CLASS SPECIFICATION
Engineering Associate

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

GENERAL PURPOSE

Under direction, performs routine to intermediate professional engineering design and construction project management or developer/building plan reviews in one of several recognized engineering specialties; applies technical engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

Incumbents of this class complete routine-to-intermediate engineering assignments requiring the application of engineering theory and the use of judgment and initiative in developing solutions to problems and exercise independent decision-making authority under policy guidelines and management direction. Incumbents are responsible for managing small projects from inception to completion or contributing to portions of a large project.

The Engineering Associate class is distinguished from Senior Engineering Associate in that Engineering Associate assignments range in difficulty from routine to intermediate, depending on length of time in class, while Senior Engineering Associate assignments are intermediate to complex. Engineering Associates may be assigned small projects or one aspect of a larger project but Senior Engineering Associates are responsible for performing or directing all technical and procedural aspects of a complex project or several smaller projects, with little direct supervision. Engineering Associates do most work assignments personally, although they may be assigned staff support and may be assigned task lead responsibility. The work of Senior Engineering Associates typically requires considerable public contact.

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 design work under the supervision of professional engineers who serve as resource experts and routinely review work in progress or upon completion for accuracy and quality.

2. Develops project concepts using information gathered through research and investigation; performs necessary computations; does cost/benefit analysis; makes recommendations on design criteria; produces preliminary and final designs after approval; makes modifications in design if needed.

3. Assists in plan review processes by applying technical knowledge to verify engineering components meet code requirements.

4. Performs project management duties as assigned, including preparing cost estimates, serving as liaison between City and contractor, checking progress of work, keeping project records, recording changes as they occur and making reports.

5. Inspects projects, equipment installations and construction work in progress to ensure compliance with contractual stipulations and all applicable codes and statutes.

6. Conducts research projects that may include a review of current literature, field investigations, pilot studies, contact with other public agencies and computer search; analyzes and reports on data gathered, including cost/benefit ratios for alternative methodologies.

7. Operates computers to input or obtain data, research master files, analyze data, make calculations, prepare reports and maintain data files; runs prepared programs, modifies existing programs as needed for specific application and assists in writing new programs; helps develop and run computer modeling and management information system programs.

8. Prepares written correspondence, technical reports and City documents such as feasibility studies, pre-design reports, final design reports, work orders, purchase orders, contract specifications, change orders, activity or compliance reports for outside agencies, and City ordinances as directed.

9. Reviews and interprets federal, state and local laws, regulations and code provisions that would impact a planned project in order to ensure City is in compliance with all pertinent regulatory provisions.

10. Reviews development and construction proposals and applications to ensure conformance with all City ordinances, codes, plans and regulations, makes recommendations, and obtains all necessary federal, state, and local project permits.

11. Drafts professional services Requests for Proposals, contracts, and contract amendments.

12. Participates in the design of system components, development and application of computer modeling project methodology and in the preparation of construction plans.

OTHER DUTIES

1. Prepares reports, graphics and specifications for assigned projects for presentation at informational meetings using manual or computer-aided drafting equipment.

2. Assists in conducting public meetings with citizen groups to reach consensus on solutions to neighborhood problems that impact sewers, water lines, street improvements, traffic management and street lighting.

3. Communicates with the public and other City employees to provide or obtain information, respond to citizen concerns and explain City policies and procedures.

4. Assists in budget preparation by preparing input data, calculating costs, writing interagency agreements, and justifications for capital improvement projects.
5. Assists in training field staff as directed.
6. Assists in contract bidding process including writing specifications, estimating probable costs, preparing bid documents, reviewing contractor qualifications, participating in meetings with contractors and monitoring work progress after contract is awarded.
7. Updates bureau files through data input to computer files or filing of written documentation.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Theory, principles and practices of either civil, structural, electrical, mechanical, chemical or traffic engineering design and project management.
2. Federal, state and local laws, regulations and codes pertinent to area of specialty.
3. Principles and practices of contract administration, and project and construction management and evaluation.
4. Principles of physics, chemistry and mathematics applicable to engineering.
5. Strength, properties and uses of construction materials.
6. Computer use, applications, languages and programming techniques pertaining to the work.

Ability to:

1. Derive information from plans, specifications, maps, complex laws, regulations and codes.
2. Write correct, clear and concise technical materials, such as project reports and specifications.
3. Use specialized drafting, engineering, surveying or electronic tools and equipment.
4. Direct the work of assigned support and technical personnel following accepted management principles.
5. Speak in front of groups; cope with dissent and conflict.
6. Communicate effectively with others, both orally and in writing, using both technical and non-technical language.
7. Establish and maintain effective working relationships with a diversity of others.
8. Interact effectively, to problem solve and partner with citizens, community groups and/or contractors.

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 or traffic engineering; or an equivalent combination of training and experience. Experience in a public agency is preferred.

Licenses; Certificates; Special Requirements:

Obtaining Engineer-in-Training Certification, (i.e., passed the State Fundamentals of Engineering (FE) examination) within nine months of hire.

A valid state driver's license may be required for certain assignments.

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: Civil (CIV), Electrical (ELEC), Mechanical (MECH), or Structural (STR). Positions assigned to the Civil Specialty are defined in the Essential Duties and Responsibilities and Minimum Qualifications portions of the class specification.

Class History:

Adopted:	01-01-90	Engineering Associate (6110) class created as a result of consolidating the following COPPEEA classes: 3154, 3157 Chemical 3160, 3161 Civil 3198, 3200 Electrical 3155, 3158 Industrial 3156, 3159 Mechanical 3202 Traffic
Revised:	04-03-95	Spec reviewed for supervisory language.
Revised:	07-01-01	Spec revised as part of the COPPEA classification and compensation study. Engineering Associate (6110) class created from the following COPPEA classes: 3153 Engineering Associate
Revised:	08-19-03	Note added regarding specialties.
Revised:	09-09-05	"Specialties" section added.
Revised:	04-26-06	"Licenses" section updated with FE exam requirement.
Revised:	08-01-06	Spec history revised to reflect pre-2001 COPPEA Study history. Spec formatting modified.
Revised:	10-13-06	Licenses section updated: EIT certification required within nine months instead of at time of hire.

June 2009 - Change Job Class number from 6110 to 30000353 (CIV), due to system change.
June 2009 - Change Job Class number from 6110 to 30000354 (ELEC), due to system change.
June 2009 - Change Job Class number from 6110 to 30000355 (MECH), due to system change.
June 2009 - Change Job Class number from 6110 to 30000356 (STR), due to system change.

30000354 - Electrical Specialty (ELEC)

GENERAL PURPOSE

Under general direction, performs routine to intermediate professional project management, specialized engineering or developer/building plan reviews; applies technical electrical engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; 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. Design and review designs of electrical, instrumentation and control systems.
2. Prepare and review electrical, instrumentation and control system plans and specifications.
3. Inspect 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. Perform programmable controller programming, simulation, debugging and start-up.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Electrical engineering principles, practices and fundamentals that relate to municipal infrastructures and construction projects.
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; or an equivalent combination of training and experience. Experience in a public agency is preferred.

30000355 - Mechanical Specialty (MECH)

GENERAL PURPOSE

Under general direction, performs routine to intermediate professional project management, specialized engineering or developer/building plan reviews; applies technical mechanical engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; 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. Design and review 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, primarily in wastewater treatment facilities.
2. Write specifications for mechanical equipment, participate in the bidding process and work with contractors.
3. Direct 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; or an equivalent combination of training and experience. Experience in a public agency is preferred.

30000356 - Structural Specialty (STR)

GENERAL PURPOSE

Under general direction, performs routine to intermediate professional project management, specialized engineering or developer/building plan reviews; applies technical structural engineering knowledge to the solution of design, maintenance, improvement and construction problems pertaining to the City's infrastructure and private development; 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 public works structures and private development that includes; bridges, buildings, culverts, pump stations, retaining walls, sewer lines, water lines and underground structures such as pump stations and large manhole chambers.
2. Plans survey requests detailing all information needed from the survey; interprets survey results and incorporates them into design and plans.
3. Selects structure type for design, taking into consideration factors that include soil conditions, cost effectiveness, available funding and visual impact.
4. Interprets information from geotechnical exploration to perform foundation design and analysis.
5. Designs and manages construction of landslide mitigation measures; monitors measuring instruments; analysis data; and designs and oversees installation of shoring.
6. Selects components of structure; calculates performance of each member of the structure through analysis that includes working stress and ultimate stress; considers effects of shrinkage, creep, thermal forces, side sway, and drift on structure.
7. Designs bridges in conformance with state and federal rules and regulations; plans and conducts bridge inspections.
8. Performs site inspections to verify compliance with the erosion control requirements on previously approved plans and specifications.
9. Determines eligibility and issues City welder certifications.

MINIMUM QUALIFICATIONS

Knowledge of:

1. Principles and practices of structural engineering.

2. Standard construction materials' specifications and testing methods.
3. Principles of design, construction and maintenance of buildings and structures as they relate to present-day building codes, including bridges.
4. Federal, state and local laws and regulations relating to structural design of municipal buildings and structures including 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 applicable to seismic design.
8. Soil mechanics and erosion control methods.
9. Provisions of the current editions of the Uniform Building Code, Building Code Requirements for Reinforced Concrete, Manual of Steel Construction, American Welding Society Code and AASHTO Standard Specifications for Highway Bridges.

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; or an equivalent combination of training and experience. Experience in a public agency is preferred.