

## ENGINEERING DESIGNER

### JOB DESCRIPTION

**Classification Responsibilities:** Under general direction, an Engineering Designer performs professional engineering work (*by assignment*) entailing design, plan review, inspections, and related work as required. Employees in this class will independently be responsible for design and project management duties, whether the project is designed in-house or by a consultant. Employees in this class may oversee and direct consultants and personnel in the design of capital improvement projects. Employees may also assist with the review and approval of other types of projects. An Engineering Designer uses independent discretion and judgement with their assigned projects from the initial determination of the scope of work, to the completed construction stage in order to attain the desired results.

The Engineering Designer will be assigned projects that range in scope from standard to more difficult and complex designs and may include the design of public work improvements or installation of facilities such as: sanitary sewers, storm drains, street improvements, retention basins, site improvements, building remodels, parks, and new buildings. Duties may involve drafting both 2D and 3D designs of piping systems, utilities, roadways, and other infrastructure systems for the City's Capital Improvement Program (CIP) using Computer-Aided Design (CAD) programs; resolving design related problems by performing calculations, evaluating alternatives, and/or interviewing affected parties; writing project specific conditions and construction notes; and preparing project specifications and design criteria. This class will independently prepare bid documents; create cost estimates; and monitor project budgets to ensure compliance with project contracts, plans, and specifications. The individual will oversee the bid process and Council Award process, analyze submitted quotes and bids, and negotiate complex contracts. This position will perform project quality control (QC) and quality assurance (QA) by conducting construction inspections on public works and non-public works projects within the City's right-of-way and coordinate with private developers to resolve inferior work performed in the City's right-of-way, resolving conflicts due to nonconformance with City standards and details. Employees in this class will secure permits and provide approvals for project work; verify project quantities and pay applications; negotiate change orders; and conduct plan reviews. This individual will serve as the City's single point of contact with the public, City employees and management, vendors, contractors, public officials, and private developers. Employees work involves the exercise of discretion and independent judgment with respect to matters of significance and may supervise lower-level clerical, paraprofessional, or technical staff. This classification works independently and prioritizes their own work. Engineering Designers may be assigned to general civil projects or one of the specialty assignments listed below.

**Electrical Assignment:** An employee assigned to perform electrical engineering work will also be responsible for the specialized engineering and technical work related to the planning, design, and operation of the City's electric distribution system including new commercial service delivery, overhead to underground conversions, etc. This class will prepare bid documents; prepare cost estimates; monitor project budgets; oversee the bid process and Council Award process; write project special conditions and construction notes; prepare project specifications, construction drawings, schematic drawings, circuit maps, and electric system mapping; utilize AutoCad to produce drawings for the construction and maintenance of overhead, underground, primary, and secondary distribution circuits and facilities for the electric system; apply problem resolution strategies during the life of projects; prepare oral and written reports of a technical nature; perform QA/QC; coordinate with City Departments; and communicate

with the general public. As part of the construction process, this position will perform site/field inspections; work with electric field crews to determine acceptable placement of electrical facilities; and respond to inquiries from representatives of the construction industry and potential bidders to clarify points about the plans and specifications (contract documents) and the bidding process.

***Landscape Design Assignment:*** An employee assigned to landscape design will be responsible for performing the full range of landscape designs which includes preparing plans and specifications used for landscape design projects; planning and developing landscape and irrigation designs; preparing design criteria and bid documents; monitoring and developing budget cost estimates; preparing reports and calculations related to landscape designs; manage the bidding and Council Award process; directing and coordinating landscape design and construction of municipal projects, including designing CIP landscape projects, from the conceptual draft phase through construction and completion of landscape projects for the City; performing comprehensive project management duties under the direction of the Landscape Architect; directing and coordinating projects with other departments and outside agencies/companies to review landscape design projects; performing project QA/QC through conducting construction inspections and securing permits and approvals for project work; verifying project quantities and pay applications; negotiating change orders; communicating with the general public regarding landscape projects; completing projects within established timeframes; managing consultants designing City landscape projects through reviewing consultant design work and project schedules to ensure compliance to project contract, plans, and specifications; reviewing landscape plans for other project managers with the purpose of providing professional review and comments regarding the design and ensuring compliance with project specifications; and acting as lead over paraprofessional technical staff in planning, designing, and creating landscape projects.

***Utility Coordinator Assignment:*** An employee assigned to perform utility coordination work will also be responsible for coordinating and establishing working relationships with outside agencies and utility companies such as: federal, state, and local government; Salt River Project (SRP); CenturyLink; Verizon Wireless; Southwest Gas; cable television; school districts; railroads, etc. This class will serve as the City's single point of contact when coordinating with outside agencies and utility companies regarding the City's capital improvement projects, including submitting plans and specifications for review comments and record drawings. Duties also include: attending utility coordination meetings with in-house staff, outside agencies, and utility companies; reviewing plans; verifying field work is done according to plans and permits; and requesting licenses from outside agencies. Extensive verbal and written communication skills are required to perform utility coordination responsibilities.

**Distinguishing Features:** An Engineering Designer is distinguished from an Engineering Technician IV by having a greater percentage of design and project management work. Work is performed under the direction of a Supervising Engineer, Senior Civil Engineer, Civil Engineer, Right of Way Manager, or a Landscape Architect (***by assignment***). This class is FLSA exempt-professional.

## QUALIFICATIONS

**Employee Values:** All employees of the City of Mesa are expected to uphold and exhibit the City's shared employee values of Knowledge, Respect, and Integrity.

**Minimum Qualifications Required.** Any combination of training, education, and experience equivalent to graduation from an accredited college or university with a bachelor's degree in

Engineering, Geographic Information Systems (GIS), Landscape Architecture, Construction Management, or related field; and a minimum of one year of engineering, construction supervision, or related experience.

**Special Requirement.** Must possess a valid Class D Arizona Driver's License by hire or promotion date.

**Substance Abuse Testing.** None.

**Preferred/Desirable Qualifications.** Civil engineering, construction management, construction supervision, architectural, or any combination of experience is desirable. College coursework or technical school coursework in Civil Engineering, Electrical Engineering, Mechanical Engineering, Landscape Architecture, or closely related field is also desirable. Possession of a bachelor's degree in Landscape Architecture and experience creating and reviewing landscape drawings, landscape design, or related experience is preferred (*Landscape Design Assignment*). Experience reviewing plans and verifying field work is completed according to plans and permits is preferred.

## ESSENTIAL FUNCTIONS

One position may not include all of the essential functions, knowledge, and abilities listed, nor do the listed examples include all the knowledge and abilities which may be found in positions of this classification.

**Communication:** Communicates with outside agencies, utility companies, the public, other City employees, vendors, management, contractors, and public officials to explain policies, procedures, and regulations relating to the development process. Employees will have excellent analytical and problem-solving skills and excellent written and verbal communication skills. Provides technical guidance and trains staff regarding design and drafting of City projects. Prepares complex letters, memos, and specifications with clearly organized thoughts and using proper sentence structure, punctuation, and grammar.

**Manual/Physical:** Reviews the work products of others to ensure compliance with: standard operating procedures; governmental regulations such as, the Environmental Protection Agency (EPA), Arizona Department of Transportation (ADOT), U.S. Department of Transportation Office of Pipeline Safety, Federal Highway Administration (FHA), Arizona Department of Environmental Quality (ADEQ), Arizona Department of Water Resources (ADWR), Arizona Corporation Commission (ACC); and City standards and guidelines. Inspects, monitors, and evaluates equipment and materials to determine compliance with prescribed operating, safety, or other standards. Operates a City vehicle requiring a standard Class D Arizona Driver's License to observe and measure field conditions at project locations during the design and construction phases, as well as to attend off-site meetings. Operates a variety of standard office equipment (including drafting equipment) to perform assigned duties. Enters data or information into a personal computer (PC) to prepare reports and monitor data. Meets scheduling and attendance requirements.

**Mental:** Plans, organizes, and manages the activities of design projects. May supervise clerical, technical, or paraprofessional staff by evaluating work involving AutoCAD, design, and calculations of landscape projects or utility coordination. Plans, organizes, and reviews development plans. Manages the bidding and Council award process. Performs project QA/QC. Monitors project budgets. Prepares design criteria. Directs the work of outside consultants. Performs illustrative artwork and drafting.

Prioritizes own work. Resolves design-related problems by performing calculations, evaluating alternatives, and/or interviewing affected parties. Coordinates work activities. Conducts research and analyzes data involving record drawings, service and operation data, and design standards to perform assigned duties. Performs mathematical calculations, statistical computations, and financial and cost analyses. Comprehends and makes inferences from written material such as plans, specifications, and correspondence. Understands and interprets construction documents, schematic drawings, and layouts to perform design review. Reviews shop drawings, verifies project quantities and pay applications, and negotiates change orders. Prepares budget estimates. Estimates labor and material costs from construction drawings. Learns job-related material through on-the-job training.

### **Knowledge and Abilities:**

#### **Knowledge of:**

utilizing technical expertise gained from years of experience or educational achievement to perform professional engineering work;  
the principles and practices of civil engineering and the methods and techniques used in the design of public water, natural gas, sanitary sewer, storm sewer, underground utility lines, retention basins, pump stations, water storage tank sites, and public street improvements;  
symbols and terminology used in engineering drawings;  
engineering mapping and drafting techniques and standards;  
federal, state, and local regulations and codes, and the engineering standards pertaining to the design of the project assigned;  
the Maricopa Association of Government's Uniform Standard Specifications and Details, and the City of Mesa's amendments thereto;  
mathematics including algebra, geometry, and trigonometry;  
mastery of engineering software and systems; and  
2D and 3D CAD programs.

#### **Ability to:**

provide expert advice to Leadership on significant matters;  
analyze various design concepts in order to recommend the most feasible approach to meet project requirements by using engineering principles in estimating the cost of each option, comparing the cost estimates to the available budget, and considering conflicting or unusual conditions that may exist such as, performance versus cost, budget constraints, public safety, new technology, and alternative construction materials;  
research City maps, past City drawings, and right-of-way documents and compare this data with observed field conditions in order to acquire predesign information;  
take responsibility for utilizing technical expertise to identify, investigate, and resolve significant and complex matters on behalf of the City;  
identify coordination needs with other agencies and City departments impacted by the project's design to ensure that their requirements are incorporated into the project design;  
establish the topographic survey parameters for the design and provide concise instructions for obtaining survey data on existing topography and elevations;  
analyze topographic survey information for various physical or environmental constraints that could impact design or require removal or relocation of an existing facility;

review preliminary CAD work to determine the accuracy of survey notes and existing facilities from record drawing information previously gathered and determine if the conceptual design is compatible with existing features;  
create profile designs indicating proper clearance between underground facilities such as: irrigation lines, sewer, gas, water, storm drains, electrical banks, and telephone ducts;  
calculate trench loads to determine special bedding details for utility lines;  
prepare a project specifications book containing all contract documents, performance and payment bond forms, insurance forms, and special permits or licenses including necessary special provisions and technical specifications for specialty items of work the contractor needs to be aware of;  
respond to inquiries from representatives of the construction industry and potential bidders to clarify points about the plans and specifications (contract documents) and the bidding process;  
review consultant's construction cost estimate by analyzing each item on the plans and determining their respective projected cost at bid time and make modifications to the project design if the projected amount exceeds budget;  
coordinate the project construction schedule and activities of the various agencies involved within the project limits;  
explain policies, procedures, and regulations regarding the development process to a diverse audience which includes: consultants, contractors, other City employees, and the general public;  
manage and direct consultants and subordinate personnel in the design of CIP projects and other duties and responsibilities;  
perform design duties with minimal direct supervision; and  
establish and maintain effective working relationships with coworkers, management, and representatives of other City departments.

***Landscape Design Assignment:***

Knowledge of:

full range of landscape design tasks involved in preparing plans and specifications and designing and managing landscape projects in the City's CIP through the full lifecycle of a project;  
design standards and specifications for landscape projects;  
principles of municipal project management; and  
principles and practical application of leading and/or supervising paraprofessional technical staff.

Ability to:

direct and coordinate landscape design and construction of municipal projects including: parks, recreation, cultural development programs, streetscapes, multi-use paths, and other City site developments;  
plan and develop landscape and irrigation designs;  
design and develop municipal CIPs;  
design projects that range from simple in design to more complex;  
design landscape projects using drafting equipment;  
prepare design criteria and budget estimates;  
manage consultants ensuring project compliance to design standards and contract requirements;  
manage landscape design projects from conceptual phase through final phase of construction;  
prepare, design, and bid documents;  
secure permits and approvals for project work;

prepare cost estimates and monitor budget;  
coordinate with other City departments, outside agencies, and consultants to conduct design review;  
perform QA/QC on projects;  
review landscape designs for other project managers;  
communicate with the public, outside agencies, and other City departments;  
assist with the bidding and Council award process; and  
coordinate change orders due to utility conflicts.

The duties listed above are intended only as general illustrations of the various types of work that may be performed. Specific statements of duties not included does not exclude them from the position if the work is similar, related, or a logical assignment to the position. Job descriptions are subject to change by the City as the needs of the City and requirements of the job change.

Revised 10/24 – updates to Responsibilities and Qualifications

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INCREMENTS 38-200

PAY GRADE: 55

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