CLASS SPECIFICATION
Engineer

FLSA Status: Exempt
Union Representation: City of Portland Professional Employees Association (COPPEA)

GENERAL PURPOSE

Under general direction, performs advanced professional project management, specialized engineering or developer/building plan reviews in one of several recognized engineering specialties; serves as a project engineer on difficult, complex projects; applies advanced engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; may seal engineering plans with manager authorization; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

Incumbents of this class complete complex engineering assignments requiring the use of judgment and initiative in developing solutions to problems, interpreting policies and determining work assignments. Incumbents are responsible for planning future system needs and developing, implementing and monitoring major construction and/or developer projects, from inception to completion. Incumbents may oversee, coordinate and review the work of professional and technical personnel.

Engineer is distinguished from Senior Engineer in that Senior Engineers are responsible for supervising professional and technical staff. Incumbents are also expected to perform and administer the most complex professional engineering work requiring a substantial level of professional training and experience.

ESSENTIAL DUTIES AND RESPONSIBILITIES

Any one position in this class may not perform all the duties listed below, nor do the listed examples of duties include all similar and related duties that may be assigned to this class.

1. Performs engineering planning for major capital construction and/or maintenance programs; researches and plans system and facilities requirements; researches City and bureau records and historical design data; outlines requirements and coordinates activities for surveying and drafting to develop contract documents; assists permit staff in reviewing, securing and issuing permits.

2. Designs, reviews and constructs engineering plans and drawings; prepares sketches of plan layouts; supervises preparation of diagrams; selects standard details and equipment to be used and adds or revises details; prepares specification provisions; assembles bid packages; supervises drafting staff in preparing complete sets of final plans and details; reviews and approves non-standard building permit plans; coordinates, directs, plans and develops workgroup modeling and data management efforts; analyzes and performs advanced and complex engineering calculations.

3. Serves as project engineer and performs project management work on various engineering and construction projects; establishes design criteria and progress schedules; serves as liaison between City, contractors, consultants and utilities or other agencies and works to develop plans in line with

City goals; develops cost estimates and monitors project costs and progress; arranges, facilitates and attends pre-design and pre-construction meetings; reviews and approves material submittals; makes field design changes and recommends and negotiates change orders; prepares project budgets; prepares closing documents to be submitted to the City Council; prepares, reviews and approves work orders; develops and analyzes project alternatives; monitors completed projects in case of needed warranty repairs.

4. Reviews and monitors work by outside consultants and administers consultant contracts; prepares standard operating procedures and requests for proposals; evaluates and rates proposals; negotiates scope of work and contract terms; evaluates project schedules; authorizes payments; prepares contract documents for bidding, including cost estimates and project schedules; advertises for and evaluates construction bids; reviews consultant designs and plans to ensure conformance with City goals.

5. Reviews developer plans for conformance with City standards and service rules; responds to developer inquiries regarding City requirements for development; monitors and reviews progress of developer projects.

6. Monitors work in progress, including monitoring and conducting regular and emergency field investigations and inspections, to ensure compliance with approved plans, specifications and standards; analyzes data and results of instrument readings; prepares inspection reports.

7. Compiles and maintains project records, documents and databases; maintains work order logs and ensures documents are updated to reflect changes; develops and designs databases for project data.

8. Investigates customer requests and complaints and explains findings to customers; prepares notarized letters answering requests for legal purposes; testifies in court as needed; assists applicants with code interpretations and resolution of conflict.

9. Prepares and delivers presentations of technical data and results to technical review committees, bureau staff and other governmental agencies; serves as expert witness and testifies at City Council hearings for the bureau; keeps up-to-date on current technology in field of specialization through reading professional literature, attending conferences and training sessions.

10. Coordinates major construction projects with other bureaus and agencies and represents the bureau on multi-jurisdictional projects; attends public meetings to present project plans; reviews and analyzes construction projects planned by other agencies for potential impact on City operations; confers with personnel from other bureaus and agencies regarding current and proposed construction projects; identifies and resolves problems in compatibility between other agency systems and City systems.

11. Provides technical guidance, assistance and training to professional and technical staff to ensure compliance with plans and specifications; reviews field engineering problems with bureau staff and contractors; manages team work loads and tracks progress and back logs; balances team workloads; reports progress to section managers; assists professional and technical staff in developing procedures and processes to improve performance of specific project-related tasks; plans and directs staff on preparation of maps, charts and electronic presentation materials; briefs co-workers on policy and manual updates and changes.

12. Assigns routine research, design and drafting tasks to technical subordinates; reviews completed work; assists in the solution of difficult problems.

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

14. Assembles stakeholder groups, conducts meetings and develops consensus; attends a variety of meetings to determine citizen concerns, discuss potential solutions and limitations, identify course of action and initiate solutions.

OTHER DUTIES

1. Participates on Technical Advisory Committees for major projects; provides engineering expertise on a wide range of technical issues; provides technical support to appeals boards.

2. Researches, reviews and tests new products and construction and maintenance procedures to determine performance characteristics, safety and reliability and whether it is acceptable for City projects; meets with vendors and manufacturers; serves on product review committees.

3. Researches, evaluates and responds to Risk Management claims; compiles records and advises and assists City Attorney on claims; provides affidavits; performs depositions and testifies in court as needed.

4. Instructs co-workers on upgrades to and troubleshooting computer programs.

5. Participates in emergency management drills.

6. Attends training seminars, conferences and workshops.

7. May identify how models can address problems and lead the development, testing and application of complex surface and subsurface hydrology numerical models.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Theory, principles and practices of either civil, structural, electrical, mechanical, chemical, traffic or fire protection engineering design and project management.

2. Principles of physics and mathematics applicable to engineering.

3. Principles and techniques of management and supervision, including goals and objectives development and work planning and organization.

4. Principles and practices of contract administration and project management and evaluation.

5. Principles, modern techniques and equipment used in design, construction and maintenance of various public works projects.

6. Strength, properties and uses of construction materials.

7. Legal guidelines for public works engineering.

8. Public relations.

9. Computer applications pertaining to the work.

Ability to:

1. Review, prepare or direct the preparation of complex plans, specifications and legal contracts.

2. Prepare and evaluate engineering studies of large projects.

3. Perform difficult technical research and analyze complex engineering and mathematical problems, evaluating alternatives and recommending or adopting effective courses of action.

4. Perform accurate engineering calculations and cost estimates.

5. Motivate and evaluate assigned staff and provide for their training and professional development.

6. Plan and manage difficult engineering-related projects.

7. Communicate scientific and technical matters to non-technical individuals, including policy makers.

8. Interact effectively, engage in problem solving, and partner with citizens, community groups and contractors.

9. Communicate effectively, orally and in writing.

10. Prepare clear, concise and accurate reports, drawings, maps, notes, correspondence and other written materials.

11. Establish and maintain effective working relationships with those encountered in the course of the work.

Training and Experience:

A typical way of obtaining the knowledge, skills and abilities outlined above is graduation from a four-year college or university with a degree in civil, mechanical, electrical, chemical, structural, traffic or fire protection engineering; and four years of responsible professional engineering experience; or an equivalent combination of training and experience. Experience in a public agency is preferred.

Licenses; Certificates; Special Requirements:

A valid state driver's license may be required for certain assignments.
Certificate of registration as a Professional Engineer.

PHYSICAL AND MENTAL DEMANDS

Persons with disabilities may be able to perform the essential duties of this class with reasonable accommodation. Reasonable accommodation will be evaluated on an individual basis and depend, in part, on the specific requirements for the job, the limitations related to disability and the ability of the hiring bureau to accommodate the limitation.

SPECIALTIES

Positions in this class are assigned to one of the following specialties: Bridge (BDG) Chemical/Environmental (CHEV), Civil (CIV), Electrical (ELEC), Geotechnical (GEO), Mechanical (MECH), Structural (STR), Traffic (TRAF) or Fire Protection (FIRE). Positions assigned to the Civil Specialty (CIV) Job # 30000365 are defined in the Essential Duties and Responsibilities and Minimum Qualifications sections of the class specification.

Class History:

Adopted:	01-01-90	Class created as a result of consolidating the following COPPEEA classes: 3166 Chemical Engineer 3166 Civil Engineer 3166 Geotechnical Engineer 3166 Mechanical Engineer 3166 Structural Engineer 3166 Corrosion Engineer
Revised:	02-18-94	
Revised:	04-03-95	Spec was reviewed for supervisory language.
Revised:	07-01-01	Spec revised as part of the COPPEA classification and compensation study. Engineer (6112) class created from the following COPPEA classes: 3164 Engineer
Revised:	08-19-03	Note added regarding specialties.
Revised:	09-09-05	"Specialties" section added.
Revised:	08-01-06	Spec history revised to reflect pre-2001 COPPEA Study history. Spec formatting modified.
Revised:	09-02-08	Modified Chemical specialty to include Environmental
Revised:	03-26-09	Modified Mechanical specialty to include State of Oregon certification requirements for certain assignments
Revised	07-29-11	Added Bridge Specialty and revised Structural Specialty to clarify duties and remove bridge work
Revised	09-10-15	Added Fire Protection Specialty

June 2009 - Change Job Class number from 6112 to 30000365 (CIV), due to system change.
June 2009 - Change Job Class number from 6112 to 30000364 (CHEV), due to system change.
June 2009 - Change Job Class number from 6112 to 30000366 (ELEC), due to system change.
June 2009 - Change Job Class number from 6112 to 30000367 (GEO), due to system change.
June 2009 - Change Job Class number from 6112 to 30000368 (MECH), due to system change.
June 2009 - Change Job Class number from 6112 to 30000369 (STR), due to system change.
June 2009 - Change Job Class number from 6112 to 30000370 (TRAF), due to system change.

30001734- Bridge Specialty (BRG)

GENERAL PURPOSE

Under general direction, performs advanced professional project management, serves as a project engineer on difficult, complex bridge projects; applies advanced structural engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure; may seal engineering plans with manager authorization; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

Duties are similarly described across this job class family. The distinguishing factors are the complexity, independence, project management and decision making authority of each level.

ESSENTIAL DUTIES AND RESPONSIBILITIES

1. Performs the structural design of bridges, including bridge related public works such as culverts, retaining walls, sewer lines, water lines and underground structures such as pump stations and large manhole chambers.

2. Inspects vehicular and pedestrian bridges and other structures in the right-of-way.

3. Performs engineering planning for bridges and public works projects; designs, reviews and constructs bridge and public works projects.

4. Calculates load ratings of bridge structures.

5. Plans land surveying requests detailing all information needed from the land survey; and interprets land survey results and incorporates them into design and plans.

6. Selects structure type for design, taking into consideration factors that include: soil conditions, cost effectiveness, available funding, and visual impact.

7. Interprets information from geotechnical exploration to perform foundation design and analysis.

8. Designs and manages construction of landslide mitigation measures; monitors measuring instruments; analyzes data; designs and oversees installation of shoring.

9. Selects components of bridges; calculates performance of each structural member through analysis using the appropriate working stress and/or ultimate stress methods; considers the effects of shrinkage, creep, thermal forces, side-sway, and drift on structures.

10. Designs bridges in conformance with state and federal rules and regulations; plans and conducts bridge inspections.

11. Performs site inspections to verify compliance with requirements on previously approved plans and specifications.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Principles and practices of bridge and structural engineering.

2. Standard construction materials' specifications and testing methods.

3. Principles of design, construction and maintenance of bridges.

4. Federal, state and local laws and regulations relating to bridge inspections and correct methods for conducting these inspections.

5. Principles and terminology of hydrology and hydraulics.

6. Standard practices for welding structural steel.

7. Geotechnical principles and practices and soil mechanics applicable to seismic design.

8. Erosion control methods.

9. Provisions of the current editions of the American Concrete Institute, Manual of Steel Construction, American Welding Society Code and AASHTO Standard Specifications for Highway Bridges.

10. Principles and practices of earthquake engineering.

11. State-of-the-art computer programs and computer technology used in solving engineering problems.

12. Current bridge and construction practices and field procedures.

Training and Experience:

A typical way of obtaining the knowledge, skills and abilities outlined above is graduation from a four-year college or university with a degree in structural engineering; and four years of responsible engineering experience; or an equivalent combination of training and experience. Experience in a public agency is preferred. Completion of the National Bridge Inventory Bridge Inspection Course and completion of ODOT's Bridge Construction Inspectors courses preferred.

30000364 – Chemical/Environmental Specialty (CHEV)

GENERAL PURPOSE

Under general direction, performs advanced professional project management, specialized engineering or developer/building plan reviews; serves as a project engineer on difficult, complex projects; applies advanced chemical engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; may seal engineering plans with manager authorization; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

Duties are similarly described across this job class family. The distinguishing factors are the complexity, independence, project management and decision-making authority of each level.

ESSENTIAL DUTIES AND RESPONSIBILITIES

1. Designs and reviews plans for chemical or physical processes to be used in potable water or wastewater treatment.

2. Evaluates effectiveness and options on treatment processes for water or wastewater treatment plants and processes; and makes recommendations for and implements change or improvements.

3. Trains operators in chemical aspects of treatment processes.

4. Prepares and reviews reports that analyze and interpret water quality data or wastewater contaminant data.

5. Designs and reviews plans for monitoring raw potable surface and groundwater supplies.

6. Reviews proposals for treating industrial waste; develops sound solutions to industrial waste disposal problems; monitors industry compliance with state, federal and local regulations.

7. Reviews qualitative data concerning the quality of water (chemical, physical, bacteriological, biological).

8. Prepares or directs preparation of environmental assessments pertaining to new, potable water supplies or treatment of wastewater in conformance with federal laws and guidelines.

9. Evaluates and interprets data for sources of pollution to determine ambient conditions, trending, and cause and effect relationship between pollutants and impacts.

10. Directs field sampling and laboratory analysis.

OTHER DUTIES

1. Participates in emergency response planning processes

2. Designs and reviews plans for new corrosion control installations; inspects, analyzes and maintains corrosion control systems.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Chemical and/or environmental engineering principles, practices and fundamentals that relate to potable water or wastewater treatment systems.

2. Chemistry, environmental, biological and bacteriological sciences.

3. Federal, state and local laws and regulations relating to environmental programs, wastewater treatment systems and/or drinking water systems.

4. Laboratory practices and field sampling techniques; commercial scale chemical processes and instrumentation.

5. Technical activities related to principles and practices of industrial pretreatment and spill control.

6. Water and wastewater distribution and treatment systems.

7. Water, hazardous or solid waste pollution, measurement and/or control principles, practices and equipment; groundwater pollution hazards and protection practices.

Training and Experience:

A typical way of obtaining the knowledge, skills and abilities outlined above is graduation from a four-year college or university with a degree in chemical or environmental engineering; and four years of responsible engineering experience; or an equivalent combination of training and experience. Experience in corrosion engineering may be preferred for some assignments.

30000366 - Electrical Specialty (ELEC)

GENERAL PURPOSE

Under general direction, performs advanced professional project management, specialized engineering or developer/building plan reviews; serves as a project engineer on difficult, complex projects; applies advanced electrical engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; may seal engineering plans with manager authorization; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

Duties are similarly described across this job class family. The distinguishing factors are the complexity, independence, project management and decision making authority of each level.

ESSENTIAL DUTIES AND RESPONSIBILITIES

1. Designs and reviews designs of electrical, instrumentation and control systems.

2. Prepares and reviews electrical, instrumentation and control system plans and specifications.

3. Inspects existing electrical, control and instrumentation systems and those under construction to determine needed improvements or ensure compliance with codes and specifications. Installations include electro-mechanical devices and ones linked to a computerized reporting system.

4. Performs programmable controller programming, simulation, debugging and start-up.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Electrical engineering principles, practices and fundamentals that relates to municipal infrastructures.

2. Instrumentation, control panel design and PLC programming.

3. Electrical codes and standards relating to municipal infrastructures.

Training and Experience:

A typical way of obtaining the knowledge, skills and abilities outlined above is graduation from a four-year college or university with a degree in electrical engineering; and four years of responsible engineering experience; or an equivalent combination of training and experience. Experience in a public agency is preferred.

30002333 – Fire Protection Specialty (FIRE)

GENERAL PURPOSE

Under general direction, performs advanced professional project management, specialized engineering or developer/building plan reviews; serves as a project engineer on difficult, complex projects; applies advanced fire protection engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; may seal engineering plans with manager authorization; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

Duties are similarly described across this job class family. The distinguishing factors are the complexity, independence, project management and decision making authority of each level. This position resides in Portland Fire & Rescue and works with fire inspectors and staff from the Bureau of Development Services on building plan review in regards to fire and life safety.

ESSENTIAL DUTIES AND RESPONSIBILITIES

1. Reviews, approves and makes recommendations on plans for complex building projects for compliance with applicable local and national fire and life safety codes including, but not limited to multi-family dwelling units, multi-level mixed used buildings, high-rise buildings, industrial buildings, fuel tank farms, and hazardous materials facilities.

2. Reviews engineering and architectural plans for large and complex projects utilizing Performance Based Building design; to analyze the methodology presented by the developer to determine if plans are sound according to fire protection engineering principles, which may differ from traditional prescribed building codes.

3. Inspects existing building installation systems and those under construction to determine needed improvements or ensure compliance with codes and specifications. Installations include sprinkler systems, fire alarm systems, elevator systems, ventilation systems, and electrical and power systems.

4. Performs calculations and analysis to verify the adequacy of building designs related to fire and life safety using methods such as fire and smoke behavior modeling, human behavior modeling, and occupant movement analysis.

5. Works with Portland Fire & Rescue personnel, Portland Bureau of Development Services personnel, plans examiners, contractors, architects, engineers, developers and regional and state agencies, in developing and reviewing strategies to ensure buildings comply with current fire codes and regulations.

6. Interprets the City's fire, life safety, and building codes using knowledge of fire protection systems and principles.

7. Serves as technical advisor to the Fire Chief and the Fire Marshal on fire and building code requirements.

8. Represents Portland Fire & Rescue at meetings and conferences.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Fire protection engineering principles, practices and fundamentals that relate to municipal infrastructures.

2. Fire and life safety codes and standards relating to municipal infrastructures.

3. Principles of design, construction and maintenance of buildings and structures as they relate to present-day fire safety and building codes.

4. Federal, state and local laws and regulations relating to structural design of buildings and structures.

5. New and non-traditional building materials and how they react in a fire or emergency situation.

6. Current and state-of-the-art computer programs and computer technology used in solving fire protection engineering problems.

7. Multi-disciplinary aspects of engineering; including chemical, mechanical, civil and electrical engineering as it relates to fire protection and life safety.

Training and Experience:

A typical way of obtaining the knowledge, skills and abilities outlined above is graduation from a four-year college or university with a degree in fire protection engineering; and four years of responsible engineering experience; or an equivalent combination of training and experience. Experience in a public agency is preferred.

Licenses; Certificates; Special Requirements:

a.) Oregon Fire Protection Engineering License **and**
b.) ICC Fire Plans Examiner **and**
c.) ICC Fire Inspector I & II and Building Plans Examiner **and**
d.) Oregon Inspectors Certification, within six months of hire date.

30000367 - Geotechnical Specialty (GEO)

GENERAL PURPOSE

Under general direction, performs advanced professional project management, specialized engineering or developer/building plan reviews; serves as a project engineer on difficult, complex projects; applies advanced geotechnical engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; may seal engineering plans with manager authorization; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

Duties are similarly described across this job class family. The distinguishing factors are the complexity, independence, project management and decision making authority of each level.

ESSENTIAL DUTIES AND RESPONSIBILITIES

1. Performs the geotechnical design of public works structures and the review of private development including, but not limited to earthwork, grading, foundations, retaining walls, shoring, slope stabilization, ground improvement and erosion control.

2. Performs site inspections of development sites. Evaluates site conditions and potential geologic hazards. Determines whether geotechnical engineering, engineering geology and/or seismic site hazard studies are required for proposed development.

3. Performs analyses of construction plans having complex and unusual geotechnical features.

4. Develops technical standards for the geotechnical engineering features of construction.

5. Determines whether geotechnical engineering features of construction plans comply with applicable codes and regulations, and professional standards of practice.

6. Plans geotechnical exploration and testing programs, interprets results and incorporates them into design and plans.

7. Designs and manages construction of landslide mitigation measures; monitors measuring instruments; analyzes data; designs and oversees installation of shoring.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Civil engineering principles and advanced current knowledge of geotechnical engineering concepts, principles and practices.

2. Standard construction methods, materials, equipment and testing methods.

3. Soil and rock exploration, sampling and testing methods.

4. Principles of design, construction and maintenance of the geotechnical features of construction as they relate to present-day building codes and professional standards of practice.

5. Principles and terminology of hydrology and hydraulics.

6. Geotechnical principles and practices and soil mechanics applicable to earthquake engineering.

7. Current computer programs and computer technology used in solving geotechnical engineering problems.

8. Erosion control methods.

9. Provisions of the current editions of the Uniform Building Code.

Training and Experience:

A typical way of obtaining the knowledge, skills and abilities outlined above is graduation from a four-year college or university with a degree in civil engineering with an emphasis in geotechnical engineering; and four years of responsible engineering experience; or an equivalent combination of training and experience. An advanced degree in civil engineering with an emphasis in geotechnical engineering is preferred.

30000368 - Mechanical Specialty (MECH)

GENERAL PURPOSE

Under general direction, performs advanced professional project management, specialized engineering or developer/building plan reviews; serves as a project engineer on difficult, complex projects; applies advanced mechanical engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; may seal engineering plans with manager authorization; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

Duties are similarly described across this job class family. The distinguishing factors are the complexity, independence, project management and decision making authority of each level.

ESSENTIAL DUTIES AND RESPONSIBILITIES

1. Designs and reviews plans for heating, ventilating and air conditioning (HVAC) systems in public buildings, and plans for mechanical equipment and instrumentation systems with mechanical components used in public works systems, including wastewater treatment facilities.

2. Writes specifications for mechanical equipment, participates in the bidding process and works with contractors.

3. Directs the installation, testing and maintenance of HVAC devices and other mechanical systems.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Principles and practices of mechanical engineering.

2. HVAC systems in public buildings, and mechanical devices and equipment commonly used in public works construction and maintenance, water or wastewater collection and treatment systems.

3. Hydraulics and hydrology applicable to water distribution systems or wastewater collection and treatment systems.

4. Federal, state and local laws and regulations relating to the design, installation and maintenance of HVAC systems.

Training and Experience:

A typical way of obtaining the knowledge, skills and abilities outlined above is graduation from a four-year college or university with a degree in mechanical engineering; and four years of responsible engineering experience; or an equivalent combination of training and experience. Experience in a public agency is preferred.

Licenses; Certificates; Special Requirements:

Certain assignments may require either:

a.) Oregon "A" level Mechanical Inspector Certification **or**

b.) Oregon Inspector Certification and ICC certification as a Commercial Mechanical Inspector.

30000369 - Structural Specialty (STR)

GENERAL PURPOSE

Under general direction, performs advanced professional project management, specialized engineering or developer/building plan reviews; serves as a project engineer on difficult, complex projects; applies advanced structural engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; may seal engineering plans with manager authorization; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

Duties are similarly described across this job class family. The distinguishing factors are the complexity, independence, project management and decision making authority of each level.

ESSENTIAL DUTIES AND RESPONSIBILITIES

1. Reviews plans for, and performs, the structural design of private development and public work structures including, but not limited to: buildings, non-building structures, foundations, retaining walls and shoring.

2. Determines whether buildings and other non-building structures on construction plans comply with codes and regulations and professional standards of practice.

3. Applies principles of structural engineering in the design and review of structures including design for lateral forces due to seismic and wind.

4. Reviews, and where required, calculates performance of structural members through analysis using the appropriate working stress and/or ultimate stress methods; and considers the effects of shrinkage, creep, thermal forces, sidesway, and drift on structures.

5. Uses and interprets state-of-the-art computer programs and computer technology used in solving engineering problems.

6. Interprets information from geotechnical exploration to perform review of foundation design and analysis.

7. Interprets provisions of codes and regulations.

8. Works with the private engineers, developers and public agencies where necessary in developing and reviewing strategies to upgrade existing buildings for seismic loads consistent with current codes and regulations.

9. Performs site inspections to verify compliance with requirements on previously approved plans and specifications.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Civil Engineering principles and advanced knowledge of concepts, principles and practices of structural engineering.

2. Principles of design, construction and maintenance of buildings and structures as they relate to present-day building codes.

3. Federal, state and local laws and regulations relating to structural design of buildings and structures.

4. Geotechnical principles and practices and soil mechanics applicable to seismic design.

5. Provisions of the current editions of the Oregon Structural Specialty Code, Oregon Residential Specialty Code,, Building Code Requirements for Reinforced Concrete, Steel, Masonry, Wood and other building materials.

6. Principles and practices of earthquake engineering, including the ability to implement the seismic provisions of the Building Code.

7. State-of-the-art computer programs and computer technology used in solving engineering problems.

8. Standard construction materials' specifications and testing methods.

9. Current construction practices and field procedures.

Training and Experience:

A typical way of obtaining the knowledge, skills and abilities outlined above is graduation from a four-year college or university with a degree in structural engineering; and four years of responsible engineering experience; or an equivalent combination of training and experience. A certification of registration as a Structural Engineer (S.E.) is preferred and may be required in certain cases. Experience in a public agency is preferred.

30000370 - Traffic Specialty (TRAF)

GENERAL PURPOSE

Under general direction, performs advanced professional project management, specialized engineering or developer/building plan reviews; serves as a project engineer on difficult, complex projects; applies advanced traffic engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; may seal engineering plans with manager authorization; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

Duties are similarly described across this job class family. The distinguishing factors are the complexity, independence, project management and decision making authority of each level.

ESSENTIAL DUTIES AND RESPONSIBILITIES

1. Designs and reviews plans for the physical layout of traffic control devices for roadway intersections requiring traffic control.

2. Designs and reviews plans for electrical wiring and selects control equipment for traffic signals and lighting.

3. Determines locations for installation of new traffic signals and removal of existing signals.

4. Manages street lighting location, construction or maintenance projects.

5. Performs analysis and selects phasing and timing of traffic signals to maximize efficiency and safety of arterial system.

6. Designs sign and pavement markings installations including type and location.

7. Performs technical traffic analysis including street and intersection capacity, travel time and delay, gap availability, turning movements, collision analysis and diagrams, origin/destination surveys; makes recommendations related to traffic problems and issues.

8. Reviews and approves detour routings for street repair, requests for street use and/or street and sidewalk closures.

9. Assists other bureaus by performing geometric design of streets, including selection of design speed, curb radius, taper distances, and design of neighborhood traffic management devices such as circles and diverters.

10. Reviews major land use development projects for traffic impact to adjacent street system and recommends or requires improvements.

11. Reviews commercial buildings plans for driveway locations, off-street parking and loading space for compliance with bureau policies and code requirements.

12. Works with City Attorney's Office and Risk Management on defense of City in traffic cases.

13. Investigates street safety complaints regarding trucks, buses, autos, bikes and pedestrians.

14. Maintains records of drawings, diagrams and inventory of signals and street lighting.

OTHER DUTIES

1. Develops parking and traffic control plans for special events.

2. Approves traffic or parking related permits for movie production, street vacation, angle loading, and over-dimensional trucks.

3. Advises customers on City policies and standards regarding operation and construction in the public right of way.

4. Researches, evaluates and provides recommendations on traffic calming issues, devices and methods.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Fundamentals of traffic engineering principles, practices and procedures.

2. Traffic control equipment design, operation, materials and construction techniques including the provisions of the Manual on Uniform Traffic Control Devices.

3. Electronic computer capabilities and operating principles as applied to traffic control.

Ability to:

1. Apply relevant traffic regulatory laws, ordinances, codes, standards and specifications applicable to work design.

2. Interpret and prepare traffic engineering designs and specifications.

3. Analyze and modify the design of streets, intersections, and traffic control devices in order to reduce collisions and congestion.

4. Analyze the effects on traffic conditions of proposed annexations, zone changes, new construction and other projects.

Training and Experience:

A typical way of obtaining the knowledge, skills and abilities outlined above is graduation from a four-year college or university with a degree in traffic engineering; and four years of responsible engineering experience; or an equivalent combination of training and experience. Experience in a public agency is preferred.