

SAN BERNARDINO MUNICIPAL WATER DEPARTMENT CLASSIFICATION SPECIFICATION

TITLE: ELECTRICAL AND INSTRUMENTATION LEAD WORKER

DATE: 10/2/2012

JOB CODE: 21852

FLSA STATUS: NON-EXEMPT

UNIT REPRESENTATION: GENERAL

Class specifications are intended to present a descriptive list of the range of duties performed by employees in the class. Specifications are not intended to reflect all duties performed within the job.

DUTIES SUMMARY

Under general supervision, to schedule, guide, direct and participate fully in the work of an assigned crew engaged in skilled electrical/instrumentation and/or electrical maintenance work; perform construction, installation, maintenance and repair of water utility and water reclamation motors, panels, switches, regulators and lighting systems; perform inspections, installations, maintenance and repairs of instruments, controllers, and related equipment; work in and around low voltage (600V or less) panels and circuits; work under the appropriate applicable provisions of the National Electric code, approved plans, specifications and standard industry practices; maintain the Supervisory Control and Data Acquisition (SCADA) system's Remote Terminal Units (RTUs), Programmable Logic Controllers (PLCs) and associated control equipment and systems; train, instruct, inspect, correct, and document the work of assigned crew members in the performance of specific tasks; perform related work as required.

DISTINGUISHING CHARACTERISTICS

This class is the journey level working crew leader in the electrical/instrumentation series. In addition to fully performing the duties of senior level class, incumbents are responsible for training, instructing and evaluating the work of assigned crew members. Incumbents in the class may also over-see the inspection of work performed by contractors, will perform more complex troubleshooting and diagnosis of electric and electronic problems and develop solutions to complex electric and electronic problems. Incumbents in this class are expected to work under general direction and use good judgment and discretion in carrying out work assignments and in directing the work of others. Incumbents also possess greater skill and expertise in operation and maintenance of electrical equipment/systems, instrumentation equipment/systems, and the SCADA equipment/systems. Supervision is received from an Electrical and Instrumentation Supervisor.

EXAMPLES OF DUTIES

The following duties are typical essential duties for positions in this classification. Any single position may not perform all of these duties and/or may perform similar related duties not listed here:

- Provides courteous and expeditious customer service to the general public and City department staff;
- Leads and participates in constructing, installing, maintaining, testing and repairing electrical mechanisms, low voltage (600V or less) panels, switches motors, controls, power output frequency regulators, solenoids, telemetry, clay valves, automatic control valves (ACVs), motor operated control

valves (MOVs), voltage controls, low cut-out alarms, geothermal couplers, relays, electronic controls, electronically automated systems, measurement systems, chlorination control systems and other electrical equipment and apparatus; works in and around low voltage circuits, panels and equipment;

- Leads and participates in troubleshooting and repairing instrumentation systems, control and process loops, PIDs and associated equipment;
- Performs journey-level installation, maintenance and repair of control circuits, pressure switches, floats, underground cables, motors, telemetry, copper lines and power output frequency regulators and transducer recorders;
- Inspects tele-metering, electric controllers, programmable controllers, process meters, analyzers, flow systems and a variety of other types of instrumentation for proper operation;
- Leads and participates in performing 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;
- Leads and participates in performing calibration and maintenance of meters, analyzers, recorders, control system and feed systems, including but not limited to electric, electronic, pneumatic, hydraulic and mechanical equipment; keeps accurate maintenance records;
- Makes adjustments, repairs, replaces, disassembles, assembles, installs and tests electrical and electronic apparatus, and instrumentation as directed;
- Reads and interprets electrical and instrumentation plans, specifications, blueprints, sketches, wiring diagrams and schematics;
- Pulls, installs, splices and terminates wiring; works on cables underground or from ladder, tower, or truck;
- Threads, bends, and operates portable power drill and other power tools commonly used in water/waste water utility work;
- Operates and maintains electrical instruments and tools; cleans and maintains tools and supplies;
- Tests power distribution, transformers, circuit breakers, meters and other apparatus; performs routine maintenance of electrical equipment and supplies;
- Inspects equipment installation work performed by contractors and other personnel for workmanship and compliance;
- Estimates labor and material for electrical installations and repairs; lays out work on the project site; prepares reports of time and material expended;
- Maintains an inventory of parts, materials and supplies used in the electrical instrumentation shop and in performing everyday tasks;
- Documents and records all programming, testing and updates performed;
- Maintains network communication between equipment, controls, field hardware and SCADA system;
- Responds to emergency situations during off hours as required;
- Reviews and provides input and suggestions on new system requirements;

- Provides training, instruction, inspection and evaluation to entry and journey-level electricians; directs the work of assigned workers on the crew;
- Routinely adheres to and maintains a positive attitude toward City and Department goals;
- Works effectively with others;
- Required to wear respiratory protective equipment to include Self Contained Breathing Apparatus (SCBA);
- Operates department vehicles.

QUALIFICATIONS

Any combination of education, training, and experience that would likely provide the knowledge, skills and abilities to successfully perform in the position is qualifying. A typical combination includes:

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 a water/wastewater treatment facility;
- Supervisory Control and Data Acquisition (SCADA) theory at an advanced level;
- Programmable logic controller (PLC) programming theory at an advanced level for testing, troubleshooting and repairs of PLC components and data highway systems;
- Applicable codes and regulations;
- Industrial electricity and safety practices, precautions and procedures;
- Tools, materials, methods and practices of electrical, electronic, and instrumentation trade;
- Methods, materials and equipment used in chlorine system installation and repair;
- Symbols and standard practices used in the preparation of process and instrument flow diagrams;
- Electrical installations and maintenance in water utility or reclamation facilities including low voltage (600V or less) electrical circuit;
- Shop mathematics applicable to the electric trade;
- Instrumentation calibration concepts and procedures;
- Complex record keeping, documentation, and practices;
- General principles of supervision and training.

Ability to:

- Recognize, analyze and define a variety of routine to complex mechanical, electrical, chlorination and instrumentation problems without close supervision;
- Correct instrument operating problems and make recommendations for system modifications to meet operational needs without close supervision;

- Operate power tools, hand tools and light equipment used in electrical activities; operate specialized test equipment such as milliamp and millivolt calibrators, multimeters, power supplies and oscilloscopes;
- Perform a wide range of skilled water utility or reclamation electrical installation, wiring, repair and maintenance work on low voltage circuits in accordance with safety standards;
- Read, understand, interpret and apply moderately complex materials including technical manuals, drawings, specifications, layouts, diagrams, blueprints, plans and schematics;
- Keep accurate records;
- Recognize, report and/or correct unsafe working conditions;
- Understand and carry out routine to complex instructions furnished in oral, written, or diagrammatic form;
- Make arithmetical calculations involving fractions, decimals and percentages with speed and accuracy;
- Communicate clearly and concisely, both orally and in writing;
- Establish and maintain effective relationships with those contacted in the course of work;
- Operate a vehicle observing legal and defensive driving practices;
- Respond to call-out or emergencies as required; handle emergency situations as directed;
- Be physically capable of entering permit required confined spaces and wearing Self Contained Breathing Apparatus (SCBA) equipment;
- Operate an atmospheric tester for entry into confined spaces;
- Wear protective respiratory equipment to include SCBA and personal escape respirator;
- Assign tasks; train, and evaluate progress of assigned employees.
- Maintain a driving record that meets vehicle code standards and is acceptable to the Department and its insurance carrier.

MINIMUM QUALIFICATIONS

An employee within this classification may be designated as a “key responder” and as such shall be required to respond to non-normal working hour emergency operational conditions.

Education and Experience:

Associate Degree in Electrical Engineering, or Electronics, or Instrumentation and Control Systems, or closely related science, **and** two (2) years of journey level experience in electrical and electronic instrumentation maintenance and repair (utility/industrial applications preferred) including at least one (1) year of experience with programmable logic controllers (PLCs).

Or

High School graduation or G.E.D. equivalent **and** six (6) years of journey level experience in electrical systems and electronic instrumentation installation, maintenance

and repair (utility/industrial applications preferred) including at least one (1) year of experience in programmable logic controllers (PLCs) .

Or

Trade School/Military Technical School graduation **and** four (4) years of journey level experience in electrical systems and electronic instrumentation installation, maintenance, and repair (utility/industrial applications preferred) including at least one (1) year of experience with programmable logic controllers (PLCs).

And

Certificates: Possession of a valid California Class “C” driver’s license required upon application: For out-of-state applicants, a valid driver’s license is required and a valid California Class “C” driver’s license is required within ten (10) days of appointment (CA Vehicle Code 12505c).

NECESSARY SPECIAL REQUIREMENTS

Must be able to respond to call—outs or emergencies including being on—call.

Must be clean shaven or have trimmed facial hair in order to properly use personal respirators and SCBA equipment. Must pass a respirator medical exam and be physically able to wear SCBA equipment. Must be able to work in enclosed spaces while wearing protective clothing and under extreme temperatures and hazardous environment.

PHYSICAL TASKS AND ENVIRONMENTAL CONDITIONS

Work involves exposure to potential physical harm, hazardous chemicals and infectious disease. There is frequent need to stand, sit, stoop, walk and perform other similar actions during the course of the workday. Employee accommodations for physical or mental disabilities will be considered on a case-by-case basis.

Incumbents require sufficient mobility to work in a variety of environmental and weather conditions, transport materials and supplies weighing up to 100 pounds, work in boom truck with lift of 30 to 60 feet and work to heights of 150 feet. Must be able to see in the normal visual range with or without correction. Must be able to hear in the normal audio range with or without correction. Employee accommodations for physical or mental disabilities will be considered on a case-by-case basis.

CAREER LADDER

From: Electrical and Instrumentation Leadperson

To: Electrical and Instrumentation Supervisor

Job Description:

BOWC Approved: 10/12/2004
Rev: 10/05/2007
10/02/2012

Testing Standards: Open/City Promo/CS Oral
CSB Approved:

11/13/2007