



## CLASS SPECIFICATION

03-23-2017

## ELECTRICAL TEST TECHNICIAN, 7512

**Summary of Duties:** Receives intensive classroom and on-the-job instruction and training, and works as a trainee under close supervision assisting journey-level Electrical Test Technicians in the performance of diagnostic tests, calibration, repair, maintenance, and adjustments on high and low voltage electrical circuits, equipment, and related material; on meters, controls circuits, instruments, relays and related materials; and on new locations; and performs related duties. A journey-level Electrical Test Technician performs routine calibration tests of meters, performs routine electrical tests of material, and assists in testing more complex electric instruments and equipment; tests electric meters, control and protective relays, instruments, transformers, and other equipment and materials; builds and tests circuit boards, removes or replaces components, and tests communication levels in regard to Supervisory Control and Data Acquisition (SCADA). Journey-level Electrical Test Technicians may occasionally lead a group of employees engaged in field or laboratory electrical testing; may perform the more difficult and advanced functions of electrical testing; and perform related duties.

**Class Characteristics:** Employees initially employed as Electrical Test Technicians function as trainees and must acquire the knowledge, skills, and abilities needed to perform at the journey-level through the on-the-job and classroom training. The trainee reports to an Electrical Test Technician Supervisor, and is closely guided by either a Senior Electrical Test Technician or journey-level Electrical Test Technician, depending on the complexity of the job. Positions at this level are temporary training positions under Civil Service Rule 5.30, and employment is limited to three years. During that time, a trainee must successfully complete an intensive course curriculum to qualify for promotion to the journey-level.

A journey-level Electrical Test Technician performs a variety of tests and adjustments on electric equipment, materials, and related equipment under both laboratory and field conditions. Work locations include generation stations, power plants, substations, water pumping stations, customer stations, underground sub-structures, and similar facilities containing electrical equipment. The work, which is technical in nature and requires the application of advanced electrical principles, is performed on transmission lines, distribution lines, communication lines, cables, station equipment, and related materials and equipment. Though conducting standardized tests and adjustments is typical, some tasks may require adapting normal procedures to a unique application.

Journey-level Electrical Test Technicians may work on low voltage and high voltage energized equipment. Such work includes hazards in addition to those present in routine field/laboratory tasks.

A journey-level Electrical Test Technician normally works without close supervision and may lead a small crew; may instruct new employees in test methods and the safe and proper use of equipment; and also provides guidance and on-the-job training to trainees.

The work of this class is distinguished from other similar classes in that Electrical Test Technicians independently test and/or troubleshoot the integrity of electrical systems and devices that are installed or repaired by other electrical technicians such as Electricians, Electrical Mechanics, and Electrical Repairers.

**Examples of Duties:** An Electrical Test Technician:

- Inspects, tests, calibrates, maintains, and repairs small and large capacity metering installations;
- Prepares reports of test results;
- Checks meter registration against standards at various loads and power factors;
- Makes corrections to readings by using calibration curves;
- Checks installation and calibration of metering and indicating instruments;
- Maintains and repairs accessory equipment such as totalizing and graphic demand devices, timing motors, and clocks;
- Makes field tests on transformers using graphic and indicating instruments to determine load, voltage, and temperature conditions;
- Measures voltage to ground and current loss, using bridge methods and drainage hook-ups;
- Tests or assists in testing DWP electric equipment such as voltage regulators, indicating instruments, transformers, rotating machines, electric motors, synchronous condensers, generators, insulating oil, circuit breakers, control and protective relays, and electronic controls and devices;
- Conducts tests on wire, cable, and line hardware;
- Works on energized high and low voltage lines, cables and equipment;
- Secures clearances on energized lines, cables, and equipment when necessary to remove them from service, determine when it is safe to work on such equipment, and when to return it to service;
- Maintains and repairs digital fault recorders and remote terminal units;
- Takes insulating oil and gas samples from electrical equipment and apparatus;
- Assists in commission tests of power circuits, equipment, and control systems;
- Assists in the maintenance and repair of recorders and control systems;
- Inspects, calibrates, revises, adjusts, and repairs protective relay equipment;
- Assists in the preparation of reports, test guides and procedures for protective relays;
- Sets control adjustments for feeder voltage regulators, tap changing transformers, regulating transformers, and switched capacitor banks;
- Tests operation of pallet switches, interlocks, and relay control circuits;
- Tests, troubleshoots, and repairs circuit boards down to component levels;
- Works closely with communication crew to determine communication levels pertaining to the SCADA system;
- Checks wiring diagrams for correct installation, operation, and indication of control circuits;

- Prepares wiring diagrams of system facilities and test set ups;
- Makes field corrosion surveys, soil resistivity surveys, and surveys to detect stray electric currents;
- Tests cathodic protection installations and drainage switches, and assists in determining protective measures required;
- Makes investigations and performs tests to determine if electronic and electrical equipment conforms to electrical engineering specifications and standards;
- Investigates complaints involving regulation of primary system voltage;
- Measures voltage supplied to customers;
- Measures voltage on the 4800-volt system to determine proper regulator operation and adjustments;
- Works on aerial platforms, station racks, and equipment at elevated heights;
- Works with hazardous materials and waste;
- Drives automotive equipment as required;
- May occasionally be assigned to other duties for training purposes or to meet technological changes or emergencies.

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

Knowledge of:

- Principles of electricity, electrical components, and physics pertinent to, and methods used in testing electric meters, relays and instruments, oil insulation, materials, and other electric equipment;
- Proper use, maintenance, and adjustment of electric testing apparatus;
- Principles of operations, characteristics, and common sources of trouble in electric meters, instruments, and equipment;
- Principles of electronics, National Standards and Specifications pertaining to testing;
- Mathematics including trigonometry;
- Hazards involved in working on or near energized equipment, proper safety precautions and first aid/CPR;
- DWP Operating Orders and Safe Work Procedures concerning work authority (such as a CLEARANCE or OK TO) to work on high and low voltage electrical equipment;
- Strength of materials and methods used to move or hoist heavy electrical equipment;
- CAL/OSHA Title 8 and DWP Safety Rules and applicable safety precautions;
- Safe use and operation of equipment such as pendant cranes and portable generators;
- Insulating oil purification, filtering, and degasification equipment;
- Sulfur hexafluoride (SPF 6) processing, purification, and drying equipment;
- Basic work practices of related craft employees such as Electric Station Operators, Electrical Mechanics, Electrical Distribution Mechanics, Electrical Repairers, and other support craft;
- Laws and regulations related to Equal Employment Opportunity;
- City personnel rules, policies and procedures;
- Memoranda of Understanding as they apply to subordinate personnel.

The ability to:

- Make necessary mathematical computations to test and adjust electrical instruments, meters, and devices;
- Detect conditions which indicate hazards or potential failure in equipment tested;
- Read, interpret, and prepare wiring diagrams;
- Recommend repairs or betterments to equipment;
- Interpret test results, keep records, and make reports;
- Troubleshoot electronic equipment down to component level;
- Use a computer to acquire and organize data, keep records, and prepare reports;
- Devise methods for electrical testing;
- Communicate in an effective manner orally and in writing;
- Understand and follow oral and written directions;
- Use common hand tools needed in electrical tester work;
- Work at elevated heights and in confined spaces, sometimes for extended periods, during electrical testing activities;
- Understand, apply, and enforce electrical testing safe work practices;
- Deal tactfully and effectively with other employees and the public.

**Requirements:**

1. Successful completion of one of the following high school, college, or trade school courses: general physical science, physics, or electricity; **or**
2. Six months of full-time paid experience as an Electrical Craft Helper with the City of Los Angeles; **or**
3. Completion of at least eight months in the Utility Pre-Craft Trainee training program sponsored by the Los Angeles Department of Water and Power performing electrical work on equipment and circuits, in excess of 120 volts, in the maintenance or construction of electrical systems.

**License:** A valid California driver's license and a good driving record are required. Some positions may require a license to operate a forklift or crane.

**Physical Requirements:**

Average lifting up to 25 pounds routinely and occasionally 75 pounds; extensive use of legs for walking and standing, hands and fingers, and back for strenuous labor; climb stairs and ladders to 40 feet; climb and crawl near energized equipment; face severe working conditions outdoors and on or near water; work in confined spaces or awkward positions for extended periods; good speaking and hearing ability; good eyesight; good balance for working heights.

Because this class has been designated as Safety Sensitive in accordance with City Policy, a drug and alcohol screening test may be required prior to appointment.

Persons with disabilities may be able to perform the essential duties of this class with reasonable accommodation. Reasonable accommodation will be evaluated on an individual basis and depend, in part, on the specific requirements for the job, the limitations related to the disability, and the ability of the hiring department to reasonably accommodate the limitations.

**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.**