

INVITATION TO BID



**CITY OF CALLAWAY
FIBERGLASS LIFT STATION ASSEMBLY PURCHASE
BID NO: CM2021-07**

ADVERTISED: The Bay County News Herald, Wednesday, July 14, 2021

PREBID MEETING: N/A

BID DEADLINE: 1:00 p.m. Friday, July 23, 2021

BIDS/PROPOSALS ARE TO BE SUBMITTED TO:

**CITY OF CALLAWAY
ATTN: JANICE L. PETERS, CITY CLERK
6601 EAST HWY. 22
CALLAWAY, FL 32404**

ATTACHMENTS: Notice of Request for Bids/Proposals
Special Instructions and Conditions
Minimum Technical Specifications
Bid Forms **(To be submitted with bid.):**
Bid/Certification Form

A handwritten signature in blue ink, appearing to read "Janice L. Peters", is written over a horizontal line.

Janice L. Peters, MMC, City Clerk

INSTRUCTIONS TO BIDDERS/PROPOSERS

Qualified firms are invited to submit a BID/Proposal (Quote) to the **CITY OF CALLAWAY** for a **FIBERGLASS LIFT STATION ASSEMBLY PURCHASE, BID NO: CM2021-07**, by replying to the enclosed specification. In order for the Bid/Proposal to be considered, complete all items in this specification.

All Bids/Proposals must include one **(1) original** and be addressed to:

CITY OF CALLAWAY
ATTN: CITY CLERK
6601 EAST HWY. 22
CALLAWAY, FL 32404

Proposals **must be received** at the address listed above no later than **1:00 p.m. on Friday, July 23, 2021**. Late Proposals will not be accepted, regardless of the reason.

Proposal envelopes must be **sealed and marked** with the Bid number, due date, and name of Proposer so as to identify the enclosed submittal. If more than one package is submitted, please mark "1 of 2", "2 of 2", etc.

INTERPRETATION OF SPECIFICATION

All questions pertaining to the terms and conditions of the scope of work of this Bid/Proposal must be submitted **in writing** via email or fax to the City Clerk as shown below:

Janice L. Peters, MMC, City Clerk
City of Callaway
6601 East Hwy. 22
Callaway, FL 32404
jpeters@cityofCallaway.com

No oral interpretations will be made to any firm as to the meaning of specifications or any other contract documents. **In accordance with Florida Statutes 287.057(23), "Respondents to this solicitation or persons acting on their behalf may not contact, between the release of the solicitation and the end of the 72-hour period following the agency posting the notice of intended award, excluding Saturdays, Sundays, and state holidays, any employee or officer of the executive or legislative branch concerning any aspect of this solicitation, except in writing to the procurement officer or as provided in the solicitation documents. Violation of this provision may be grounds for rejecting a response."** Questions must be submitted as referenced above.

All questions must be received at least five (5) calendar days prior to the scheduled opening of Bids/Proposals. Any interpretation of the Bid/Proposal terms, conditions, and/or specification, if made, will be only by Addendum issued by the City Clerk. A copy of such Addendum will be posted to the City's website at www.cityofcallaway.com and mailed to each proposer that received a copy of the advertisement of the Request for Bids/Proposals. **IT IS THE RESPONSIBILITY OF THE BIDDER/PROPOSER TO CHECK THE CITY'S WEBSITE FOR ANY ADDENDUMS PRIOR TO SUBMITTING A BID/PROPOSAL.** No verbal instructions or interpretations of drawings and specifications will be made other than indicated above.

The City reserves the right to reject any or all proposals, to waive informalities in the Bids/Proposals and to re-advertise for Bids/Proposals. The City also reserves the right to separately accept or reject any item or items of a Bid/Proposal and to award and/or negotiate a contract in the best interest of the City.

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FIBERGLASS LIFT STATION ASSEMBLY PURCHASE
BID NO: CM2021-07**

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CITY OF CALLAWAY
SPECIAL INSTRUCTIONS AND CONDITIONS
FIBERGLASS LIFT STATION ASSEMBLY PURCHASE
BID NO: CM2021-07

A. **Description:** () See Attached (X) As Follows

Proposals for the Fiberglass Lift Station Assembly shall include a fiberglass wet well, submersible pumps, discharge piping, and all other lift station appurtenances and incidentals as indicated on the construction drawings and specifications. The proposal shall include all mechanical, electrical, and discharge piping as identified under Construction Key Note 2, drawing sheet M-101.

B. **Specifications:** (X) See Attached () As follows:

See attached Minimum Technical Specifications

C. **Contract/Agreement Required:** (X) None () As follows:

D. **Items to be submitted with Bid:** () None (X) As follows:

- One (1) original proposal
- Bid/Certification Form(s) with signature page(s).

E. **Deadline and place for submission of Bids:**

1:00 p.m., FRIDAY, JULY 23, 2021

City Hall

6601 East Hwy. 22

Callaway, FL 32404

**CITY OF CALLAWAY
FIBERGLASS LIFT STATION ASSEMBLY PURCHASE
BID NO: CM2021-07**

TECHNICAL SPECIFICATIONS

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CITY OF CALLAWAY – FIBERGLASS LIFT STATION ASSEMBLY

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40 05 13 LIFT STATION PROCESS PIPE AND FITTINGS

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SECTION 33 32 13 - SUBMERSIBLE CENTRIFUGAL PUMPS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Furnish and install the submersible non-clog pumps, related piping, supports, and all other necessary appurtenances as shown on the drawings and specified in these specifications.

1.2 SUBMITTALS

- A. Submit shop drawings, technical data, and pump curves in accordance with Section 01 33 00. Submit operation and maintenance data in accordance with Section 01 78 23.

1.3 QUALITY ASSURANCE

- A. All pumps shall be furnished by a single manufacturer. Non-clog Pumps shall be Flygt or Wilo.

1.4 PUMP WARRANTY

- A. The pump manufacturer shall warrant the units being supplied to the owner against defects in workmanship and material for a period of five (5) years. Warranty period shall begin on the date of project substantial completion.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Furnish and install two (2) submersible non-clog sewage pumps for the lift station. The working load rating of the lifting system shall be a minimum of 50% greater than the pump weight. Each pump motor shall be equipped with 50 feet of power and control cable sized in accordance with NEC and CSA standards.

2.2 REQUIREMENTS

Primary Design Point	High Condition: 113 GPM @ 109' TDH Low Condition: 113 GPM @ 40' TDH
Maximum Motor Horse Power	20
Voltage	230
Minimum Pump Solids Passing Capability	3"
Motor Rating	FM Explosion Proof

2.3 PUMP DESIGN

- A. The heavy duty submersible wastewater pumps shall be capable of handling raw unscreened sewage, storm water, and other similar solids-laden fluids without clogging. The pump shall be driven by a premium efficiency motor, providing the highest levels of operational reliability and energy efficiency.

2.4 PUMP CONSTRUCTION

- A. Major pump components shall be of gray cast iron, ASTM A-48, Class 35B with smooth surfaces devoid of porosity or other irregularities. All exposed fasteners shall be stainless steel AISI type 316 construction. All metal surfaces coming into contact with the pumped media (other than the stainless steel components) shall be protected by a factory applied spray coating of high solids two part epoxy paint finish on the exterior of the pump. The pump shall be equipped with an open lifting hoop suitable for attachment of standard chain fittings, or for hooking from the wet well surface. The hoop shall ductile cast iron ASTM A536; 60-40-18 with an option of 316 stainless steel, and shall be rated to lift a minimum of four times the pump weight.
- B. Sealing design for the pump/motor assembly shall incorporate machined surfaces fitted with Nitrile (Buna-N) rubber O-rings. Sealing will be the result of controlled compression of rubber O-rings in two planes of the sealing interface. Housing interfaces shall meet with metal to metal contact between machined surfaces, and sealing shall be accomplished without requiring a specific torque on the securing fasteners. Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered equal. No secondary sealing compounds shall be required or used.

2.5 REQUIREMENTS GUIDE RAIL BASE ASSEMBLY

- A. There shall be no need for personnel to enter the wet well to remove or reinstall the pumps. In a wet pit installation, the discharge base & elbow assembly shall be permanently installed in the wet well and connected to the discharge piping. In order to prevent binding or separation of the pump from the guide rail system, the pumps shall connect to the guide rail base automatically and firmly, guided by one 2 inch guide pipe (two 2 inch pipes optional) extending from the base elbow to the top of the station. Systems using guide cable in lieu of rigid guide bars or pipes shall not be considered acceptable. The sliding guide bracket shall be a separate part of the pumping unit, capable of being attached to standard 6 inch ANSI class 125 or metric DN150 pump flanges, so that the pump mounting is nonproprietary, and any pump with a standard discharge flange can be mounted on the base assembly. Base or bracket assemblies with proprietary or nonstandard flange dimensions shall not be considered acceptable.
- B. A field replaceable Nitrile (Buna-N) rubber profile gasket or O-ring shall accomplish positive sealing of the pump flange/guide rail bracket to the discharge elbow. Base

assemblies which rely solely on metal to metal contact between the pump flange and discharge base elbow as a means of sealing are inherently leak prone, and shall not be considered equal. No portion of the pump shall bear directly on the floor of the sump. The guide rail system shall be available in an optional non-sparking version, approved by Factory Mutual for use in NEC Class 1, Division 1, Group C&D hazardous locations.

2.6 MECHANICAL SEAL

- A. Each pump shall be equipped with a triple seal system consisting of tandem mechanical shaft seals, plus a radial lip seal; providing three complete levels of sealing between the pump wet end and the motor. The mechanical seal system shall consist of two totally independent seal assemblies operating in a lubricant reservoir that hydro-dynamically lubricates the lapped seal faces at a constant rate. The mechanical seals shall be of nonproprietary design, and shall be manufactured by a major independent manufacturer specializing in the design and manufacture of mechanical seals. The lower, primary seal unit, located between the pump and the lubricant chamber, shall contain one stationary industrial duty solid silicon-carbide seal ring and one rotating industrial duty solid silicon-carbide seal ring. The stationary ring of the primary seal shall be installed in a seal holding plate of gray cast iron ASTM A-48, Class 35B. The seal holding plate shall be equipped with swirl disruption ribs to prevent abrasive material from prematurely wearing the seal plate. The upper, secondary seal unit, located between the lubricant chamber and the sensing chamber, shall contain one stationary industrial duty solid silicon-carbide seal ring, and one rotating one rotating industrial duty solid silicon-carbide seal ring. Each seal interface shall be held in contact by its own spring system. A radial lip seal shall be positioned above the sensing chamber, preventing any liquid which accumulates in the sensing chamber from entering the lower bearing and motor. The seals shall not require routine maintenance, or adjustment, and shall not be dependent on the direction of rotation for proper sealing. Each pump shall be provided with a lubricant chamber for the shaft sealing system which shall provide superior heat transfer and maximum seal cooling. The lubricant chamber shall be designed to prevent overfilling, and to provide lubricant expansion capacity. The drain and inspection plug shall have a positive anti-leak seal, and shall be easily accessible from the outside of the pump. The seal system shall not rely upon the pumped media for lubrication and shall not be damaged when the pump is run dry. Lubricant in the chamber shall be environmentally safe nontoxic material.
- B. The following seal types shall not be considered equal: Seal systems with less than three complete levels of sealing between the pump wet end and the motor. Seals of proprietary design, or seals manufactured by other than major independent seal manufacturing companies. Seals requiring set screws, pins, or other mechanical locking devices to hold the seal in place, conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces, any system requiring a pressure differential to seat the seal and ensure sealing.

2.7 MECHANICAL SEAL PROTECTION SYSTEM

- A. The primary mechanical seal shall be protected from interference by particles in the waste water, including fibrous materials, by an active Seal Protection System integrated into the impeller. The back side of the impeller shall be equipped with a sinusoidal cutting ring, forming a close clearance cutting system with the lower submersible motor housing or seal plate. This sinusoidal cutting ring shall spin with the pump impeller providing a minimum of 75 shearing actions per pump revolution. Large particles or fibrous material which attempt to lodge behind the impeller or wrap around the mechanical seal, shall be effectively sheared by the active cutting system into particles small enough to prevent interference with the mechanical seal. The Seal Protection System shall operate whenever the pump operates, and shall not require adjustment or maintenance in order to function. Submersible pump designs which do not incorporate an active cutting system to protect the primary mechanical seal shall not be considered acceptable for wastewater service.

2.8 SEAL FAILURE EARLY WARNING SYSTEM

- A. The integrity of the mechanical seal system shall be continuously monitored during pump operation and standby time. An electrical probe shall be provided in a sensing chamber positioned above the mechanical seals for detecting the presence of water contamination within the chamber. The sensing chamber shall be air filled, and shall have a drain / inspection plug with a positive anti-leak seal which is easily accessible from the outside of the pump. A solid-state relay mounted in the pump control panel or in a separate enclosure shall send a low voltage, low amperage signal to the probe, continuously monitoring the conductivity of the liquid in the sensing chamber. If sufficient water enters the sensing chamber through the mechanical seal system, the probe shall sense the increase in conductivity and signal the solid state relay in the control panel. The relay shall then energize a warning light on the control panel, or optionally, cause the pump shut down. This system shall provide an early warning of mechanical seal leakage, thereby preventing damage to the submersible pump, and allowing scheduled rather than emergency maintenance. Systems utilizing float switches or any other monitoring devices located in the stator housing rather than in a sensing chamber between the mechanical seals are not considered to be early warning systems, and shall not be considered equal or acceptable.
- B. As an option, two additional moisture sensing probes, one in the electrical connection chamber, and one in the motor chamber shall be available. These optional probes shall send separate signals to the control panel as described above, so that maintenance personnel are given an early warning of the presence of moisture in the respective sensing chambers.

2.9 BEARINGS

- A. Each pump shaft shall rotate on high quality permanently lubricated, greased bearings. The upper bearing shall be a cylindrical roller bearing and the lower bearings shall be a matched set of at least three heavy duty bearings, two angular

contact ball bearings and one cylindrical roller bearing. All three lower bearings shall have identical outer race diameters to provide maximum bearing load capacity. Designs which utilize a roller bearing with a smaller outer diameter than the other bearings in the assembly do not provide maximum load capacity and shall not be considered equal. Bearings shall be of sufficient size and properly spaced to transfer all radial and axial loads to the pump housing and minimize shaft deflection. L-10 bearing life shall be a minimum of 100,000 hours at flows ranging from ½ of BEP flow to 1½ times BEP flow (BEP is best efficiency point). The bearings shall be manufactured by a major internationally known manufacturer of high quality bearings, and shall be stamped with the manufacturer's name and size designation on the race. Generic or unbranded bearings from other than major bearing manufacturers shall not be considered acceptable.

- B. Provide two totally independent mechanical shaft seals, installed in tandem, each with its own independent single spring system acting in a common direction. Install the upper seal in an oil-filled chamber with drain and inspection plug (with positive anti-leak seal) for easy access from external to the pump. Provide seals requiring neither routine maintenance nor adjustment, but capable of being easily inspected and replaced. Provide seals which are non-proprietary in design, with replacements available from a source other than the pump manufacturer or its distributors. Do not provide seals with the following characteristics: conventional double mechanical seals with single or multiple springs acting in opposed direction; cartridge-type mechanical seals; seals incorporating coolant circulating impellers, seals with face materials other than those specified.

2.10 PUMP SHAFT

- A. The pump shaft and motor shaft shall be an integral, one piece unit adequately designed to meet the maximum torque required at any normal start-up condition or operating point in the system. The shaft shall have a full shutoff head design safety factor of 1.7, and the maximum shaft deflection shall not exceed .05 mm (.002 inch) at the lower seal during normal pump operation. Each shaft shall be stainless steel AISI 420 material, and shall have a polished finish with accurately machined shoulders to accommodate bearings, seals and impeller. As an option, the shaft shall be available in stainless steel. Carbon steel, chrome plated, or multi piece welded shafts shall not be considered adequate or equal.

2.11 IMPELLER

- A. The impeller shall be high chrome cast iron. The impeller shall be of the semi-open, non-clogging, two vane design, meeting the Ten State Standards requirement for minimum solids passage size of 3 inches. The impeller shall be capable of passing a minimum of 3x4 inch spherical solids as are commonly found in waste water. The impeller shall have a slip fit onto the motor shaft and drive key, and shall be securely fastened to the shaft by a stainless steel bolt which is mechanically prevented from loosening by a positively engaged ratcheting washer assembly. The head of the impeller bolt shall be effectively recessed within the impeller bore or supporting

washer to prevent disruption of the flow stream and loss of hydraulic efficiency. The impeller shall be dynamically balanced to the ISO 10816 standard to provide smooth vibration free operation. Impeller designs which do not meet the Ten State Standards requirement for 3 inch solids passage size, those that rely on retractable impeller designs to pass 3 inch solids, or those that rely on fins or pins protruding into the suction path to assist in the handling of fibrous material shall not be considered equal.

2.12 VOLUTE

- A. The pump volute shall be single piece gray cast iron, ASTM A-48, Class 35B non-concentric design with centerline discharge. Passages shall be smooth and large enough to pass any solids which may enter the impeller. Discharge size shall be as specified on the pump performance curve. The discharge flange design shall permit attachment to standard ANSI or metric flanges/appurtenances. The discharge flange shall be drilled to accept both 6 inch ANSI class 125 and metric DN150 (PN 10) metric flanged fittings. Proprietary or nonstandard flange dimensions shall not be considered acceptable. The maximum working pressure of the volute and pump assembly shall be 145 psi.

2.13 REQUIREMENTS MOTOR DESIGN

- A. The premium efficiency motor shall meet efficiency standards in accordance with IEC 60034-30, level IE3 and NEMA Premium*. Motor rating tests shall be conducted in accordance with IEC 60034-2-1 requirements and shall be certified accurate and correct by a third party certifying agency. A certificate shall be available upon request.

* IE3 and NEMA premium efficiency levels are equivalent, however the NEMA Premium standard is intended to cover dry installed motors only, not integrated submersible motors.

- B. The motor shall be housed in a water tight gray cast iron, ASTM A-48, Class 35B enclosure capable of continuous submerged operation underwater to a depth of 65 feet, and shall have an IP68 protection rating. The motor shall be of the squirrel-cage induction design, NEMA type B, Premium Efficiency. The copper stator windings shall be insulated with moisture resistant Class H insulation material, rated for 356°F. The stator shall be press fitted into the stator housing. The use of bolts, pins or other fastening devices requiring penetration of the stator housing is unacceptable. The rotor bars and short circuit rings shall be made of cast aluminum
- C. The motor shall be designed for continuous duty. The maximum continuous temperature of the pumped liquid shall be 104°F, and intermittently up to 122°F. The motor shall be capable of handling up to 15 evenly spaced starts per hour without overheating. The service factor (as defined by the NEMA MG1 standard) shall be 1.3. The motor shall have a voltage tolerance of +/- 10% from nominal, and a phase to phase voltage imbalance tolerance of 1%. The motor shall have a NEMA Class A temperature rise, providing cool operation under all operating conditions. The

premium efficiency motor shall be FM and CSA approved for use in NEC Class I, Division I, Groups C & D hazardous locations. The surface temperature rating shall be T3C. The motor shall meet the requirements of NEMA MG1 Part 30 and 31 for operation on PWM type Variable Frequency Drives.

- D. The motor shall be capable of operating, completely submerged, partially submerged, or unsubmerged. For submerged (wet pit) applications, the motor shall be self-cooling via the process fluid surrounding the motor.

2.14 THERMAL PROTECTION

- A. Each phase of the motor shall contain a normally closed bi-metallic temperature monitor switch imbedded in the motor windings. These thermal switches shall be connected in series and set to open at 140°C +/- 5°C (284°F). They shall be connected to the control panel to provide a high stator temperature shutdown signal, and are used in conjunction with external motor overload protection. As an option, bi-metallic temperature switches shall be available for the upper and lower bearings to provide high bearing temperature warning signals. As an alternate option, RTD (PT100) type temperature measuring devices shall be available for the motor winding and bearings to provide actual temperature measurement at these locations. When the RTD option is supplied for the motor winding, bi-metallic switches shall also be supplied in the winding. The bi-metallic system must be connected to the control to provide positive shutdown of the motor in the event of an overheat condition. This is required in order to conform to FM and CSA rules for explosion proof equipment.

2.15 POWER CABLE

- A. The power cables shall be sized according to NEC and CSA standards and shall be of sufficient length to reach the junction box without requiring splices. The outer jacket of the cable shall be oil, water, and UV resistant, and shall be capable of continuous submerged operation underwater to a depth of 65 feet.
- B. Provide motors which are FM listed for use in Class I Division 1 Groups C&D hazardous locations as defined by the National Electric Code.

2.16 CABLE ENTRY/JUNCTION CHAMBER

- A. The cable entry design shall not require a specific torque to insure a watertight seal. The cable entry shall consist of cylindrical elastomer grommets, flanked by stainless steel washers. A cable cap incorporating a strain relief and bend radius limiter shall mount to the cable entry boss, compressing the grommet ID to the cable while the grommet OD seals against the bore of the cable entry. The junction chamber shall be isolated and sealed from the motor by means of sealing glands. Electrical connections between the power cables and motor leads shall be made via a compression or post type terminal board, allowing for easy disconnection and maintenance.

PART 3 - EXECUTION

3.1 INSTALLATION OF EQUIPMENT

- A. Install equipment as required by the manufacturer's written installation instructions and approved shop drawings unless otherwise directed by the Engineer.
- B. Excess motor and control wire shall be carefully coiled and hung inside the wet well. These wires shall not be cut and all identification tags shall be in place. Cables shall be supported with S.S. basket weave type strain reliefs hung in wet well and be routed in a manner that will not interfere with access to any equipment or terminals in the control panels.

3.2 SPARE PARTS

- A. The following spare parts shall be supplied for the pump station:
 - (1) Set of upper and lower shaft seals
 - (1) Set of upper and lower bearings
 - (1) O-ring kit
 - (1) Volute wear ring
 - (1) Impeller wear ring
 - (1) Oil inspection port o-ring

3.3 PUMP TEST

- A. The pump manufacturer shall perform the following inspections and tests on each pump before shipment from factory:
 - 1. Impeller, motor rating and electrical connections shall first be checked for compliance to the customer's purchase order.
 - 2. A motor and cable insulation test for moisture content or insulation defects shall be made.
 - 3. Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.
 - 4. The pump shall be run for 30 minutes submerged under a minimum of six (6) feet under water.
 - 5. After operational test No. 4, the insulation test (No. 2) is to be performed again.
- B. A written report stating the foregoing steps have been done shall be supplied with each pump at the time of shipment upon request.
- C. The pump cable end will be sealed with a high quality protective covering, to make it impervious to moisture or water seepage prior to electrical installation.

J.Anderson, P.E.
BDI/PNS
END OF SECTION 33 32 13

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SECTION 40 05 13 - LIFT STATION PROCESS PIPE AND FITTINGS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The CONTRACTOR/MANUFACTURER shall furnish all labor, materials, equipment, and incidentals required to install HDPE DR11 piping and fittings complete, tested, and ready for use, as shown on the Drawings and/or as specified herein.

1.2 RELATED WORK (REQUIREMENTS)

- A. Construction Drawings, Agreement Declarations, Exhibits and other Technical Specification Sections apply to this Section.

1.3 SUBMITTALS

- A. The CONTRACTOR shall submit to the ENGINEER, within twenty (20) calendar days after receipt of Notice to Proceed, a list of materials to be furnished, and the names of the suppliers and the date of delivery of materials to the site.
- B. Submit shop drawings to the ENGINEER for review in accordance with Section 01 33 00 Submittal Procedure, showing the complete laying plan of all pipe, including all fittings, adapters, valves, and specials along with the MANUFACTURER's drawings and specifications indicating complete details of all items. The pipe details shall include a **pipe class laying schedule** which specifies pipe class, class coding, joints, station limits, and transition stations, and a list of abbreviated terms with their full meaning. The pipe class laying schedule shall also show the required bedding class as required for the pipes pressure class and bury depth according to the drawings and specifications herein. The CONTRACTOR/MANUFACTURER shall provide details of fittings to be furnished. The above shall be submitted to the ENGINEER for approval before fabrication and shipment of these items. The locations of all pipes shall conform to the locations indicated on the Drawings. In most cases, a certain amount of flexibility in the positioning of pipes will be allowed. Horizontal and vertical deflections may require beveled, special deflection; or short pipes. The deflections at joints shall not exceed 75 percent of that recommended by the MANUFACTURER.
- C. Furnish in duplicate to the ENGINEER, prior to each shipment of pipe, submit MANUFACTURER's certification and certified test reports that the pipe and linings and coating for this contract was manufactured and tested in accordance with the ASTM and ANSI/AWWA Standards specified herein.

1.4 QUALIFICATIONS

- A. All HDPE DR11 pipe and fittings shall be furnished by MANUFACTURER's who are fully experienced in the U.S. for the manufacture of the material to be furnished. The pipe and fittings shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these Specifications.

1.5 QUALITY ASSURANCE

- A. All HDPE DR11 pipe and fittings shall be from a single MANUFACTURER. All HDPE DR11 pipe to be installed under this contract may be inspected at the foundry for compliance with these specifications by an independent testing laboratory provided by the OWNER. The CONTRACTOR shall require the MANUFACTURER's cooperation in these inspections. The cost of foundry inspection of all pipe approved for this contract will be borne by the OWNER.
- B. Inspection of the pipe will also be made by the ENGINEER or other representatives of the OWNER after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the specification requirements, even though pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.
- C. Testing may be performed prior to machining bell and spigot. Failure of HDPE DR11 pipe shall be defined as any rupture of pipe wall. Certified test certificates shall be furnished in duplicate to the ENGINEER prior to time of shipment. The standard 500 psi hydro test will be performed on 24" and smaller pipe.

PART 2 - PRODUCTS

2.1 HDPE DR11

- A. Carrier Pipe for Force Main:
 - 1. Pipe and fittings shall be high-density polyethylene manufactured from NSF approved PLEXCO P34CH compound, PE 4710, or equal.
 - 2. Pipe shall meet AWWA C-906, PE Pressure Pipe and Fittings 4" – 53" for Distribution and shall be marked with the NSF-pw logo. Force main shall be impregnated with three, 1" green stripes the length of the pipe, both equally spaced around the pipe.
 - 3. Hydrostatic design stress (HDS) shall be 800 psi at 73.4°F with a minimum pipe DR of 11 and operating pressure of 160 psi at 73.4°F.
 - 4. Pipe and fittings shall be produced by the same manufacturer from identical materials meeting the requirements of this specification.

5. Molded fittings shall meet the requirements of ASTM D-3261 and this specification. At the point of fusion, the outside diameter and minimum wall thickness of fitting butt fusion outlets shall meet the outside diameter and minimum wall thickness specifications of ASTM F-714 for the same size of pipe.
6. Pipe shall be manufactured in accordance with ASTM F-714, ASTM D-3035, or the applicable dedicated service specification. Print line markings shall include a production code from which the location and date of manufacture can be identified. Upon request, the manufacturer shall provide an explanation of his production code.
7. Pipe Marking: HDPE color coding shall be in accordance with the marking requirements specified herein.

<u>Base Bid – High Density Polyethylene Pipe (HDPE) Pipe</u>						
<u>Pipe Description</u>	<u>AWWA</u>	<u>Outside Di- ameter (in.)</u>	<u>DR</u>	<u>Color</u>	<u>Pressure Class (psig)</u>	<u>Inner Diameter (in.)</u>
4” HDPE FM (DIPS)	C-906	4.8	11	Green	200	3.875

B. ACCEPTABLE PIPE MANUFACTURER

1. Performance Pipe, Driscoplex 4000, PE 3408, AWWA C-906, DIPS sizing, Richardson TX, (800) 527-0662; Supplier: ISCO Industries, Grand Bay, AL, 1-800-345-4726
2. JM Eagle, 5200 West Century Blvd, Los Angeles, CA 90045, 1-800-621-4404
3. Engineer approved equal.

C. Butt fusion Fittings: HDPE fittings shall be PE 4710 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99, and approved for AWWA use. Butt fusion fittings shall have a manufacturing standard of ASTM D3261. Molded and fabricated fittings shall have a pressure rating equal to the pipe unless otherwise specified in the plans. Fabricated fittings shall be manufactured using Data Loggers. Temperature, fusion pressure, and a graphic representation of the fusion cycle shall be part of the Quality Control records. Fittings shall be suitable for use as pressure conduits, and per AWWA C906, shall have nominal burst values of three and one-half times the working pressure rating of the fitting.

D. Transition Fittings: Terminate HDPE pipe with fusion welded flanges (125 lb bolt pattern). See below for alternate fusion procedures.

2.2 JOINING METHODS

A. Butt fusion joining: Plain end pipe and fittings shall be made using butt fusion. The butt fusion procedures shall be in accordance with the manufacturer or the PPI. The fusion equipment operator shall receive training using the recommended procedure. CONTRACTOR/MANUFACTURER shall verify that the fusion equipment is in good

operating condition and that the operator has been trained within the past twelve months. Fusion equipment shall be equipped with a Data Logger. Records of the welds (heater temperature, fusion pressure, and a graph of the fusion cycle) shall be maintained for five (5) years. Fusion beads shall not be removed.

- B. Mechanical Joining: Polyethylene pipe and fittings shall be joined together using flanges or mechanical joint adapters. These fittings shall be made from PE 3048 HDPE, with a Cell Classification of 345464C as determined by ASTM D3350-99. Flanged and MJ adapters shall have a manufacturing standard of ASTM D3261. They shall have a pressure rating equal to the pipe unless otherwise specified on the plans.
- C. Electrofusion couplings: Polyethylene pipe and fittings shall be joined using approved electrofusion couplings. Fittings shall be PE 3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99. Electrofusion fittings shall have a manufacturing standard of ASTM F1055. Fittings shall have a pressure rating equal to the pipe unless otherwise specified on the plans. Electrofusion fittings shall be suitable for use as pressure conduits, and per AWWA C906, shall have nominal burst values of three and one-half times the working pressure rating of the fitting.

2.3 IDENTIFICATION

- A. Each length of pipe and each fitting shall be marked with the name of the MANUFACTURER, size, and class. All gaskets shall be marked with the name of the MANUFACTURER, size, and proper insertion directions.

PART 3 - EXECUTION

3.1 INSTALLING OF PROCESS PIPE AND FITTINGS

- A. All mains shall be installed in accordance with recommendations of the pipe MANUFACTURER and as specified herein.
- B. Care shall be taken in the handling, storage, and installation of pipe and fittings to prevent injury to the pipe or coatings. All pipe and fittings shall be examined before installing, and no pipe shall be installed which is found to be defective. Pipe or fittings shall not be dropped. All damage to the pipe coatings shall be repaired according to the MANUFACTURER's recommendations.
- C. All pipe and fittings shall be kept clean and shall be thoroughly cleaned before installation.
- D. Pipe shall be laid to the lines and grades shown on the Drawings with bedding and backfill as shown on the Drawings. Blocking under the pipe will not be permitted.

- E. When installation is not in progress, including lunchtime, or the potential exists for dirt of debris to enter the pipe, the open ends of the pipe shall be closed with watertight plugs or other approved means.
- F. Under no circumstances shall the pipe or accessories be dropped into the trench.
- G. All plugs, caps, bends and other locations where unbalanced forces exist shall be anchored by restrained joints. The length of pipe for which restrained joints shall be used are shown on the Drawings.
- H. When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be jointed with a bell shall be beveled to conform to the manufactured spigot end. Lining shall be undamaged.

3.2 FLEXIBLE JOINT PIPE

- A. The flexible joint pipe shall be installed in accordance with the MANUFACTURER's recommendations. In addition, the installed deflection shall be limited to 15 deg. per joint and provisions shall be made where required to prevent flotation or buoyancy of the pipe.

3.3 SLEEVE TYPE COUPLINGS

- A. Couplings shall be installed where shown. Couplings shall not be assembled until adjoining push-on joints have been assembled. After installation, apply a heavy bitumastic coating to all bolts, nuts and accessories.

3.4 CLEANING

- A. At the conclusion of the work the CONTRACTOR/MANUFACTURER shall thoroughly clean all of the new pipelines.

END OF SECTION 40 05 13

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SECTION 40 95 13 – CONTROL PANEL CONSTRUCTION

PART 1 - GENERAL

1.1 SCOPE

- A. The Supplier shall furnish, test, and startup all furnished electrical control panels and control system components related to their furnished equipment.
- B. This section applies specifically to the Lift Station Control Panel, CP-LS

1.2 SUBMITTALS

- A. Product Data: For each type of product supplied. Include rated capacities, weights, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Dimensioned plans, elevations, sections, and details showing minimum clearances, conductor entry provisions, gutter space, installed features and devices, and material lists for each switch specified.
- C. Additional Shop Drawing Requirements:
 - 1. Point - to - Point Wiring Drawings.
 - 2. Loop Drawings
 - 3. Fabrication and nameplate legend drawings
 - 4. Systems schematic drawings illustrating all components being supplied complete with electrical interconnections.
 - 5. Computer input/output lists and a written description of the control strategy to be applied.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR CONTROL PANELS

- A. Control panel shall be constructed in accordance with the following standards: National Electrical Manufacturers Association (NEMA), Institute of Electrical and Electronics Engineers (IEEE), Underwriter Laboratories (UL), Nation Fire Protection Association (NFPA), and Instrumentation Systems and Automation Society (ISA)
- B. Control panel shall be constructed in a UL approved production facility and bear all applicable UL labels for panel construction.
- C. The completed panel shall be factory tested prior to shipment. Field installation by the Contractor shall consist only of setting the panel in place and making necessary pneumatic and/or electrical connections.

- D. Control panel shall be designed to operate at the 208Y/120 service voltage.

2.2 CONTROL PANEL ENCLOSURES

- A. Control panels and associated hardware shall be constructed of 316L stainless steel.
- B. Interior components shall be mounted with stainless steel hardware and shall be clearly identified with plastic identification nametags. The tags shall be white with black lettering.
- C. Control panels shall be NEMA 4X construction with a 3-point steel latching mechanism and padlocking stainless steel handles. Latch rods to have rollers for easier door closing.
- D. Door shall be provided with heavy gauge continuous stainless steel hinges.
- E. Control panels shall be constructed of 14 gauge stainless steel. Control panels shall also include a 10 gauge mild steel sub-panel mounted on collar studs for equipment mounting.
- F. Control panel seams shall be continuously welded and ground smooth.
- G. Exterior control panel doors shall be removable by pulling the stainless steel hinge pin.
- H. Data pockets shall be provide on all interior panel doors. The equipment supplier shall provide laminated schematics in each pocket for the associated control panel.
- I. Control panels shall be sized to accommodate the equipment required plus 25% spare space.
- J. Control panels shall be provided with a mild steel or aluminum dead front panel capable of protecting the operator from a bolted fault within the control panel with the outer door open.
- K. Control panels shall be provided with a battery back-up system that consists of a power supply / battery charger and re-chargeable batteries. The use of an off the shelf UPS shall not be considered acceptable.

2.3 CONTROL PANEL COOLING REQUIREMENTS

- A. NEMA 4X air conditioner shall be supplied as required to keep the equipment mounted inside the control panels operating within the manufacturers operating temperature requirements. The air conditioner unit shall not exchange the air inside the control panel with the air outside the control panel. The unit shall be coated to provide environmental protection.
- B. The manufacturer of the control panel and cabinet shall provide all necessary cooling/heating equipment required to maintain temperature and humidity within the operating requirements of all equipment located within panels and cabinets. Coordination for electrical/mechanical connection is the responsibility of the Contractor/Manufacturer. At the time of submittals the Contractor/Manufacturer shall submit calculations indicating that such requirements have been met.

2.4 SUPPORT BASE

- A. Control panel shall be mounted on a support base constructed of 2" stainless steel angle, welded to provide a 24" high support structure with stainless steel removable, ventilated panels on the front, rear and sides of the support structure. The maximum size of the removable panels shall be 24" x 24".
- B. Provide stainless steel fasteners to attached support base to the concrete housekeeping pad and the control panel enclosure.

2.5 POWER INFEED

- A. Provide main circuit breaker for the feeder conductors entering the control panel enclosure.
- B. Provide generator input circuit breaker with 200A Meltric generator input receptacle located on the side of the control panel enclosure to accommodate a temporary connection to a portable generator.
- C. The main circuit breaker and generator input circuit breaker shall be mechanically interlocked to ensure only one breaker is allowed to be closed at all times.
- D. Provide integral mounted surge protection device within the control panel enclosure.

2.6 MOTOR STARTER

- A. Provide Solid State Reduced Voltage (SSRV) type, Size 3 motor starter for each 20 HP submersible pump.
- B. Motor starters shall be provided with 120 VAC operating coils.
 - 1. A motor protection relay shall be furnished as part of the starting equipment. The motor protector shall be adjustable so that the range selected includes the motor nameplate listed FLA (full load amps) rating and the service factor.
 - 2. Repeated unsuccessful attempts to start the motor or a short circuit shall cause the motor protector to trip.
 - 3. Tripping of the motor protector shall stop the motor and flash the trip light. Resetting the relay shall allow the alarm circuitry to be reset.
 - 4. Output terminals shall be provided for connection of the motor leads exiting the enclosure.

2.7 TELEMETRY CONTROL UNIT (TCU)

- A. Control panel shall be provided with a telemetry control unit, Data Flow Systems Model TCU001, for monitoring and control of the lift station duplex submersible pump system and associated equipment as shown on drawings. Manufacturer representative contact information is:

Tom Hogeland
Data Flow Systems

Phone: 321.259.5009, ext. 1102
Email: tomh@dataflowsys.com

- B. The TCU shall be provided with the following communication modes:
1. Ethernet communication module
 2. Radio Telemetry System consisting of 5W, synthesized 400 MHz, 9-18 VDC, 1.8A integrated radio and analog radio converter with Yagi antenna installed on concrete pole. Coordinate communication interface with the City of Callaway for connection to the City's control system network for remote monitoring and control of the lift station.
- C. The TCU input/outputs shall include the following:
1. Analog Inputs (4-20mA)
 - a. Bubbler Level Device (TCU360)
 - b. SPARE
 2. Digital Inputs (Intrinsically Safe)
 - a. Low Level Float Switch (Both pumps stopped with alarm)
 - b. Off Level Float Switch (All pumps stopped)
 - c. Lead Level Float Switch (Lead pump started)
 - d. Lag Level Float Switch (Lag pump started)
 - e. High Level Float Switch (All pumps stagger started with alarm)
 3. Digital Inputs (120V)
 - a. SP-1, Motor Protection Relay – Thermal and Moisture Seal (Alarm)
 - b. SP-1, Ground Fault Monitor Relay (Alarm)
 - c. SP-2, Motor Protection Relay – Thermal and Moisture Seal (Alarm)
 - d. SP-2, Ground Fault Monitor Relay (Alarm)
 4. Digital Outputs (120V)
 - a. Pump, SP-1, start command
 - b. Pump, SP-1, On pilot light
 - c. Pump, SP-2, start command
 - d. Pump, SP-2, On pilot light
- D. The TCU shall include 4-line x 20 character LCD with a 12-key keypad that allows the operator to configure the TCU, viewing and resetting alarms, and analyzing status information.
- E. Control panel shall include wireless industrial Ethernet connections and shall be provided with industrial wireless Ethernet access points. The Radio Telemetry Unit (RTU) shall be provided by Data Flow Systems.
- F. The TCU shall include Hand-Off-Automatic (H-O-A) switches for each pump.
- G. The TCU shall include an internal power monitor for a 208Y/120V electrical system with phase monitor to disconnect power to the pump motors upon loss of a phase.
- H. TCU Programming:
1. All TCU code shall be written in either “Structured Text” or “Function Block” style using the manufacturer’s standard program, DFS Basic-52. The programming of the TCU shall be performed by the manufacturer, Data Flow Systems.

2. All TCU code shall be supplied to the owner with fully descriptive instruction and rung comments. All code to be supplied to the owner with fully descriptive screen and tag data.
3. The TCU manufacturer shall provide the owner with a flow chart of all TCU code as well as a written algorithm of the codes functions.
4. The control panel manufacture shall provide the owner with an I/O map of all process variables in the TCU.
5. All TCU code shall be the property of the owner.
6. The Contractor/Manufacturer shall provide three copies of all commented TCU and Operator Interface code/script/screen layouts to the Owner in electronic format prior to acceptance by the Owner. Any documentation not containing symbol information or comments will not be considered acceptable.

2.8 BUBBLER SYSTEM – LIFT STATION BUBBLER LEVEL DEVICE (BLD)

- A. The primary lift station level monitoring device shall be a bubbler system, Data Flow Systems Model TBU360, for monitoring and control of the lift station duplex submersible pumps. Manufacturer representative contact information is:

Tom Hogeland
Data Flow Systems
Phone: 321.259.5009, ext. 1102
Email: tomh@dataflowsys.com

- B. The bubbler system shall be monitored via a 4-20 mA signal to the analog input of the Telemetry Control Unit (TCU) and include the following components installed within the control panel enclosure:
1. Bubbler Pressure Transducer
 2. Air Pump for Bubbler
 3. Check Valve
 4. Fittings and Adapters
 5. Tubing

2.9 CONTROL PANEL WIRING

- A. Wiring, where required, shall be general-purpose open type, neatly bundled and laced or installed in plastic wiring troughs. Wire shall be stranded No. 16 AWG minimum, with thermoplastic insulation rated for 600V and 90°C.
- B. All equipment mounting backboards shall be provided with nonmetallic slotted ducts. All nonmetallic slotted ducts shall have spare space equal to 40% of the depth of the duct.
- C. Wiring colors shall be as follows:
1. All ungrounded AC conductors operating at the supply voltage shall be “Black”
 2. All ungrounded AC control conductors operating at voltage less than supply shall be “RED”
 3. All ungrounded DC control conductors shall be “Blue”

4. All ungrounded AC control conductors or wires that remain energized when the main disconnect is in the "OFF" position shall be "Yellow"
 5. All grounded AC current carrying conductors shall be "White"
 6. All grounded DC current carrying conductors shall be "White with a Blue stripe"
 7. All grounded AC current carrying conductors that remain energized when the main disconnect is in the "OFF" position shall be "White with a Yellow stripe"
 8. All ground conductors shall be "Green"
 9. A wiring color code legend shall be mounted inside the control panel door.
- D. All wires entering and leaving all panels shall be terminated at barrier type terminal strips with integral surge protection. All terminals shall be identified and labeled per the Owner's standard naming conventions. It shall be the Supplier's responsibility to coordinate with the Owner for the accepted naming conventions. (All terminal strips shall be designed for #12 AWG, XHHW-2, 90°C field wiring for terminations.)
- E. No terminal strip may be located closer than 8" from any side or bottom of the control panel. This is designed to allow for adequate wire bending radius for field terminations.
- F. All wiring shall be clearly marked with an identification number consistent with the wiring schematic.
- G. Devices mounted on the enclosure door or interior dead front panel shall be run in spiral wrap to avoid pinch points when opening and closing the enclosure door(s) or interior panels.

2.10 SURGE PROTECTION

- A. The main surge protective device shall be rated at 120 KA surge current per phase for 208Y/120V systems with L-L, L-N and L-G protection modes equal to Phoenix Contact "Trabtech" surge protectors.
- B. All control power and digital I/O signals shall be protected from surges at the control panel with suitable surge suppression devices. Panel mounted surge protection shall be Plug in Style & DIN rail mounted to allow for easy replacement. The power and digital I/O signals shall be protected with solid state surge suppression devices manufactured by Phoenix Contact or Engineer approved equal. MOV only type surge suppression is not acceptable.
- C. All analog I/O signals shall be protected by loop powered isolators manufactured by Phoenix Contact or Engineer approved equal.
- D. Lightning Protection and surge suppression devices shall be provided for all radio and telemetry equipment. The Lightning protection and surge suppression devices shall be manufactured by Phoenix Contact or Engineer approved equal.

2.11 PANEL MOUNTED DEVICES

- A. Pump run status indicating lights shall be provided on the control panel door and shall be heavy duty, push-to-test type, oil tight, industrial type for 120 VAC applications. Pump run pilot lights shall be red colored. Legend plates shall be factory engraved as required. – Allen-Bradley Bulletin 800T 30.5mm or approved equal.

- B. Current to voltage converters, 4-20mA dc to 1-5VDC shall be as manufactured by Phoenix Contact or Engineer approved equal.
- C. D.C. power supplies shall be as manufactured by PLC Manufacturer, Phoenix Contact, or approved equal and shall be sized for 1.5 times the application requirements. (No open power supplies will be allowed.)
- D. All relays shall Allen-Bradley. Units shall be hermetically sealed in metal can with octal plug. Contacts to be 120VAC/60Hz at 10 amps. Unit to incorporate lamp in parallel with relay coil. All relays to be DPDT. Provide hold down clamps for all relays.
- E. All circuit breakers shall have an Amp Interrupting Capacity (AIC) rating of 22,000 minimum.
- F. Provide ground fault monitoring relay
- G. Runtimes for each motor starter located in the control panel shall be tracked in the TCU and the motor control shall be programmed to alternate pumps to ensure equal run time for each motor.
- H. Power distribution blocks shall be block style distribution blocks manufactured by Ferraz Shawmut or Engineer approved equal. All distribution blocks shall be provided with polycarbonate safety covers to provide dead front protection. The safety cover shall have a test prod hole for testing purposes
- I. Fuse blocks/holders shall be UL style fuse blocks manufactured by Ferraz Shawmut or Engineer approved equal.
- J. General purpose fuses shall be Ferraz Shawmut UL Power Fuse style or Engineer approved equal. Unless otherwise noted the fuse rating and type shall be determined based on the equipment (which the fuse is protecting) manufacturer's recommendations for overcurrent protection.
- K. Semiconductor fuses shall be Ferraz Shawmut Amp Trap series fuses or Engineer approved equal. Unless otherwise noted the fuse rating and type shall be determined based on the equipment (which the fuse is protecting) manufacturer's recommendations for overcurrent protection.
- L. All control transformers shall be sized to provide 25% spare capacity. The transformer connections shall be provided with protective covers to guard against accidental contact, and the transformer shall be provided with primary and secondary fusing per the manufacturer's recommendations.
- M. Each control panel shall be provided with a ground fault duplex service receptacle that is accessible from the interior dead-front panel. The service receptacle shall be capable of providing 15A at 125VAC
- N. Each control panel shall be provided with a series connected suppression filter system to protect the programmable logic controller and instrumentation power from high-frequency noise and electrical transients. The suppression filter shall be a current technology LoadGuard or Engineer approved equal.

- O. All intrinsically safe barrier relays shall be UL listed and shall be manufactured by Warrick or Engineer approved equal.
- P. Pilot lights shall be provided for each starter located inside the control panel. The lights shall be as follows: Red (Run), Green (Off), Amber (Fault).
- Q. Control power transformers shall be provided in each control panel with a supply voltage other than 120V or 120/208V. Control power transformers shall be manufactured by Square D company and provided with both primary and secondary fuses per the NEC.

2.12 MISCELLANEOUS

- A. Engraved laminated plastic nameplates shall be furnished for each front panel mounted instrument. The Contractor shall coordinate with the Owner for nameplate color and naming conventions. All instruments and components shall be tagged on rear with embossed plastic tape labels.
- B. Provide convenience GFCI receptacle mounted within the control panel enclosure and a GFCI receptacle mounted on the exterior of the control panel enclosure in a cast aluminum outlet box with a while in use, weatherproof coverplate.
- C. Provide button type photocell and 20A/1P switch in weatherproof cast aluminum outlet boxes mounted on the exterior of the control panel to control the area light.
- D. Provide LED strip lights mounted within each section of the Lift Station Control Panel, CP-LS, controlled via door switches.

PART 3 - EXECUTION

3.1 CONTRACTOR'S RESPONSIBILITY

- A. The Contractor shall coordinate the work of the service personnel during construction, testing, and acceptance of the work.
- B. The Contractor/Manufacturer shall receive final approval on all panel, enclosure, and equipment layouts by the Engineer prior to fabrication or installation.

3.2 QUALITY ASSURANCE

- A. All control panels shall be factory tested and certified prior to releasing for shipment. The testing shall consist of but not limited to the following:
 - 1. Point to point testing of all wiring prior to application of power.
 - 2. The intended supply voltage shall be applied to the control panel and all components shall be tested for proper operation and calibration.
 - 3. The Telemetry Control Unit and operator interface code shall be loaded, and shall be tested for functionality.

4. All components shall be checked to confirm that each device has been installed per the plans and specifications as well as the Manufacturer's recommendations.
5. The enclosure shall be inspected for defects and shall be repaired or replaced if necessary.
6. All labeling and identification tags shall be verified and be clean and visible.

B. An Electrical Engineer, registered in the state of Florida, shall be required to document the results of the control panel testing. The documentation shall contain the results of the tests listed above as well as any rework items and subsequent repairs that were required prior to shipment. In addition he/she must certify this document prior to the release for shipment. Prior to shipment all one copy of the applicable documentation shall be placed in the drawing pocket of each enclosure, and three copies shall be sent to the Engineer.

3.3 INSTALLATION

- A. All equipment and devices for the work shall be installed in the locations shown on the drawings, in accordance with the manufacturer's recommendations, and in compliance with the requirements of these specifications.
- B. The Contractor shall be responsible for coordinating the installation of all equipment in the proposed locations with all other trades performing work on the project that may be affected.

3.4 FINAL INSPECTION

- A. Include all changes and/or alterations in the control panels prior to final inspection and acceptance by the owner.
- B. Any changes and/or alterations in the Control Panels shall be reflected/updated in all Control Panel Schematics prior to acceptance by the Owner. This includes all electronic copies delivered to the Owner.

END OF SECTION 40 95 13

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SECTION 43 41 45 - FIBERGLASS REINFORCED PLASTIC TANKS

PART 1 - GENERAL

1.1 SUMMARY

A. Related Requirements:

1. Section 03 30 00 - Cast-in-Place Concrete: Requirements for concrete support pad.
2. Division 40 - Process Interconnections: Pipes, tubes, fittings, and valves as apply to specific application.
3. Section 33 32 13 – Submersible Centrifugal Pumps.

1.2 DEFINITIONS

A. FRP: Fiberglass-reinforced plastic.

1.3 REFERENCE STANDARDS

A. ASME International:

1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
2. ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.

B. ASTM International:

1. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
2. ASTM D2563 - Standard Practice for Classifying Visual Defects in Glass-Reinforced Plastic Laminate Parts.
3. ASTM D3299 - Standard Specification for Filament-Wound Glass-Fiber-Reinforced Thermoset Resin Corrosion-Resistant Tanks.
4. ASTM D4097 - Standard Specification for Contact-Molded Glass-Fiber-Reinforced Thermoset Resin Corrosion-Resistant Tanks.
5. ASTM D883 - Standard Terminology Related to Plastics
6. ASTM D3753 - Standards Specifications for Glass-Fiber-Reinforced Polyester Manholes and Wet Wells

C. Code of Federal Regulations:

1. 29 CFR Part 1926.502.

1.4 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

- B. Coordinate Work of this Section with location and placement of utilities and piping.

1.5 SCHEDULING

- A. Schedule Work of this Section after concrete Work for support pad and prior to connecting utility and piping Work.

1.6 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data:
 - 1. Submit data for expansion joint fittings and other pipe specialty fittings.
 - 2. Submit data for ladder and ladder safety devices.
 - 3. Submit information concerning materials of construction and fabrication.
- C. Shop Drawings:
 - 1. Indicate complete plan, elevation, and sectional drawings showing critical dimensions.
 - 2. Indicate supply and overflow piping details, including fittings, expansion joints, pipe support methods, and components of the fiberglass wet well.
 - 3. Indicate ladder and ladder safety device details.
 - 4. Indicate handrail details.
 - 5. Indicate access hatch details.
 - 6. Indicate anchoring system.
 - 7. Indicate submersible pumps and other attachments.
- D. Manufacturer's Certificate:
 - 1. Certify that products meet or exceed specified requirements.
 - 2. Submit certified list of tank installations storing same liquid and concentration, in service for period of not less than five years.
- E. Owner Installation Certificate: Obtain from tank manufacturer's representative and submit, attesting that tank has been properly installed and is ready for startup and testing.
- F. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for determination of shell thickness, nozzle reinforcement, buoyancy collar, and special elements of vessel construction and support.
- G. Test and Evaluation Reports:
 - 1. Submit certified data on physical properties of laminates being used to include laminate tensile modulus and flexural modulus in hoop and axial directions, and data on laminate makeup to include number and thickness of layers and layer glass content.
 - 2. Submit certified factory test results.
- H. Manufacturer Instructions: Submit detailed instructions on installation requirements, including tank handling procedures, anchoring, and layout.

- I. Source Quality-Control Submittals: Indicate results of factory tests and inspections.
- J. Field Quality-Control Submittals: Indicate results of Contractor/Manufacturer-furnished tests and inspections.
- K. Manufacturer Reports: Certify that tank has been installed according to manufacturer instructions.
- L. Qualifications Statements:
 - 1. Submit qualifications for manufacturer, installer, and licensed professional.
 - 2. Submit manufacturer's approval of installer.

1.7 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations and final orientation of tank and accessories.

1.8 QUALITY ASSURANCE

- A. Materials in Contact with Potable Water: Certified according to NSF 61 and 372.
- B. Perform Work according to The City of Callaway standards.
- C. Maintain one copy of each standard affecting Work of this Section on Site.

1.9 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store materials according to manufacturer instructions.
- D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

1.11 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

1.12 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish one-year manufacturer's warranty for replacement due to breakage, yellowing, abrasion, loss of light transmission, or coating delamination.

PART 2 - PRODUCTS

2.1 FIBERGLASS REINFORCED (FRP) WET WELL

A. Loading Conditions

1. Wet well FRP wall laminate must be designed to withstand wall collapse or buckling based on the following assumed physical parameters. The wet well shall be designed and constructed to withstand or exceed wall collapse and buckling based upon three (3) times the assumed loading conditions listed under (1) (a.), (1)(b.), and (1)(c.).
 - a. Unit weight of water is 62.4 lbs. per cubic foot.
 - b. Saturated soil unit weight of 120 lbs. per cubic foot.
 - c. Modulus of soil reaction of 700 lbs. per square foot.
2. Wet well bottom shall not have more than 3/8" inches of center deflection with vessel empty and water table located @ finished grade.
3. Wet well, when installed according to wet well manufacturers current Wet Well Installation Instruction and Operating Guidelines, shall support accessory equipment – such as submersible pumps, rails, valves, and ladders as shown on drawings.

B. Product Storage

1. Wet Well shall be vented to atmospheric pressure.
2. Wet Well shall be capable of storing products identified in the manufacturer's limited warranty for underground wet wells in effect at the time of purchase.

C. Materials

1. Wet well shall be manufactured with 100% premium resin (such as isophthalic or terephthalic resin) and glass-fiber reinforcement. No sand fillers.
2. Wet Well shall be tested by the manufacturer to a Barcol Hardness of at least 80% of the resin manufacturer's specific hardness for fully cured resin.
3. The following pertinent average material properties shall be used in analysis for fiberglass composite in the Wet Well.
 - a. Tensile Modulus 900,000 psi
 - b. Flexural Modulus 900,000 psi
 - c. Tensile Strength 10,000 psi
 - d. Compressive Strength 20,000 psi
 - e. Poisson's Ratio 0.33

D. Wet Well Dimensions

1. Wet well shall have an overall depth of 16.82 feet.
2. Wet well shall have nominal diameter of 96" inches.

2.2 ACCESSORIES AND FEATURES

A. Wet Well Top Flange

1. The wet well flange shall have an outside diameter of at least 4.0 inches greater than the diameter of the wet well.

B. Anti-Flotation Flange

1. The manufacturer shall provide anti-flotation calculations for the designed wet well based on specifics of ground water depth and soil properties for the specific site location.

C. Stub – Outs and Connections

1. Stub-outs must be installed by the manufacturer. Installations in the field are not recommended and may void the manufacturer's warranty. Installation of FRP pipe will be performed using resin and reinforced hand lay-up procedures. All resin and fiberglass shall be the same type and grade as used in the manufacturer of the basin.

D. Wet Well Wall Reinforcement Rib

1. All 6' diameter and larger wet wells shall be constructed using an integral constructed trapezoidal rib for superior strength and support of the wet well wall.

E. Pump Mounting Base and Studs

1. The pump base mounting studs shall be 316 series stainless steel threaded studs.
2. The pump mounting base detail shall be provided by the owner.

2.3 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.

- B. Certify through visual inspection of tanks after fabrication that Acceptance Level II requirements of ASTM D2563 are met.
- C. Certify following during shop inspection:
 - 1. Compliance with Drawing dimensions.
 - 2. Surface cure by acetone wipe test; no surface tackiness is permitted.
 - 3. Liquid tightness by minimum 24-hour hydrostatic test.
- D. Certificate of Compliance:
 - 1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
 - 2. Specified shop tests are not required for Work performed by approved manufacturer.
- E. Marking and Identification:
 - 1. The wet well shall be marked on the inside and outside with the following information:
 - a. Manufacturer's trade name or trademark
 - b. Manufacturer's location
 - c. Serial Number
 - d. Total height and diameter of wet well
 - e. Date of manufacturer

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify layout and orientation of tank accessories, utilities, and piping connections.

3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Thoroughly clean chemical storage tank pad, removing loose concrete, dust, and other debris.
- C. Place two layers of building paper on pad according to tank manufacturer instructions prior to placing tank.

3.3 INSTALLATION

- A. Support Pad: Using templates furnished with tank, install anchor bolts and accessories for mounting and anchoring tank.
- B. Install FRP tanks as indicated on Drawings and according to manufacturer instructions.
- C. Connect piping to tank.
- D. Install tank accessories not factory mounted to complete installation.
- E. Wet Well shall be installed per manufacturers recommendation.

3.4 FIELD QUALITY CONTROL

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- B. Field Testing:
 - 1. Hydrostatically test each FRP tank by filling with water to the overflow pipe level.
 - 2. Conduct test minimum 48 hours.
 - 3. No leakage permitted.
- C. Equipment Acceptance: Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.
- D. Furnish installation certificate from equipment manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing.

END OF SECTION 43 41 45

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GENERAL NOTES:

- TANK TO BE WATER FILLED (HYDRO TESTED) FOR A 24 HOUR PERIOD AFTER THE TANK IS INSTALLED.
- DO NOT ENTER TANK UNLESS FEDERAL AND STATE O.S.H.A. TANK ENTRY PROCEDURES HAVE BEEN FOLLOWED.
- IT SHALL BE THE PUMP SUPPLIER'S RESPONSIBILITY TO CONFIRM THE ADEQUACY OF THE SPECIFIED MINIMUM HATCH SIZE TO ENABLE THE PUMP(S) TO BE EASILY REMOVED FROM THE WET WELL THROUGH THE HATCH WITHOUT DISASSEMBLY WITH A MINIMUM 4" CLEAR. UPSIZE HATCHES AS NEEDED.
- CONTRACTOR SHALL SUBMIT A SUBMITTAL FOR ALL PIPING, VALVES AND APPURTENANCES ASSOCIATED WITH THE PUMP STATION. PRESSURE GAUGE SHALL HAVE STAINLESS STEEL TAP & ISOLATION BALL VALVE.
- ARY SHALL HAVE STAINLESS STEEL TAP & ISOLATION BALL VALVE. ALL PENETRATIONS IN WET WELL FOR PIPING, ELECTRICAL ETC. SHALL BE SEALED & SLEEVED. ALL VISIBLE PENETRATIONS SHALL BE SEALED WITH LINKSEAL. ALL BELOW GRADE SHALL BE SEALED WITH AN FRP SLEEVE WITH KOR-N-SEAL.
- PLUG VALVES SHALL HAVE AN ALLOWABLE FLOW CAPACITY EQUAL TO 100% OF THE ADJACENT PIPE AREA, AND SHALL ALLOW "PIGGING".

CONSTRUCTION KEY NOTES:

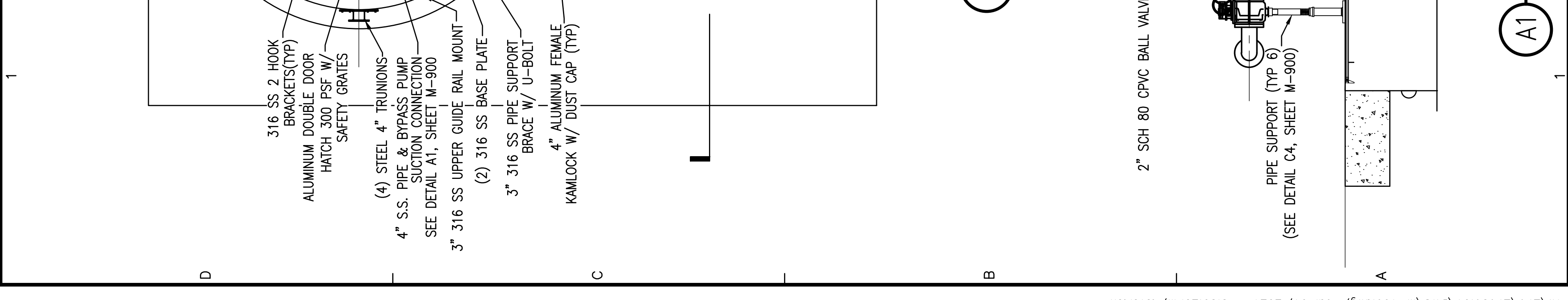
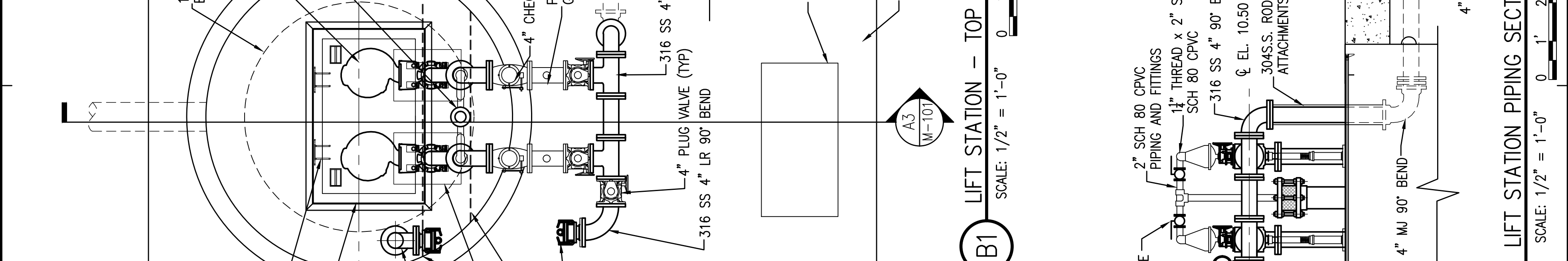
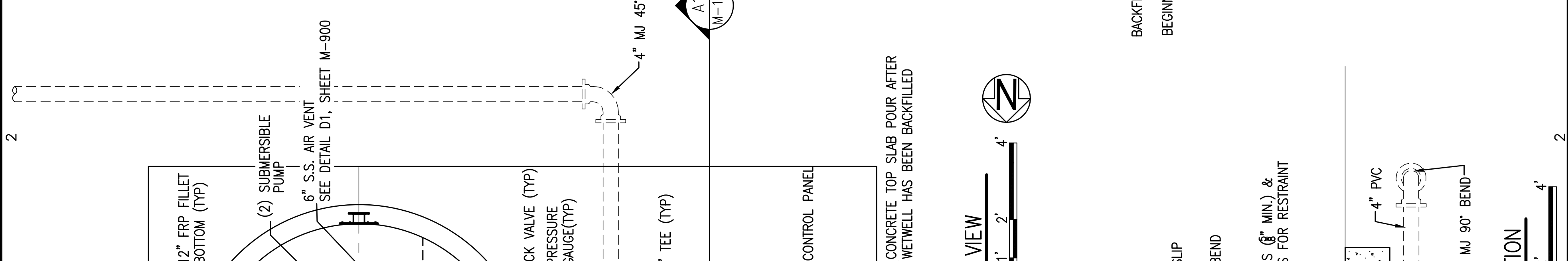
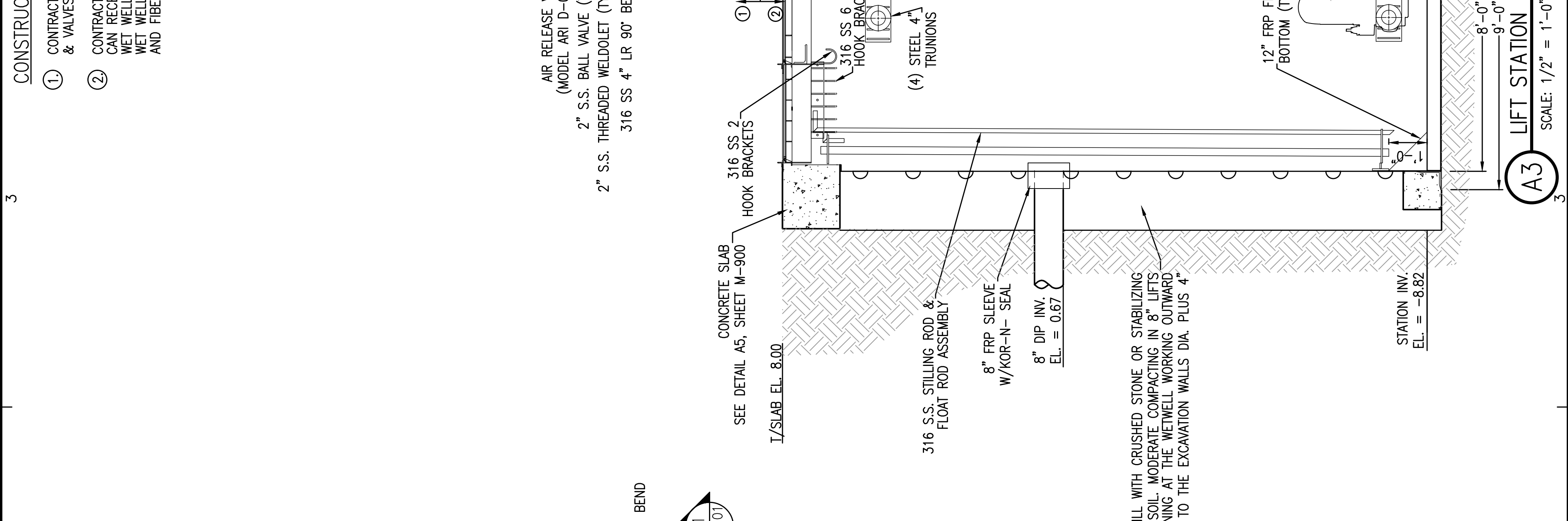
- CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL PIPING, FITTINGS & VALVES ABOVE THE HDPE/316 S.S. TRANSITION FITTING.
- CONTRACTOR TO COORDINATE WITH OWNER SO THE CONTRACTOR CAN RECEIVE, TRANSPORT, UNLOAD, AND INSTALL THE FIBERGLASS WET WELL ASSEMBLY PER CONSTRUCTION PLANS, SPECIFICATIONS, AND FIBERGLASS MANUFACTURER.

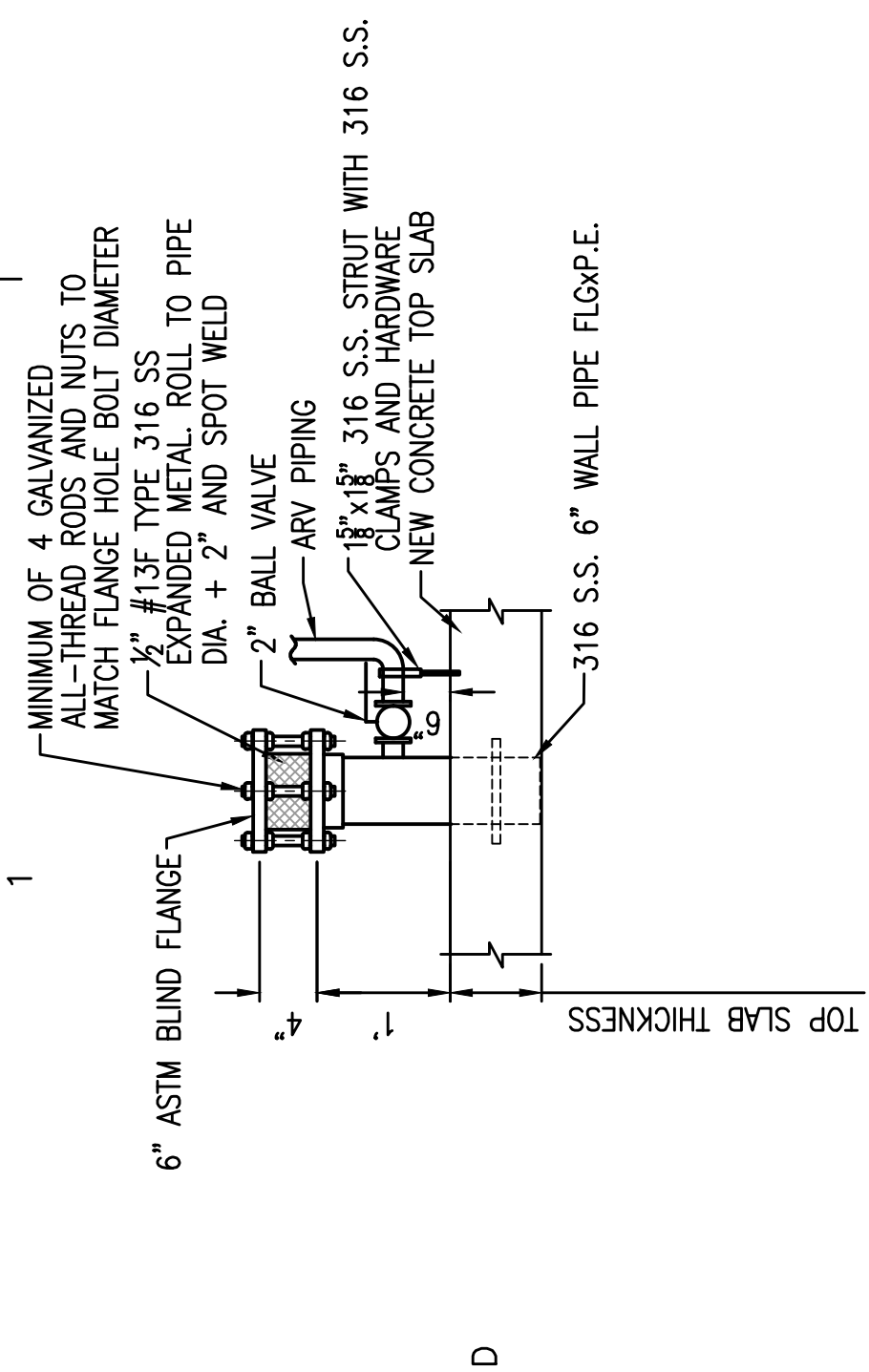
PROPOSED PUMP DATA

PUMP	
TYPE PUMP	SUBMERSIBLE
HIGH CONDITION (GPM - TDH)	113 GPM @ 109' TDH
LOW CONDITION (GPM - TDH)	113 GPM @ 40' TDH
DISCHARGE PUMP SIZE	4"
HP. - RATED RPM	20

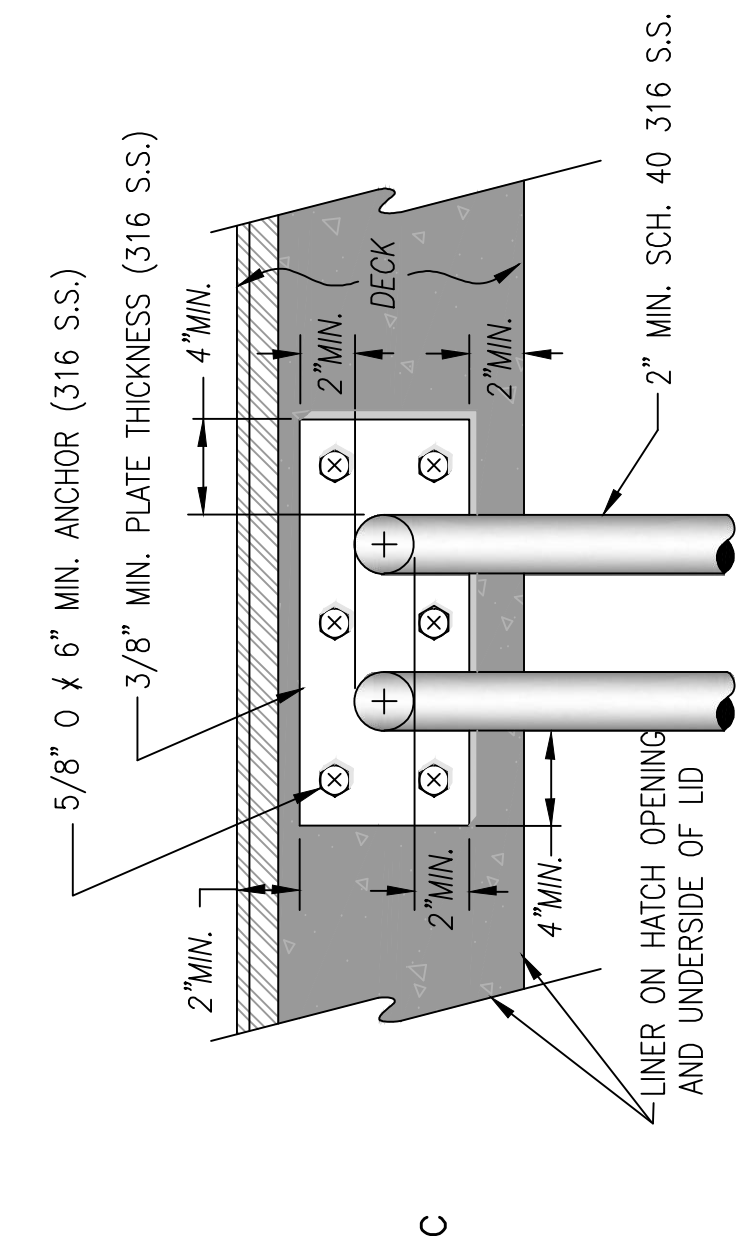
PROPOSED PUMP DATA

FLOAT ELEVATIONS	
HIGH LEVEL ALARM	EL. -1.67
LAG PUMP ON	EL. -2.67
LEAD PUMP ON	EL. -3.67
ALL PUMPS OFF	EL. -5.67
EMERGENCY SHUT-OFF	EL. -6.67



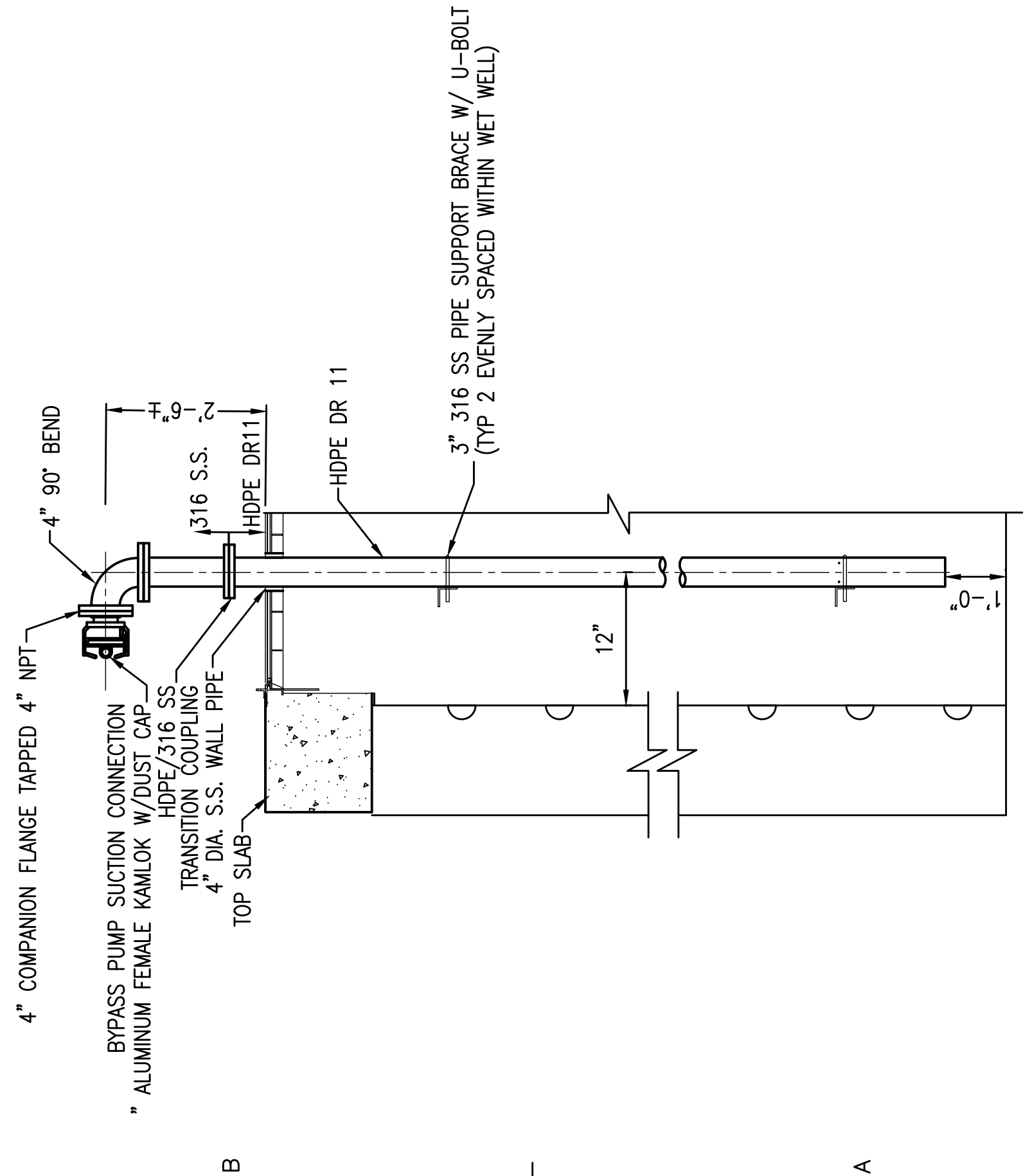


D1
TYPICAL VENT PIPE DETAIL
NOT TO SCALE

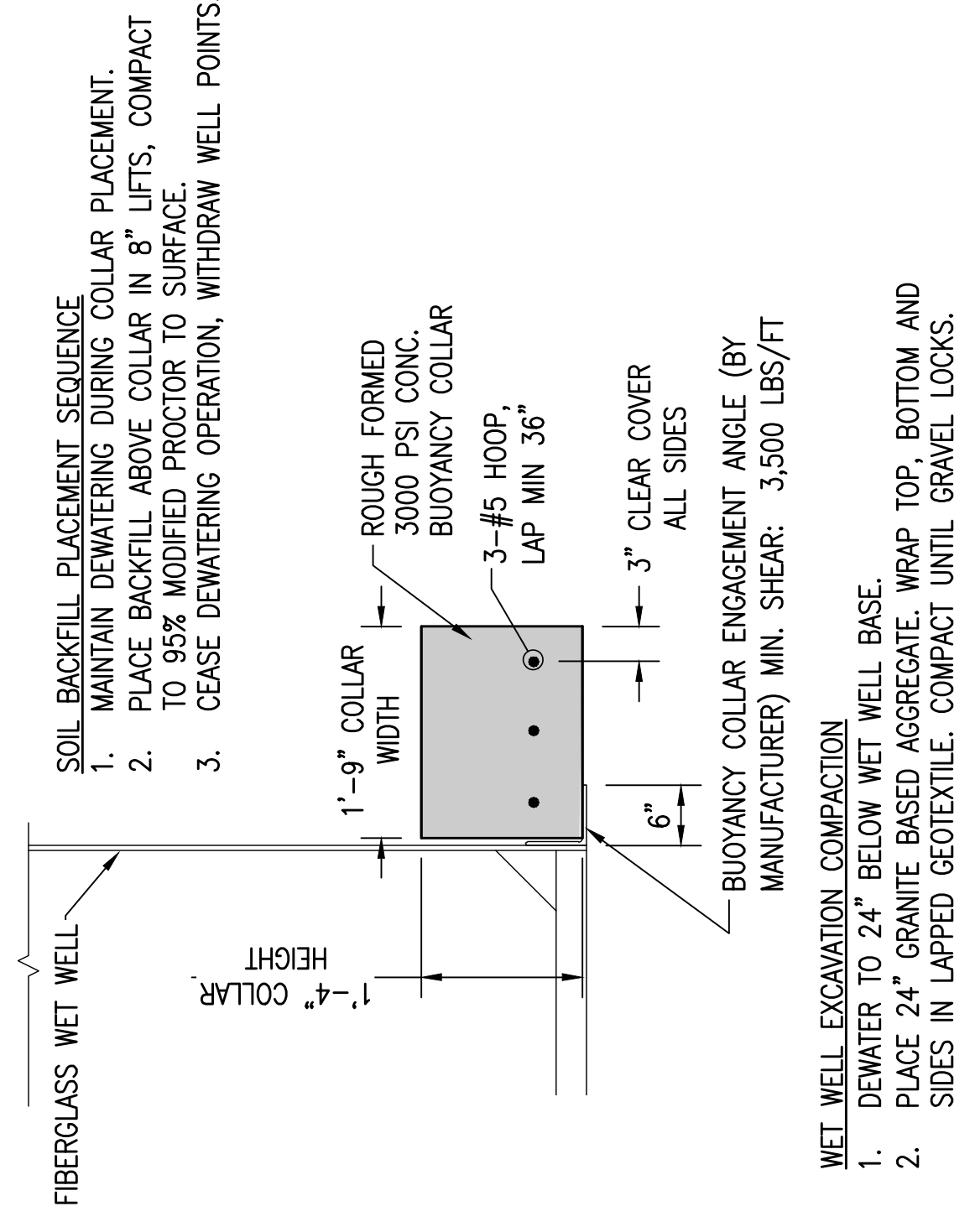


- REQUIRE SUBMITTAL FOR "STYLE" OF RAIL ATTACHMENT.
- PUMP RAILS TO BE WELDED TO PLATE IN A MANNER ACCEPTABLE TO THE CITY OF CALLAWAY.

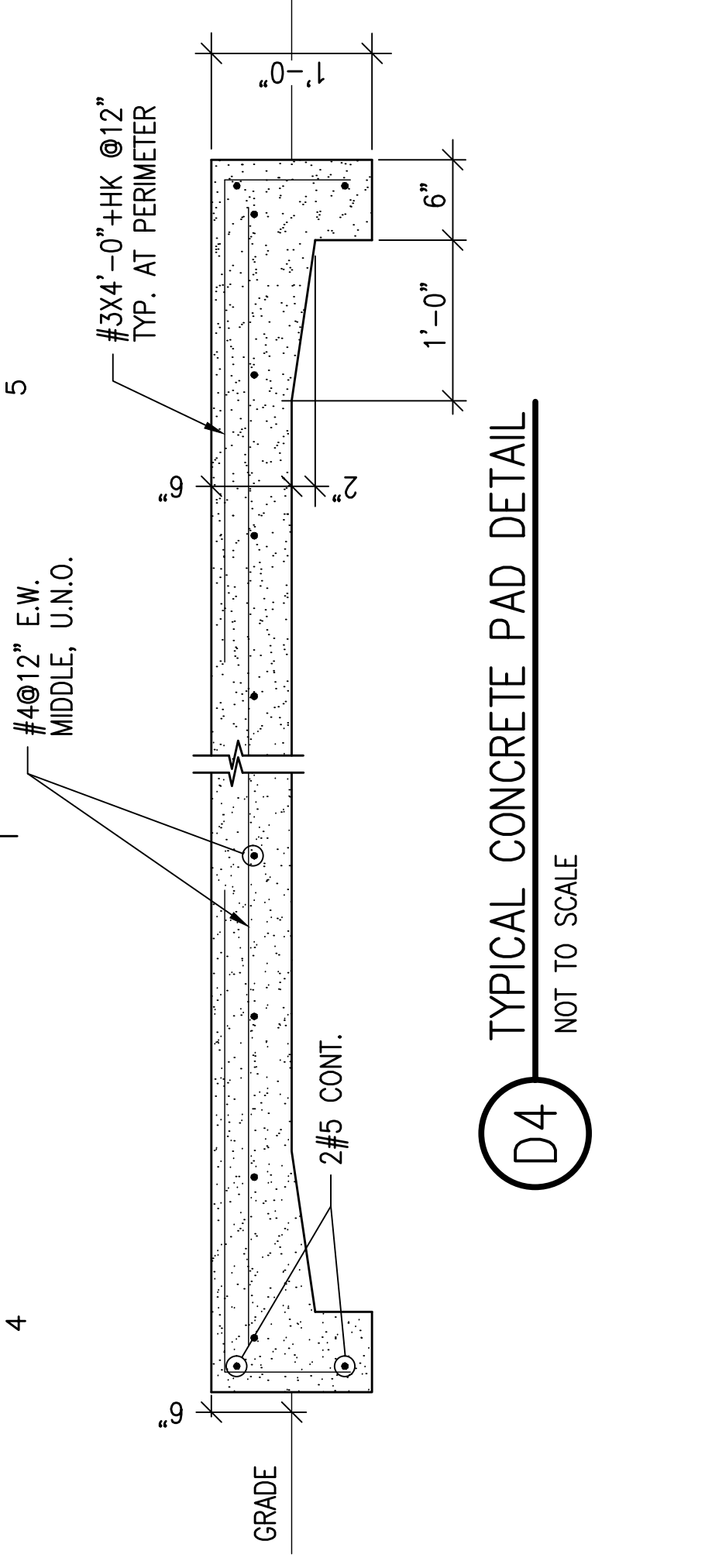
B1
GUIDE RAIL
SCALE: N.T.S.



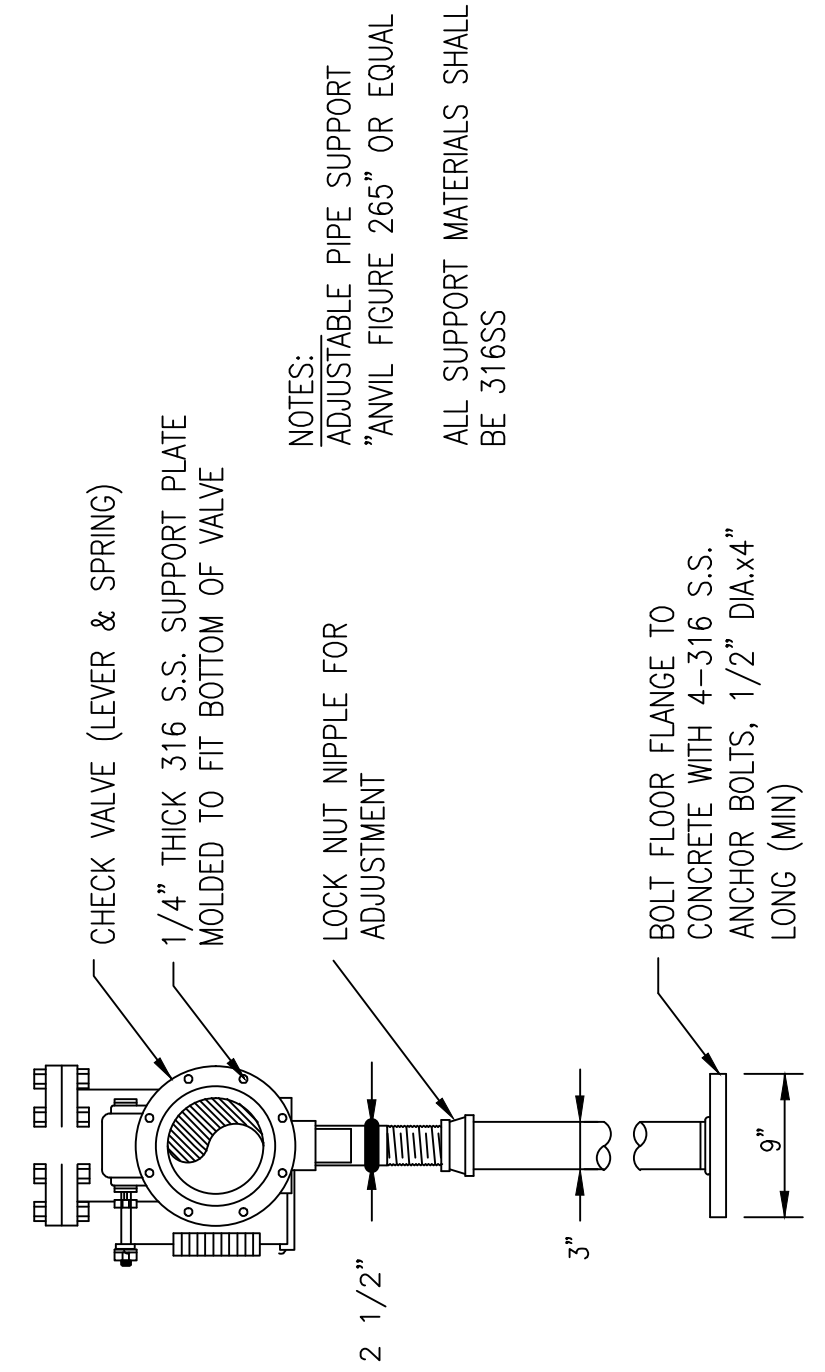
A1
TYPICAL BYPASS PUMP SUCTION CONNECTION DETAIL
SCALE: 1/2" = 1'-0" 0 1' 2' 4'



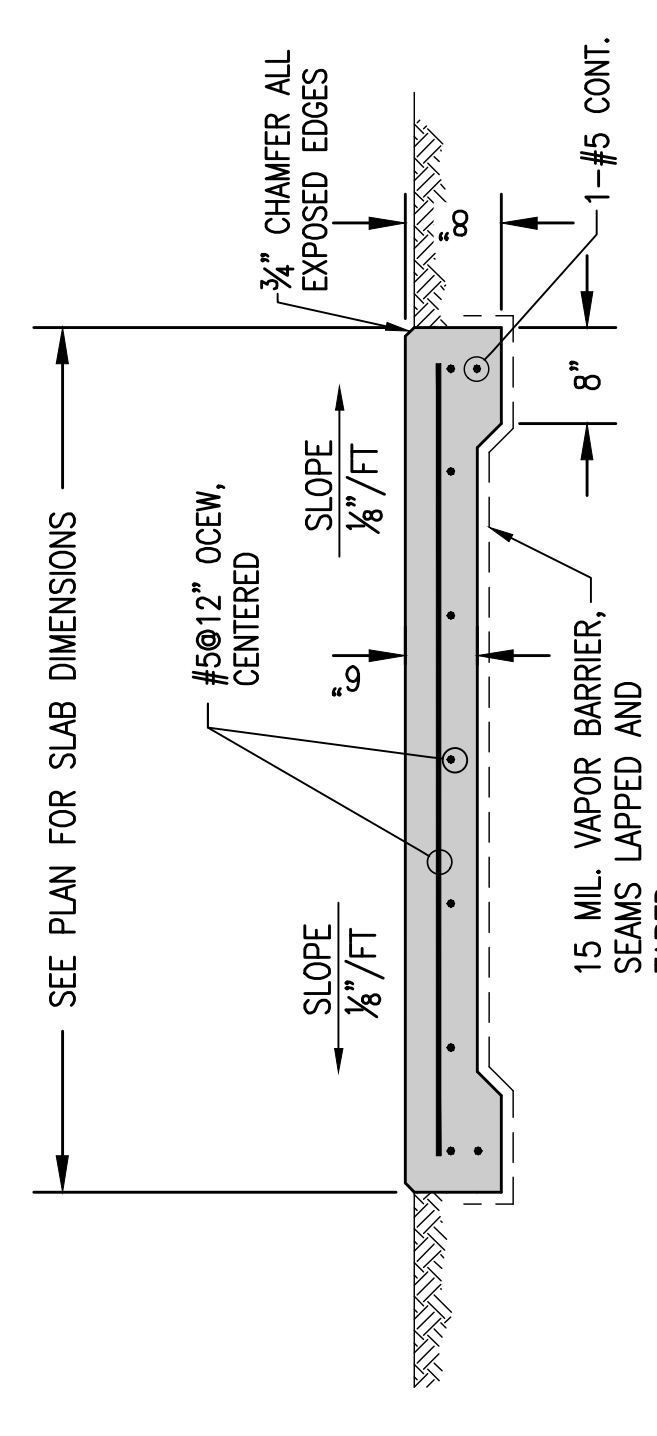
A3
PUMP STATION
BUOYANCY COLLAR DETAIL
SCALE: 3/4" = 1'-0" 0 6' 1' 2'



D4
TYPICAL CONCRETE PAD DETAIL
NOT TO SCALE



C4
ADJUSTABLE PIPE STAND DETAIL
SCALE: N.T.S.



- GENERAL NOTES**
1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 3000 PSI, THE BATCH MIX DESIGN SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.
 2. REINFORCING SHALL BE GRADE 60, SUBMIT REINFORCING SHOP DRAWINGS FOR APPROVAL.
 3. WET CURE ALL CAST CONCRETE FOR A MINIMUM OF 7 DAYS, PROVIDE MEDIUM BROOM FINISH TO ALL EXPOSED SURFACES, CHAMFER ALL CORNERS 3/4"
 4. SLAB CONSTRUCTION: COMPACT EXISTING EXPOSED SUBGRADE TO 95% MAXIMUM DRY DENSITY TO A DEPTH OF 12" (MODIFIED PROCTOR). BACKFILL IN 6" LIFTS TO BEARING ELEVATION WITH CLEAN SANDY SOIL SUITABLE TO THE OWNER'S TESTING LAB TO 95% MAXIMUM DRY DENSITY PER MODIFIED PROCTOR METHOD.

A5
TYPICAL CONCRETE SLAB DETAIL
SCALE: 1/2" = 1'-0" 0 1' 2' 4'

		S. BERTHE AVENUE LIFT STATION AND SEWER REHABILITATION	PROJECT NO: 27656.01	DESIGNED BY: TTL	DATE: JUNE 2021
DRAWN BY: THO CHK'D BY: JEA PROJ. MGR: JCP	NOT RELEASED FOR CONSTRUCTION BY DATE / /				

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LEGEND AND ABBREVIATIONS



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PHONE: (850) 455-5540
CERTIFICATE NO. CA-31884



James J. Tatone, State of Florida, Professional Engineer, License No. 57609.
This item has been electronically signed and sealed by James J. Tatone, PE. On 07/01/2021 using a Digital Signature.
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

PROJECT NO.	27656.01
DESIGNED BY:	JJT
DRAWN BY:	JLB
CHK'D BY:	JJT
PROJ. MGR:	JCP
DATE:	JUNE 2021
NO.	
DATE	
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REVISION/ACTION TAKEN	
NOT RELEASED FOR CONSTRUCTION BY	JJT
DATE	

S. BERTHE AVNUE
LIFT STATION AND
SEWER REHABILITATION

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ELECTRICAL ABBREVIATIONS

A	AMPERES	LTS	LIGHTS
AC	ABOVE CEILING	LV	LOW VOLTAGE
AF	AMPERE FRAME	MCB	MAIN CIRCUIT BREAKER
AFCI	ARC FAULT CIRCUIT INTERRUPTER	MIN	MINIMUM
AF	ARC FAULT CIRCUIT INTERRUPTER	MLO	MAXIMUM LOAD ONLY
AF	ARC FAULT CIRCUIT INTERRUPTER	N	NEUTRAL
ALT	ALTERNATE	N/G	NEUTRAL
ALT	ALTERNATE	NA	NOT APPLICABLE
AT	AMPERE TRIP	NC	NORMALLY CLOSED
AUTO	AUTOMATIC	NO	NORMALLY OPEN
AWG	AMERICAN WIRE GAUGE	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
BLDG	BUILDING	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
C	CONDUIT	P	POLE
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	PC	PHOTOCELL
CLG	CLERK	PF	POWER FACTOR
DC	DIRECT CURRENT	PH	PHASE
DISC	DISCONNECT	PVC	POLYVINYL CHLORIDE
EBJ	EQUIPMENT BONDING JUMBER	RAC	RIGID ALUMINUM CONDUIT
EBJ	EQUIPMENT BONDING JUMBER	REC	RECEPTACLE
FLA	FULL LOAD AMPERES	SPD	SURGE PROTECTIVE DEVICE
G	GROUND	SSRV	SOLID STATE REDUCED VOLTAGE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TR	TAMPER RESISTANT
GFI	GROUND FAULT INTERRUPTER	TV	TELEVISION
GR	GROUNDING ROD	UC	UNDER COUNTER
GR	GROUNDING ROD	UG	UNDERGROUND
IB	JUNCTION BOX	UL	UL LISTED
KVA	KILOVOLT-AMPERES	UNL	UNLESS NOTED OTHERWISE
KW	KILOWATTS	V	VOLTAGE
KWH	KILOWATT HOURS	WI	WITH
		WP	WEATHERPROOF

ELECTRICAL LEGEND

	MOTOR STARTER		UTILITY METER
	NEMA SIZE AS INDICATED ON DRAWING		SURGE PROTECTIVE DEVICE
	DUPLEX RECEPTACLE (NEMA 5-20R)		GROUND ROD
	MOUNTING HEIGHT: 18" AFF UNO		FIXED EQUIPMENT CONNECTION
	EQUIPMENT TAG		WIRING
	KEYED NOTE		CURRENT TRANSFORMER
	PHOTOCCELL		MOTOR
	FLOAT SWITCHES		⚡ DENOTES HORSEPOWER RATING
	POWER METER		UTILITY POLE WITH THREE TRANSFORMERS
	MOTOR PROTECTION RELAY		AREA LIGHT
	CURRENT TRANSFORMER SHORTING BLOCK		MOUNTED ON SCADA POLE
	TELEMETRY CONTROL UNIT		REFER TO DETAIL 3 ON SHEET E-411
	BUBBLER LEVEL DEVICE		GROUND FAULT MONITOR RELAY
	RADIO TELEMETRY SYSTEM		

ELECTRICAL PROJECT NOTES

COMMON WORK RESULTS FOR ELECTRICAL

A. ALL ELECTRICAL WORK SHALL CONFORM WITH ALL STATE AND LOCAL CODES AND STANDARDS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
1. FLORIDA BUILDING CODE (2020)
2. NATIONAL ELECTRICAL CODE (2017)

B. WHEREVER CONFLICTS OCCUR, MORE STRINGENT CODES SHALL APPLY.

C. DEVICES AND PRODUCTS SHALL BE LISTED AND CLASSIFIED BY UNDERWRITERS LABORATORIES, INC AS SUITABLE FOR THE PURPOSE INDICATED.

D. ALL ELECTRICAL WORK SHALL BE PERFORMED BY QUALIFIED PERSONNEL IN A NEAT AND WORKMANLIKE MANNER IN ACCORDANCE WITH NECA 1.

E. FURNISH AND INSTALL ALL MATERIALS AND ACCESSORIES AS REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. TORQUE ALL FASTENING DEVICES TO MANUFACTURERS SPECIFICATIONS.

F. UTILITY COORDINATION:
1. COORDINATE UTILITY CONNECTION WITH THE GULF POWER AND INCLUDE IN BASE CONNECTION CHARGES ARE NOT DETERMINED AT THE TIME OF BID. PROVIDE NOTIFICATION TO OWNER INDICATING GULF POWER CONTRIBUTION IN AID OF CONSTRUCTION (CMC) ARE NOT INCLUDED IN THE BID. REFER TO GULF POWER CONTACT INFORMATION PROVIDED UNDER GENERAL NOTE 1, SHEET

2. THE ELECTRICAL SERVICE UNDER THE SCOPE OF THIS PROJECT IS DESIGNED AS MAXIMUM AVAILABLE FAULT CURRENT OF 22,000A. THE ELECTRICAL SERVICE CHARACTERISTICS SHALL BE VERIFIED WITH GULF POWER. IF ANY OF THE SERVICE CHARACTERISTICS CHANGES, THE ELECTRICAL SERVICE PROVIDED SHALL BE AVAILABLE FOR THE ELECTRICAL SERVICE PROVIDED BY GULF POWER. CONTACT THE ELECTRICAL ENGINEER OF RECORD PRIOR TO PERFORMING ANY ELECTRICAL WORK.

3. PROVIDE METERING EQUIPMENT AS FOLLOWS:
a. BASIS OF DESIGN: MILBANK UAP9700-HRL-QG-HSP
b. METER IS SPECIFIED FOR A UTILITY SERVICE FED FROM A 208Y/120V, THREE PHASE, FOUR WIRE SYSTEM.
c. METER ENCLOSURE SHALL BE 200A, 7 TERMINAL, RINGLESS WITH LEVER BYPASS IN ALUMINUM ENCLOSURE.
d. SERVICE DELIVERY WITH GULF POWER AND NOTIFY GULF POWER AS SOON AS THE FINAL INSPECTION LABEL IS ATTACHED BY THE AUTHORITY HAVING JURISDICTION.

I. ELECTRICAL IDENTIFICATION:
1. COLOR-CODED TAPE SHALL BE 3M COMPANY "SCOTCH 35" VINYL PLASTIC ELECTRICAL TAPE.
2. SWITCH AND AT EACH OUTLET WITH PERMANENTLY ATTACHED, WRAP AROUND, ADHESIVE MARKERS, WITH AN APPROPRIATE NUMBER OR LETTER THAT WILL EXPEDITE FUTURE TRACING AND TROUBLE SHOOTING.
3. PROVIDE NAMEPLATE MOUNTED ON THE LIFT STATION CONTROL PANEL (CP-LS).
4. IDENTIFICATION NAMEPLATES SHALL BE LAMINATED BLACK PHENOLIC RESIN WITH A WHITE CORE AND ENGRAVED LETTERING. LETTERING SHALL BE A MINIMUM OF 1/8" IN HIGH.

J. WORKING CLEARANCES SHALL NOT BE LESS THAN SPECIFIED IN THE NATIONAL ELECTRICAL CODE.

SECTION 26 0519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

A. CONDUCTOR SIZES (AND ASSOCIATED CONDUIT SIZES) IN THESE CONTRACT DOCUMENTS ARE BASED ON THE USE OF COPPER WIRE APPLIED AT 75 DEG. C RATING. ONLY COPPER WIRE SHALL BE USED.

B. WIRE SHALL BE TYPE XHHW SINGLE CONDUCTOR INSULATED COPPER WIRE RATED FOR 600 VOLTS, RATED 90 DEGREES C DRIFT DEGREES C WIRE, 1/2" AND SMALLER CONDUCTORS SHALL BE TYPE XHHW SINGLE CONDUCTOR INSULATED COPPER WIRE. PROVIDE STRANDED CONDUCTORS WHERE CONDUCTORS TERMINATE IN CRIMP TYPE LUGS. WIRING CONNECTORS SHALL BE SPRING WIRE CONNECTORS: UL 486C; RATED FOR 600 VOLTS, 105 DEG. C.

C. LIMIT BRANCH CIRCUITS TO 3 CURRENT-CARRYING CONDUCTORS PER CONDUIT IN ACCORDANCE WITH NEC 310-15(B)(2)(A). FOR 20A CIRCUITS OF ALL TERMINATING PHASES, 4 CURRENT CARRYING CONDUCTORS MAY BE PERMITTED IN A RACEWAY. MINIMUM CONDUCTOR SIZE SHALL BE NO. 12 AWG.

D. TEST EACH FEEDER AT TERMINATIONS FOR PROPER PHASING.

E. COLOR CODE POWER WIRING AS FOLLOWS:
1. 120/240 VOLT, PHASE A-BLACK, PHASE B-ORANGE (STINGER), PHASE C-BLUE, NEUTRAL-WHITE; GROUND CONDUCTOR-GREEN;

F. SHARED NEUTRAL CONDUCTORS (MULTI-WIRE BRANCH CIRCUITS) ARE NOT ALLOWED.

GROUNDING AND BONDING

A. GROUND SYSTEM TESTING:
1. RESISTANCE OF THE GROUNDING ELECTRODE SYSTEM SHOWN ON THE FOUR-TERMINAL FALL-OF-POTENTIAL METHOD AS DEFINED IN IEEE 81.
2. GROUND RESISTANCE MEASUREMENTS SHALL BE MADE BEFORE THE ELECTRICAL SERVICE IS ENERGIZED AND SHALL BE MADE IN NORMALLY DRY CONDITIONS NOT FEWER THAN 48 HOURS AFTER THE LAST RAINFALL.
3. RESISTANCE MEASUREMENTS OF THE GROUNDING ELECTRODE SYSTEM SHALL BE MADE BEFORE THE ELECTRICAL SYSTEM IS ENERGIZED.

B. PROVIDE GROUND CONTINUITY BETWEEN EQUIPMENT OR DEVICE AND METALLIC CONDUIT-RACEWAY SYSTEM. MULTIPLE CONDUCTORS IN SINGLE LUG NOT PERMITTED. EACH GROUNDING CONDUCTOR SHALL TERMINATE IN ITS OWN TERMINAL LUG.

C. PROVIDE SEPARATE GREEN WIRE GROUND CONDUCTOR FOR EACH BRANCH CIRCUIT AND FEEDER CONDUIT. GROUND CONDUCTORS SHALL BE SIZE AS INDICATED IN NEC, EXCEPT MINIMUM SIZE GROUND CONDUCTOR SHALL BE NO. 12 AWG.

D. GROUNDING CONDUCTOR IS IN ADDITION TO NEUTRAL CONDUCTOR AND IN NO CASE SHALL NEUTRAL CONDUCTOR SERVE AS GROUNDING MEANS.

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

A. CONDUIT BODIES SHALL BE MADE FROM COPPER-FREE ALUMINUM AND HAVE OPENINGS COMPATIBLE WITH CONDUIT FITTINGS. PROVIDE BLANK COVERS WITH NEOPRENE GASKETS HELD IN PLACE WITH TWO (2) STAINLESS STEEL SCREWS. BODIES SHALL BE LB, C OR OTHER TYPE INDICATED.

B. ALL CONDUITS INSTALLED ABOVE GRADE SHALL BE RIGID ALUMINUM CONDUIT (RAC). BUSHINGS SHALL HAVE BUSHINGS WITH INTEGRAL INSULATOR. PROVIDE BONDING BUSHINGS FOR ALL CONNECTIONS THROUGH PRE-PUNCHED CONCENTRIC OR ECCENTRIC KNOCKOUTS.

G. CONDUITS INSTALLED BELOW GRADE SHALL BE SCHEDULE 40 PVC CONDUIT. UNDERGROUND CONDUIT SHALL TRANSITION TO RIGID ALUMINUM CONDUIT USING RIGID CONDUIT ADAPTERS. ALL RIGID ALUMINUM CONDUIT INSTALLED BELOW GRADE SHALL BE PAINTED WITH BITUMASTIC COATING OR WRAPPED IN CORROSION PROTECTION TAPE.

H. PROVIDE ONE-PIECE CAST ALUMINUM TYPE OUTLET BOXES TO ACCOMMODATE DEVICES. IN CONFORMANCE WITH CODE REQUIREMENTS, NUMBER AND SIZE OF CONDUCTORS AND SPLICES AND CONSISTENT WITH TYPE OF CONSTRUCTION.

I. PROVIDE HEAVY DUTY SHEET STAINLESS STEEL STRAPS, OR CHANNEL SYSTEM WITH APPROPRIATE COMPONENTS CONDUIT SUPPORTS FOR HORIZONTAL OR VERTICAL SINGLE RUNS. SPRING TYPE PRESSURE CLAMPS MAY BE USED WITH CONDUIT THROUGH 3/4".

J. REAM CONDUIT SMOOTH AT ENDS. CAP UPON INSTALLATION. RIGIDLY ATTACH TO STRUCTURAL SUPPORTS AND SECURELY FASTEN TO OUTLET BOXES, PANEL CABINETS, JUNCTION BOXES, PULL BOXES, SPLICING CHAMBERS, SAFETY SWITCHES AND OTHER COMPONENTS OF THE RACEWAY SYSTEM.

K. MINIMUM CONDUIT SIZE IS 3/4".

Type	Manufacturer	Model Series	Lamps No. & Type	Volts	Input Watts	Remarks
SL	Lithonia or Approved Equal	RSX1 LED Series	70 CRI, 3000K TYPE III B2-U0-G3 14,880 LUMENS	120	133	EXTERIOR SINGLE HEAD AREA LUMINAIRE, UL LISTED FOR WET LOCATIONS IN DARK BRONZE HOUSING MOUNTED ON A 25' DIRECT BURIED SQUARE CONCRETE POLE RATED FOR 160 MPH WIND SPEED. PROVIDE 20KV/10KA SURGE PROTECTIVE DEVICE AND IN-LINE FUSING WITHIN HANDHOLE AT BASE OF POLE.

EQUIPMENT CONNECTION SCHEDULE						
TAG	HP (KW)	VOLTS	FLA	PHASE	KVA	REMARKS
						SUBMERSIBLE PUMP
1	20	240	54.0	3	22.4	PROVIDE 125A 3P MAGNETIC ONLY CIRCUIT BREAKER, GROUND FAULT MONITOR (ALARM ONLY), NEMA SIZE 3 SSRV MOTOR STARTER MOUNTED WITHIN THE LIFT STATION CONTROL PANEL AS SHOWN ON DRAWINGS.
2	20	240	54.0	3	22.4	PROVIDE 125A 3P MAGNETIC ONLY CIRCUIT BREAKER, GROUND FAULT MONITOR (ALARM ONLY), NEMA SIZE 3 SSRV MOTOR STARTER MOUNTED WITHIN THE LIFT STATION CONTROL PANEL AS SHOWN ON DRAWINGS.

KEYED NOTES

- 1 COORDINATE THE LOCATION OF THE UTILITY POLE WITH GULF POWER TO ENSURE THE OVERHEAD ELECTRICAL SERVICE FEEDERS ARE NOT ROUTED ABOVE THE LIFT STATION PAD.
- 2 THE LIFT STATION CONTROL PANEL, CP-LS, SHALL BE INSTALLED ON A 2" HIGH STAINLESS STEEL BASE WITH VENTILATED REMOVABLE PANELS PROVIDED AS AN AIR BREAK FOR ALL CONDUITS ENTERING THE LIFT STATION. PROVIDE CABLE CLAMP FITTING ON TOP AND BOTTOM OF THE SUPPORT BASE AS SHOWN IN DETAIL 4 ON SHEET E-411.
- 3 REFER TO SHEET IM-101 FOR FLOOT ELEVATIONS.

James J. Tatone, State of Florida, Professional Engineer, License No. 57609.

This item has been electronically signed and sealed by James J. Tatone, PE. On 07/01/2021 using a Digital Signature.

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ENGINEERING THE SOUTH SINCE 1927
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ENGINEERING BUSINESS: EB-0000340
Frascochia - Panama City Beach - Tallahassee - Mobile

S. BERTHE AVENUE
LIFT STATION AND
SEWER REHABILITATION

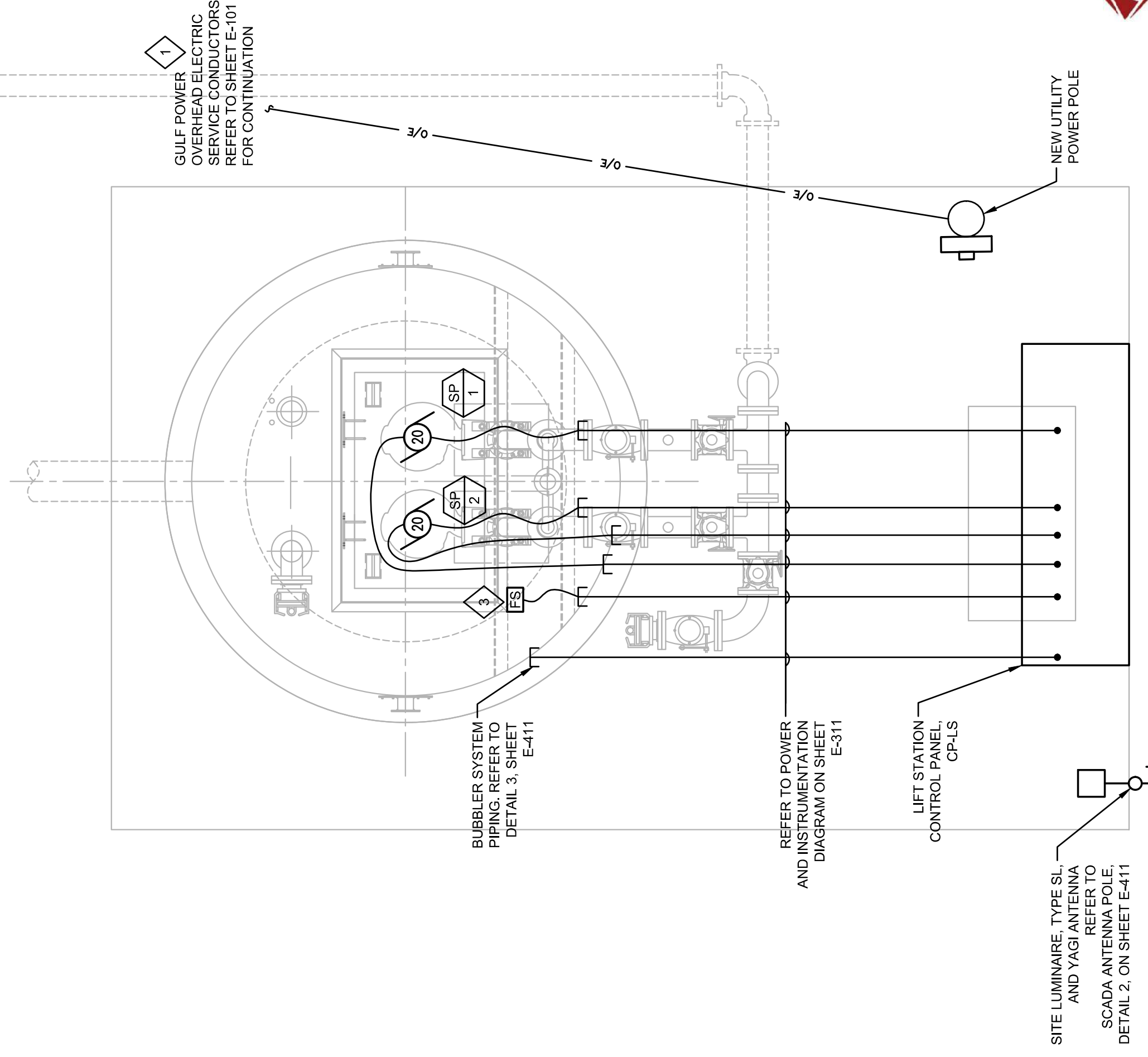
PROJECT NO:	27656.01		
DESIGNED BY:	JJT		
DRAWN BY:	JLB		
CHK'D BY:	JJT		
PROJ. MGR:	JCP		
DATE:	JUNE 2021		
NOT RELEASED FOR CONSTRUCTION BY JT DATE	/ /		
NO.	DATE	APPR.	REVISION/ACTION TAKEN

LIFT STATION
AREA PLAN

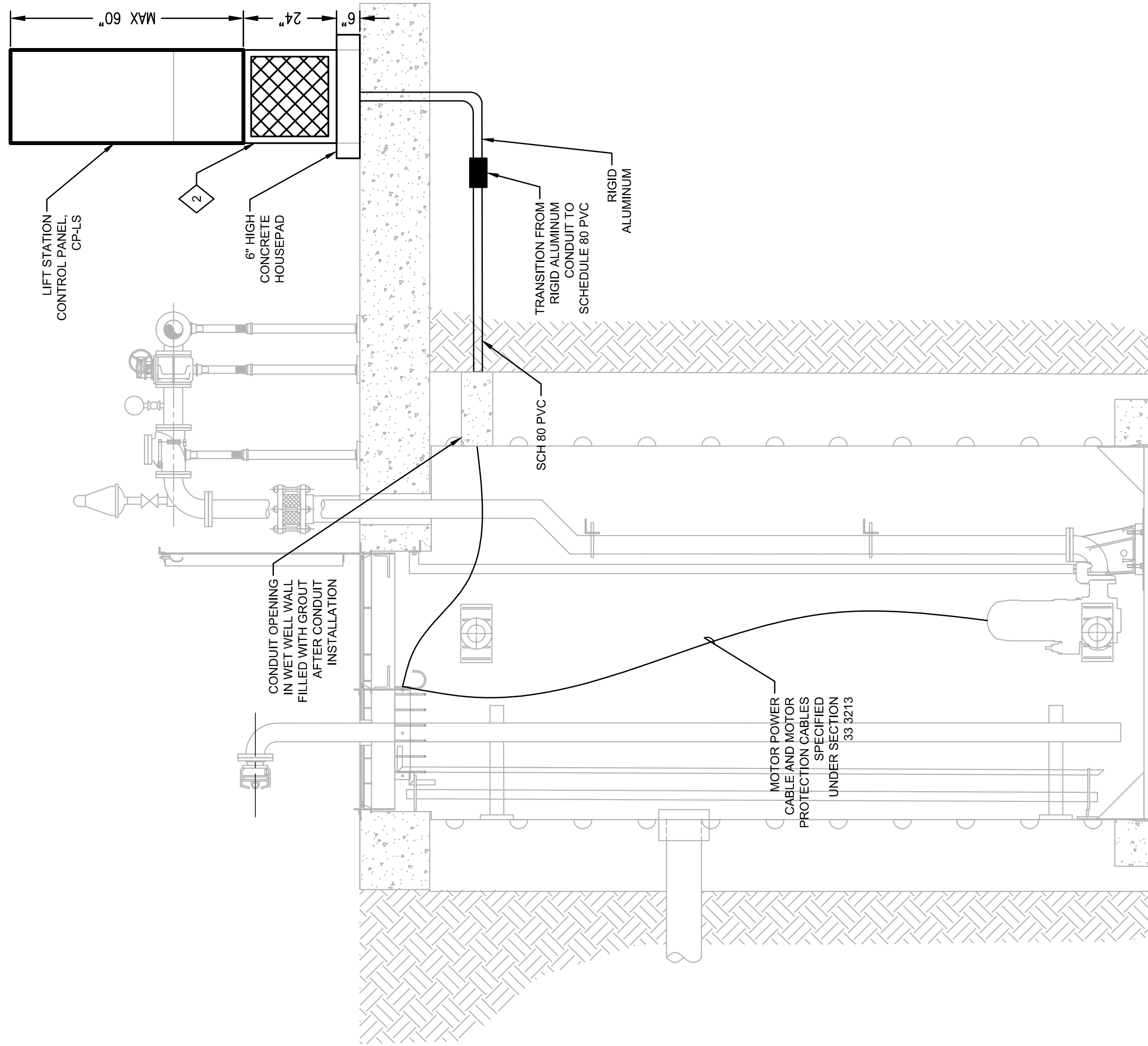
E-111



Ruby ENGINEERING, INC
RUBY ENGINEERING, INC
3000 W. WASHINGTON ST., SUITE 14
PANAMA CITY BEACH, FL 32414
PHONE: (850) 455-5540
CERTIFICATE NO. CA-31884



1 LIFT STATION - PLAN VIEW
SCALE: 1/2" = 1'-0" 0 1' 2' 4'



2 LIFT STATION SECTION
SCALE: 1/2" = 1'-0" 0 1' 2' 4'

PROJECT NO.	27656.01
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LIFT STATION AND
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GENERAL NOTES

- THE ELECTRIC SERVICE INSTALLATION SHALL COMPLY WITH THE CODE REQUIREMENTS. THE ELECTRICAL SERVICE FEES TO PROVIDE ELECTRIC SERVICE SHALL BE INCLUDED IN THE BID.
- GULF POWER CONTACT INFORMATION:
GULF POWER CONTACT INFORMATION:
PH: 850-528-3834
EMAIL: CHARLES.BOYETT@NEXTENERGY.COM
- VOLTAGE DROP CALCULATIONS HAVE BEEN VERIFIED TO BE LESS THAN 2% VOLTAGE DROP FOR FEEDERS AND LESS THAN 3% VOLTAGE DROP FOR BRANCH CIRCUITS.
- THE ELECTRICAL SERVICE IS FED FROM A 120/240V, 3 PHASE, H-LEG DELTA SYSTEM. ENSURE ALL 120V BRANCH CIRCUITS ARE CONNECTED TO NEUTRAL AND GROUND.

KEYED NOTES

- REFER TO GROUNDING RISER DIAGRAM SHOWN ON THIS SHEET.
- PROVIDE 200A SELF-CONTAINED METER ENCLOSURE AS SPECIFIED UNDER UTILITY COORDINATION ON SHEET E-601.
- THE MAIN BREAKER AND GENERATOR INRUT BREAKER SHALL BE MECHANICALLY INTERLOCKED.
- LOCATE CONTROL POWER FUSE BLOCK IN THE LIFT STATION CONTROL PANEL, CPL-LS. CONTROL SECTION TO SERVE CONTROL POWER FOR THE TELEMETRY, MOTOR CONTROL UNIT, BUBBLER SYSTEM EQUIPMENT, MOTOR PROTECTION RELAYS AND RADIO TELEMETRY UNIT.
- PROVIDE CABLE GLAND CONNECTORS AT THE TOP AND BOTTOM OF THE BREAKER SUPPORT BASE FOR ALL CONDUITS ENTERING THE WET WELL (CLASS 1 DIVISION 1 LOCATION) AS SHOWN IN DETAIL 4 ON SHEET E-411.
- PROVIDE 1/2" TWISTED SHIELDED PAIR TO THE ANALOG INPUT OF THE TELEMETRY CONTROL UNIT.
- PROVIDE 1/2" CONDUIT STUBBED INTO WET WELL TO ACCOMMODATE THE MOTOR POWER AND MOTOR PROTECTION CABLES SPECIFIED UNDER SECTION 33-3213.
- REFER TO DETAIL 3 ON SHEET E-411 FOR THE INSTALLATION OF BUBBLER AND PIPE REQUIREMENTS. PROVIDE 1/2" CONDUIT TO THE BUBBLER SYSTEM SPRING INSTALLATION. THE CITY OF CALLAWAY WILL PROVIDE ON-SITE OBSERVATION DURING THE BUBBLER SYSTEM INSTALLATION. BUBBLER SYSTEM PIPING SHALL NOT BE INSTALLED UNTIL ON-SITE APPROVAL IS PROVIDED BY THE CITY.
- PROVIDE (6) 1" CONDUITS TO ACCOMMODATE FLOAT SWITCH CABLES FOR HIGH ALARM, LAG LEAD, OFF NORMAL, LOW WATER, AND TELEMETRY CONTROL UNIT. REFER TO SHEET M-101 FOR FLOAT ELEVATIONS.
- PROVIDE BUTTON TYPE PHOTOCELL AND 20411P SWITCH IN WEATHER-PROOF CAST ALUMINUM ENCLOSURES MOUNTED TO SIDE OF THE LIFT STATION CONTROL PANEL.
- PROVIDE LMR-400-08 OUTDOOR WATERTIGHT COAXIAL CABLE INSTALLED IN 1-1/4" CONDUIT ROUTED TO THE FAGE ANTENNA COORDINATE TERMINATION PROVISION FOR THE YAGI ANTENNA MOUNTED TO THE CONTROL UNIT AND SCREW ANTENNA MANUFACTURERS SHOP DRAWINGS. CONDUIT ROUTING TO ANTENNA SHALL UTILIZE SMOOTH RADIUS BENDS. CONDUIT BODIES OR PULLING ELLS SHALL NOT BE PERMITTED.
- PROVIDE (2) #14 WHM ROUTED FROM THE GROUND FLOOR TO THE RELAY ROOM TO PROVIDE INPUT OF THE TELEMETRY CONTROL UNIT TO PROVIDE A COMMON ALARM FOR THE THERMAL OVERLOAD AND MOISTURE SEAL PROTECTIVE RELAY OUTPUTS.



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James J. Tatone, State of Florida, Professional Engineer, License No. 57609.

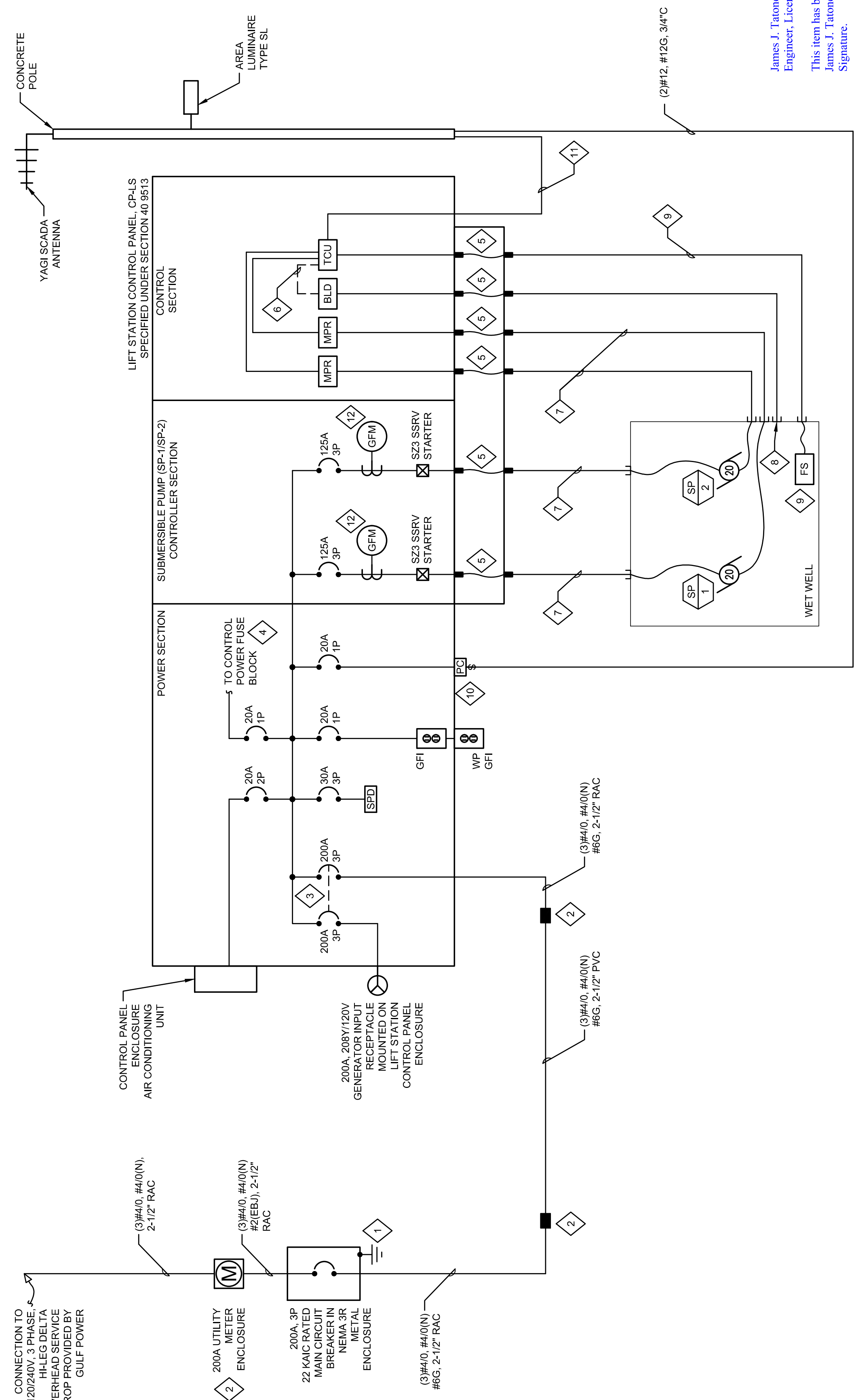
This item has been electronically signed and sealed by James J. Tatone, PE. On 07/01/2021 using a Digital Signature.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

SERVICE ENTRANCE CALCULATIONS				
General	Specific	Fixed Space	A/C	
Lighting	Appliance	Heating	Compressor	Motor
Connected Load (KVA)	Connected Load (KVA)	Connected Load (KVA)	Connected Load (KVA)	Connected Load (KVA)
0.0	0.0	0.0	0.0	21.4
0.0	0.0	0.0	0.0	21.4
0.5	0.4	1.0	0.0	0.0
0.5	0.4	1.0	0.0	42.8
General Lighting Load per NEC Article 220.12 and 220.47 (See Note 2): 0.5 KVA				
NEC Computed Receptacle Load per NEC Article 220.44: 0.4 KVA				
Specific Appliance Load per NEC Article 220.14(A): 1.0 KVA				
NEC Computed Fixed Space Heating Load per NEC Article 220.51: 0.0 KVA				
Refrigerant Compressor Connected Load per NEC Article 440.6: 0.0 KVA				
Motor Computed Loads per NEC Article 430.24: 42.8 KVA				
Total NEC Computed Load: 44.7 KVA				
NEC Computed Amperacity @ 240V, 3 Phase: 107.5 A				

5/8" DIA. X 101' COPPER CLAD GROUND ROD WITH EXOTHERMIC WELD TYPE TERMINATIONS IN GROUND TEST WELL. TYPICAL FOR ALL THREE GROUND RODS.

GROUNDING RISER DIAGRAM
NOT TO SCALE



POWER AND INSTRUMENTATION DIAGRAM
NOT TO SCALE

1



PROPOSAL CHECKLIST

**CITY OF CALLAWAY
LANNIE ROWE AND BERT FOX LAKES
CLEANUP PROJECT
BID NO: CM2021-07**

FORMS/ITEMS TO BE RETURNED WITH YOUR PROPOSAL!

The following forms are to be completed/signed by the Proposer and submitted to the City:

1. Bid/RFP Certification Form(s),
2. One (1) original proposal

BID/RFP CERTIFICATION FORM
CITY OF CALLAWAY
FIBERGLASS LIFT STATION ASSEMBLY PURCHASE
BID NO: CM2021-07

PROPOSERS CERTIFICATION TO THE CITY OF CALLAWAY:

1. The undersigned warrants that: (A) This Proposal is submitted in response to, and is in compliance with, all terms and conditions applicable thereto as set forth in the Advertisement, Instructions to Proposers, General Instructions and Conditions, Special Instructions and Conditions, Bid/RFP Certification Forms, the Minimum Technical Specifications, Addendum, Exhibits, Agreement, Bonds, and Insurance Requirements, each of which has been carefully examined, (B) Proposer or Proposer's representative has made such investigation as is necessary to determine the character and extent of the work and their capability to perform the work, and (C) agrees that if the Proposal is accepted by the City, Proposer will provide the necessary labor, materials, machinery, equipment, tools or apparatus, and perform all the work or services required to complete the assignment and/or contract within the time specified according to the requirements of the City as herein and hereinafter set forth, and (D) he/she is authorized to legally execute binding contracts for and on behalf of the Proposer.
2. Please check one:
 - Proposer declares that the only person, persons, company, or parties interested in this Proposal are named in the Proposal.
 - Proposer, or one or more of Proposer's officers, principals, or any owner of more than 5% in or of proposer, or members of their immediate families: (A) have a financial interest in another company, project, or property that could benefit financially from this proposed project; and/or (B) another individual or business will be compensated by (or on behalf of proposer) if Proposer is selected by the City for the requested services. (Attach a detailed explanation for either.)
3. Bid Bond - If the Proposal is accepted by the City, it will become a binding contract on both parties. If a Bid Bond or Cashier's Check/Certified Check is required, it shall be submitted with the Proposal. If the undersigned shall fail to deliver or perform, or if applicable, execute a Contract as stated herein, then the City may, at its option, determine that the undersigned has abandoned the Award/Contract, and thereupon such Bid and/or Award shall be null and void, and any Cashier's Check/Certified Check or Bond accompanying this Bid shall be forfeited to and become the property of the City, and the full amount of said check, or if a Bid Bond, the full amount of such bond, shall be paid to the City as partial liquidated damages; otherwise, any Bond or Cashier's Check/Certified Check accompanying this Bid shall be returned to the undersigned within 30 calendar days from the date of Award, or if provisions for a Notice to Proceed are included, from the date of the Notice to Proceed.
4. Vendor proposes and agrees to provide all materials, services or equipment required for the City of Callaway **FIBERGLASS LIFT STATION ASSEMBLY PURCHASE BID NO: CM2021-07**, for the Total Sum(s) as follows: (*Totals must match breakdown of costs for each part on next page.*) Dollar Amount (\$ _____)
Written Amount: _____
5. Number of days from date of purchase that will be required for the delivery of purchase as described herein.

(Maximum Calendar Days)
6. The City reserves the right to accept any or all prices itemized in any combination that best serves the interests of the City. The City further reserves the right to accept or reject any of the components of this Proposal, including alternates.

Basis of Bid

1.01 LUMP SUM

- A. 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 item. The lump sum price bid for various items shall be compensation in full for furnishing all materials, labor, equipment, and incidentals with these plans and specification in order to make the system fully functional and operational. All disposal costs shall be included in the bid items.

S. Berthe Avenue Lift Station Assembly

1. **Bid Item 1 – Fiberglass Wet Well – 8’ Diameter x 17’ Deep:** The LUMP SUM BID AMOUNT will be payment for all labor, materials, and equipment necessary for furnishing the Fiberglass Wet Well in accordance with the contract documents. Payment shall include, but not be limited to, fiberglass resin material and all other items and incidentals required to construct a fully functional fiberglass wet well. The Fiberglass Wet Well manufacturer is required to submit Buoyancy Calculations signed and sealed by a license Florida Engineer.
2. **Bid Item 5 – 4” HDPE DR11 Discharge Piping:** The LUMP SUM BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 4” HDPE DR11 discharge piping for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The 4” HDPE DR11 Discharge Piping includes piping from the pump discharge elbows to the 4” DIPS Flange HDPE/316 Stainless Steel adapter which is located two (2’) above the wet well lid. This cost will also include the 4” HDPE DR11 Bypass Piping.
3. **Bid Item 8 – 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt:** The LUMP SUM BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The 3” 316 Stainless Steel Pipe Support w/ U-Bolt shall be able to support both the discharge piping and bypass piping. The number of 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt shall be installed per the pump manufacturer’s recommendation.
4. **Bid Item 9 – 2” SCH 40 316 Stainless Steel Guide Rails & Supports:** The LUMP SUM BID AMOUNT will be a payment for furnishing and installing the 2” SCH 40 Stainless Steel Guide Rail & Supports in accordance with the contract documents. Payment shall include, but not be limited to, stainless steel pipes, fittings, anchor bolts, stainless steel plate, and all other items and incidentals required for construction of the guide rails and supports as shown in the contract documents.
5. **Bid Item 10 – 316 Stainless Steel Float/Cable Holder:** The LUMP SUM BID AMOUNT will be a payment for furnishing and installing the 316 Stainless Steel Float/Cable Holder in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct a float and cable holder.
6. **Bid Item 12 – 6” 316 Stainless Steel Air Vent:** The LUMP SUM BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6” 316 Stainless Steel Air Vent for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. At a minimum the air vent shall consist of a 6” 316 Stainless Steel Wall Pipe FLG x P.E. and a 2” threadolet.

7. **Bid Item 13 – 316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the 316 Stainless Steel Lifting Chains with Hammerlocks & Masterlinks in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct the lifting chains.
8. **Bid Item 14 – Lift Station Controls Floats & Float Hatch:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the lift station control floats and float hatch in accordance with the contract documents. It shall be the pump suppliers responsibility to confirm the adequacy of the minimum hatch to enable the floats to be easily removed from the wet well through the hatch.

S. Berthe Avenue Lift Station - Electrical

9. **Bid Item 16 – Duplex Powder White Stainless Steel Control Panel:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a NEMA 4X Duplex Powder White Stainless Steel Control Panel as shown on the contract drawings. Payment shall include, but not be limited to all 316 Stainless Steel material and powder white coating required to construct a fully functional Duplex Powder White Stainless Steel Control Panel.
10. **Bid Item 17 – SCADA Data Flow & Soft Starters:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of the SCADA Data Flow System and Submersible Pump Soft Starters as shown on the contract drawings. Payment shall include, but not be limited to cables, conductors, switches, panels, instrumentation, grounding risers, fuses, and all other necessary components to construct a fully operational system.
11. **Bid Item 18 – Yagi Antenna & Coax Cable:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of the Yagi Antenna & Coax Cable as shown on the contract drawings. Payment shall include, but not be limited to cables, conductors, switches, panels, instrumentation, grounding risers, fuses, and all other necessary components to construct a fully operational system. The antenna tower cost **SHOULD NOT** be included in the Lump Sum Bid Amount.

S. Berthe Avenue Lift Station – Miscellaneous

12. **Bid Item 19 – Freight to Jobsite:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to deliver the complete Lift Station assembly to the jobsite.
13. **Bid Item 20 – Start-up & Training:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for start-up and training services provided to the OWNER by the MANUFACTURER(S).

1.02 UNIT PRICE

- A. Where payment for items is shown on a unit price basis, payment will be made for the actual quantity installed and will include all labor, material, and equipment necessary for such.

S. Berthe Avenue Lift Station Assembly

1. **Bid Item 2 – Submersible Centrifugal Pumps:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pumps and accessories. This includes, but is not limited to, pumps, cast iron impeller & volute insert, FM explosion proof motors, mix/flush valve for each pump, 50 LF of electrical cord, coatings, mounting brackets, and all other items and incidentals associated with the submersible pumps. The selected pump shall be able to meet a high condition of 113 gpm @ 109' and a Low Condition of 113 gpm @ 40'.
2. **Bid Item 3 – Submersible Pump Base Plate:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pump's base plate and accessories. This includes, but is not limited to, base plate material, anchors, and mounting brackets.
3. **Bid Item 4 – 4" Stainless Steel Discharge Elbow:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pump's discharge elbow and accessories.
4. **Bid Item 6 – 4" HDPE DR11 Fused Offset Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 4" HDPE DR11 Fused Offset Fitting for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer.
5. **Bid Item 7 – 4" DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 4" DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer.
6. **Bid Item 11 – Aluminum Access Hatch w/ Safety Gate:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the Aluminum Access Hatch w/ Safety Gate for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. It shall be the pump supplier's responsibility to confirm the adequacy of the specified minimum hatch size to enable the pump(s) to be easily removed from the wet well through the hatch without disassembly with a minimum 4" clear. Upsize hatches as required.
7. **Bid Item 15 – 316 Stainless Steel Sleeve w/ Link Seals:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 316 stainless Steel Sleeve w/ Link Seal for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The sleeve w/ link seals shall serve the 4" discharge piping, 6" air vent, and 4" bypass piping. All nuts, bolts, and screws associated with the link seal shall be 316 stainless steel.

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
S. Berthe Avenue Lift Station Assembly					
1	Fiberglass Wet Well - 8' Diameter x 17' Deep	1	LS		
2	Submersible Centrifugal Pumps	2	EA		
3	Submersible Pump Base Plate	2	EA		
4	4" 316 Stainless Steel Discharge Elbows	2	EA		
5	4" HDPE DR11 Discharge Piping	1	LS		
6	4" HDPE DR11 Fused Offset Fitting	2	EA		
7	4" DIPS Flange HDPE/316 Stainless Steel Adapter	3	EA		
8	3" 316 Stainless Steel Pipe Support Brace w/ U-Bolt	1	LS		
9	2" SCH 40 316 Stainless Steel Guide Rails & Supports	1	LS		
10	316 Stainless Steel Float/Cable Holder	1	LS		
11	Aluminum Access Hatch w/ Safety Grate	1	EA		
12	6" 316 Stainless Steel Air Vent	1	LS		
13	316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks	1	LS		
14	Lift Station Control Floats & Float Hatch	1	LS		
15	316 Stainless Steel Sleeve w/ Link Seals	4	EA		
S. Berthe Avenue Lift Station - Electrical					
16	Duplex Powder White Stainless Steel Control Panel	1	LS		
17	SCADA Data Flow & Soft-Starters	1	LS		
18	Yagi Antenna & Coax Cable	1	LS		
S. Berthe Avenue Lift Station - Miscellaneous					
19	Freight to Jobsite	1	LS		
20	Start-up & Training	1	LS		
Total Fiberglass Wet Well Assembly Base Bid Cost					\$ _____

7. BIDDER HEREBY ACKNOWLEDGES RECEIPT OF THE FOLLOWING ADDENDUMS: _____

Name of Bidder: _____

Business structure: () Corporation, () Partnership, () Individual, () Other: _____

If a Partnership: _____

Name(s) of Partner(s): _____

If a Corporation: _____

Incorporated in State of: _____ Date of Incorporation: _____

Business Address: _____

City: _____ State _____ Zip _____

Telephone Number: () _____ Fax () _____

E-mail Address: _____

Submitted By: _____
(Print)

Affix Corporate Seal
(If Corporation)

Title: _____

Signature: _____

ATTEST: _____

Secretary

By: _____
Print Name

State of Florida
County of _____

The foregoing instrument was acknowledged before
me by means of Physical Presence or
 Online Notarization

The foregoing instrument was acknowledged before me this ___ day of _____, 20 __, by _____,
who is personally known to me or who presented _____ as identification, and who (did) (did not) take
an oath.

[Signature of Notary Public]

[Printed, typed or stamped name of Notary Public]

**NOTE: BIDS MAY BE REJECTED IF ALL DOCUMENTS ARE NOT COMPLETE AND EXECUTED, AND
THE NUMBER OF COPIES SPECIFIED/REQUESTED OF EACH ARE NOT SUBMITTED WITH THE
BID.**