ENGINEER 1-4

SERIES DESCRIPTION

General Responsibilities:

This class series is designed to describe professional engineering work performed in association with the design and construction of public works projects and/or other activities requiring professional engineering expertise. Positions in these classes are normally found in the Engineering Division, the Water Utility, or the Traffic Engineering Division (at the 1 and 2 levels). The series is structured to provide for career progression from Engineer 1 to 2 and 2 to 3 based on increased employee expertise and responsibility, independence of action, and experience in and knowledge of City systems and processes associated with the work. Progression to the Engineer 4 level is normally contingent upon budgeted vacancies and accomplished by competition. The levels of the Engineer series are structured as follows:

Engineer 1 (CG18, Range 06)

This is entry level professional engineering work performed in the office and/or the field in connection with the design and construction of public works projects such as: storm and sanitary sewers, streets, sidewalks, bikeways, water utility facilities and systems, water quality and stormwater management projects, gas collection systems, transportation improvements, traffic signals and signing, pavement marking, and street lighting. Assignments are received from higher-level engineers who define the scope of the work, review the work in progress and upon completion, and certify the results. The work is characterized by the application of theoretical professional engineering expertise and the attainment of procedural knowledge through on-the-job training and experience.

Engineer 2 (CG18, Range 08)

This is intermediate-level professional engineering work performed in the office and/or field in connection with the design and construction of public works projects. Assignments are received from higher-level engineers who define the scope of the work, review the work in progress and upon completion, and certify the results. The work is characterized by the application of expanded professional expertise encompassing both theoretical concepts and operational considerations gained through experience.

Engineer 3 (CG18, Range 10)

This is journey-level professional engineering work performed in the office and/or field in connection with the design, management, and construction of a wide variety of public works projects. Assignments are received from an Engineer 4 or higher-level engineer who generally defines the scope of the work; reviews progress periodically and upon completion; and certifies the results, if necessary. The work is characterized by the excise of technical and professional judgment, the broader application of professional engineering expertise, and proficiency in the operational and procedural aspects of the work.

Engineer 4 (CG18, Range 12)

This is advanced-level professional engineering and project supervision work performed in the office and/or field in connection with the planning, design, management and construction of a wide variety of public works projects. Assignments are received from a higher-level engineer and the work involves the application of independent professional judgment to define the project; determine the best methods of addressing the situation(s), including the assignment of project components to lower-level staff, and professional certification of the results. The work is performed under the general direction and coordination of a higher-level professional engineer and regularly involves the supervision of lower-level staff including professional engineers.

Examples of Duties and Responsibilities:

Engineer 1

Assist in the design and construction of public works projects. Prepare engineering plans, designs, and specifications. Coordinate design activities with other Engineering Units, City agencies, and other entities as necessary. Oversee drafting of plans and specifications.

Prepare project and construction cost estimates.

Prepare narrative and statistical reports, maps, and other materials as necessary. Conduct basic engineering research.

Assist in the review of outside plans and specifications for compliance with City Ordinances and state and federal regulations in such areas as erosion control, on-site detention, runoff control and proper drainage, and placement and installation of traffic control devices.

Answer technical questions from the public, contractors, property owners, and elected officials about engineering considerations and plans. Attend public hearings and other public information meetings with higher level engineers and provide project-related information as requested.

Perform related work as required.

Engineer 2

Perform all work of an Engineer 1 with greater professional expertise and responsibility for the completion of major project components.

Perform related work as required.

Engineer 3

Perform all work of an Engineer 2 with the application of broader professional expertise and independent responsibility for the completion and management of major project components.

Prepare or coordinate the preparation of designs, plans, and specifications for a wide variety of public works projects. Assist field staff in interpreting plans and specifications.

Prepare project and construction cost estimates and approve contractor payments. Prepare final assessments.

Perform special engineering studies including construction materials studies and tests.

Review plats, conditional use permits and outside plans and specifications for compliance with City standards and policies and state and federal regulations.

Coordinate project components and schedules with other departments and agencies.

Attend public hearings and informational meetings alone or with higher level engineers and provide project-related reports and information. Answer questions from the public, contractors, developers, inspectors, etc.

Perform related work as required.

Engineer 4

Perform all work of an Engineer 3 with increased professional expertise, independent responsibility for the completion of major projects, and emphasis on project leadership and management.

Determine the nature and scope of an assigned project and decide what aspects of the work will be assigned to lower level staff. Plan and schedule all aspects of the project and review status regularly with staff. Provide training to lower level staff. Sign off plans and specifications.

Attend public hearings and informational meetings with staff or independently. Deal with more complex engineering issues and provide advice and assistance to lower level staff relative to public presentations.

Participate in the prioritization of projects and the preparation of estimates for the Capital Budget process.

Coordinate projects with consulting engineers; private/public utilities; state, county and other governmental units; and other individuals and entities.

Oversee the activities of the drafting section responsible for preparing and maintaining the maps and records for the water distribution system. Direct the maintenance and security of engineering records to ensure long-term system integrity.

Supervise the preparation of special assessments and various engineering and fiscal reports.

Perform related work as required.

QUALIFICATIONS

Knowledge, Skills and Abilities:

Engineer 1 and Engineer 2

Knowledge of the principles, theories, and practices of civil engineering, particular as they relate to the design and construction of public works projects. Knowledge of the methods and techniques associated with the construction and inspection of public works projects. Ability to make engineering computations and document them. Ability to perform or learn how to perform computer-aided design and spreadsheet analysis. Ability to exercise professional expertise in the resolution of engineering problems. Ability to collect, analyze, and compile data and prepare technical reports. Ability to communicate effectively, both orally and in writing. Ability to develop and maintain effective relationships with supervisors, co-workers, contractors, the general public and other parties. Ability to maintain accurate records. Ability to inspect or assign others to inspect public works construction projects. Ability to maintain adequate attendance.

Engineer 3

All of the above plus: knowledge of the procedural aspects of the City's contracting and capital budgeting processes. Ability to design and/or coordinate routine projects and provide necessary follow-through to completion. Skill in making and documenting engineering computations and cost estimates. Ability to exercise significant professional engineering expertise and judgment in the resolution of engineering problems. Ability to speak before large groups and answer technical questions. Ability to maintain adequate attendance.

Engineer 4

Thorough knowledge of civil engineering design and construction principles, practices, materials, and inspection techniques. Thorough knowledge of the procedural aspects of the City's contracting and capital budgeting processes. Ability to supervise lower level staff in the design and coordination of public works construction projects. Skill in making and documenting engineering computations and cost estimates, and document them and to review the work of others. Ability to perform computer-aided design and spreadsheet analysis. Ability to exercise significant professional engineering expertise and judgment in the resolution of engineering problems. Ability to collect, analyze and compile data and prepare technical reports. Ability to communicate effectively both orally and in writing. Ability to speak before large groups, answer technical questions, and assist subordinates. Ability to develop and maintain effective relationships with supervisors, subordinates, co-workers, contractors, the general public and other parties. Ability to maintain accurate records. Ability to inspect or assign others to inspect public works construction projects. Ability to maintain adequate attendance.

Training and Experience:

Engineer 1

Graduation from an accredited college or university with a degree in civil engineering or a closely related field.

Engineer 2

One year of professional engineering experience at the Engineer 1 level with the City of Madison.

Engineer 3

One year of professional engineering experience at the Engineer 2 level with the City of Madison.

Engineer 4

One year of professional engineering experience at the Engineer 3 level with the City of Madison including project coordination and leadership responsibilities.

All Levels

Other combinations of training and/or experience which can be demonstrated to result in possession of the knowledge, skills, and abilities necessary to perform the duties of this positions will also be considered.

Necessary Special Qualifications:

Engineer 1

Possession of a valid Wisconsin driver's license or the ability to meet the transportation requirements of the position.

Engineer 2

Ability to obtain a Certificate of Engineer in Training within 18 months of hire, with one six-month extension allowed if the employee has met requirements and taken the Fundamentals of Engineering exam and not yet been notified of the results. Possession of a valid Wisconsin driver's license or the ability to meet the transportation requirements of the position.

Engineer 3

Possession of a valid Certificate of Engineer in Training and possession of a valid Wisconsin driver's license or the ability to meet the transportation requirements of the position.

Engineer 4

Possession of a valid certificate of registration as a Professional Engineer in the State of Wisconsin or ability to obtain such registration within the probation or trial period. Possession of a valid Wisconsin driver's license or the ability to meet the transportation requirements.

Department/Division	Class Title	Comp. Group	Range
Engineering/Water Utility/Traffic Engineering	Engineer 1	18	06
Engineering/Water Utility/Traffic Engineering	Engineer 2	18	08
Engineering/Water Utility	Engineer 3	18	10
Engineering/Water Utility	Engineer 4	18	12

Approved: _____

Brad Wirtz — Date

Human Resources Director