by means of a key and self-locking bolt or nut—25% chrome cast iron with leading edges hardened to RC 60–61.

IV.7.2 MECHANICAL SEALS (UPPER AND LOWER SEALS)

The top seal may be either carbon-ceramic, tungsten carbide or silicon carbide material. Adjustable wearing rings shall be provided for all pumps 25 HP and larger.

IV.7.5 MOTORS 1800 RPM

Cable sizing shall conform to NEC requirements. The cable shall enter the pump(s) through a heavy-duty stainless steel cast iron assembly with grommet. An epoxy seal may be added to this cable entrance assembly to improve water tightness. The system used shall ensure a watertight submersible seal. The cable shall terminate in a junction chamber. Junction chamber shall be sealed from the motor by a compression seal.

EFFECTIVE 4/1/20

2) IN-LINE BOOSTER WASTEWATER PUMPING STATIONS – SECTION 435

III.4 MATERIALS

III.4.3.1 Piping within the in-line booster station site shall be flanged 316 stainless steel, (schedule 10, one-piece construction with no butt-welds with exception of pump-out pipe). Fittings shall be flanged 316 stainless steel. All nuts, bolts and accessories within shall be 316 stainless steel.
III.4.3.2. Pipe and fittings above ground shall be 316 stainless steel (flanged, schedule 10 with no butt-welds). All bolts, washers, and nuts shall be 316 stainless steel, threaded and shall be coated with “Never Seize” type coating.

III.4.3.3. All piping within the in line booster station site shall be 316 stainless steel: flanged, schedule 40. Butt welding of any piping (except for the emergency suction pipes, if applicable) is not allowed. All bolts, washers and nuts shall be 316 stainless steel, threaded and shall be coated with “Never Seize” type coating.

EFFECTIVE 4/10/20

3) VACUUM PODS

Lined concrete vacuum pods have been approved for use within driveways and unpaved areas. Concrete pods shall not be used in roadways or heavy traffic loading areas. Details posted to JEA.com

Plate S-52. Material for venting to candy cane changed from DWV Schedule 40 to Schedule 40.

EFFECTIVE 4/13/20

4) EXCAVATION AND EARTHWORK – SECTION 408

XII. 3.7 COMPACTION OF BACKFILL FOR PIPE TRENCHES:

Pipe backfill densities of at least 100% of the Standard Proctor maximum density as determined by AASHTO T99, Method C shall be required except where the cover height 1) below the bottom of base under asphalt pavement, 2) below concrete pavement, or 3) below unpaved ground, exceeds 15 inches, then pipe backfill densities of at least 95% of the Standard Proctor maximum density (as determined by AASHTO T99, Method C) shall be required.

EFFECTIVE 4/10/20

5) SUBMERSIBLE WASTEWATER PUMPING STATION – SECTION 433

I.1.1. IMPELLER

The impeller casing shall have well-rounded water passages and smooth interior surfaces free from cracks, porosity, blowholes, or other irregularities. The impeller shall be a semi-open or enclosed one-piece casting with not more than two non-clog passages and must pass a minimum 3 inch solid (unless written approval from JEA’s Pump Station Committee). Screw impellers are not acceptable. The interior water passages shall have uniform sections and smooth surfaces and shall be free from cracks and porosity. The impeller shall be dynamically balanced and securely locked to the shaft by means of a key and self-locking bolt or nut (25% chrome cast iron with leading edges hardened to RC 60).

IV.7.2 MECHANICAL SEALS (UPPER AND LOWER SEALS)

Pumps shall have mechanical seals, which shall require neither maintenance nor adjustment and shall be readily accessible for inspection and replacement. The seals shall not rely upon the pumped media for lubrication and shall not be damaged if the pump is run un-submerged for extended periods while pumping under load. Mechanical seals shall be solid hard faced, (not laminated type). The bottom seal shall be tungsten carbide or silicon
carbide material. The top seal may be either carbon-ceramic, tungsten carbide or silicon carbide material. Adjustable wearing rings shall be provided for all pumps 25 HP and larger.

### IV.7.5 MOTORS 1800 RPM

The cable shall enter the pump(s) through a heavy-duty stainless steel cast iron assembly with grommet. An epoxy seal may be added to this cable entrance assembly to improve water tightness. The system used shall ensure a watertight submersible seal. The cable shall terminate in a junction chamber. Junction chamber shall be sealed from the motor by a compression seal.

**EFFECTIVE 6/8/20**

6) **SUBMERSIBLE WASTEWATER PUMPING STATIONS – SECTION 433**

#### II.2. WET WELL MANUFACTURER WARRANTY

The Manufacturer shall supply to JEA a fifty (50) year corrosion unconditional warranty. Current JEA approved Pre-cast Concrete manufacturers two (2) year warranty shall be grandfathered in for twelve (12) months. The warranty shall include materials and installation and shall constitute complete replacement and delivery to the site of materials and installation of same to replace defective materials or defective workmanship with new materials/workmanship conforming to the specification.

#### I.2. SELECTION OF PUMP STATION STANDARDS

JEA Pump Station Standards are available in Auto CAD format, on the jea.com website. The selection of a pump station type shall comply with the following:

<table>
<thead>
<tr>
<th>Pump Station Type</th>
<th>Pump Station Maximum Peak Flow</th>
<th>Pump Station Maximum ADF, &amp; EDU</th>
<th>Emergency Operating Requirements</th>
<th>Odor Control Requirements</th>
<th>Additional Design Requirements</th>
<th>Influent Solids Management System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>0 – 440 GPM</td>
<td>174,999 GPD 499 EDU</td>
<td>Generator or Pump Engine*</td>
<td>Not required</td>
<td>Smart electric meter</td>
<td></td>
</tr>
<tr>
<td>Class II</td>
<td>441 – 1000 GPM</td>
<td>175,000 – 436,450 GPD 500 - 1247 EDU</td>
<td>Generator or Pump Engine</td>
<td>Piping and Wiring Required</td>
<td>Flow meter and Smart electric meter</td>
<td></td>
</tr>
</tbody>
</table>

*Piping and Wiring Required: III.6.3.7*
### III.7.2. BACK UP POWER REQUIREMENTS

#### III.7.2.1. An emergency operating system shall be required for all pump stations. The emergency operating system shall be a Generator Receptacle, an Emergency Generator (see section 472, Emergency Generator) and/or Emergency Pump Engine (see section 470, Emergency Pump Engine).

#### III.7.2.2. Refer to Chapter IV.7. - Section 472, “Emergency Generator”, for technical specifications on automatic standby emergency generator with diesel engine drive and above ground fuel storage tank. All generators shall be sized to run all pumps at station.

#### III.7.2.3. Refer to Chapter IV.6 – Section 407, “Emergency Pump Engines”, for technical specifications on standby emergency pump engine with fuel storage tank. All emergency pump engines shall be sized to run all pumps at station.

#### III.7.2.4. Reference Appendix for Back Up Power Decision Matrix

#### III.7.2.5. All pumping station emergency back-up systems, separate or combined, are to be sized to peak flow.

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**EFFECTIVE 6/8/20**

#### 7) SUBMERSIBLE WASTEWATER PUMPING STATIONS – SECTION 433 DRAWINGS

Drawings have been revised to remove the requirement for a boom crane on Class III and Class IV stations, to remove the requirement for solids handling on Class III stations and note for back up diesel pumps revised to indicate 2nd pump required only when hydraulics dictate.
8) IN-LINE BOOSTER WASTEWATER PUMPING STATIONS – SECTION 435

III.4 MATERIALS

All material shall be free from defects impairing strength and durability and be of the best commercial quality for the purpose specified.

III.4.1 Unless indicated otherwise on the drawings, all metal components, with the exception of pipe, fittings, pumps and motors shall be anodized aluminum or 316 stainless steel as specified here in or on the plans.

III.4.2 The pumps and motors shall be supplied by the pump supplier to ensure unit compatibility.

III.4.3 Station piping shall conform to JEA Water and Wastewater Standards Chapter IV. 3. - Section 429, entitled Wastewater Force Mains and Chapter IV. 4. Section 430, entitled Wastewater Valves and Appurtenances. Specifically, station piping for Class I, Class II, Class III and Class IV stations shall be plumbed and aligned according the latest ASTM, AWWA standards, any piping irregularities shall be removed and replaced.

III.4.3.1 Piping within the in-line booster station site shall be flanged 316 stainless steel, (schedule 10, one-piece construction with no butt-welds with exception of pump-out pipe). Fittings shall be flanged 316 stainless steel. All nuts, bolts and accessories within shall be 316 stainless steel.

III.4.3.2 Pipe and fittings above ground shall be 316 stainless steel (flanged, schedule 10 with no butt-welds). All bolts, washers, and nuts shall be 316 stainless steel, threaded and shall be coated with “Never Seize” type coating.

III.4.3.3 Stainless Steel Piping and Fittings

All piping above grade within the in line booster station site shall be 316 stainless steel: flanged, schedule 40. Butt-welding of any piping (except for the emergency suction pipes, if applicable) is not allowed. All bolts, washers and nuts shall be 316 stainless steel, threaded and shall be coated with “Never Seize” type coating.

III.4.3.4 Force main piping below ground, shall be in accordance with Chapter IV. 3. - Section 429 and Chapter IV. 4. - Section 430 of this standards manual. No connections permitted into JEA force mains which are greater than 12” size unless the connection is from a master pump station (441 GPM/MIN). All connections shall be 4” size or larger (no 2” size connections).

III.4.3.3.1 Fittings may be 316 stainless steel flanged type manufactured in accordance with ASTM-A774, AWWA C110 of the same raw material and in the same thicknesses as the pipe.

III.4.3.2 The finish on the stainless steel raw material, manufactured to ASTM A-240 will be No. 1, HRAP (hot rolled annealed and pickled) or better. The finish on the completed stainless steel pipe and fittings shall be as specified in ASTM A778 and A774, respectively.

III.4.3.4 Ductile Iron Fittings: Fittings may also be flanged ductile iron with specialty inside coating.

III.4.3.5 PVC Piping: Buried piping shall be PVC Dr18. Transition from PVC to stainless steel or ductile iron shall be flange to mechanical joint.

III.4.3.6 Cam-locks shall be 316 stainless steel.
Pump Station Back Up Power Decision Tree

Class I and Class II Stations (0 - 1000 gpm PHF and less)

- **Flow > than 440 gpm Peak?**
  - **Yes**
    - Re-pumps other Pump Station?
      - **Yes**
        - Back-Up Power Required
      - **No**
    - **No**
      - 3 Hour Storage in Wetwell plus Gravity?
        - **Yes**
          - No Backup Power required
        - **No**
          - Back-Up Power Required

- **Back Up Diesel Feasible?**
  - **Yes**
    - Generator Required
  - **No**
    - Back Up Diesel Pump Required

**Note 1:**
- Downstream Gravity can accommodate flow
- Minimum/Maximum Suction head is possible
Pump Station Back Up Power Decision Tree

Class III & Class IV Stations (1001 gpm PHF and greater)

- Back-Up Power Required
  - 3 Hours Storage in Wetwell plus Gravity? (PHF)
    - Yes
      - Back Up Generator Feasible?¹
        - Yes
          - Generator Required
          - No
          - Back Up Diesel Pump Required
        - No
          - Redundant Back-Up Power Required²
    - No
      - Redundant Back-Up Power Required²

Note 1:
- Site size can accommodate a generator

Note 2: Redundant Back-Up power options
- Generator and Diesel Pump
- Generator and Dual Feed Electric Services (2 Separate Circuits)
- Diesel Pump and Dual Feed Electric Services (2 Separate Circuits)
- 3 hours storage volume plus Generator
- 3 hours storage volume plus Dual Feed Electric Services (2 Separate Circuits)
- 3 hours storage volume plus diesel pump

Required by COJ EPB Rule 3 and FDEP

Cost Compare Redundant Options²

Most Cost Effective Redundant Option Required²
EFFECTIVE 9/15/20

9) INSTRUMENTATION AND CONTROLS INTEGRATOR REQUIREMENTS – SECTION 494

I. GENERAL

Instrumentation and control integrator companies and programmers doing work for JEA must adhere to the following certification and experience requirements. Copies of current, valid certifications must be provided to JEA to maintain status as an approved JEA Instrumentation and Controls Integrator.

II. INTEGRATOR QUALIFICATION

Based on a company's certifications and the experience level of its integrators/programmers it will be placed into one of two tiers that will determine the company’s qualification to bid on projects of different levels of complexity.

II.1. COMPANY CERTIFICATION

II.1.1. First tier approval is for major complex jobs and would consist of the integration company being a SCSP (Siemens Certified Solutions Partner) and the additional integrator experience required for complex jobs. See section III.3.1 for what defines complex jobs.

II.1.2. Second tier approval is for simpler, less complex, jobs which would not require SCSP certification and the additional integrator experience required for simple jobs. See section III.3.2 for what defines simple jobs.

II.1.3. All approved companies must have a permanent local office with actual street address. The local office location shall be within a four hour driving radius from Jacksonville, FL / Duval County.

II.1.4. All approved companies shall require a minimum of two local certified integrators on staff capable of doing the work assigned. See section above for required certifications. Local is defined as an office location within a four hour driving radius from Jacksonville.

II.2. INTEGRATOR CERTIFICATION AND EXPERIENCE

II.2.1. The actual integrators doing the work must be Siemens certified in Step 7, TIA Portal, and/or WinCC as required by the programming required by the project.

II.2.2. Refer to the Integrator Experience Matrix in III.4 to evaluate the combination of Siemens programming and water wastewater programming experience for each programmer to determine qualification for working on complex and/or simple projects.
III. PROJECT QUALIFICATION

III.1. COMPANY PROJECT QUALIFICATION

III.1.1. Tier one approved companies may do work on complex, simple or incidental projects provided the integrator assigned to do the work meets the experience requirements in the Integrator Experience Matrix.

III.1.2. Tier two approved companies may not do complex projects. Tier two approved companies may do simple and incidental projects provided the integrator assigned to do the work meets the experience requirements in the Integrator Experience Matrix.

III.2. INTEGRATOR PROJECT QUALIFICATION

III.2.1. Complex Project Integrator Experience Requirement
The integrator assigned to do the work must have a combination of Siemens programming and water wastewater programming experience to qualify for a complex project (Green area of matrix).

III.2.2. Simple Project Integrator Experience Requirement
The integrator assigned to do the work must have a combination of Siemens programming and water wastewater programming experience to qualify for a simple project (Yellow or Green area of matrix).

III.2.3. Incidental Programming Integrator Experience Requirement
The integrator assigned to do the work must have a combination of Siemens programming and water wastewater programming experience to qualify to work on incidental programming tasks. (Red, Yellow or Green area of matrix)

III.3. PROJECT COMPLEXITY DEFINITIONS

III.3.1. Complex Project
A complex project is any water, wastewater, or reuse process control system project that contains any one of the following:

III.3.1.1. Two or more PLCs that communicate with each other.
III.3.1.2. Two or more PI or PID loops, with a cascading loop counting as two.
III.3.1.3. Plant HMI development (not local Operator displays)
III.3.1.4. Potable Water Treatment
III.3.1.5. Other features as specified in the project scope (e.g. processes/technologies that are new to JEA)
III.3.2. Simple Project
A simple project is any water, wastewater, or reuse process control system project that is not classified as a complex project.

III.3.3. Incidental Programming
Incidental programming work, includes but is not limited to, development of Function Blocks (FB) or Function Calls (FC) for use in operating logic, development of an API or ActiveX controls for an HMI, or conversion of existing logic from Step7 to TIA Portal under the direct supervision of JEA Management.

GRATOR EXPERIENCE MATRIX

<table>
<thead>
<tr>
<th>Years of Siemens Programming</th>
<th>0</th>
<th>1</th>
<th>2</th>
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Water/Wastewater Programming Experience

Green = Qualified to work on complex projects
Yellow = Qualified to work on simple projects
Red = Qualified to work on incidental support projects