CARLSBAD MUNICIPAL WATER DISTRICT
CLASS SPECIFICATION

JOB TITLE: **SCADA SUPERVISOR**

DEPARTMENT: **PUBLIC WORKS – UTILITIES**

BASIC FUNCTION/DISTINGUISHING CHARACTERISTICS:

Under general direction, this position oversees and leads all work related to the design, installation, maintenance and upgrades of the city's Supervisory Control and Data Acquisition (SCADA) systems for water and wastewater. Works closely with Engineering, Operations and Maintenance for all SCADA projects to ensure no interruptions in any of the processes (Water, Wastewater, Recycled Water). Participates in the design and implementation of the SCADA system, often with consultant assistance, including developing the capital projects, hiring the vendors, performing project management during implementation, coordinating with water/wastewater staff on testing, and coordinating with IT on the procurement and installation of SCADA servers and network equipment. Responsible for the management and development of automation engineering and architecture design, programming standards, and specifications for SCADA servers, the automation communication network and automation systems. Ensures that the SCADA system is available 24/7 and manages repairs and upgrades. Supervises and manages the work of the SCADA Technician(s).

The SCADA Supervisor position requires an advanced skill level in understanding and directly working with Industrial Control Systems in the water/wastewater industry. In addition to performing the full range of journey-level professional duties, this position serves as the working lead person of the group, coordinating and overseeing the work and providing training and guidance to employees engaged in the operations, maintenance and integration of process automation platforms, related computer systems and networks. This position provides advanced technical and systems administration support of the SCADA network and provides design input on process automation and control system projects. Works with limited supervision and exercises independent judgment to ensure employees complete assigned tasks and responsibilities in accordance with broad operational or project requirements. The position requires excellent communication skills to convey the needs and requirements of the SCADA system to upper management and to analysts who rely on real-time data to prepare reports. The position requires the ability to work with other technical staff to make all data available at an enterprise level.

KEY RESPONSIBILITIES:

Leads, provides work guidance and direction, and participates in the work of group employees; participates in scheduling, assigning, and monitoring work of other employees for completeness, accuracy and conformance with city standards; provides information, instruction and training on work processes, proper uses of equipment and safe work practices; supervises employee work performance and behaviors.

Estimates personnel, equipment, and material requirements for assigned jobs; may order work materials and supplies.

Designs, programs, installs, and maintains the reliability of the plant automation network on multiple platforms for the city's programmable logic controllers (PLC), human-machine interface (HMI) and related process automation and control systems; supports network communications

and associated hardware including process input/output (I/O), local area and wide area networks (LAN/WAN) and the radio/microwave network.

Designs, develops and programs new and enhanced automation controls; performs software and firmware upgrades; configures and enhances the performance of operating systems; reviews and modifies code written by lower-level staff and contractors; ensures city PLC/HMI standards are being used accurately.

Participates and provides input on engineering and construction projects; provides guidance and design review of control strategies to be used in process automation for all projects; performs factory testing and system startups; supports Operations in developing control solutions involving automation; prepares periodic project status reports; ensures process control equipment, instrumentation and software are installed properly and that they are in conformance with all standards and requirements, and operating at expected levels.

Assists in developing strategies and plans for automation and data communication enhancements including the selection of hardware and software; forecasts labor resource requirements; develops cost benefit analysis of projected total costs over a system's proposed life including data storage/integration, network and end-user training and support; analyzes alternatives and makes recommendations; discusses findings with management; prepares reports of study conclusions; develops implementation plans and assists in developing policies and procedures.

Maintains documentation on all enhancements; creates standard operating procedures and operations guidance documents and other systems documentation; trains operations and maintenance staff on how to use tools and applications developed; provides customer support to field staff.

Develop budgets for the upgrades and maintenance of the SCADA hardware, software, LAN/WAN links and any peripheral equipment needed for the overall system.

QUALIFICATIONS:

    Knowledge of:

- Principles, methods and techniques in the design and operation of automated process control systems and their components.
- Systems design principles and applications development methodologies and tools. This includes understanding, implementing, and testing Cyber Security requirements for Utilities.
- Integrations with business systems using properly defined security zones, also referred to as demilitarized zones (DMZ), and the use of relational database like SQL. Specifically, the convergence of operational technology (OT) with information technology (IT).
- Principles and methods of systems/network administration and maintenance, including configuration, performance tuning, security, and diagnostic tools.
- Use of mobile devices like cell phones and tablets integrated into the overall control technology using state and federal recommendations on security standards for these devices.
- Programming theory and operating system capabilities and constraints applicable to the city's real-time process control environment. Knowledge of programming Rockwell Automation ControlLogix PLC's and Ignition HMI software would be a plus.

- Relevant programming languages for automation control systems, including those applicable to specialized field hardware devices.
- Methods and techniques used in the operation of electrical, mechanical telemetry and systems instrumentation elements.
- General asset management principles and best practices, including equipment and systems maintenance methodologies.
- City policies, procedures, and practices regarding area of assignment.
- Safety policies, practices, equipment and supplies applicable to the work.
- Applicable federal and state laws, rules, and regulations.
- Basic principles and practices of employee supervision.
- Sound business communications.
- City human resources policies and labor contract provisions.

Ability to:

- Organize, assign, and inspect the work of subordinate staff.
- Configure, maintain, and manage the operations of computer platforms and/or networks to achieve optimal process performance and user support.
- Troubleshoot, diagnose, and resolve complex systems problems.
- Analyze and define process and user requirements and recommend hardware, software, network/communication, and technical applications solutions that are in conformance with the city standards to provide the best solutions.
- Perform highly technical functions requiring extensive understanding of automated control systems, network communication system and their software and hardware components.
- Conduct training for users on the uses and operations of SCADA, the related process automation and control systems, computer platforms and network resources.
- Develop, execute, and enforce policy including but not limited to network reliability and security, backup and disaster recover, and HMI and PLC programming standards.
- Conduct analysis and feasibility studies.
- Review and evaluate design plans and specifications for a wide variety of electrical, telemetry control and instrumentation projects.
- Read Process and Instrumentation Diagrams (P&IDs) proficiently.
- Analyze problems, evaluate alternatives, and recommend or adopt effective courses of action.
- Organize and set priorities and exercise independent judgement within areas of responsibility.
- Communicate effectively, both orally and in writing.
- Understand, interpret, explain, and apply applicable laws, codes, and ordinances.
- Represent the City of Carlsbad and Carlsbad Municipal Water District effectively and professionally in dealings with vendors and consultants.
- Present proposals and recommendations clearly and logically.
- Use tact and diplomacy in dealing with sensitive and complex issues, situations, and personnel.
- Establish and maintain effective working relationships with all those encountered during work.

EXPERIENCE AND EDUCATION:

Any combination equivalent to experience and education that could likely provide the required knowledge, skills and abilities is qualifying. A typical background would include:

Equivalent to graduation from an accredited four-year college or university with major coursework in electronics, computer information systems, engineering, or a closely related field; and

Five years of progressively responsible experience in design, implementation and administration of process automation and controls in a water/wastewater treatment or other industrial environment, including two years in a lead or supervisory capacity.

SPECIAL REQUIREMENTS:

Possession of a valid California Driver's License.

ISA Automation Certification (ex. Control Systems Technician, Certified Automation Professional or Automation Project Management Specialist), or

CWEA Electrical/Instrumentation Grade III, or

The ability to get one of the certifications within the first year of employment.

PHYSICAL REQUIREMENTS AND ENVIRONMENTAL SETTING:

While performing duties of this class, an employee is regularly required to sit, walk, and stand; talk or hear, in person and by telephone; use hands to finger, handle, feel or operate objects, tools or controls, reach with hands and arms; perform repetitive movements of hands or wrists; climb or balance on ladders or stairs, and stoop, kneel, bench at the waist, crouch or crawl. The employee is frequently required to lift up to 50 pounds unaided. Specific vision abilities required by this job include close vision, distance vision, the ability to adjust focus, depth perception and color vision.

While performing the duties, employees of this class are regularly required to use written and oral communication skills; properly read and interpret data, information and documents; analyze and solve problems; use math and apply mathematical reasoning; observe and interpret people and situations; learn and apply new information or skills; perform highly detailed and complex work on multiple, concurrent tasks; work with changing deadlines and frequent interruptions; and interact with staff, Council members and others encountered in the course of work.

Work is performed mainly in an office environment; however and employee may be required to operate in a field setting, and as a result may be exposed to weather conditions and loud noises, extreme heat or cold, or wet or humid conditions; employee may also be required to work in confined spaces, on ladders/scaffolding or in high, precarious places, on uneven or slippery surfaces, near moving mechanical parts and/or near moving equipment. The employee is required to meet with other staff, the public and officials at various city locations and may travel to off-site locations as necessary.

The employee may be exposed to fumes or airborne particles, toxic or caustic chemicals and biological hazards. The employee may be exposed to loud or prolonged noise and equipment with heavy vibrations. The employee may be at risk of electrical shock.

Must be available to work various shifts and on weekends and holidays as needed. Employee may be required to perform standby duty and/or respond to emergency call-outs.

This is an at-will unclassified classification.

DATE APPROVED: June 21, 2023