

## INSTRUMENTATION TECHNICIAN

### DEFINITION

To perform skilled, technical work in the design, installation, testing, calibration, maintenance, and repair of process control, telemetry, and data acquisition systems and subsystems used in the wastewater treatment plant, water production, and distribution facilities; to provide journey level electrical skills in a heavy industrial environment; and to provide technical support to an assigned supervisor.

### DISTINGUISHING CHARACTERISTICS

This is the journey level in the single level technical Instrumentation Technician class. Incumbents initially perform the more routine duties assigned to positions in this class and work under close supervision. However, as experience is gained, incumbents are expected to perform the full range of duties as assigned with increasing independence.

### SUPERVISION RECEIVED AND EXERCISED

Receives general supervision from the assigned supervisor; and may receive technical and functional supervision from more experienced staff.

### EXAMPLES OF ESSENTIAL DUTIES - Duties may include, but are not limited to, the following:

Perform skilled, technical work in the design, installation, programming, testing, calibration, maintenance, and repair of process control, telemetry, and data acquisition systems and subsystems used in the wastewater treatment plant, water production, and distribution facilities; to provide journey level electrical skills in a heavy industrial environment.

Design, install, program, test, calibrate, and repair computer, electronic, pneumatic, and radio systems, electrical assemblies, various types of variable frequency motor drive systems, programmable logic controllers, automatic control valves and associated control functions, secure encrypted data communication programs and systems used in water supply and wastewater treatment facilities.

Install, program and maintain a variety of supervisory controls; perform electrical wiring as required for the installation of digital and analog electrical equipment, machinery, switchgear, controllers and associated equipment, and instrumentation.

Read and update blueprints and schematics as required to assist in repairs; prioritize and coordinate the appropriate timing to service equipment; estimate labor and materials necessary to complete the needed work; order replacement parts to perform maintenance and repairs as necessary.

Troubleshoot and maintain electrical systems, controls and related process equipment; calculate power load distributions to various motors and related equipment.

Purchase required parts and equipment; contact vendors and other agencies to determine the availability, applicability, and performance of components.  
Inspect and test components installed by contractors.

Write ladder logic programs and other computer programs for the operation of process control and data acquisition systems, controllers and test equipment; install, maintain and program related hardware and software for control systems; maintain accurate records of work performed, materials used and associated costs.

Build and maintain positive working relationships with co-workers, other City employees and the public using principles of good customer service.

Foster an environment that embraces diversity, integrity, trust, and respect.

Be an integral team player, which involves flexibility, cooperation, and communication.

Perform related duties as assigned.

## MINIMUM QUALIFICATIONS

### Knowledge of:

Principles and practices of the theory and practice of electronics, computer systems, pneumatics, hydraulics.

Electrical knowledge related to troubleshooting, repair and maintenance of devices and control systems associated with water, wastewater, and electric utilities.

Design, installation, maintenance and repair of industrial electrical systems; tools and equipment used in the work.

Methods and procedures of the maintenance, calibration and repair of test instruments.

Methods and procedures of various communication protocols, cyber security, and encryption measures.

Occupational hazards and safety procedures related to the work; utility distribution systems and controls.

Supervisory controls, including solenoids, mercury switches, limit switches, and relays; electronic, digital, and analog circuits and power switching to the component level.

Methods and procedures used to compute power and load requirements for low voltage industrial systems.

Methods and procedures to estimate labor and needed materials for projects.

Programmable controller ladder logic programs.

National Electrical Code and other appropriate standards and specifications.

Building lighting and environmental control systems.

Methods and procedures of installing, maintaining, and troubleshooting secure computer networks.

Relevant local, State, and Federal laws, rules and regulations related to area of assignment.

Ability to:

Perform skilled, technical work in the design, installation, testing, calibration, maintenance, and repair of process control, telemetry, and data acquisition systems and subsystems used in the wastewater treatment plant, water production, and distribution facilities; to provide journey level electrical skills in a heavy industrial environment.

On a continuous basis, know and understand operations, and observe safety rules; intermittently analyze problem equipment; identify and locate equipment; interpret work orders; remember equipment location; and explain jobs to others.

Intermittently, sit while studying or preparing reports; bend, squat, climb, kneel and twist when performing installation of equipment; perform simple and power grasping, pushing, pulling, and fine manipulation; and lift or carry weight of 50 pounds or less.

Diagnose faults in complex electronic and electrical equipment; specify, install and inspect electrical conduit in trade sizes from 1/2 inch to 4 inches in diameter.

Fabricate, design, install and maintain various panels and control systems.

Read and prepare a variety of wiring diagrams, specifications, work procedures, and interpret electrical schematics and use them effectively for troubleshooting.

Prepare and maintain detailed and accurate records, reports, and work estimates.

Safely use and care for a variety of tools and equipment common to the work and operate a variety of electronic and electrical test instruments.

Use sound judgment in recognizing scope of authority.

Operate and use modern office equipment including computers and applicable software.

Maintain regular attendance and adhere to prescribed work schedule to conduct job responsibilities.

Utilize appropriate safety procedures and practices for assigned duties.

Establish and maintain effective working relationships with those contacted in the course of work.

Work with various cultural and ethnic groups in a tactful and effective manner.

Communicate clearly and concisely, both orally and in writing.

### Experience and Training

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

#### Experience:

Two years of responsible journey level experience involving the design, installation, testing, calibration, maintenance, and repair of process control, telemetry, and data acquisition systems.

#### Training:

Equivalent to an Associate's degree from an accredited college with major course work in electrical theory, mathematics or a related field.

### License and Certificate

Possession of a valid California Class C Driver License may be required at the time of appointment. Failure to obtain or maintain such required license(s) may be cause for disciplinary action. Individuals who do not meet this requirement due to a physical disability will be considered for accommodation on a case-by-case basis.

Possession of a Grade I Electrical/Instrumentation Technologist certificate from the California Water Environment Association within 18 months of employment.

Possession of a Grade II Electrical/Instrumentation Technologist certificate from the California Water Environment Association within 42 months of employment.