

SECTION 16000

LIFT STATION ELECTRICAL WORK

PART 1 GENERAL

1.01 SCOPE OF WORK

WORK described in this section shall consist of furnishing, installing, and connecting all panels, motor control center, lighting fixtures, and all other equipment shown or otherwise indicated in the DEVELOPMENT DRAWINGS. This section shall provide minimum, general guidelines and requirements; all and any electrical plans shall be designed by a qualified, registered electrical engineer in the state of Georgia.

1.02 CODES AND STANDARDS

- A. WORK performed under this section shall conform to the latest edition of the National Electrical Code.
- B. Equipment and material furnished under this section shall be new, unused, and shall be manufactured to the following standards:
 - 1. I.E.E.E. - Institute of Electrical & Electronic Engineers.
 - 2. A.N.S.I. - American National Standards Institute.
 - 3. U.L. - Underwriters Laboratories, Inc.
 - 4. I.C.E.A. - Insulated Conductor Engineers Association.

1.03 POWER SERVICE

- A. Power service will be 3-phase, 4-wire delta for the pump stations. The developer is responsible to coordinate with the Power Company and ensure that 3 phase power is available to the site.
- B. DEVELOPER shall furnish and install wooden pole, service entrance conduits, and cables including necessary weatherhead. Coordinate with the power company the location of their transformer pole.
- C. DEVELOPER shall furnish and install metering equipment including conduits and cables as required by the power company.

PART 2 PRODUCTS

2.01 CONDUITS

- A. Rigid conduits shall be hot-dipped galvanized steel.
- B. Electrical metallic tubing shall not be used at any location.

- C. Flexible conduits shall be used for final connection to motors.
- D. Conduits shall be U.L. listed.
- E. Schedule 40 PVC conduits shall be provided for underground installation. When a conduit is to be stubbed up, a PVC to steel adaptor and galvanized steel elbow shall be provided. All exposed conduit extensions shall be rigid galvanized steel.
- F. No conduit runs or junction boxes are to be installed inside or on top of wet well. Splicing of cables inside the wetwell will not be permitted.
- G. All items shall be water-tight.

2.02 CABLES

- A. Underground service entrance and motor feeder conductors shall be U.L. listed as "XHHW".
- B. Conductors shall be copper. Minimum size for power and lighting conductors shall be #12 AWG.
- C. Control cables shall be type XHHW, stranded copper, minimum size #14 AWG.
- D. Signal cables shall be twisted and shielded, #16 AWG minimum.
- E. Cables shall be U.L. listed and shall be manufactured by G.E., General Cable, Rome, Collyer, or approved equivalent.

2.03 PANELBOARDS

- A. The panelboards shall be U.L. listed.
 - 1. Circuit breakers shall be bolt-on type.
 - 2. Busses shall be copper.
 - 3. A ground bus shall be provided in the panel.
- B. Panelboard shall be as manufactured by Square D, Westinghouse, General Electric, or approved equivalent.
- C. The Panel Vendor shall provide a set of electrical schematics (wiring diagrams) which accurately reflect the actual construction of the control panel. All components and wiring in the control panel shall be numerically labeled at each termination with its own number designation and referenced on the schematics by the corresponding labels. The schematic shall contain a legend table which explicitly describes any acronyms, abbreviations, or non-standard symbols used to describe the circuitry or its components. The schematics shall be laminated and attached to the inside doorway of the panel.

2.04 LIGHTNING ARRESTORS

- A. The lightning arrestors shall be suitable for connection to 3-phase, 4-wire power service. Provisions shall be made to mount the lightning arrestor to the equipment mounting structure.
- B. The lightning arrestors shall be Square D, Catalog No. SP3650I or approved equivalent.
- C. The lightning arrestor shall provide protection for communications.

2.05 GROUNDING

CONTRACTOR shall furnish and install grounding system as shown on Drawings. Ground rods shall be 3/4-inch diameter x 10-foot long copperweld. Ground rods shall be driven into ground until top is 24 inches below grade and connected with #2 bare copper wire. Ground conductors shall be cadwelded to rod and routed to main circuit breaker, lightning arrestor, and lighting transformer.

2.06 WIRING DEVICES

- A. A minimum of one (1) duplex weather proof receptacle is required. Duplex receptacles shall be 20 ampere, 120/277 volts, specification grade, NEMA 5-20R configuration. Switches shall be rated 20A. All the device coverplates shall be stainless steel.
- B. Wiring devices shall be U.L. listed and manufactured by G. E., Hubbell, Arrow Hart, or approved equivalent.

2.07 AUTOMATIC TRANSFER SWITCH

The automatic transfer switch shall be designed, built, tested and furnished and warranted by the manufacturer of the generator to ensure one source of responsibility for the complete standby power system. Transfer switch shall be U.L. listed and rated for 100% of the total system load.

2.08 DRY TYPE TRANSFORMERS

- A. Dry type transformer shall be in ventilated indoor enclosure with core and coil assemblies mounted on rubber isolation pads to reduce the sound level. Two full capacity 5% below normal taps shall be provided.
- B. Transformer shall have 220°C insulation system with 115°C rise allowing 15% overload capability.
- C. Transformer shall be U.L. Listed and manufactured by Square D, Westinghouse, G.E. or approved equivalent.

2.09 MAIN CIRCUIT BREAKERS

The main circuit breakers at pump stations shall be NEMA-4X stainless steel enclosure with external operating handle to padlock the breaker in "on" and "off" positions. The main circuit breakers shall be sized such that the minimum interrupting capacity accommodates the capacity of the service entrance and shall be U.L. listed for service entrance. The circuit breaker must be mounted inside the fenced area of the station.

2.10 LIGHTING

1. Lamp light shall be General Electric Criterion Series: Part number CHMX40XOA2BDKBZA.
2. Mounting pole shall be KW Industries #STSP20-625-7-BRZ-DM10-BC.
3. Timer shall be provided with light switch.
4. A motion sensing feature shall be provided with light.

PART 3 EXECUTION

3.01 GUARANTEES AND TESTS

- A. WORK shall be guaranteed for 12 months after date of acceptance. WORK shall be free from improper grounds and short circuits.
- B. DEVELOPER is required to test new pump stations with generator prior to acceptance of the facility with manufacturer's representatives.

END OF SECTION