

## ELECTRICAL TECHNICIAN I/II/III

### I. Position Identification:

- A) Title: Electrical Technician I/II/III
- B) Bargaining Unit: Public Employees' Union, Local 1
- C) Customary Work Hours: As outlined in the department schedule.
- D) Customary Work Days: As outlined in the department schedule.
- E) Reports To: Electrical-Instrumentation Supervisor
- F) Directs the Work Of: None; however, the Electrical Technician III is considered a lead position.

G) Educational and/or Experience Requirements:

Any relevant combination of education and experience that would demonstrate the knowledge and skills outlined below is qualifying. A typical way of gaining the knowledge and skills is:

Electrical Technician I:

Education: High school diploma or equivalent.

Experience: Two (2) years of work experience involving electrical and/or electronic equipment and systems related to residential or commercial construction and maintenance.

Electrical Technician II:

Education: High school diploma or equivalent and completion of a recognized apprenticeship program in the electrical trade.

Experience: Two (2) years of work experience involving electrical and/or electronic equipment and systems related to residential or commercial construction and maintenance and (2) years of journey-level experience performing duties similar to or exceeding those of the City's Electrical Technician I. College or trade school in electrical, electronics, or related fields may be substituted for journey-level experience on a year-to-year basis for up to two (2) years total.

Electrical Technician III:

Education: High school diploma or equivalent and completion of a recognized apprenticeship program in the electrical trade.

Experience: Two (2) years of work experience involving electrical and/or electronic equipment systems and five (5) years of journey-level experience performing duties similar to or exceeding those of the City's Electrical Technician I. College or trade school in electrical, electronics, or related fields may be substituted for journey-level experience on a year-to-year basis for up to two (2) years total.

Licenses and/or Certifications Required:

At time of hire, must possess a valid California driver's license.

Electrical Technician II – additional certifications:

Possession of a CA Residential Electrician certificate or CA General Electrician certificate required at time of appointment.

Obtain an International Municipal Signal Association (IMSA) Level I Traffic Signal Technician certification within twelve months of appointment.

Electrical Technician III – additional certifications:

Possession of a CA General Electrician certificate (or equivalency) required at time of appointment.

Obtain an International Municipal Signal Association (IMSA) Level II Traffic Signal Technician certification within twelve months of appointment.

Obtain a California Water Environment Association (CWEA) Electrical Instrumentation Technology Grade I or equivalent industry standard certificate within three (3) years of hire.

Ability to obtain a valid California Class B or A driver's license is desired but not required for this position.

**II. FLSA Status:** Non-Exempt

**III. Position Summary:**

Under general supervision, performs a wide variety of semiskilled to skilled labor in the installation, testing, maintenance, repair, and modification of City-owned and/or -operated electrical and electronic equipment and systems. Typical infrastructure includes, but is not limited to, water treatment facility equipment, wastewater treatment facility equipment, traffic signals, streetlights, HVAC, communications equipment, and City-owned or -leased facilities.

Electrical Technician I:

This is the entry-level position in the series. Incumbents perform routine unskilled and semi-skilled tasks in support of a variety of electrical maintenance functions, perform utility-locating services, and assist other team members in assigned preventive maintenance, installation, and repair of electrical equipment, facilities, and systems. This position requires some related experience and/or training in the maintenance and operation of electrical equipment and systems. Under general supervision, incumbents are expected to progress their knowledge, skills, and responsibilities toward performance of the full range of duties. Through on-the-job training, an Electrical Technician I is expected to obtain the skills and knowledge necessary to advance to journey-level performance as a Electrical Technician II.

Electrical Technician II:

This is the journey-level position in the series. Incumbents independently perform the full range of skilled electrical maintenance work and may function as team leader for designated work projects. Incumbents must be capable of performing all facets of preventive maintenance, installation, and repair across all types of City electrical equipment and systems. This position also requires the ability to provide responsible and knowledgeable support in the maintenance and upkeep of specified electronics equipment and systems.

Electrical Technician III:

This classification represents the highest level in the series. Incumbents in this class are expected to perform their assigned tasks with only limited supervision. Incumbents independently perform the most highly technical and specialized electrical and electronics maintenance, repair, and installation activities, and also function as team leader on assigned work projects. Incumbents perform project planning and design work, train subordinate employees in a variety of tasks, and may collaborate with and act as a resource in areas of expertise to other City departments, outside contractors, and the general public as assigned.

**IV. Essential Functions:**

Incumbent may be assigned to varying work schedules, weekend work, and be called back to work as needed by the City.

Electrical Technician I:

1. Assist in the installation, inspection, maintenance, and repair of electrical and HVAC equipment and components.
2. Assist in the repair, diagnosis, and replacement of damaged or malfunctioning equipment in the field.
3. Retrieve parts and supplies.
4. Perform unskilled and semiskilled construction, maintenance, and labor as needed to assist the Electrical Division and support other City divisions and departments.

5. Assist with performing preventive maintenance tasks as directed.
6. Maintain and update daily log of activities and prepare reports.
7. Operate a variety of tools and equipment.
8. Respond to Underground Service Alert (USA) requests and accurately locate and mark under- and aboveground electrical, water, and wastewater utilities.
9. Dig trenches for underground electrical installation and/or repair.
10. Develop and maintain positive public relations with emphasis on customer service.
11. Carry out the mission of the City and the Department and adhere to City and departmental organizational values. Serve on employee task forces and committees.

Electrical Technician II – additional duties to duties listed above:

12. Perform maintenance for electrical, electronic, and HVAC equipment and systems for the City, including water and wastewater treatment plants.
13. Install, service, operate, test, and repair indoor/outdoor lighting, streetlights, traffic signals, and other devices.
14. Participate in Electrical Stand-by on a weekly rotating basis after obtaining supervisor approval to ensure continuity of operations within the City's electrical systems during absences or emergencies.
15. Update and change existing wiring to maximize the effectiveness, energy savings, and efficiency of electrical systems; expand, modify, and replace wiring and related electrical equipment as necessary.
16. Implement the preventive maintenance program for the water and wastewater treatment plants and related facilities and systems.
17. Implement the preventive maintenance program for a variety of electrical and electronic equipment and systems; clean and inspect a variety of electrical equipment.
18. Connect motors; check for voltage, current, rotation, or speed changes; repair and replace equipment and components.
19. Maintain, repair, and install traffic-signal equipment and systems; diagnose, calibrate, adjust, and replace electro-mechanical, solid-state, and microprocessor controllers and signal heads; replace and revise relays and wiring systems.
20. Maintain and repair instrumentation and control systems for the water and wastewater treatment plants; inspect and calibrate equipment.
21. Install and maintain electrical power systems.
22. Inspect street, park, and sports lighting and underground wiring; install, maintain, and repair specialized and underground wiring.
23. Keep abreast of current issues and trends in electrical and electronic equipment.
24. Check construction plans regarding electrical installations and system design.

25. Contact contractors and review job progress.
26. Provide on-the-ground orientation and training to new employees.
27. Act as a resource to other City departments and employees.
28. Independently perform troubleshooting, diagnostic, and problem-solving activities.
29. Perform repairs to printed circuit boards and relays as needed.
30. Prepare and maintain project records and documentation.
31. Review as-built drawings and operations/maintenance manuals.

Electrical Technician III – additional duties to duties listed above:

32. Participate in the design and planning of electrical and electronic construction and maintenance projects.
33. Prepare specifications and lists of needed materials; review bids to assure that all required components meet specifications; follow the City's procurement policies and procedures for the purchase of necessary materials, supplies, and services.
34. Participate in the design and installation of new electrical, electronic, and HVAC systems for the City.
35. Work with outside contractors and act as a resource and liaison to outside contractors regarding the City's priorities and requirements, as assigned.
36. Monitor and inspect construction projects to assure compliance with plans, electrical standards, and requirements.
37. Coordinate construction schedules.
38. Prepare project change orders for approval.
39. Authorize progress payments and field changes.
40. Conduct follow-through with project warranties.

**V. Job Related and Essential Qualifications:**

NOTE: The required level and scope of the following knowledge and skills relate to the level of the position as defined in the class characteristics.

Electrical Technician I:

**A. Knowledge of:**

- Basic theories and principles of electrically operated valves, pumps, and electrical motors.
- Basic principles and practices of electrical system repair and maintenance.
- Basic hand tools and testing equipment utilized in electrical repair and maintenance.

- Basic mechanical principles and applications.
- Basic under- and aboveground electrical, water, and wastewater infrastructure.
- Safe work practices at work facilities and construction sites.

**B. Skills at:**

- Learning the occupational hazards, safety standards, procedures, and appropriate safety precautions to protect self and others.
- Following oral and written directions, preparing reports, and maintaining accurate records.
- Operating and maintaining tools and equipment in a safe and effective manner.
- Using computer systems and software programs such as Microsoft Word, Excel, and Outlook.

**C. Ability to:**

- Maintain regular and predictable attendance.
- Identify electrically operated valves, pumps, and electrical motors and their components.
- Use a variety of electrical testing devices, gauges, and recording instruments.
- Work on voltages above 120V under direct supervision.
- Identify with Department and City goals and objectives and understand City priorities and needs.
- Maintain cooperative working relationships with management and supervisors, other employees, vendors, contractors, and the general public in the normal course of work.
- Reinforce City's quality internal and external customer service philosophy in daily actions.

Electrical Technician II – additional qualifications:

**A. Knowledge of:**

- National Electrical Code and other pertinent local and state regulations and codes.
- Components and parts utilized in street lighting, traffic lights and controls, water pumping systems, HVAC systems, and electrical motors.
- Basic hydraulic and pneumatic principles and applications.
- Department policies, procedures, and operations standards.
- Caltrans state specifications for traffic signal repair.

- Industrial electrical and electronic equipment and systems, including Variable Frequency Drives (VFDs), Adjustable Speed Drives (ASDs), Soft Starters, and Programmable Logic Controllers (PLCs).

**B. Skills at:**

- Utilizing diagnostic and testing equipment and interpreting results.
- Testing, diagnosing, repairing, and maintaining electrical equipment and systems.
- Interpreting technical information, schematics, and engineering drawings.
- Locating, diagnosing, and adjusting defects in electrical systems and equipment.
- Coordinating multiple projects and meeting deadlines.

**C. Ability to:**

- Identify and define problems, collect and analyze pertinent data, and determine appropriate course of action within parameters of given alternatives.
- Work on medium voltages (301 - 600V) according to established safety standards.
- Design and sketch electrical systems, installations, modifications, and fabrications.
- Estimate the materials, supplies, labor, and timeframes necessary to complete an electrical installation, repair, or maintenance project.
- Access information and resources for system maintenance and repair procedures.
- Learn the use of basic business and technical computer software applications.
- Understand potential liability of personal actions and work behaviors.
- Accept the input of supervisors and co-workers as well as provide input, and be a genuine team player.
- Recognize, prioritize and accomplish needed tasks.
- Follow and communicate proper safety standards.
- Demonstrate a high level of integrity.

Electrical Technician III – additional qualifications:

**A. Knowledge of:**

- Applicable statutes, rules, ordinances, codes, standards, and regulations.
- Electrically operated valves, pumps, electrical motors, and related electronic control devices utilized in all City operations and facilities.

- Standard and accepted components and parts currently utilized in a variety of hydraulic and pneumatic equipment as well as the appropriate diagnostic methods and techniques for troubleshooting all types of electrical, hydraulic, and pneumatic systems.
- Additional resources available within the community and the industry.
- Standard and accepted principles and practices of digital and microprocessor theory, power distribution, motor and transformer theory, electrical theory, and solid-state theory.
- Project management methods, techniques, and documentation requirements.
- Basic principles and practices of lead supervision, work oversight, and skills training.
- Reading and interpreting complex technical manuals, instructions, blueprints, sketches, and diagrams related to construction, installation, maintenance, repair, operation and installation of electrical and electronic equipment and instruments.
- Applying inspection methods and techniques to examine and evaluate the quality of work and materials and detect deviations from project specifications.
- Standard installation and maintenance practices.
- Reviewing and evaluating project technical data and documentation.
- Establishing effective working relationships with others.
- Using initiative and independent judgment.

**B. Ability to:**

- Utilize technical software for pump control systems, SCADA applications, and touch screen applications.
- Assign work projects and tasks, monitor work in progress, and successfully adhere to established timelines and schedules.
- Evaluate alternative solutions and develop and present recommendations.

**VI. Physical Demands/Qualifications:**

1. Working conditions in outside areas are subject to variations in temperature and may include wind, rain, and other elements.
2. Work safely outdoors in all weather.
3. Stand, climb, and walk for extended periods.
4. Lift, push, pull, and/or carry object up to 50 pounds without assistance.
5. Work on slippery and uneven surfaces and in heights, confined spaces, and awkward
6. Grasp and hold objects and tools with full range of wrist and arm motion positions with sufficient manual dexterity.
7. See sufficiently to perform fine measurements and differentiate between colored wires.



8. Hear sufficiently to understand conversations, both in person and on the telephone.
9. Drive a motor vehicle.

NOTE: Reasonable accommodations will be made for some physical demands for otherwise qualified individuals who required and request such accommodations.

**VII. Non-Physical Demands/Qualifications:**

1. Communicate information clearly and effectively on a number of different levels, both verbal and written.
2. Demonstrate a high level of integrity.
3. Operate under deadlines.
4. Be organized and capable of managing projects to schedule.
5. Possess a valid California driver's license.

**VIII. Environmental Conditions:**

Working conditions in the field are subject to extreme variations in temperatures, humidity, and can include high wind and rain. Incumbent may occasionally be required to work on slippery or uneven surfaces.

**IX. Other duties and requirements:**

This class description lists the major duties and requirements of the job and is not all inclusive. Not all duties are necessarily performed by each incumbent. Incumbents may be expected to perform job-related duties other than those contained in this document and may be required to have specific job-related knowledge and skills.