SAN BERNARDINO MUNICIPAL WATER DEPARTMENT CLASSIFICATION SPECIFICATION

TITLE: ELECTRICAL AND INSTRUMENTATION TECHNICIAN

DATE: 11/13/2007 **JOB CODE: 21848**

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, performs a variety of semi-skilled routine electrical/instrumentation and/or electrical maintenance work; assists in construction, installation, maintenance and repair of water utility and water reclamation motors, panels, switches, regulators and lighting systems; assists with inspection, installation, maintenance and repair of instruments, controllers, and related equipment; works in and around low voltage (600V or less) panels and circuits; works under the appropriate applicable provisions of the National Electric Code, approved plans and specifications and standard industry practices; and performs related work as required.

DISTINGUISHING CHARACTERISTICS

This class is an entry-level technical class in the electrical series. This class is distinguished from the Senior level in that incumbents are not responsible for training lower level personnel, inspecting the work performed by contractors, performing more complex troubleshooting and diagnosis of electric and electronic problems and developing solutions to complex electric and electronic problems. Incumbents at the higher level work under minimal supervision and possess greater skill and expertise in operation and maintenance of the Supervisory Control and Data Acquisition (SCADA) system. Supervision for the entry level is received from a Senior Electrical and Instrument Technician or 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;
- Assists in the construction, installation, testing, maintenance and repair of electrical mechanisms, low voltage panels, switches, motors, controls, power output frequency regulators, solenoids, telemetry, clay valves, automatic control valves (ACVs), 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 (600V or less) circuits, panels and equipment;
- Assists in the routine installation, maintenance and repair of control circuits, pressure switches, floats, underground cables, motors, telemetry copper lines and power output frequency regulators and transducer recorders;

- Assists in inspecting tele-metering, electric controllers, programmable controllers, process meters, analyzers, flow systems and a variety of other types of instrumentation for proper operation;

- Assists 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;

- Assists 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 routine electrical and instrumentation plans, specifications, blueprints, sketches, wiring diagrams and schematics;

- Assists in pulling, installing, splicing and terminating wiring; works on cables underground or from ladder or tower truck;

- Threads, bends and operates portable power drill and other power tools commonly used in water utility work;

- Operates and maintains electrical instruments and tools; cleans and maintains tools and supplies;

- Assists in testing power distribution, transformers, circuit breakers, meters and other apparatus; performs routine maintenance of electrical equipment and supplies;

- Assists with 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;

- Assists in estimating time and materials needed to perform various assigned tasks;

- Assists in maintaining an inventory of parts, materials and supplies used in the electrical instrumentation shop and in performing everyday tasks;

- Assists in documenting and recording all programming, testing and updates performed;

- Assists in maintaining network communication between equipment, controls, field hardware and SCADA system;

- Responds to emergency situations during off hours as required;

- Assists journey-level electricians as necessary; directs the work of assigned helpers;

- 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:

- Basic electrical, electronics, pneumatics, hydraulics and mechanics theory, as they apply to equipment commonly found in a wastewater treatment facility;
- Supervisory Control and Data Acquisition (SCADA) theory;
- 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;
- Basic 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;
- Basic instrumentation calibration concepts and procedures;
- Basic record keeping methods;

Ability to:

- Recognize, analyze and define a variety of routine mechanical, electrical, chlorination and instrumentation problems with close supervision;
- Assist in correcting instrument operating problems and in making recommendations for system modifications to meet operational needs with 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 instructions furnished in oral, written or diagrammatic form;

- Make simple arithmetical calculations involving fractions, decimals and percentages with speed and accuracy;
- Respond to call-out or emergencies as required; handle emergency situations as directed;
- Communicate clearly and concisely, both orally and in writing;
- Establish and maintain effective relationships with those contacted in the course of work;
- 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;
- Operate a vehicle observing legal and defensive driving practices;
- Maintain a driving record that meets vehicle code standards and is acceptable to the Department and its insurance carrier;
- Respond to call-out or emergencies as required; handle emergency situations as directed.

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: High School Diploma or G.E.D. equivalent,

And

Experience: A minimum of one year of full-time experience working in the electrical or instrumentation field, or three years experience in an electrical apprenticeship program.

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 respirator and SCBA equipment. Must pass a respiratory medical exam and be physically able to wear SCBA equipment. Must be able to work in enclosed spaces while wearing protective clothing 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 variety of environmental and weather conditions; to climb stairs and ladders daily; to transport materials and supplies weighing up to 100 pounds; to work in a boom truck with lift of 30 to 60 feet; and to 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 Technician

To: Senior Electrical and Instrumentation Technician

Job Description:

BOWC Approved: 10/02/2007
CSB Approved: 11/13/2007

Testing Standards:

Open/City Promo/CS Oral: