

**Summary of Duties:** An Engineering Designer does specialized engineering design work limited in scope in connection with the preparation of plans, designs, details, and estimates for a variety of structures, facilities, public works improvements, or other construction projects; and does related work.

**Distinguishing Features:** An Engineering Designer utilizes a specialized technical background to perform routine design work of a limited scope related to the development of construction plans for public works projects. The work differs from that performed by a Civil Engineering Assistant in that the work of a Civil Engineering Assistant requires a formal educational background, rather than specialized experience, and may involve a broad range of engineering work while gaining the experience required to become a fully qualified professional engineer. In this class assignments normally are given verbally and in writing and the results are evaluated.

**Examples of Duties:** An Engineering Designer:

- \* Performs specialized engineering design work of a limited scope in the preparation of preliminary and construction plans, right-of-way maps and descriptions, designs, details, and estimates for streets, sewers, storm drains, wastewater treatment facilities, buildings, bridges, street lighting systems, traffic systems, water supply and distribution structures and facilities, airport facilities, or other specialized public works improvements;
- \* Researches record maps, field notes, water runoff data, and other engineering records;
- \* Requests additional field work and makes site inspections as required;
- \* Performs engineering calculations using standard formulas and establishes design parameters;
- \* Prepares preliminary and finished plans, profiles, and cross sections according to job requirements;
- \* Checks calculations and plans prepared by other designers or consultant engineers for accuracy and to see that they conform to standards;
- \* Performs routine architectural or landscape architectural design work of a limited scope in the preparation of preliminary and construction plans, designs, details and estimates;
- \* Performs drafting and detailing of construction plans;
- \* Makes investigations and prepares reports and maps relating to the determination of right-of-way requirements for construction projects;
- \* Prepares contractor grade sheets;
- \* Makes field investigations and prepares sketches and reports relating to plan changes;
- \* Performs construction engineering activities, such as, the preparation of necessary change orders;

- \* Investigates and prepares reports regarding private development and land use activities;
- \* Prepares legal descriptions and processes vacations, ordinances, and other matters relating to right-of-way engineering;
- \* Prepares various routine reports of a non-technical nature;
- \* Prepares communications to other agencies and private citizens;
- \* Uses personal computers to prepare plans, schedules, charts, graphs, spreadsheets, and engineering data sheets.
- \* Prepares bond estimates and issues permits for private development projects.

May occasionally be assigned to other duties for training purposes or to meet technological changes or emergencies.

**Qualifications:** Incumbents must have the following knowledges and abilities:

**A good knowledge of:**

- \* Principles, techniques, and nomenclature used in drafting;
- \* Principles of engineering as they relate to routine design functions;
- \* Sources of engineering information;
- \* Principles, procedures and technical skills to operate various Computer Aided Drafting Designer (CADD) systems.

**A working knowledge of:**

- \* Engineering mathematics including algebra, geometry, and trigonometry;

**A general knowledge of:**

- \* Engineering practices and procedures as applied to street construction, street lighting design and construction, sewage, traffic, street and highway construction, wastewater and drainage systems, buildings, bridges, earth retaining structures, water supply and distribution systems, and airport facilities;
- \* Engineering mechanics, mechanics of materials, fundamentals of electricity and illumination, hydraulics and hydrology;
- \* Field survey techniques;
- \* Print reproduction processes;
- \* Urban planning and land development processes;

**The ability to:**

- \* Design and plot horizontal and vertical curves;
- \* Interpret and plot legal descriptions;
- \* Prepare and plot slopes and grades, plot grade contours and calculate earthwork volumes;
- \* Interpret engineering data and visualize spatial relations;
- \* Communicate effectively in writing.

**Minimum Requirements:**

Completion of two years of education in a recognized college or

university with specialization in engineering and three years of subprofessional engineering experience including two years at the level of Civil Engineering Drafting Technician are required. One additional year of subprofessional engineering experience at the level of Civil Engineering Drafting Technician may be substituted for each year of college education lacking.

**License:** A valid California driver's license may be required.

**Physical requirements:** Strength to perform average lifting up to 5 pounds and occasionally over 15 pounds; arm, hand, and finger dexterity with both hands involved in activities such as reaching, handling, and feeling; good speaking and hearing ability; and good eyesight.

Those with medical limitations may be able to perform the duties of some position in this class with reasonable accommodation. The decision to accommodate someone's limitations will be made on an individual basis and depends on the types of limitations, what the hiring department can reasonably do to accommodate them, and the specific qualifications for the job.

**As provided in Civil Service Commission Rule 2.5 and Section 4.55 of the Administrative Code, this specification is descriptive, explanatory and not restrictive. It is not intended to declare what all of the duties and responsibilities of any position shall be.**