

**Section 2.0 Knowledge, Skills and Abilities Required by Professional Level**  
**City of Carlsbad Engineering Technician KSA Matrix**

<b>Job Level: Tech I</b>	<b>Job Level: Tech II</b>
<b>Assumes proficiency in only those skills listed below.</b>	<b>Assumes proficiency in all skills listed below as well as those listed under Level I</b>
<p><i>Complexity and Scope</i></p> <ul style="list-style-type: none"> <li>-Intermediate level para-professional. This is the first level in the Engineering Technician job family. Performs basic technical engineering support under limited supervision.</li> <li>-Requires limited use and application of basic engineering and survey principles, theories, and concepts. Requires a basic understanding of the City's policies and procedures, and a detailed understanding of the municipal and other agency codes and requirements pertaining to the Division supported.</li> <li>-Provides solutions to routine problems of limited scope and complexity.</li> </ul>	<p><i>Complexity and Scope</i></p> <ul style="list-style-type: none"> <li>-Experienced para-professional. This is the most senior level in the Engineering Technician job family. Performs complex technical engineering support work with accuracy, speed and minimal supervision.</li> <li>-Requires full use and application of standard theories, concepts and techniques used, and a solid understanding of the City's policies and procedures, and a detailed understanding of the municipal and other agency codes and requirements pertaining to the Division supported.</li> <li>-Diagnoses and solves a wide variety of problems of moderate scope and complexity.</li> </ul>
<p><i>Problem Solving, Judgment and Impact</i></p> <ul style="list-style-type: none"> <li>-Identifies and reports problems, issues and trends.</li> <li>-Recognizes when immediate action is needed.</li> <li>-Exercises judgment within closely defined procedures and practices to determine appropriate action.</li> <li>-Errors typically do not have a major effect on the organization.</li> </ul>	<p><i>Problem Solving, Judgment and Impact</i></p> <ul style="list-style-type: none"> <li>-Solves problems independently.</li> <li>-Exercises judgment with limited information, but within standard, defined procedures and practices to determine appropriate action.</li> <li>- Knows when to seek guidance for complex projects or requests.</li> <li>-Suggests and helps implement process improvements and modifications.</li> <li>-Incorrect decisions or inaccuracy in calculating development fees could have a financial impact on the City.</li> </ul>
<p><i>Contact and Communication:</i></p> <ul style="list-style-type: none"> <li>-Contacts are primarily with immediate supervisors and other team members in section/group.</li> <li>-Interorganizational and outside organization contacts are infrequent and/or on routine matters.</li> <li>-Has direct citizen contact within a routine environment.</li> </ul> <p>-Writes simple reports. Documents problems, fills out forms. Issues work orders.</p>	<p><i>Contact and Communication:</i></p> <ul style="list-style-type: none"> <li>-Daily communication on a technical level with other City staff.</li> <li>-Daily contact with the public. Must deal with regular interruptions and changing priorities. Resolves complaints, answers technical questions clearly and accurately.</li> <li>-Makes oral presentations to departments or small groups.</li> <li>-Discusses procedures and ideas with group members.</li> <li>-May interact with contractors and other vendors.</li> <li>-Has direct citizen contact on routine and non-routine issues.</li> <li>- Frequent interorganizational contact.</li> <li>-May serve on cross-functional teams.</li> </ul> <p>-Revises and upgrades routine documents (e.g. procedures, specifications, etc.)</p>

**Section 2.0 Knowledge, Skills and Abilities Required by Professional Level**  
**City of Carlsbad Engineering Technician KSA Matrix**

<ul style="list-style-type: none"> <li>-Communicates clearly with customers, peers and supervisor (both speaking and listening).</li> <li>-Good interpersonal and communication skills. Good customer service skills.</li> </ul>	<ul style="list-style-type: none"> <li>-Documents work on new procedures</li> <li>-Writes complex analytical reports and memos.</li> <li>-Effective communicator, with both written and oral presentations.</li> <li>-Strong interpersonal and customer service skills.</li> <li>- Deals effectively with rude or aggressive customers.</li> </ul>
<p><i>Teamwork and Training</i></p> <ul style="list-style-type: none"> <li>-Interacts well with team members and other departments and citizens/customers.</li> <li>-Effective team player.</li> <li>-Remains flexible to changing work priorities.</li> </ul>	<p><i>Teamwork and Training</i></p> <ul style="list-style-type: none"> <li>-Active team member, participates and contributes to team activities</li> <li>-Effective team player and leader of small, local teams.</li> <li>-Utilizes resources effectively outside own department.</li> <li>-Instructs others on procedures, specifications and the use of equipment.</li> <li>-With assistance, develops and presents short, informal training sessions.</li> <li>-Within work assignment, demonstrates an effort to improve operations, decrease turnaround times, streamline processes and work cooperatively to provide high quality customer service.</li> <li>-Cross trained to work flexibly in all/most Engineering Tech work assignments within Division.</li> </ul>
<p><i>Supervision Given or Received, Independence and Priority Setting:</i></p> <ul style="list-style-type: none"> <li>-Normally works under limited supervision, receiving detailed coaching and work instructions. Assigned work by others.</li> <li>-May work on project teams.</li> </ul>	<p><i>Supervision Given or Received, Independence and Priority Setting:</i></p> <ul style="list-style-type: none"> <li>-Works with minimal supervision.</li> <li>-Works under less detailed instructions to complete assignments.</li> <li>-Schedules own time according to established priorities.</li> <li>-May schedule priorities or give direction to others or supervise less senior staff</li> <li>-Effective project team member. Understands and effectively applies project management fundamentals.</li> </ul>

**Section 2.0 Knowledge, Skills and Abilities Required by Professional Level  
City of Carlsbad Engineering Technician KSA Matrix**

<p><i>Data Collection and Field Work:</i></p> <ul style="list-style-type: none"> <li>-Has basic skills in use of a variety of City systems to find and collect data for use in daily work, e.g. DMS, Permits Plus, GIS or Hansen</li> <li>-Conducts routine surveys and field work. Measures, collects, tabulates and plots/records data. Prepares diagrams. Collects and prepares samples.</li> </ul>	<p><i>Data Collection and Field Work</i></p> <ul style="list-style-type: none"> <li>-Competent at using a variety of City systems to find and collect data for use in daily work, e.g. DMS, Permits Plus, GIS, Hansen</li> <li>-Maintains databases and document management systems.</li> <li>-Conducts non routine and/or more complex surveys and field work including investigations for asset location. May be team leader of field crew.</li> <li>-Prepares legal and property descriptions.</li> </ul>
<p><i>Research and Data Analysis</i></p> <ul style="list-style-type: none"> <li>-Knows basic methods and techniques of research, statistical analysis and report presentation</li> <li>-Organizes, analyzes, correlates and summarizes data and/or test results.</li> <li>-Recognizes and questions unclear or discrepant data.</li> </ul>	<p><i>Research and Data Analysis</i></p> <ul style="list-style-type: none"> <li>-Knows advanced methods and techniques of research, statistical analysis and report presentation</li> <li>-Collects, interprets and analyzes statistical data.</li> <li>-May determine methods for data evaluation</li> <li>-Calculate fees based on usage and type.</li> <li>-Draws conclusions and makes recommendations based on evaluation of data.</li> </ul>
<p><i>Equipment Utilization:</i></p> <ul style="list-style-type: none"> <li>-Uses basic survey equipment e.g. Mitron, laser/radar gun.</li> <li>-Sets up and adjusts equipment to specifications.</li> <li>-Recognizes equipment/instrument problems.</li> <li>-May make minor equipment repairs.</li> <li>-Basic use of handheld computing tools, personal computers, computer workstations, plotters, printers, etc.</li> </ul>	<p><i>Equipment Utilization:</i></p> <ul style="list-style-type: none"> <li>-Proficient at use of all survey equipment.</li> <li>-Does routine troubleshooting of equipment.</li> <li>-Helps suggest improvements in equipment.</li> <li>-May repair and maintain equipment and/or instruments.</li> <li>-May do routine calibration.</li> <li>-Proficient use of: GPS Data Collector, camera, personal computers, computer workstations, fax,, scanner, plotters, printers, etc.</li> </ul>
<p><i>Math and Computer Knowledge:</i></p> <ul style="list-style-type: none"> <li>-Uses basic engineering math skills involving geometry, trigonometry, statistics and algebra</li> <li>- Performs basic design and drafting using AutoCAD or similar programs</li> <li>- Basic knowledge and use of computer software including: DMS, Permits Plus, Word, Excel, Access, Hansen. Uses GIS database for research.</li> </ul>	<p><i>Math and Computer Knowledge:</i></p> <ul style="list-style-type: none"> <li>-Uses engineering math skills involving geometry, trigonometry, statistics and algebra</li> <li>-Manipulates data using standard software programs</li> <li>-Performs design and drafting using AutoCAD or similar programs.</li> <li>-Fully qualified user of DMS, Permits Plus, Word, Excel, Access, and Hansen.</li> <li>-Uses GIS database for research.</li> <li>-Takes data from CAD files and drawings and use it to update GIS database using ARC Editor.</li> <li>-Create specialized cartographic products from GIS database for internal customers</li> </ul>

**Section 2.0 Knowledge, Skills and Abilities Required by Professional Level**  
**City of Carlsbad Engineering Technician KSA Matrix**

<p><i>Drafting and Design</i></p> <ul style="list-style-type: none"> <li>-Reads and understands blueprints.</li> </ul>	<p><i>Drafting and Design</i></p> <ul style="list-style-type: none"> <li>-Prepares legal and property descriptions.</li> <li>-Designs elementary engineering structures and prepares specifications.</li> <li>-Understands and interprets engineering records and maps</li> <li>-Uses AutoCAD to create, design and draft projects, maps, exhibits and plans in support the work of professional engineers and others in the City.</li> </ul>
<p><i>Technical, Organization and Industry Knowledge</i></p> <p>Requires a basic understanding of:</p> <ul style="list-style-type: none"> <li>-Civil engineering standards, principles, practices and methods involving the design and construction of projects of various types.</li> <li>-Ability to read and interpret final maps, grading plans, improvement plans and other related documents.</li> <li>-Knowledge of City of Carlsbad Municipal Codes, Standards, Policies and Procedures, as well as the San Diego County Codes and Standards, especially in relevant areas.</li> <li>-the City's services, policies and procedures in relevant areas</li> <li>-the organizational structure of the City and the roles and responsibilities of related functions.</li> <li>-federal, state and local laws, codes and regulations affecting the areas of assigned responsibility.</li> </ul>	<p><i>Technical, Organization and Industry Knowledge</i></p> <p>Requires an advanced understanding of:</p> <ul style="list-style-type: none"> <li>-Civil engineering standards, principles, practices and methods involving the design and construction of projects of various types.</li> <li>-Ability to read and interpret final maps, grading plans, improvement plans and other related documents.</li> <li>-Knowledge of City of Carlsbad Municipal Codes, Standards, Policies and Procedures, as well as the San Diego County Codes and Standards, especially in relevant areas.</li> <li>-the organizational structure of the City and the roles and responsibilities of related functions.</li> <li>-federal, state and local laws, codes and regulations affecting the areas of assigned responsibility.</li> </ul>

<p><i>Typical Minimum Education and Experience:</i></p> <p>-The equivalent of an associate's degree in engineering technology or a related field and minimal work experience; or HS with relevant college courses in trigonometry, geometry, statistics, algebra, surveying, science and computer drafting and design, with significant related work experience.</p>	<p><i>Typical Minimum Education and Experience:</i></p> <p>-The equivalent of an associate's degree in engineering technology or a related field and at least two year's work experience equivalent to Engineering Tech I; or HS with relevant college courses in trigonometry, geometry, statistics, algebra, surveying, science and computer drafting and design, and at least two year's work experience equivalent Engineering Tech I.</p>
--	--