



**DECEMBER 2018**  
**FLSA: EXEMPT**

## **PRINCIPAL ENGINEER**

*This class specification indicates, in general terms, the type and level of work performed as well as the responsibilities of employees in this classification. The job functions described are not to be interpreted as being all-inclusive to any specific employee.*

### **DEFINITION**

Under general direction, performs a wide variety of the most complex professional engineering duties involving wastewater treatment and collection systems including design, project management, operational and compliance review, and permit issuance and enforcement; manages the most complex large engineering projects; inspects and analyzes plant operations and implements process improvements; serves as lead subject matter expert and advisor to management/staff on assigned plant systems, projects or programs; researches highly complex problems and conducts highly involved engineering related studies; and performs related work as required.

### **SUPERVISION RECEIVED AND EXERCISED**

Receives general direction from the assigned supervisory and/or management staff. Exercises no direct supervision of staff. May exercise functional and technical leadership in assigned workgroups or teams and coach and/or mentor less experienced staff.

### **CLASS CHARACTERISTICS**

This classification is the fifth of five (5) levels within the professional engineering job series. Incumbents serve as lead advocate and authority for specific subject matters to management/staff; provide functional and technical leadership over other engineers, as well as technical and administrative staff; and perform/manage the most diverse, largest and/or most complex assignments, projects, analyses, and programs requiring advanced knowledge of the concepts, practices, procedures, and policies of engineering having significant organizational impact. Responsibilities may include the oversight of programs and/or projects. The Principal Engineer is distinguished from the Engineering Supervisor in that the Engineering Supervisor is responsible for planning, organizing, and coordinating all programs, projects, and activities of a work section and for the full supervision of assigned professional, technical, and administrative support staff.

### **EXAMPLES OF ESSENTIAL JOB FUNCTIONS** (Illustrative Only)

*The following essential job functions are typical for this classification. Incumbents may not perform all of the listed job functions and/or may be required to perform additional or different job functions from those set forth below to address business needs and changing business practices.*

- Serves as lead subject matter expert and/or internal consultant to management/staff regarding the larger and most complex projects and/or program management functions; identifies project team members and provides leadership and direction; ensures compliance with contract documents and regulatory permits; monitors the project schedules; ensures compliance with specifications; administers permits; prepares budget, progress, and status reports.
- Ensures established safety precautions are adhered to, corrects unsafe work conditions/practices, and/or reports unsafe work conditions/practices to assigned supervisory or managerial staff.

- Oversees, performs, reviews, and participates in a wide variety of the most complex engineering duties involving wastewater treatment and collection systems. Identifies improvements to delivery methods and designs.
- Establishes project execution policies, procedures, standards, templates for Professional Design Service Agreement and Professional Consultant Service Agreement scopes of work, and design fee estimating tools.
- Establishes, manages, maintains, and updates Engineering Standards and Practices to meet current best practices and engineering design requirements.
- Oversees the updating, improvement, approval, adoption, education, and compliance of policies and procedures, design guidelines, standards of practice, calculations, templates, master specifications, scopes of work, check lists, design details, and standard drawings.
- Advocates within OCSD for support of and compliance with standards related to designated subject matters. Provides mentoring, training, and coaching of OCSD staff in those areas, as well as with the practice of engineering and related technical work in general.
- Develops and oversees technical training programs for engineers.
- Participates in the development and implementation of goals and objectives, policies, and priorities.
- Has designated authority within the District with regards to compliance with specific local, state, or federal codes.
- Identifies resource needs and recommends staffing levels for work within the various work groups for management consideration.
- Oversees the bid, proposal, and purchase recommendation processes for the most complex projects/programs and equipment which would include safety requirements; prepares detailed drawings, technical specifications, and scopes of work for safety compliance; solicits and reviews proposals; reviews proposals for safety; selects consultants/consulting engineers; prepares agenda reports for the Board of Directors; establishes schedule and performance criteria.
- Provides technical leadership and expertise in preparing designs and specifications; provides technical leadership during declared emergencies to repair systems and restore essential services; performs constructability reviews on project designs; performs construction management functions to ensure projects are constructed in accordance with contract documents, permits, safety requirements, and applicable building codes; reviews and tracks the progress and work of consultants and contractors; ensures project progress and completion within approved budgets and schedules; conducts site visits and inspections; oversees contract change management on construction projects and may serve as subject matter expert for contractor claim negotiation and mitigation.
- Coordinates design and construction activities to minimize impact to plant facilities and the public.
- Provides design and construction engineering services on engineering projects, systems, and processes to optimize plant safety, and oversees the design of engineering plans; provides startup and commissioning support services including commissioning planning and coordination.
- Oversees and monitors consultant designs for compliance with Engineering Standards, safety and regulatory requirements, design quality expectations, and stakeholder needs.
- As lead technical advisor, inspects, diagnoses, develops, and oversees corrective action plans for the more complex operation and maintenance problems of the plant, pump stations, and collection system.
- As the lead subject matter expert, reviews plans and technical specifications and provides input on functional and/or safety aspects of proposed plant and collection facilities as well as rehabilitation projects; reviews plant process trends, directs corrective action, and coordinates operational activities to optimize plant process and safety.
- Oversees the design, replacement, rehabilitation, and abandonment of plant process areas, collection facilities, and pump stations; analyzes and performs optimization studies of various chemicals, unit processes, odor control, and utilities ensuring safety requirements are met.
- Oversees air pollution control design, implementation and process oversight; develops and manages emission modeling systems and testing program.

- As the lead subject matter expert, provides safety engineering support; provides corrosion engineering support; conducts and reviews failure analyses; reviews lab reports; monitors and controls chemicals; and prepares recommendations for appropriate action.
- Performs complex power system studies of electrical equipment to determine how modifications affect the systems and to plan future growth; monitors energy markets; manages energy contracts and budgets.
- Performs system safety analysis of District processes and operations.
- Analyzes and performs optimization studies of various chemicals, unit processes, odor control, and utilities.
- Performs engineering analysis, calculations, and safety analysis for projects/process monitoring and control, and equipment replacement.
- Prepares memorandums and technical reports regarding wastewater treatment management, safety management, and air quality management; develops, manages, analyzes, and utilizes relevant database systems and recommends methods to meet compliance requirements.
- Monitors compliance and regulatory conformity of wastewater treatment processes; reviews and analyzes the treatment facilities' removal efficiencies and discharge data.
- Coordinates projects with member agencies regarding preliminary negotiation, agreement development, right of way requirements, and plan review.
- Reviews and evaluates plans of proposed connections to District facilities; issues connection permits as necessary.
- Manages studies conducted by outside agencies; performs evaluations of corrective response plans and waste management proposals; prepares, finalizes, and tracks correspondence including TWQCB, EPA, and OSHA reports.
- Identifies, determines, develops, and implements regulatory programs targeted at the discharger community as well as at internal work processes that eliminate pollution discharge into the District's sewerage systems and ensures the District's compliance with various regulatory requirements.
- Provides in depth analysis, interpretation, and explanation related to regulations and policy affecting pretreatment.
- Oversees the preparation of emergency preparedness plans and training procedures.
- Oversees the start-up of facilities; participates in staff training, including safety training.
- Tracks new legislative and regulatory developments related to compliance; develops and oversees the implementation of conformity documents, policies, and procedures; implements new regulatory requirements; participates in studies conducted by the EPA, OSHA, and other regulatory agencies; identifies impacts of proposed regulations on the District's facilities, processes, operations, and engineering design.
- Assists in the development of policies, procedures, and standards; establishes, manages, updates engineering standards to meet current best practices and engineering design requirements; and updates various engineering knowledge databases.
- Prepares a variety of administrative, technical, and budget reports, memorandums, letters, and correspondence.
- Represents the District with regulatory agencies, public, contractors and consultants.
- Represents the District on technical subject matters to outside parties, in coordination with OCSD management.
- Oversees the preparation of the Capital Facilities Master Plan; evaluates the ability of District facilities to reliably and cost-effectively meet various operational requirements; makes recommendations to resolve deficiencies; supports staff in implementing capital master plans.
- As assigned, assists Operations and Maintenance staff in resolving highly complicated issues or in performing urgent troubleshooting by field investigation, engineering analyses, and researching as-built engineering data and available solutions in the industry.
- Develops programs and databases for treatment plants and pump stations, working with vendors and vendor software; ensures that control system functionality is coordinated with electrical, mechanical

and hydraulic interfaces during design, construction and commissioning of treatment facilities; ensures that automation and controls are designed and programmed to address the District's needs.

- Provides leadership and guidance to the division and department on engineering projects. As a program and/or project leader, may direct, assign, train, monitor and review the work activities of team members; determines work priorities; oversees quality and quantity of work performed and ensures adherence to established procedures by instructing employees accordingly; is a resource to employees by possessing specialized skills; develops and implements work improvements.
- Interfaces with senior management, peers, project staff, consultants, customers, and users as necessary in coordinating capital improvement project execution.
- Performs the most technically complex tasks of the work unit as assigned.
- Attends and participates in professional group meetings; stays abreast of new trends and innovations in the field of engineering; researches emerging products and enhancements and their applicability to District needs.
- Performs related duties as assigned.

## **QUALIFICATIONS**

### **Knowledge of:**

- Advanced modern and complex principles and practices of civil, electrical, mechanical, chemical, environmental, structural, safety, or control systems engineering.
- Advanced principles and applications of critical thinking and analysis.
- Advanced principles, practices, policies, and procedures of construction and project management.
- Operations, services, and activities of wastewater treatment and management systems, flow regimes, and conveyance programs.
- Construction, maintenance, and operating characteristics of wastewater treatment facilities.
- Advanced principles of air dispersion, fate-transport, interceptor odor, and safety and health risk analysis modeling.
- Methods and techniques of engineering plan review and analysis.
- Project management and contract negotiation and administration principles and techniques.
- Principles and practices of field surveying.
- Methods and approaches for improving, replacing, or creating new policies and procedures, design guidelines, standards of practice, calculations, templates, master specifications, scopes of work, check lists, design details, and standard drawings.
- Current regulatory requirements, project execution needs, risk management practices, and other areas of emerging concern.
- Applicable Federal, State, and local laws, regulatory codes, ordinances, and procedures relevant to assigned area of responsibility.
- Modern office practices and technology, including personal computer hardware and software applications related to the work, such as computer-aided drafting (CAD) concepts and applications and Geographic Information Systems (GIS) programs.
- Modern developments, current literature, and sources of information regarding engineering.
- Principles of advanced mathematics and their application to engineering work.
- Principles of chemistry and biology as applied to wastewater treatment.
- Principles of safety requirements as applied to wastewater treatment.
- Practices of researching engineering and design issues, evaluating alternatives, making sound recommendations, and preparing and presenting effective staff reports.
- Methods and techniques of effective technical report preparation and presentation.
- English usage, grammar, spelling, vocabulary, and punctuation.
- Basic principles and practices of employee supervision.

- Techniques for effectively representing the District in contacts with governmental agencies, community groups, various business, professional, educational, and regulatory organizations, and with property owners, developers, contractors, and the public.
- Principles and practices of customer service and techniques for effectively communicating with the public, vendors, contractors, and District staff.

**Ability to:**

- Plan, schedule, assign, and oversee activities of assigned workgroups or teams.
- Oversee programs and/or projects and promote the individual professional growth and development of less experienced staff.
- Resolve conflict through workable solutions and alternative approaches.
- Inspect the work of others and maintain established quality control standards.
- Adhere to safe work practices and procedures in the workplace
- Train others on proper work procedures.
- Apply critical thinking and analysis to a broad range of situations.
- Identify and implement effective course of action to complete assigned work.
- Perform a variety of difficult and complex professional engineering functions.
- Conduct complex engineering research projects, analyze complex problems, evaluate alternatives, make sound recommendations, and prepare effective technical staff reports.
- Maintain confidentiality and be discreet in handling and processing confidential information and data.
- Prepare, understand, and interpret engineering construction plans, specifications, and other contract documents.
- Inspect public works projects for conformance with plans and specifications.
- Prepare bid documents, contract documents, specifications, cost estimates, and engineering drawings.
- Prepare and implement project budgets.
- Conduct comprehensive engineering studies and prepare reports with recommendations.
- Administer contracts for professional services and construction in a public agency setting.
- Interpret, apply, explain, and ensure compliance with Federal, State, and local policies, procedures, laws, rules, and regulations.
- Identify problems, research and analyze relevant information, develop and present recommendations and justification for solution.
- Use critical thinking techniques and advanced methods in reaching independent decisions.
- Make sound, independent decisions within established policy and procedural guidelines.
- Read and understand technical drawings and specifications.
- Recognize discrepancies from as-built to contract specifications and recommend reconciliation.
- Perform mathematical and engineering computations with precision.
- Make engineering design computations, check design, and prepare engineering plans and studies.
- Recognize and properly deal with hazardous materials/environments.
- Run various air dispersion, fate-transport, interceptor odor, and health risk analysis models.
- Effectively represent the department and the District in meetings with governmental agencies, community groups, and various business, professional, and regulatory organizations and individuals.
- Prepare and present clear, concise, and logical written and oral reports, correspondence, policies, procedures, legal descriptions, and other written materials.
- Establish and maintain a variety of filing, record-keeping, and tracking systems.
- Organize and prioritize a variety of projects and multiple tasks in an effective and timely manner; organize own work, set priorities, and meet critical time deadlines.
- Operate a motor vehicle and travel to various District sites, project and/or meetings.
- Adhere to safe work practices and procedures in the workplace.
- Utilize a computer, relevant software applications and/or other equipment.
- Effectively communicate in person, over the telephone, and in writing.
- Use tact, initiative, prudence, and independent judgment within general policy and legal guidelines.

- Establish, maintain, and foster positive and effective working relationships with those contacted in the course of work.

**Employment Standards:**

Any combination of education and experience that provides the required knowledge, skills, and abilities may be qualifying as determined by OCSD.

1. Bachelor's degree from a college or university accredited by the U.S. Department of Education, with major coursework in engineering, or a related field; AND,
2. Eight (8) years of work experience in engineering, including three (3) years at a level comparable to a Senior Engineer.

**Licenses and/or Certifications:**

- Valid California Class C Driver's License.
- Valid professional engineering (P.E.) registration license from the State of California.

**Disaster Service Workers:**

All Orange County Sanitation District employees are designated Disaster Service Workers through state law (California Government Code Section 3100-3109). Employment with the Orange County Sanitation District requires the affirmation of a loyalty oath to this effect. Employees are required to complete all related training as assigned, and to return to work as ordered in the event of an emergency.

**PHYSICAL DEMANDS**

Must possess mobility to work in a standard office setting and use standard office equipment, including a computer, to inspect District development sites, including traversing uneven terrain, climbing ladders, stairs, and other temporary or construction access points; ability to travel to various District sites, projects and/or meetings; vision to read printed materials and a computer screen; and hearing and speech to communicate in person, before groups, and over the telephone. This is primarily a sedentary office classification although standing in and walking between work areas and to conduct inspections may be required. Finger dexterity is needed to access, enter, and retrieve data using a computer keyboard or calculator and to operate standard office equipment. Positions in this classification occasionally bend, stoop, kneel, reach, push, and pull drawers open and closed to retrieve and file information. Employees must possess the ability to lift, carry, push, and pull materials and objects weighing up to 10 pounds.

**ENVIRONMENTAL ELEMENTS**

Employees work in an office environment with moderate noise levels, controlled temperature conditions, and no direct exposure to hazardous physical substances. Employees may work in the field and occasionally be exposed to loud noise levels, cold and hot temperatures, inclement weather conditions, road hazards, vibration, mechanical and/or electrical hazards, and hazardous physical substances and fumes. Employees may interact with upset staff and/or public and private representatives in interpreting and enforcing departmental policies and procedures.