

City of San José
CLASS SPECIFICATION

TITLE: Instrument Control Technician I/II/III/IV (3761/3764/3763/3765)

DEPARTMENT	ACCOUNTABLE TO	FLSA STATUS
Environmental Services	Instrument Control Supervisor	Non-Exempt

CLASS SUMMARY

Incumbents are responsible for installing, maintaining, repairing, troubleshooting and servicing a wide variety of control instruments and systems such as PLC, SCADA, and DCS utilizing skills and experience with electronic, electric, pneumatic, hydraulic, mechanical, and other recording, indicating, alarm and control instrumentation devices.

DISTINGUISHING CHARACTERISTICS

This is a four level flexibly-staffed class that is the entry/journey level in the Instrument Control series. Instrument Control Technicians have responsibility for performing routine instrumentation and telemetric systems maintenance and repair activities. Instrument Control Technician IV is responsible for performing more advanced maintenance and repair work, overseeing program elements and administrative duties, and may serve as a lead to lower-level technicians. Instrument Control Technician I/II/III/IV is distinguished from the Instrument Control Supervisor, which has full supervisory responsibility.

Incumbents may be subjected to moving mechanical parts, electrical currents, vibrations, fumes, odors, asbestos, exposure to noxious chemicals, combustible gases, dusts, poor ventilation, extreme temperatures, inadequate lighting, work space restrictions, and intense noises, and may be required to lift up to 50 pounds occasionally.

QUALIFICATIONS

(These qualifications are typically required. An equivalent combination of education and experience sufficient to satisfactorily perform the duties of the job may be substituted.)

Minimum Qualifications

Education and Experience

Instrument Control Technician I

Graduation from high school, General Education Development (G.E.D.) Certificate, or California Proficiency Certificate AND one (1) year of instrumentation and controls work experience at an industrial facility similar to that of a wastewater treatment facility.

Instrument Control Technician II

Graduation from high school, General Education Development (G.E.D.) Certificate, or California Proficiency Certificate AND two (2) years of instrumentation and controls work experience at an industrial facility similar to that of a wastewater treatment facility.

Instrument Control Technician III

Graduation from high school, General Education Development (G.E.D.) Certificate, or California Proficiency Certificate AND one (1) year Instrument Control Technician experience at with the City of San José.

Instrument Control Technician IV

Graduation from high school, General Education Development (G.E.D.) Certificate, or California Proficiency Certificate AND four (4) years instrumentation and controls work experience at an industrial facility similar to that of a wastewater treatment facility, including two (2) years Instrument Control Technician experience with the City of San José.

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Required Licensing (such as driver's license, certifications, etc.)

- Possession of a valid driver's license authorizing operation of a motor vehicle in California.
- **Instrument Control Technician III and Instrument Control Technician IV** - Possession of an ISA Certified Control Systems Technician (CCST) level 1 certificate OR possession of an IBEW/UA (International Brotherhood of Electrical Workers/United Association) Instrumentation Calibration Certification.

Other Qualifications

(Incumbents may be required to have different combinations of the listed qualifications, or more specific job-related qualifications depending on the position.)

Basic Competencies

(Needed at entry into the job in order to perform the essential duties.)

- Job Expertise - demonstrates knowledge of and experience with applicable professional/technical principles and practices in instrumentation and controls used in industrial settings including:
 - Knowledge of:*
 - Technical instruments, basic mathematic principles, basic electrical principles, and basic electronics principles, basic chemistry principles, safety principles.
 - Applicable city, state, and federal laws, rules, and regulations
 - Pneumatic controls such as 3-15 PSI pneumatic controllers, I to P converters, and P to I converters.
 - I.S.A standard symbols and methodology and ability to draw and interpret diagrams and charts to accomplish tasks with minimal or non-existent documentation or support.
 - SCBA equipment
 - Basic water treatment plant procedures.
 - Current and developing technology and its impact on current and future capital improvement projects; the facility's operating system and processes and legacy operations and system design; wide range of instrumentation and control products and their applicability to the plants systems and equipment; the computerized process controls –(programmable logic control).
 - Skill in:*
 - Safe use of instrument testing equipment such as DVM (digital volt meters), control loop simulators, oscilloscopes, pressure and vacuum calibrators, test set-up, and any specialized test equipment found in a wastewater treatment facility or related industrial facility.
 - Training others in electronic instruments
 - Ability to:*
 - Install, maintain, operate, troubleshoot and calibrate the following to component levels: 4-20 mA control loops, DP (differential pressure) cells, RTD (resistance temperature detectors), pressure transducers, level indicators, positioners, valve actuators, fixed and portable D.O. (dissolved oxygen) probes, fixed and portable suspended solids meters, turbine flow meters, density meters, or most control instrumentation devices found in a wastewater treatment facility (or related industrial facilities such as oil refineries, power generation, food-processing, and chemical plants).
 - Perform trouble shooting to resolve complex issues in the Facility; effectively review, modify or utilize data within the CMMS system related to equipment maintenance and/or predictive maintenance work; read and prepare single line schematics, ladder logic diagrams, loop diagrams and other instrumentation and control drawings; program

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PLCs and ability to troubleshoot and maintain VFDs; designing, fabricate and install instrumentation and telemetric systems and components; gather critical amounts of information and resolve issues using instrumentation and control equipment (flow, temp, PH, turbidity, conductivity, pressure, solids (TSS)).

- Install, program and troubleshoot various types of programmable logic control (PLCs), P.I.D control loops, distributed control systems (DCS) and SCADA control schemes.
 - Start up, troubleshoot, maintain, and repair a variety of Wastewater instrumentation, control, and telemetric systems; use computers and computer software as related to instrumentation systems.
 - Develop and lead I&C Preventative Maintenance programs;
 - Establish and manage long-term schedules requiring significant resources (internal and external); organize and maintain parts and equipment inventories; source, identify, select, and purchase Instrumentation control devices to meet the needs of the Plant; Ability to calibrate or re-calibrate a variety of instruments monitoring electrical (high and low voltage) and mechanical processes.
 - Work with high voltage equipment safely
 - Assign and monitor the work of contractors and temporary workers; work with other trades to install, remove, repair, or replace very large mechanical or electrical services and equipment; meet with and work effectively with a wide range of disciplines addressing Capital Improvement Projects.
 - Utilize and work with aging equipment protocols (U.S., European).
- **Communication Skills** - Effectively conveys information and expresses thoughts and facts clearly, orally and in writing; demonstrates effective use of listening skills; displays openness to other people's ideas and thoughts.
 - **Computer Skills** - Experience with common business computer applications including but not limited to: MS Outlook, MS Word, MS PowerPoint, MS Access, and MS Excel, CMMS Work order system.
 - **Creativity** - addresses objectives and problems while questioning traditional assumptions/solutions in order to generate creative ideas and new ways of doing business.
 - **Multi-Tasking** - Can handle multiple projects and responsibilities simultaneously; has handled a wide variety of assignments in past and/or current position(s).
 - **Problem Solving** - Approaches a situation or problem by defining the problem or issue; determines the significance of problem; collects information; uses logic and intuition to arrive at decisions or solutions to problems that achieve the desired outcome.
 - **Teamwork & Interpersonal Skills** - Demonstrates a positive attitude and flexibility along with the ability to develop effective relationships with co-workers and supervisors by helping others accomplish tasks and using collaboration and conflict resolution skills

Desirable Qualifications

(Knowledge, skills and abilities; licenses, certificates, education, experience that is more position specific and/or likely to contribute to more successful job performance.)

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- Possession of an International Society of Automation (ISA) Certified Control Systems Technician (CCST), California Water Environment Association (CWEA) Electrical/Instrumentation Technologist Grade II, &/or Water Treatment Operator or Water Distribution Operator.
- Formal training in SCADA and PLC Programming and Maintenance, Distributed Control Systems (DCS), Human Machine Interface (HMI) programming and screen configuration.
- Knowledge of NFP70E Electrical Safety.
- Skill in training others in instrumentation and monitoring and evaluating personnel.
- Skill in reading and interpreting diagrams and blueprints.

DUTY NO.	TYPICAL CLASS ESSENTIAL DUTIES: (These duties and estimated frequency are a representative sample; position assignments may vary depending on the business needs of the department.) Duties may include, but are not limited to, the following:	FRE-QUENCY*
1.	Repairs, troubleshoots, identifies, isolates, and solves system, network and equipment problems.	Continuous
2.	Maintains, operates, installs, adjusts, and calibrates systems and equipment. Inspects, evaluates, operates, maintains, tests, troubleshoots, installs, and repairs instruments, components, systems and equipment including electric, telemetric and pneumatic systems.	Continuous
3.	Programs, configures, and optimizes the analytical, recording and electronic or pneumatic control instruments and related equipment.	Continuous
4.	Designs, fabricates, and installs instrument and telemetric systems and components to include ensuring code compliance and installing.	Continuous
5.	Meets with capital improvement projects teams related to future changes and considerations regarding instrumentations.	Frequent
6.	Keeps records using Microsoft Office applications.	Frequent
7.	Purchases equipment, parts and supplies including: selecting vendors; filling out paperwork; coordinating purchases.	Frequent
8.	Uses CMMS system to fill out work orders and maintains records.	Frequent
9.	Creates and updates engineering drawings.	Occasional
10.	Develops preventative maintenance procedures and train others.	Occasional
11.	Calculates circuit requirements.	Occasional
11.	Operates computer programs for testing electrical equipment, including PLC and DCS.	Occasional
13.	Levels III & IV may act as a lead, assigning, scheduling and checking work, providing technical direction, determining priorities, and training staff. As a lead, may sign timecards and may give input to the supervisor regarding the employee's performance evaluation, hiring, promotion, termination and discipline of employees.	Occasional
14.	Performs other duties of a similar nature or level.	As Required

*Frequency defined as %, (totaling 100%) *or* "Continuous" (daily or approximately 20%+), "Frequent"(weekly or approximately 15%+), "Occasional"(monthly or approximately 10%+), "As Required"(Intermittent or 5% or less)

Classification History Created 05/80, Rev. & Ret. 01/01 (Formerly Instrument Repair Technician), Rev. 04/05, Rev 04/15, Rev. 08/17; s007