

SAN BERNARDINO MUNICIPAL WATER DEPARTMENT CLASSIFICATION SPECIFICATION

TITLE: SCADA/INSTRUMENTATION SUPERVISOR

DATE: 10/18/2011

JOB CODE: 51835

FLSA STATUS: EXEMPT

UNIT REPRESENTATION: MID-MGMT

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 direction, perform difficult and complex installation, maintenance, operation and repair of electrical/instrumentation/Supervisory Control and Data Acquisition (SCADA) systems and equipment associated with water and wastewater utilities; supervise entry and journey-level electrical/instrumentation/SCADA technicians and lead workers involved in the preventative maintenance, adjustment, repair, overhaul, replacement and installation of SCADA and instrumentation apparatus and related equipment and devices; perform other duties as directed by the Electrical, Instrumentation and SCADA (EI&S) Superintendent; ensures work is completed following appropriate and applicable provisions of the Electric Code, approved plans and specifications, and standard industry practices.

DISTINGUISHING CHARACTERISTICS

The class of SCADA/Instrumentation Supervisor is a supervisory level in the EI&S series. Supervision is received from the EI&S Superintendent. Work of this class involves continuous operation of complex computer-directed real-time control systems and associated peripherals. Incumbents are expected to provide field engineering and test support on all installation and troubleshooting problems relating to system equipment, computers, software and solid state electronics. The ability to understand customer's needs and balance response with cost effective scheduling is essential.

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:

- Provide courteous and expeditious customer service to the general public and City Department staff;
- Routinely adhere to and maintain a positive attitude toward City and Department goals;
- Participate in the development and implementation of functional requirements, specifications, purchase and commissioning of highly complex computer based systems for monitoring and control of water and wastewater facilities;

- Direct and participate in development and implementation of all database modifications in computer directed control systems for process equipment additions, modifications and/or deletions for current systems operations;
- Supervise employees engaged in constructing, installing, maintaining, testing and repairing electrical mechanisms, instrumentation, low voltage (600V or less) 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; work in and around low voltage circuits, panels and equipment;
- Interface on a regular basis with engineering and operations sections of the water and wastewater divisions to assist in the development and implementation of goals, objectives, policies, and priorities;
- Interview applicants and recommend action on appointments; counsel employees and recommend disciplinary actions;
- Plan and evaluate staff performance; establish performance requirements and personal development targets; regularly monitor performance and provide coaching for performance improvement and development;
- Provide day-to-day leadership and work with staff to ensure a high performance, customer service-oriented work environment which supports the department's mission, strategic plan, objectives, and values;
- Oversee and perform troubleshooting and repairing of instrumentation systems, control and process loops, PIDs, and associated equipment;
- Supervise, direct, and participate in the installation, maintenance, and repair of control circuits, pressure switches, level sensors, temperature sensors, turbidimeters, chemical analyzers, flow meters, gas detectors, indicating transmitters, floats, underground cables, motors, telemetry, copper lines and power output frequency regulators and transducer recorders;
- Participate in the Department's short- and long-range planning process for water utility and water reclamation needs and requirements; review engineering design plans for the Department's systems and facilities to ensure conformance with Department standards and policies;
- Supervise and participate in the inspection of tele-metering, electric controllers, programmable controllers, process meters, analyzers, flow systems and a variety of other types of instrumentation for proper operation;
- Oversee and direct the 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;
- Oversee and monitor the work of others performing calibration and maintenance of meters, analyzers, recorders, control systems, and feed systems, including but not limited to electric, electronic, pneumatic, hydraulic, and mechanical equipment; keep accurate maintenance records;
- Monitor the work performed by others related to electrical and electronic apparatus and instrumentation including repair, replacement, disassembling, assembling, installing, and testing;
- Read, interpret and direct others with regard to electrical and instrumentation plans, specifications, blueprints, sketches, wiring diagrams, and schematics;

- Supervise the testing of power distribution, transformers, circuit breakers, meters, and other apparatus; oversee others engaged in performing routine maintenance of electrical equipment and supplies;
- Supervise the inspection of equipment installation work performed by contractors and other personnel for workmanship and compliance;
- Estimate labor and material for electrical installations and repairs; lay out work on the project site; prepare reports of time and material expended;
- Maintain an inventory of parts, materials, and supplies used in the electrical instrumentation shop and in performing everyday tasks;
- Oversee and participate in the documentation of all programming, testing, and updates performed;
- Evaluate and maintain records of maintenance and repair functions; prepare routine and special reports on equipment maintenance and repair;
- Assure effective cost and manpower controls through a formal and continuing maintenance management program;
- Maintain network communication between equipment, controls, field hardware, and SCADA system;
- Respond to emergency situations during off hours as required;
- Review and provide input and suggestions on new system requirements;
- Participate in the safety program and coordinates the training of assigned staff;
- Provide training, instruction, inspection, and evaluation to entry and journey-level electrical/instrumentation/SCADA personnel and lead workers; direct the work of assigned crews;
- Work effectively with others;
- Prepare written and verbal reports, memorandums, and correspondence;
- Assist in preparing annual budget;
- Required to wear respiratory protective equipment to include Self Contained Breathing Apparatus (SCBA);
- Operate 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 electrical engineering, data processing, electricity, electronics, AC/DC electrical power supplies, supervisory controls, pneumatics, hydraulics and mechanics as they apply to installation, maintenance and repair of equipment and instruments commonly found in water and wastewater production, transmission, distribution, and treatment facilities;

- 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;
- Modern methods and techniques in maintaining and operating a wide variety of central control systems and communication equipment;
- Functional, operational, and testing principles of solid-state electronics, solid-state and electro-mechanical controls, and real-time computer control systems;
- Computer programming related to real-time computer 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;
- Principles of project management;
- Appropriate safety precautions and procedures;
- Instrumentation calibration concepts and procedures;
- Mid-level computer operation skills, including word processing, database programs, spreadsheets, electronic mail, Department utilized software application programs, and SCADA operation (advanced);
- Complex record keeping, documentation, and practices;
- English usage, spelling, grammar, and punctuation;
- General principles of supervision, scheduling, and training.

Ability to:

- Plan, organize, schedule, and monitor work for efficiency, quality, and timeliness;
- 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 detailed, complex, and accurate records;
- Recognize, report, and 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;
- Maintain a driving record which 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;
- Assign tasks; train and evaluate progress of assigned employees.

MINIMUM QUALIFICATIONS

Education and Experience:

High School graduation or G.E.D. equivalent and completion of sixty (60) semester units (90 quarter units) of college level course work in Business Administration, Electrical Engineering, Electronics, Instrumentation and Control Systems, or closely related science and four (4) years of journey-level experience in the construction, installation, maintenance and repair of electrical and electronics systems, equipment and facilities including two (2) years experience in the programming of PLCs (utility/industrial applications preferred).

Or

A Bachelor's Degree from an accredited college or university in Business Administration, Electrical Engineering, Electronics, or Instrumentation and Control Systems, or closely related science, and two (2) years of journey-level experience in programming of PLCs, electrical and/or electronic instrumentation maintenance and repair (utility/industrial applications preferred).

Or

High School graduation or G.E.D. equivalent and eight (8) years of journey-level experience in programming of PLCs, electrical systems and electronic instrumentation installation, maintenance and repair, two (2) years of which must be in a supervisory capacity or four (4) years in a lead capacity (utility/industrial applications preferred).

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

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.

PHYSICAL TASKS AND ENVIRONMENTAL CONDITIONS

Work involves exposure to potential physical harm, infectious disease and hazardous chemicals including smoke, fumes, gas, treated water, high frequency noise, dirt, dust, grease, oil, chemicals, solvents and toxic agents. Incumbents need to be able to tolerate unpleasant odors, wet conditions and uncomfortable climate conditions. There is frequent need to stand, stoop, walk, crawl, climb 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 50 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: SCADA/Instrumentation Supervisor

To: Electrical, Instrumentation and SCADA Superintendent
Water Reclamation Maintenance Superintendent

Job Description:

BOWC Approved: 10/18/2011

Testing Standards: Open/City Promo/Suppl Appl/CS Oral:

CSB Approved: 11/08/2011