



Instrumentation and Electrical Technician

Purpose of the role:

Under general supervision, performs a wide variety of skilled tasks in the installation, repair, troubleshooting, modifying, and maintenance of wastewater treatment plant, water and wastewater, collections, and landscape electrical, pneumatic and electronic instrumentation equipment including programmable logic controllers, variable frequency drives, remote terminal units, supervisory control data acquisition (SCADA) systems, software controlled units and equipment, and telecommunication systems and devices; and performs related duties as assigned.

Distinguishing Characteristics:

This is the journey-level position and may be distinguished from the higher classification of Senior Instrumentation and Electrical Technician by that position's primary accountability for all instrumentation program leadership, technology evaluation and implementation and coordination efforts.

The following duties are typical for this classification. Incumbents may not perform all of the listed duties and/or may be required to perform additional or different duties from those set forth below to address business needs and changing business practices.

Essential Duties and Responsibilities:

- Repairs, troubleshoots, installs, and maintains high voltage and low voltage electrical equipment and related devices including transformers, power panels, wireways, light fixtures, receptacles, and disconnect switches.
- Repairs, troubleshoots, installs, and maintains various motor control equipment and devices including variable frequency drives, motor controllers, adjustable speed drives, relays, timers, and indicating devices.
- Calibrates, repairs, troubleshoots, installs, and maintains electrical control systems, and instrumentation including transmitters, meters, generators, counters, regulatory clocks, monitors, recorders, programmable controllers, and tele-metering systems; creates and modifies logic programs.
- Conducts, audits, reviews, specifies, and designs electrical and electronic schematics, plans, and improvements drawings to evaluate operational and maintenance requirements.
- Participates in planning the installation of new or improved electrical and electronic systems, equipment, and machinery.
- Programs, installs, maintains, modifies, and upgrades Software Control Programs that are utilized in programmable logic controllers, operator interface devices.

- Orders necessary parts to maintain equipment or construct replacement parts; coordinates repair and maintenance work with plant operators and outside agency technical personnel.
- Trains City staff on operation of new or modified systems.
- Provides technical advice and support to operators, supervisors, City engineering staff, and outside agency personnel.
- Estimates time, materials, and equipment required for jobs.
- Responds to night and weekend emergency call outs.
- Performs related duties as required.

The following generally describes the knowledge and ability required to enter the job and/or be learned within a short period of time in order to successfully perform the assigned duties.

Knowledge of:

- Operational characteristics of instrumentation and electrical equipment and components.
- Methods, techniques, materials, equipment, and tools used in installing electrical wiring, control devices, and equipment.
- Standard terms, practices, procedures, methods, and mathematics used in the instrumentation and electrical trades.
- National Electrical Code and the Electrical Safety Orders of Cal OSHA.
- Principles of pneumatic controls and devices, telemetry and electronic installation, maintenance, operation, testing and repair.
- Preventive maintenance applicable to electrical and instrumentation systems.
- Effects of hazardous chemical conditions encountered in a wastewater treatment plant.
- Occupational hazards and standard safety practices.
- Office procedures, methods, and equipment including computers and applicable software applications.
- Telecommunications operating systems and equipment.
- Operational characteristics of fiber-optic, Local Area Network, and SCADA systems.

***Desired
Minimum
Qualifications:***

Ability to:

- Perform a variety of installation, repair, and maintenance on electronics, instrumentation control and support systems.
- Operate programmers, calibrators, measuring, and testing devices, hand tools, and equipment of the trade.
- Calibrate, align, and test a variety of systems designed to monitor treatment plant processes and activities.
- Plan and execute repair, maintenance, and installation of controls and equipment.
- Estimate costs, time and labor requirements.
- Troubleshoot and diagnose problems.
- Read and interpret technical illustrations, blueprints, maps, plans, specifications, wiring and pneumatic diagrams.
- Work in confined spaces and safely use self-contained breathing apparatus.
- Keep records and schedule maintenance work.
- Operate office equipment including computers and supporting software applications.

- Adapt to changing technologies and learn functionality of new equipment and systems.
- Repair and maintenance of telecommunications operating systems and equipment.
- Work under steady pressure with frequent interruptions.
- Learn and apply new information or new skills.
- Communicate clearly and concisely, both orally and in writing.
- Establish and maintain effective working relationships with those contacted in the course of work.
- Respond and perform assigned duties in the event of a City-declared emergency.

Competencies:

- Results Oriented
- Customer-Focused
- Flexible/Adaptable
- Accountable
- Planner and Organizer
- Skill and Career Development Coach
- Technically Knowledgeable

Any combination of education and experience that would likely provide the required knowledge and abilities is qualifying. A typical way to obtain the knowledge and abilities would be:

Education:

Equivalent to the completion of the twelfth grade.

**Education and
Experience
Guidelines:**

Experience:

Four years of experience in the design, repair, installation and maintenance of electrical equipment, such as instrumentation systems, transformers, switches, control panels, electronic components of telemetry systems and components utilized in a wastewater treatment plant.

Licenses; Certificates; Special Requirements:

A valid Class C California driver's license is required.

The conditions herein are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential job functions.

**Physical and
Environmental
Conditions:**

Physical: Sufficient physical ability to work indoors and outdoors in all weather conditions; sit, stand, walk on level and slippery surfaces; reach, twist, turn, kneel, bend, stoop, squat, crouch, grasp and making repetitive hand movement; lift, carry and push tools, equipment and supplies weighing 25 pounds or more; climb ladders, use power and noise producing tools and equipment, drive motorized vehicles and heavy equipment, and work in heavy vehicle traffic conditions. **Vision:** See in the normal visual range with or without correction; vision sufficient to read computer screens and printed documents; and to operate assigned equipment. **Hearing:** Hear in the normal audio range with or without correction.

Environment: Wastewater treatment plant and field environment; exposure to noise, dust, grease, fumes, gases, potentially hazardous chemicals, electrical energy, and inclement weather conditions including wet and/or humid conditions; work in or around water or wastewater; work on slippery surfaces; work in confined spaces; work near moving mechanical parts and moderately loud noise levels; work with frequent interruptions.

*Class specifications are only intended to present a descriptive summary of the range of duties and responsibilities associated with specified positions. Therefore, specifications **may not include all** duties performed by individuals within a classification. In addition, specifications are intended to outline the **minimum** qualifications necessary for entry into the class and do not necessarily convey the final qualifications of incumbents within the position.*

Pursuant to California Government Code Section 3100, all public employees are required to serve as disaster service workers subject to such disaster service activities as may be assigned to them by their supervisor or by law.

Date Adopted: 7/5/03

Date Revised: