ELECTRICAL/INSTRUMENTATION TECHNICIAN

JOB SUMMARY

Under general supervision, performs a variety of skilled electrical/instrumentation maintenance work; assists in construction, installation, modification, calibration, maintenance and repair of a wide variety of electrical and electronic control systems, plant control systems, field telemetry systems and related equipment and devices used in the treatment, storage, pumping and distribution of potable and non-potable water and reclamation; and performs other related work as assigned.

EXAMPLES OF DUTIES

(*Duties include but are not limited to the following*):

- Tests, troubleshoots and calibrates, repairs and performs preventative maintenance on a variety of electronic and/or instrumentation equipment related to the operation of water distribution and wastewater reclamation systems; equipment may include high voltage motors, switchgear, distribution panels, transformers, lighting panels, motor control circuits, motor control panels, and all associated control circuits ranging from low voltage to high voltage (12 volts DC to 4200 volts).

- Tests systems including analog/digital meters, ohm meters, high voltage meters, amp meters, high potential testers, calibrators, and data recorders.

- Identifies and isolates faulty electric, electronic, pneumatic, hydraulic and computerized parts, components, circuits or panels; repairs, fabricates or replaces parts, components or circuits, installs new or repaired parts or components.

- Modifies, installs and supports systems and networks used for the transportation of electronic signals across a wide geographic area utilized by the SCADA system.

- Programs, troubleshoots and modifies various electronic controllers such as PLCs, VFDs, RTUs, and DCS.

- Schedules and oversees work performed by contractors or vendors; specifies tasks to be performed; monitors compliance testing and performance issues associated with the contract; and assists in project or contract completion.

- Assists in the maintenance and repair of pumps, filters, aerators, valves, controls and other system and plant equipment.

- Keeps detailed work and maintenance records; prepares written reports; and completes maintenance work order reports.

- Reviews and updates electrical plans, specifications, wiring diagrams and schematics.

- Performs installations, repairs, modifications, calibrations and preventative maintenance on a wide variety of complex digital, analog, programmable and other auxiliary equipment used in the collection transmission and treatment of water/wastewater.

- Tests power distribution, transformers, circuit breakers, meters and other apparatus; performs routine maintenance of electrical equipment and supplies.

- Estimates labor and materials for minor electrical installation and repair projects; requisitions supplies, materials and equipment to complete the assigned tasks; assists in maintaining an inventory of parts, materials and supplies.

- Schedules and coordinates activities with other staff, divisions, departments or agencies; ensures the timely and accurate completion of preventive maintenance activities.

- Isolates and resolves electronic and telemetry equipment and system failures in the field and in central control; troubleshoots, aligns and calibrates equipment with such devices as frequency generators, voltmeters, oscilloscopes, multimeters, logic analyzers, meggers, amp meters, digital analyzers and other specialized test equipment.

- Pulls, splices and terminates wiring.

- Disconnects electrical sources (up to 4200 volts), uses lockout/tagout procedures to block electrical sources; reconnects and operates equipment at panel for maintenance purposes; removes and repairs various electrical components.

- Reports operating problems and needed repairs in accordance with established procedures.

- Performs minor maintenance, repair and replacement of facilities in systems under his/her control; may perform custodial duties in the buildings and yards.

- Enters confined spaces using appropriate permit procedures and equipment, in accordance with established safety practices.

- Responds to emergency situations including those occurring after normal working hours.

- Performs other related duties as assigned.

EMPLOYMENT STANDARDS

Knowledge of:
- Basic electrical, electronics, pneumatics, hydraulics and mechanics theories.
- Applicable codes and regulations.
- Industrial electricity and safety practices, precautions and procedures.
- Troubleshooting methods and procedures.
- Electrical components and wiring configurations used in industrial systems.
- Testing procedures used to detect problems, including use of typical testing instruments.
- Safety precautions and procedures pertaining to the work, particularly relating to the operation of large pumps and motors and high electrical voltages.
- VFD, PLC, SCADA and DCS troubleshooting, repair and programming.
- Safety practices and procedures including high and low voltage, lockout/tagout and confined space entry.
- Basic principles of hydraulics.

Ability to:
- Test, diagnose, calibrate and repair a wide variety of electrical and electronic instrumentation devices, motors, motor control systems, machinery and equipment common to a large waterworks system.
- Identify and implement effective courses of action to complete assigned work.
- Exercise independent judgment and initiative within established guidelines.
- Maintain accurate records; read and interpret plans, specifications, and operating and technical manuals.
- Interpret and apply applicable electrical codes and regulations.

- Recognize unusual or dangerous operating conditions and take rapid appropriate action.
- Learn to use computers and related software applications.
- Operate a vehicle observing legal and defensive driving practices.
- Understand and carry out oral and written instructions.
- Establish and maintain effective relationships with those contacted in the course of work.
- Be available for overtime, standby and after-hour emergencies.

Experience and Education:
Any combination of training, experience and education that could likely provide the required knowledge and abilities stated above, and the ability to perform the duties of the position would be qualifying. A typical way to obtain the knowledge and abilities would be:

Experience: Four (4) years of experience performing installation, repair and maintenance of complex electrical equipment, preferably in a water/wastewater plant or facility. Successful completion of a recognized electrical or instrumentation apprenticeship is desirable.

Education: Formal or informal education or training at a level which ensures the ability to read, write, and perform mathematical computations and write reports at a level necessary for successful job performance.

Licenses and Certificates:
1) Possession of a valid California driver's license, Class C, with ability to maintain insurability under the District's insurance carrier.

Physical Demands:
Hear normal conversation in person and/or on the telephone, with or without electronic aids; see to read fine print; operate hand and power tools requiring strength and coordination; use hands and fingers repetitively to manipulate small objects and print or write legibly; regularly lift over 50 pounds and frequently, over 100 pounds, with assistance; be exposed to harsh substances; be exposed to foul odors within acceptable ranges/levels; work in confined spaces; ascend and descend ladders up to 50 feet in height; wear protective apparel including, but not limited to, goggles, face protectors, aprons, fall protection, shoes and a respirator, as required by OSHA standards; reach with hands and arms; speak in a normal voice to be able to be heard and understood on the telephone and awareness of electrical hazards.

OTHER REQUIREMENTS

May be required to work evenings and weekends and assume stand-by duty if necessary.

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