



CITY OF CITRUS HEIGHTS

ENGINEERING AIDE ENGINEERING TECHNICIAN I ENGINEERING TECHNICIAN II

DEFINITION

To perform a variety of para-professional engineering services and provide technical engineering assistance in the office and in the field, including drafting, traffic investigations, computations, data collection and analysis.

DISTINGUISHING CHARACTERISTICS

Engineering Aide - This is the trainee level class in the Engineering Technician series. Aides work under close supervision, and progress to general supervision as an incumbent is able to perform the assigned duties. The Engineering Aide may perform routine computer-aided drafting, field investigations, data collection, and other related work that does not require previous specialized experience.

Engineering Technician I - This is the entry level class within the Engineering Technician series, handling routine assignments which require a combination of basic technical knowledge and specialized engineering skills, such as computer aided drafting, minor design work, field engineering, data collection and analysis. This class is distinguished from the Engineering Technician II journey level by the limited scope of projects, and less complex work assignments. Incumbents exercise some judgment in selecting the appropriate established guidelines to follow; significant deviations require prior approval. Positions in this class are flexibly staffed and are normally filled by advancement from the trainee level.

Engineering Technician II - This is the journey level class within the Engineering Technician series. Incumbents in this class are distinguished from the Technician I level in the broader scope and greater complexity of work assignments. The Technician II level performs the full range of work within established procedures, and receives occasional instruction or assistance as new or unusual situations arise. Work is reviewed upon completion and for overall results. Positions in this class are flexibly staffed and are normally filled by advancement from the entry level.

SUPERVISION RECEIVED AND EXERCISED

Engineering Aide

Receives immediate supervision from an engineer and receives technical or functional supervision from a higher-level Technician as appropriate. Work is reviewed regularly, and changes in procedures or exceptions to rules are explained in detail as they arise.

Engineering Technician I

Receives immediate supervision from an engineer and receives technical or functional supervision from a higher-level Technician as appropriate. Incumbents initially work under close supervision, but are expected to progress to general supervision as they learn to perform the full range of duties at this level. May exercise technical and functional supervision over less experienced technical personnel.

Engineering Technician II

Receives general supervision from an engineer. May exercise technical and functional supervision over less experienced technical personnel.

EXAMPLES OF DUTIES - Duties may include, but are not limited to, the following:

- Perform computer-aided drafting of engineering plans, drawings, maps and exhibits including, roadways, utilities, landscape, street lighting, and traffic signals using AutoCAD and other civil engineering design software.
- Insert text into existing drawings; determine quantities of areas, process and manipulate raw survey and/or base map information; create AutoCAD point files, post processing of GPS data, organize information to fit the City's drafting standards, and import information into existing AutoCAD files.
- Provide input to the development and enhancement of AutoCAD drafting standards; participate in the City's quality assurance process for in-house plan preparation.
- Prepare sketches or exhibits using standard drafting equipment; assist in preparation of "as-built" construction plans; and perform civil engineering computations related to distances, ties, angles, areas, traverses, and closures.
- Perform calculations for cost estimates, material quantities, verification of utility design information, right of way area, and other calculations required for plan preparation and/or quality control.
- Utilize traffic engineering software and other computer software to input collected data, prepare reports, databases, and drawings.
- Perform database and mapping work related to the development and maintenance of GIS needs in conjunction with the Information Technology Division.
- Research parcels and other documents; develop and modify databases for technical information, including the research of products.
- File and retrieve a variety of engineering maps, plans, reports, and related documents.
- Organize and maintain the map files, database, and other related electronic and paper filing systems.
- Assist in the review of plans, descriptions, plats, maps, and a variety of survey information to ensure accuracy and conformance with City standards; make recommendations for taking corrective action.
- Assist in processing encroachment and transportation permits.
- Perform plan checking duties and cost estimates for private development and public improvement projects.
- Perform field survey work such as GPS data collection, basic topographic survey, radar speed surveys, traffic sampling, pedestrian and bicycle safety studies, inspection of existing conditions, and other related work. Update related documents.
- Evaluate problems or conditions in the field, report findings, and make recommendations for corrective action.

- Coordinate with the City's contractor for specialized data collection activities including installing, traffic counters and flow meters and collection of engineering speed surveys.
- Prepare, and assist in the preparation of a variety of technical reports and exhibits, with input from engineering staff, including the development of schedules, spreadsheets, charts, graphs, diagrams, grant applications, and other graphical aids.
- Report on the status of monitoring projects, investigations, construction projects, and other similar engineering projects or programs.
- Assist with coordination of project development and management of design and construction of small projects.
- Work cohesively with the County and contractors to develop and review a variety of civil engineering and traffic plans associated with City and County projects.
- Follow procedures and assist in implementation of street closures for repair or construction projects.
- Respond to inquiries and concerns and interact with the public regarding traffic complaints and questions, engineering projects and studies, plans and maps; research and resolve conflicts as required and discuss traffic control ordinances, plans, policies and procedures.
- Analyze data related to traffic flow, vehicular and pedestrian accident rate data, and proposed development in order to determine the most efficient methods to expedite traffic flow.
- Compute time settings for traffic signals and speed restrictions, using standard formulas.
- Gather and compile data from hand count sheets, machine count tapes, and radar speed checks, and code data for computer input.
- Interview motorists about specific intersections or highways in order to secure information regarding roadway conditions for use in planning.
- Measure and record the speed of vehicular traffic, using electrical timing devices or radar equipment.
- Collect traffic data from field studies including manual and machine vehicle counts and record data in order to assess the volume, type, and movement of vehicular and pedestrian traffic at specified times.
- Study factors affecting traffic conditions, such as lighting, and sign and marking visibility, in order to assess their effectiveness.
- Analyze and study traffic delays by noting times of delays, the numbers of vehicles affected, and vehicle speed through the delay area.
- Monitor street and utility projects for compliance to traffic control permit conditions.
- Plan, design, and improve components of traffic control systems in order to accommodate current and projected traffic, and to increase usability and efficiency.
- Prepare work orders for repair, maintenance, and changes in traffic systems.
- Provide technical supervision regarding traffic control devices to other traffic technicians and laborers.
- Review traffic control/barricade plans in order to issue permits for parades and other special events and for construction work that affects rights-of-way, providing assistance with plan preparation or revision as necessary.

- Visit development and work sites in order to determine project effects on traffic and the adequacy of plans to control traffic and maintain safety; use digital and analog field equipment; suggest traffic control measures.
- Build and maintain positive working relationships with co-workers, other City employees and the public using principles of good customer service.
- Perform related duties as assigned.

MINIMUM QUALIFICATIONS

Engineering Aide

Knowledge of:

- Basic principles and practices of manual and computer-aided drafting and design and traffic and civil engineering computer software applications.
- Operational characteristics of equipment and materials used in assigned program areas.
- Algebra, geometry, and trigonometry used in drafting and other technical tasks.
- General office methods, equipment use and procedures, including filing and record keeping.
- Proper English usage, spelling, punctuation, and grammar.
- Principles and practices of good customer service.
- Techniques and principles of effective interpersonal communication.

Ability to:

- Understand and follow oral and written instructions.
- Perform mathematical and basic technical engineering computations and learn to use engineering computer software applications, including computer aided design (CAD).
- Learn to operate various traffic, civil and other engineering instruments and traffic related test equipment and mechanical devices.
- Learn to read, understand and interpret technical reports, diagrams, maps, drawings, specifications, and legal descriptions.
- Learn pertinent local, State and Federal laws, codes and ordinances
- Learn and interpret City functions, and various policies, rules and regulations related to area of assignment.
- Communicate clearly and concisely, both orally and in writing.
- Learn and utilize new skills and information to improve job performance and efficiency.
- On a continuous basis, know and understand all aspects of the job; intermittently analyze work papers, reports and special projects; identify and interpret technical and numerical information; observe and problem solve operational and technical policy and procedures.
- Understand the organization and operation of the City and of outside agencies as necessary to assume assigned responsibilities.
- Use principles of effective office and field safety including use of equipment in a proper and safe manner, use of preventative personal ergonomic techniques, and maintenance of safe housekeeping in personal and common workspaces.
- Provide high quality, economical services to the Citrus Heights community, placing emphasis on responsive customer service.

- Demonstrate a civic entrepreneurial spirit by generating new, innovative ideas and development of better methods to accomplish tasks and complete projects.
- Foster an environment that embraces diversity, integrity, trust and respect.
- Be an integral team player, which involves flexibility, cooperation and communication.
- Establish and maintain effective working relationships with those contacted in the course of work.
- Work with various cultural and ethnic groups in a tactful and effective manner.
- Use principles of effective office safety including use of equipment in a proper and safe manner, use of preventative personal ergonomic techniques, and maintenance of safe housekeeping in personal and common workspaces.
- Communicate clearly and concisely, both orally and in writing.
- Operate a personal computer with proficiency and familiarity.

Experience and Training

Any combination of experience and training that would provide the required knowledge and abilities is qualifying. A typical way to obtain the required knowledge and abilities would be:

Experience:

None required. Six months of general experience that provides familiarity with technical engineering work is desirable.

Training:

Equivalent to the completion of the twelfth grade. Additional courses or training in computer aided drafting, engineering technology, or mathematics courses such as algebra, geometry, or trigonometry are desirable.

License or Certificate:

Possession of, or ability to obtain, a valid California driver's license and proof of automobile liability insurance are required.

Engineering Technician I

In addition to the qualifications for Engineering Aide:

Knowledge of:

- Methods, practices, techniques and instruments used in technical engineering work such as drafting, mapping, and surveying.
- Mathematics, including algebra, geometry, and trigonometry as applied to technical engineering work.
- Pertinent local, State and Federal laws, codes and ordinances.
- Computer software, including word processing, database, spreadsheet and accounting applications.
- Basic computer-aided design and engineering computer applications.

- Principles and methods of business letter and report writing.
- Report writing techniques.
- Principles and practices of safety management.

Ability to:

- Use engineering computer applications and engineering instruments used by the City.
- Perform mathematical and technical engineering computations.
- Compile and interpret engineering data; read and interpret and prepare technical reports, diagrams, maps, drawings, specifications, and legal descriptions.
- Operate a personal computer utilizing spreadsheet, word processing and database software at an intermediate to advanced level.
- Compose professional quality correspondence and letters; write highly technical, detailed and analytical reports.
- Listen and hear from citizens from different backgrounds and perspectives regarding concerns, issues and needs. Explain technical data and problem solve actively with customers. Communicate clearly and effectively to the public.
- Operate office and field equipment related to areas of assignment.
- Work scheduled and emergency overtime; be available for call back, as required; and to change work periods and work days dependent on operational requirements of the City.

Experience and Training

Any combination of experience and training that would provide the required knowledge and abilities is qualifying. A typical way to obtain the required knowledge and abilities would be:

Experience:

One year of experience similar to the Engineering Aide with the City of Citrus Heights or other Public Agency is desirable.

Training:

Equivalent to completion of the twelfth grade supplemented by additional courses or training in computer aided drafting, engineering technology, and mathematics courses such as algebra, geometry, and trigonometry. An Associate degree in engineering technology, computer-aided drafting, or other related field is desirable.

License or Certificate:

Possession of, or ability to obtain, a valid California driver's license and proof of automobile liability insurance are required.

Engineering Technician II

In addition to the qualifications for Engineering Technician I:

Knowledge of:

- Terminology, methods, practices, and techniques of drafting, including computer aided drafting and design.
- Trigonometry as applied to computation of angles, area, distances, and traverses.
- Surveying techniques and practices; engineering maps and records.
- Materials testing techniques and practices.
- Engineering computer applications, including GIS.
- Pertinent local, State and Federal laws, codes and ordinances, City functions, policies, rules and regulations.

Ability to:

- Perform engineering drafting work and create maps using computer aided drafting and design software and other automated systems used by the City.
- Compile and analyze technical data.
- Operate office and other equipment including computer, plotter, scientific calculator and drafting instruments.
- Read, interpret and or prepare moderately complex technical reports, diagrams, maps, drawings, specifications, and legal descriptions.
- Understand, interpret, and apply Federal, State and City codes and ordinances, rules, regulations, and guidelines affecting departmental specifications and operations.
- Make moderately complex engineering computations quickly and accurately.
- Use and care for drafting, surveying, and materials testing instruments.
- Read and interpret legal descriptions, engineering drawings, simple engineering designs, survey notes and tract descriptions.
- Perform basic field inspections and work in field for various special traffic and emergency incident response events.

Experience and Training

Any combination of experience and training that would provide the required knowledge and abilities is qualifying. A typical way to obtain the required knowledge and abilities would be:

Experience:

Two years of experience performing duties similar to the Engineering Technician I with the City of Citrus Heights or other Public Agency experience is highly desirable.

Training:

Equivalent to completion of the twelfth grade supplemented by additional courses or training in computer aided drafting, engineering technology, and mathematics courses such as algebra, geometry, and trigonometry. An Associate degree in engineering technology, computer-aided drafting, or other related field is highly desirable.

License or Certificate:

Possession of, or ability to obtain, a valid California driver's license and proof of automobile liability insurance are required.

PHYSICAL/SENSORY REQUIREMENTS

On a continuous basis, stand at public counter or sit at a desk for long periods of time; intermittently stand when performing inspection duties; walk around inspection sites, kneel, twist and bend in the office while retrieving files/plans and in the field while performing site inspections; perform simple and power grasping, pushing, pulling, and fine manipulation; use a telephone, and write or use a keyboard to communicate; and lift or carry weight of 25 pounds or less; and see well enough to read documents and computer screens.

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| File: | Engineering Aide Engineering Technician I Engineering Technician II |
| FLSA: | Non-exempt |
| Created: | 07/01/05 |
| Revised: | 05/01/06 – Modified duty statements for clarification; modified experience and training MQs for consistency in moving to higher levels 10/15/10 – Corrected EEO Language 04/28/16 – Modified duty statements and experience requirements for clarification 07/23/2019 – Technical updates; new format |