



Career Service Authority

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Senior Engineer

GENERAL STATEMENT OF CLASS DUTIES

Performs full performance professional engineering work on a variety of complex engineering assignments with emphasis placed upon the application of engineering mathematics, principles, and practices in all phases of major engineering projects/assignments.

DISTINGUISHING CHARACTERISTICS

This class performs full performance professional engineering work on a variety of complex engineering assignments. This class is distinguished from the Engineer class that performs intermediate level professional engineering work on a variety of engineering assignments with emphasis placed upon the application of engineering mathematics, principles, and practices on moderately difficult engineering projects/assignments. The Senior Engineer class is also distinguished from the Engineer/Architect Specialist class that performs specialized, advanced professional engineering/architectural work in one or more of the following areas: 1) project management work on complex, multifaceted projects from inception to completion including the management and coordination of projects that have city-wide impact and requires a global, strategic understanding of city agencies and city policies, standards, and systems; 2) identifies the department's engineering needs by initiating analytical studies to improve operating efficiency and meet city, federal, and state regulatory mandates; 3) responsible for engineering quality control involving all components of the department's complex engineering programs; 4) monitors, evaluates, and modifies existing department engineering programs, systems, and processes for optimum efficiency and changing objectives and participates in strategic planning activities; 5) functions as the city-wide technical expert in one or more functional areas.

Incumbents in the Senior Engineer classification may perform **lead work** over other engineers and technical employees and may perform **supervision** over Staff Engineers or technical employees. This is distinguished from the Engineer/Architect Supervisor that performs professional and supervisory work over professional, licensed engineers and architects, develops, implements, and evaluates engineering plans, work processes, systems, and procedures to achieve annual goals and objectives, and makes budgetary decisions and resources allocation decisions.

Lead work is defined as intermittent or regular performance of some of the elements of supervision which occupies between 20% and 50% of an employee's work time. Lead work is in addition and secondary to the non-supervisory duties performed by the employee. Final accountability remains with the supervisor delegating the lead work assignment. Elements of lead work include: determining priorities, assigning and reviewing work, training employees, and resolving problems.

Supervision is defined as a classification level in which most of the elements of supervision are performed over 50% of the time. A supervisor has the primary responsibility for arranging and directing the work of two or more employees, usually at a specified classification level, for the major part or 50% of total job time, by performing some combination of supervisory elements. A Senior Engineer may be assigned to supervise Staff Engineers and technical staff but should not supervise other Engineers or Senior Engineers. **Supervision should not be a predominant duty of a Senior Engineer.**

Matrix Management is defined as a style of management where an individual reports to a supervisor and a team leader, one functional and one operational. This is a common practice for project management

where an employee reports to her/his assigned supervisor and reports to a team leader/project manager on operational project issues. The employee's supervisor still has overall responsibility for performing the elements of supervision including performance evaluation and approving leave time and the team leader is responsible for performing the elements of lead work while the employee is assigned to a specific project.

Guidelines, Difficulty and Decision Making Level:

Guidelines are generally but not always clearly applicable, requiring the employee to exercise judgment in selecting the most pertinent guideline, interpret precedents, adapt standard practices to differing situations, and recommend alternative actions in situations without precedent.

Duties assigned are generally complex and may be of substantial intricacy. Work assignment is performed within an established framework under general instructions but requires simultaneous coordination of assigned functions or projects in various stages of completion.

Employee is responsible for determining time, place, and sequence of actions to be taken. Unusual problems or proposed deviations from guidelines, practices, or precedents may be discussed with the supervisor before being initiated.

Level of Supervision Received and Quality Review:

Under administrative supervision, the employee has personal accountability for carrying out an assigned function, program, or project within the scope of established guidelines and objectives and is expected to resolve problems that arise in the normal course of the work. Completed work is generally reviewed for soundness of judgment, conclusion, adequacy, and conformance to policy.

Interpersonal Communications and Purpose:

Contacts with the public or employees where explanatory or interpretive information is exchanged, defended, and gathered and discretion and judgment are required within the parameters of the job function.

Level of Supervision Exercised:

Matrix manages and/or coordinates the work of consultants/contractors and other employees who are assigned to specific projects.

By position, perform lead work.

By position, supervises Staff Engineers and/or technical staff.

ESSENTIAL DUTIES

The essential duties section is divided into two categories: 1) general duties that are applicable to all Senior Engineers and 2) specific duties applicable to a functional area or discipline. The specific functional areas or disciplines include: Project Management, Plans Review, Traffic Engineering, Planning & Design, and Fire Protection. These specific functional areas or disciplines represent the duties

performed by the majority of Senior Engineers in the city. The duties performed by incumbents may be described in more than one specific area.

General Senior Engineer duties for all disciplines:

Act as a team leader on complex assignments/projects, coordinates tasks, and utilizes resources effectively.

Matrix manages and/or coordinates the work of consultants/contractors and other employees who are assigned to specific projects.

Participates in establishing policies, procedures, standards, guidelines, and specifications.

Attends neighborhood meetings that involve issues that are controversial and/or complex in order to resolve issues and provide information.

Attends City Council and other governmental entities meetings to represent the city and resolve controversial and complex issues.

Cultivates, fosters, and maintains positive working relationships with managers, supervisors, employees, and other stakeholders to gain their cooperation and support on assigned projects/assignments.

Resolves conflicts, develops creative solutions, and keeps team members focused on overall goals.

Prepares a variety of special engineering studies, correspondence, records, files, and reports.

By position, performs lead work over technical employees and/or other engineers including:

- Develops or modifies work plans, methods, and procedures, determines work priorities, and develops work schedules to provide adequate staff coverage. Provides work instruction and assists employees with difficult and/or unusual assignments. Assigns and distributes work, reviews work for accuracy and completeness, and returns assignments with recommendations for proper completion.
- Resolves problems encountered during daily operations and determines appropriate solutions.
- Contributes to the development of the performance enhancement plan, documents performance, provides performance feedback, and furnishes information for the formal performance evaluation.
- Responds orally to informal grievances and relays information to the supervisor.
- Documents situations which may be cause for disciplinary action and provides this information to the supervisor.

By position, may perform supervisory duties over technical employees and/or Staff Engineers including:

- Reviews, develops, and/or modifies work plans, methods, and procedures, determines work priorities, and develops work schedules to provide adequate staff coverage. Provides work instruction, assists employees with difficult and/or unusual assignments, and encourages innovation. Assigns and distributes work, reviews work for accuracy and completeness, and returns assignments with recommendations for proper completion.
- Conducts hiring interviews and selects candidate(s) for job opening(s).
- Resolves problems, mediates conflicts encountered during daily operations, determines appropriate solutions, and promotes teamwork. Encourages regular communication and informs staff of relevant business issues and their impact on the organization.
- Develops the performance enhancement plan, documents performance, provides performance feedback, formally evaluates the work of the employee, and provides reward and recognition for proper and efficient performance. Develops and implements training and development plans and opportunities for subordinate staff.
- Encourages and guides others toward goals.
- Ensures quality, effectiveness, and efficiency of unit activities and safety measures.

- Documents causes for disciplinary action, initiates letters of reprimand, and makes formal recommendations for disciplinary action. Responds to formal and informal employee grievances and prepares written responses.

Project Management

Plans and oversees the design, construction, maintenance, and/or alteration of multiple complex projects, directs, schedules, and coordinates the work of multi-disciplinary project teams, and provides advice and technical expertise to departmental staff.

Consults with clients, elected officials, and/or other stakeholders to determine project requirements and gathers and prepares information regarding design, specifications, materials, equipment, estimated costs, and time to complete a project.

Reviews plans and specifications prepared by consultants and/or staff to ensure adherence to applicable codes, standards, and city, state, and federal guidelines, monitors the progress and quality of a project, and resolves problems and project barriers by identifying strategies and approaches to overcome barriers.

Develops project budgets, schedules, work plans, and cost estimates/projections, administers and monitors contracts including contract negotiation and preparation of contract recommendations, and monitors projects for conformance to approved plans and contract specifications.

Prepares bid materials defining scope of work and related information necessary for request for qualifications (RFQ) and request for proposals (RFP), sets up selection board; responds to questions concerning the project and/or contract(s); reviews bids, and prepares recommendation(s).

Develops a communication plan and related project status reports for key stakeholders and provides updates on project activities and information on risks and mitigation strategies.

Prepares and monitors the budget for project planning, design, regulatory, and/or construction phases, recommends project budget needs for annual appropriations, and ensures project deliverables stay on-time, on-target, and on-budget.

Performs the following duties during the construction phase: verifies that the materials used comply with standards and project specifications, coordinates the scheduling of construction phases, provides technical assistance to construction personnel, maintains and updates all project documents, and reviews and provides design services for plan modifications required by unforeseen field conditions.

Interacts with utility companies, city agencies/departments, and other governmental agencies to obtain necessary permits and clearances and to ensure regulatory compliance.

Plans Review

Reviews and evaluates blueprints, architectural drawings, design plans, and/or project/development documents submitted for approval utilizing applicable codes/standards/guidelines/laws, appropriate municipal ordinances, and construction and engineering standards, determines review fees, and authorizes the release of approved documents for city permits.

Checks engineering calculations and reviews one or more of the following specialized areas: civil/site engineering, architectural, structural, electrical, plumbing, fire protection, and/or mechanical designs and provides timely oral and/or written communication detailing design and/or construction deficiencies in plans and specifications.

Interacts with the public, professional design consultants, project managers, contractors, and elected officials to communicate permit application procedures and regulatory and code requirements and interpretations, and negotiates for special considerations on unique and/or historical projects.

Directs and participates in design coordination meetings regarding private development projects and city, state, and regional capital improvement projects in order to lead the development process, ensure timely approval and completion of projects, and resolve any problem areas.

Assists inspectors with difficult or unusual code compliance issues and answers questions from inspectors about plan review comments.

Traffic Engineering

Manages the Traffic Management Center including the city traffic signal road system and all associated infrastructure (traffic signals, variable message signs, fiber optics, etc.).

Develops traffic management plans for large scale events by assisting the police department in assigning officers to improve traffic flow during events and reviewing and approving traffic control plans submitted by the event organizers.

Develops traffic control plans for large scale projects and assists project managers with project phasing in the right-of-way.

Plans, designs, and builds/upgrades traffic signals and various traffic signs including reviewing concept and design plans and coordinating the work of field personnel and utility providers.

Reviews planning studies and traffic simulations models for traffic engineering issues and represents the division's position at various stakeholder meetings.

Provides traffic/signal engineering review including reviewing concept plans for issues with traffic signals, traffic impact studies, traffic signal plans, and traffic simulation models for proposed developments.

Planning and Design

Manages, administers, and updates the Sanitary Master Plan and the Storm Drainage Master Plan including planning, scoping, and the conceptual design of capital sanitary and storm projects and conducts planning studies to identify scope of work and project feasibility.

Designs capital improvement projects, performs feasible and/or drainage studies as applicable, and coordinates interagency concerns on assigned projects.

Responds to complaints of poor drainage and flooding from citizens, elected officials, and other stakeholders to resolve issues and to ensure compliance with applicable standards and regulations.

Designs complex public right-of-way infrastructure capital maintenance and/or capital improvement project, obtains federal, state, and other regulatory permits, and coordinates projects with other city departments or external agencies for input and approvals.

Assesses, prioritizes, and recommends resolutions to requests for services or repairs to public right-of-way infrastructure. Requests primarily are received through the City of Denver 311 system but could come from a variety of other City or external sources.

Manages the City's Special District activities including the creation of new districts, provides training to district members regarding city processes, reviews and processes the operating plans and budgets for

the Business Improvement Districts, and reviews and comments on proposed legislation that relates to district activities.

Performs other related duties as assigned.

Any one position may not include all of the duties listed. However, the allocation of positions will be determined by the amount of time spent in performing the essential duties listed above.

MINIMUM QUALIFICATIONS

Competencies, Knowledge, & Skills:

Project Management – Applies principles, methods, or tools for developing, scheduling, coordinating, monitoring, evaluating, and managing projects and resources including technical performance.

Engineering – Knowledge of the concepts, principles, theories, and methods required to plan, design, construct, operate, and maintain facilities such as buildings, transportation systems water and sanitary systems, and other public works systems.

External Awareness – Identifies and understands economic, political, and social trends that affect the organization.

Technical Competence – Uses knowledge that is acquired through formal training or extensive on-the-job experience to perform one's job, works with, understands, and evaluates technical information related to the job, and advises others on technical issues.

Strategic Thinking – Formulates effective strategies, determines objectives, and sets priorities and anticipates potential threats or opportunities.

Vision – Understands where the organization is headed and how to make a contribution, takes a long-term view, and recognizes opportunities to help the organization accomplish its objectives or move toward the vision.

Decision Making - Makes sound, well-informed, and objective decisions, perceives the impact and implications of decisions, commits to action even in uncertain situations to accomplish program goals, and causes change.

Reasoning - Identifies rules, principles, or relationships that explain facts, data, or other information, analyzes information, and makes correct inferences or draws accurate conclusions.

Financial Management – Prepares, justifies, and/or administers the budget for project area, plans, administers, and monitors expenditures to ensure cost-effective support of project policies, and assesses financial conditions.

Influencing/Negotiating – Persuades others to accept recommendations, cooperate, or change their behavior, works with others toward an agreement, and negotiates to find mutually acceptable solutions.

Planning and Evaluating – Organizes work, sets priorities, and determines resource requirements, determines short- or long-term goals and strategies to achieve them,

coordinates with other organizations or parts of the organization to accomplish goals, and monitors progress and evaluates outcomes.

Interpersonal Relationship and Service Orientation – Demonstrated competency in working with a wide range of government departments with diverse business needs, interests, expectations, and requirements.

Oral Communication - Clearly communicates and explains organizational and program policies and work assignments to staff and communicates information about the program area's activities to peers, higher-level managers, administrative staff of other organizations, and internal and external customers.

Written Communication - Composes, reviews, edits, and issues written materials for diverse audiences and communicates purpose in a succinct and organized manner appropriate for context, time, and place. Written materials are of a routine nature and affect the immediate program area(s).

Interpersonal Skills - Establishes and maintains constructive and cooperative interpersonal relationships with staff, peers, higher-level managers, staff from other organizations, internal and external customers, and local stakeholder groups to accomplish a program's mission. Adapts approach to different people and situations.

Teamwork – Encourages and facilitates cooperation, pride, trust, and group identity, fosters commitment and team spirit, and works with others to achieve goals.

Conflict Management – Manages and resolves conflicts, grievance, confrontations, or disagreements in a constructive manner to minimize negative personal impact.

Problem Solving – Identifies problems, determines accuracy and relevance of information, uses sound judgment to generate and evaluate alternatives, and makes recommendations.

Performance Assessment – Knowledge of the principles, methods, and tools for conducting performance assessment to enhance and validate project performance and user acceptance.

Diversity – Is sensitive to cultural diversity, race, gender, and other individual differences in the workforce.

Integrity/Honesty – Contributes to maintaining the integrity of the organization, displays high standards of ethical conduct, understands the impact of violating these standards on an organization, self, and others, and is trustworthy.

Knowledge of planning, coordination, and execution of business functions, resource allocation, and production.

Knowledge of budgeting principles and practices sufficient to be able to assume budgetary responsibilities as required.

Knowledge of various types of contracts, techniques for contracting and procurement, contract negotiation, and administration.

Physical Demands (Physical Demands are a general guide and specific positions will vary based on working conditions, locations, and agency/department needs):

Standing: remaining on one's feet in an upright position.

Walking: moving about on foot.

Sitting: remaining in the normal seated position.
Carrying: transporting an object usually by hand, arm, or shoulder.
Balancing: maintaining body equilibrium to prevent falling over.
Stooping: bending the body by bending spine at the waist.
Reaching: extending the hand(s) and arm(s).
Handling: seizing, holding, grasping, or otherwise working with hand(s).
Feeling: perceiving attributes of objects by means of skin receptors.
Talking: expressing or exchanging ideas by means of spoken words.
Hearing: perceiving the nature of sounds by the ear.
Eye/hand/foot coordination: performing work through using two or more.
Lifting: raising or lowering an object from one level to another.
Far Acuity: ability to see clearly at 20 feet or more.
Near Acuity: ability to see clearly at 20 inches or less.
Depth Perception: ability to judge distance and space relationships.
Field of Vision: ability to see peripherally.
Accommodation: ability to distinguish and identify different colors.

Working Environment:

Pressure due to multiple calls and inquiries.
Subject to long irregular hours.
Subject to many interruptions.
Subject to varying and unpredictable situations.

Education Requirement:

Bachelor's Degree.

Experience Requirement:

Three years of professional engineering work experience after obtaining a Professional Engineering (PE) license. (Some positions may require experience in a specific engineering area.)

Licensure and/or Certification:

Registration as a Professional Engineer (PE) by the Colorado State Board of Registration for Professional Engineers at the time of application. Registration as a Professional Engineer (PE) by another state will be accepted in lieu of this requirement providing the applicant is registered by the State of Colorado by the completion of the probationary period.

Possession of a valid driver's license at the time of application and as a condition of employment.

CLASS DETAIL

FLSA CODE: Exempt

ESTABLISHED DATE: 09/161995

REVISED DATE: Patricia Anderson

REVISED BY: 03/21/2010

CLASS HISTORY This class specification was revised and updated as part of the Engineer/Architect Study (2010).