Date: March 3, 2021

To: **Civil Service Commission**

From: **Sylvana Tamura, Personnel Analyst**

Subject: **REQUEST TO ADOPT NEW CLASSIFICATION AND NEW CLASSIFICATION SPECIFICATION-ELECTRICAL AND INSTRUMENTATION TECHNICIAN I-II**

On February 25, 2021, correspondence was received from Fred Verdugo, Acting Director of Human Resources, requesting the Civil Service Commission approval of the new classification specification for ***Electrical and Instrumentation Technician I-II.***

Facts for Consideration:

- The proposed new classification specification for Electrical and Instrumentation Technician I-II is exclusive to the Water Department. This new classification is proposed based on the needs of the Water Department and the industry recognizing that specialized skills are needed in conducting electrical and instrumentation automation at the City Water Treatment Plant.

- The position of Electrical and Instrumentation Technician I-II will, under general supervision, perform a wide range of technical duties in the installation, calibration, troubleshooting, testing, maintenance, and repair of complex electronic and mechanical instrumentation and control systems, equipment, and facilities, including the SCADA system.

- The proposed classification includes the following:

    - **Distinguishing Characteristics-**This section outlines the grade levels I and II and their level of competency and independence required in performing essential duties at each level.
    - **Example of Duties**-This section identifies the range of duties that will be performed and responsibility required for the classification of *Electrical and Instrumentation Technician I-II.* The range of duties and responsibilities reflect industry standards and knowledge, skills and abilities required to perform the duties of the classification.
    - **Minimum Qualifications-**This section outlines the requirements to file in correlation with the knowledge, skills and abilities at each grade level of the classification.
        - **Electrical and Instrumentation Technician I:** *A minimum of four (4) years, full-time equivalent, paid experience in the electrical and instrumentation field or electrical repair and*

maintenance working in the water industry. ***Certificate requirements before passing probation, must have one of the following 1, 2, or 3:*** ***(1)*** *California Water Environment Association (CWEA) Electrical Instrumentation Technological Grade 2, or* ***(2)*** *EPRI (Electrical Power Research Institute) Instrumentation and Controls, Part A, such as that issued by IBEW-NECA, or (3) ISA (international Society of Automation) Certified Control System Technician (CCST)) Level 1 certification in combination with one (1) of the following:*

- **Long Beach Journeyman Electrician's Certificate -or-**
- **State of California Electrical Contractors License**

- **Electrical and Instrumentation Technician II:** *A minimum of six (6) years full-time equivalent, paid experience in the electrical and instrumentation field or electrical repair and maintenance working in the water industry.* ***Certificate requirements at time of filing, must have one of the following 1, 2, or 3: (1)*** *California Water Environment Association (CWEA) Electrical Instrumentation Technological Grade 3, or* ***(2)*** *EPRI (Electrical Power Research Institute) Instrumentation and Controls, Part B, such as that issued by IBEW-NECA, or* ***(3)*** *ISA (international Society of Automation) Certified Control System Technician (CCST)) Level 2 certification in combination with one (1) of the following:*
  - **Long Beach Journeyman Electrician's Certificate -or-**
  - **State of California Electrical Contractors License**

- Staff worked with the Water Department, Human Resources Department and the Association of Long Beach Employees on the proposed new classification specification of **Electrical and Instrumentation Technician I-II.**

- Staff completed its meet and confer obligation on February 22, 2021 with the Association of Long Beach Employees (ALBE) regarding the proposed new classification.

- The Water Department, the Human Resources Department, and the Association of Long Beach Employees (ALBE) have been informed that this request is on the Civil Service Commission Agenda this week.

- Representatives from the Water Department and the Human Resources Department will be present to respond to any questions from the Civil Service Commission.

CITY OF LONG BEACH

Memorandum

Date: February 26, 2021

To: Civil Service Commission

From: Fred Verdugo, Interim Director of Human Resources

Subject: **NEW CLASSIFICATION SPECIFICATION – ELECTRICAL AND INSTRUMENTATION TECHNICIAN I-II**

The Human Resources Department recommends the Civil Service Commission adopt the new classification of Electrical and Instrumentation I – II classification specification. The Water Department identified a need for a new classification specification as specialized skills are needed in conducting electrical and instrumentation automation at the Water Treatment Plant. Staff worked with the Water Department and Civil Service Department on the proposed new classification specification.

Staff from the departments of Human Resources, Civil Service and Water and the Association of Long Beach Employees worked together to complete the meet and confer process. Having completed the meet and confer obligation, we are now requesting that the Commission adopt the Electrical and Instrumentation Technician I-II classification specification as outlined for your review and approval.

Should you have any questions regarding this item, please contact Khristina Coston, Human Resources Officer at (562) 570-6440.

FV:KC:VK

Attachments
Electrical and Instrumentation Technician Classification Specification.

cc: Dana Anderson, Interim Deputy Human Resources Director
Khristina Coston, Human Resources Officer

CITY OF LONG BEACH

CLASSIFICATION SPECIFICATION

TITLE: ELECTRICAL AND INSTRUMENTATION TECHNICIAN I-II

DEFINITION: Under general supervision, positions in this series perform a wide range of highly technical duties in the installation, calibration, troubleshooting, testing, maintenance, and repair of complex electronic and mechanical instrumentation and control systems, equipment, and facilities, including the Water Department's SCADA system.

DISTINGUISHING CHARACTERISTICS:

Grade Level I — Entry-level classification. Incumbents perform the more standard tasks while learning the design, layout, and operations of the Water Department's facilities and systems.

Grade Level II — Journey-level classification. Incumbents perform the full range of duties associated with maintenance of all instrumentations and control system, including SCADA. A minimum of six (6) years full-time equivalent, paid experience in the electrical and instrumentation field or electrical repair and maintenance working in the water industry.

EXAMPLES OF DUTIES:
The functions of the classification may include, but are not limited to, those listed below:

- Tests, troubleshoots, diagnoses, repairs, and performs preventative maintenance on a variety of electronic equipment, instrumentation control systems, Programmable Logic Controllers (PLC), Distributed Control Systems (DCS), components and devices associated with the Supervisory Control and Data Acquisition (SCADA) system at multiple facilities operated by the Department including water treatment plant and distribution system, reclaim distribution system and waste water collection system;

- Maintains, calibrate, troubleshoots, repairs, designs, builds and installs hardware used with SCADA, water quality monitoring instruments, and other control systems;

- Rebuilds equipment, including motor controllers, flow and pressure transmitters, cathodic protection systems, data radios, digital modems, networked communications, programmable logic controllers and specialized testing equipment and devices using operational performance standards;

CITY OF LONG BEACH

CLASSIFICATION SPECIFICATION

- Isolates electronic and telecommunications equipment / system failures in the field and in the control room by researching system logs, databases, codes and other system and field documentation to correlate events and diagnose the root cause of the problems;

- Performs work to program, troubleshoot, debug, test, and monitor software related to SCADA/PLC and electrical systems;

- Designs and implements changes to software and hardware systems to provide an accurate and reliable control system;

- Installs, troubleshoots, repairs, and maintains electrical and/or instrument problems in all systems at plants, pumping and lift stations, turnout and Department facilities. Equipment may include low and high voltage electrical motors; switchgear; distribution panels and enclosures, transformers, exciters, generators, pneumatic and hydraulic devices, electrical conduit, wires, pull boxes, lighting panels, motor control circuits, soft starters, variable frequency/speed drives, pumps, valve actuators, motor control panels, and all associated control circuits ranging from low voltage (<120 volts) to medium/high voltage (>600 volts);

- Performs preventive maintenance of electrical and electronic systems at all facilities with the above listed equipment;

- May troubleshoot, align and calibrate equipment with such devices as frequency generators, voltmeters, ohm meters, high voltage meters, high potential testers, calibrators, oscilloscopes, multimeters, logic analyzers, meggers, amp meters, micro-computers, thermo-imaging devices, digital analyzers and other specialized test equipment;

- Identifies and isolates faulty electric, electronic, pneumatic, hydraulic and computerized parts, components, circuits or panels;

- Modifies, alters and installs motor control equipment circuits, planning, laying out and wiring the work;

- Disconnects electrical sources, approves lockout/tagout procedures to block electrical sources;

- Thoroughly documents and records all programming, testing and updates to software programs detailing work completed, for example, after changes have been implemented, timely update and maintain the updated records of drawings, programs, testing records, operation & maintenance manuals in designated storing locations (digital or hard copy);

- Maintains a library of documentation and licenses for all software and hardware used in PLCs and PLC programming, including license agreements and product warranty information;
- Reviews design drawings, blueprints, submittals and assists in ensuring compliance with codes and department standards;
- Obtains quotes in accordance with organization's purchasing processes and procedures by preparing scopes of work and leading prospective contractors on job walks describing the specifics of a Request for Proposal;
- Requisitions and maintains an adequate inventory of necessary spare parts, shop and vehicle supplies;
- Plans and lays out jobs from blueprints, drawings, sketches, work orders or verbal instructions while maintaining records in the form of blueprints, plans and specifications for equipment and devices and review electric piping and instrumentation diagram (P&ID) drawings;
- Schedules and coordinates preventative maintenance, obtain necessary permits, and repair activities with other sections, City departments, vendors, and outside agencies;
- Monitors compliance testing and performance issues associated with contracts and assists in project or contract completion;
- Ensure that work is performed safely at all times by complying with safety and health policies, procedures, and practices while attending all mandatory safety training courses and events.

MINIMUM QUALIFICATIONS:

A minimum of four (4) years full-time equivalent, paid experience in the electrical and instrumentation field or electrical repair and maintenance working in the water industry.

Certification Requirements

- Electrical and Instrumentation Technician I: Must have one (1) of the following valid certification(s) before passing probation:
    1. California Water Environment Association (CWEA) Electrical Instrumentation Technologist Grade 2, or

CITY OF LONG BEACH

CLASSIFICATION SPECIFICATION

2. EPRI (Electrical Power Research Institute) Instrumentation and Controls, Part A, such as that issued by IBEW-NECA, or
3. ISA (International Society of Automation) Certified Control System Technician (CCST) Level 1 certification in combination with one of the following:
    - Long Beach Journeyman Electrician's Certificate or
    - State of California Electrical Contractor's License

- Electrical and Instrumentation Technician II: Must have one (1) of the following valid certification(s).
    1. California Water Environment Association (CWEA) Electrical Instrumentation Technologist Grade 3, or
    2. EPRI (Electrical Power Research Institute) Instrumentation and Controls, Part B, such as that issued by IBEW-NECA, or
    3. ISA (International Society of Automation) Certified Control System Technician (CCST) Level 2 certification in combination with one of the following:
        - Long Beach Journeyman Electrician's Certificate or
        - State of California Electrical Contractor's License

Knowledge, Skills, and Abilities

- Knowledge of water hydraulics, pneumatic, electrical and mechanical equipment and systems and be skilled in the use of precision measurement devices.
- Knowledge of practices, methods, techniques, tools, and equipment used in the design, installation, testing, calibration, maintenance and repair of industrial electrical and mechanical instrumentation and control equipment and devices common to water and wastewater systems.
- Knowledge of principles, theory, and practices of electricity, electronics, pneumatics, hydraulics, and mechanics as they apply to maintenance and repair of equipment and instruments commonly found in water, wastewater, and reclaimed system.
- Knowledge of programmable logic controller (PLC) ladder logic, PLC and Supervisory Control and Data Acquisition (SCADA) programming theory.
- Knowledge of the National Electric Code, OSHA safe practices, and ISA standards.
- Knowledge of computer operation skills, including word processing, database programs, spreadsheets, electronic mail, and SCADA operation.

CITY OF LONG BEACH

CLASSIFICATION SPECIFICATION

- Knowledge of digital electronic symbols and operations.
- Skill in utilizing applicable software including, but not limiting to departmental application programs and electrical/instrumentation programs.
- Ability to test, diagnose, correct, calibrate and repair a wide variety of electrical and electronic instrumentation devices such as flowmeters, level transmitters, motors, motor starters, machinery and equipment common to the water and wastewater system.
- Ability to read and interpret blueprints, schematics, PLC ladder logic, P&ID drawings, operating and maintenance manuals and software to aid in troubleshooting and/or installing instrumentation, control systems, and electrical equipment.
- Ability to plan, organize, schedule, and monitor work for efficiency, quality, and timeliness.
- Ability to establish and maintain positive, cooperative working relationships with employees, contractors, and vendors.
- Ability to respond to call-out or emergencies as required; handle emergency situations as directed.
- Ability to make mathematical calculations involving fractions, decimals, and percentages with speed and accuracy.

HISTORY:

Civil Service Approval/Adoption Dates: March 2021