



JULY 2012
FLSA: NON-EXEMPT

ELECTRICAL TECHNICIAN I/II

This class specification indicates, in general terms, the type and level of work performed as well as the responsibilities of employees in this classification. The job functions described are not to be interpreted as being all-inclusive to any specific employee.

DEFINITION

Under direct or general supervision, performs a variety of non-complex and complex assignments in the maintenance, repair, and installation of electrical equipment up to 12K volt including lighting systems, sump pumps, controls, motors, transformers, generators, batteries, cranes, variable frequency drives, air conditioners, and switch gears; performs predictive, preventive and corrective maintenance on assigned equipment; and assists contractors as necessary.

SUPERVISION RECEIVED AND EXERCISED

Receives direct or general supervision from a Maintenance Supervisor. Exercises no direct supervision over staff.

CLASS CHARACTERISTICS

Electrical Technician I – This is the entry level class in the Electrical Technician series and work is performed on up to 480 volt electrical equipment. Positions at this level have prior experience but are not expected to function with the same amount of program knowledge or skill level as positions allocated to the Electrical Technician II level and exercise less independent judgment in matters related to work procedures and methods. Work is usually supervised while in progress and fits an established structure or pattern. Exceptions or changes in procedures are explained in detail as they arise. Advancement to the “II” level is based on demonstrated proficiency in performing the assigned functions and is at the discretion of higher level supervisory or management staff.

Electrical Technician II – This is the full journey level class in the Electrical Technician series performing the full range of duties with only occasional instruction or assistance including performing electrical work on equipment up to 12K volt. Positions at this level are distinguished from the Electrical Technician I level by the performance of the full range of duties as assigned, working independently, and exercising judgment and initiative. Positions at this level receive only occasional instruction or assistance as new or unusual situations arise, and are fully aware of the operating procedures and policies of the work unit. Work is normally reviewed at critical points of assigned projects for soundness of technical judgment and to determine if desired overall objectives have been achieved. Positions in this class series are flexibly staffed and positions at the Electrical Technician II level are normally filled by advancement from the Electrical Technician I level. This class is distinguished from Lead Electrical Technician in that the latter is responsible for functional direction over and provides training of lower-level staff and is capable of performing the most complex duties assigned to the division.

EXAMPLES OF ESSENTIAL JOB FUNCTIONS

The following essential job functions are typical for this classification. Incumbents may not perform all of the listed job functions and/or may be required to perform additional or different job functions from those set forth below to address business needs and changing business practices.

- Perform a variety of non-complex and complex preventive maintenance duties; inspect equipment; check voltage and amperage; tighten, clean, and lubricate equipment; locate potential problems.
- Perform non-complex and complex corrective maintenance; isolate power and ground wires; troubleshoot problems and make necessary repairs; restore power and check equipment for proper operation.
- Perform non-complex and complex electrical circuit installation for additions or modifications; bend and install conduit; pull wire and wiring in circuit as shown on blueprint; test system for proper installation.
- Maintain and repair electrical equipment at pump stations such as motors, switchgears, substations and control equipment; generate power at pump stations during outages by connecting emergency generator to pump stations.
- Perform a variety of tests, samples, and readings, to determine if equipment is showing any signs of deterioration; determine appropriate corrective action and implement.
- Gather parts and materials for assigned jobs and contact other departments involved in the maintenance or repair of equipment.
- Record data regarding electrical equipment, including voltage and amps readings and date and type of work performed, on daily work schedule form; update data in an online maintenance management system for back logs, lockout tag-out, and other equipment information that is necessary.
- Assist contractors as necessary by switching electrical power or other functions as required by the District.
- As assigned, design, integrate, and upgrade new systems and/or integrate the design into an existing system.
- As assigned, perform infrared testing, oil analysis, high voltage testing of switchgears and cables, and protective relay calibration.
- May perform routine maintenance work in plant or at pump stations including painting, cleaning and digging; drive District vehicles or generator trucks.
- Participate in a full featured predictive maintenance program using condition monitoring, recording new baselines for newly installed equipment and continuing to periodically monitor for future trends.
- In collaboration with a supervisor or lead person, utilize condition assessment equipment, including dissolved gas analysis, infrared thermography, ultra sound scans, and vibration analysis for electrical switchgear, power transformers, motor control centers, motors and generators.
- Working with 12K volt equipment, isolate, test and ground electrical equipment while wearing personal protective equipment (PPE).
- Working on 480 volt and 12K volt generators, operate, synchronize, parallel and transfer plant load.
- Drive generator truck, hook up power, transfer load at pump stations.
- Maintain and update all electrical drawings, schematics and single line drawings.
- Troubleshoot and repair electrical, electronic and microprocessor-based electrical control equipment.
- In collaboration with a supervisor or lead person, perform preventive, predictive and corrective maintenance on electrical, generation and distribution systems including 12K volt generators, exciters, 12K volt circuit breakers, generator controls, 12K volt power transformers and motors up to 2,600 horsepower.
- Perform predictive, preventive and corrective maintenance on uninterruptible power supplies (UPS) and DC power system for generator and switchgear controls.
- Install conduits, pull wire and wiring in circuits as shown on blueprint, and test system for proper operation.
- Prepare clear and concise purchase requisition forms.
- Perform related duties as required.

QUALIFICATIONS

Knowledge of:

- Operational characteristics of electrical equipment and components.
- Electrical and electronic technology principles and practices.
- Principles, methods, materials, and tools used in electrical repair and maintenance work.
- Principles of electrical theory as applied to electrical circuits and wiring systems.
- Methods and techniques of maintaining, installing and repairing electrical systems and equipment.
- Methods and techniques of troubleshooting electrical equipment and components.
- Methods and techniques of high voltage electrical system maintenance and repair.
- Operating characteristics and application of electrical test equipment.
- Operational principles of a wastewater treatment facility.
- Preventive and corrective maintenance techniques.
- Electrical safety regulations, practices, and procedures.
- National Electrical Code
- NFPA-70E (National Fire Protection Association).
- Principles of diesel engine operation and troubleshooting.
- Office procedures, methods, and equipment including computers and applicable software applications such as word processing, spreadsheets, and databases.
- Testing and calibrating electrical protective relays.
- Hardware and cabling technologies.
- Mathematical principles.
- Principles and procedures of record keeping.
- Occupational hazards and standard safety practices.
- English usage, spelling, vocabulary, grammar, and punctuation.
- Techniques for providing a high level of customer service by effectively dealing with the public, vendors, contractors and District staff.

Ability to:

- Perform a variety of repair, maintenance, and cleaning duties on electrical equipment and systems.
- Inspect, troubleshoot, diagnose, and repair electrical and electronic malfunctions.
- Operate a variety of electrical repair, maintenance and installation equipment in a safe and effective manner.
- Bend and install conduit, pull wire and work on control wiring and equipment.
- Use electrical test equipment.
- Read, interpret, and understand plans, schematics, technical manuals, diagrams, and operating and maintenance manuals.
- Design basic electrical controls.
- Perform mathematical calculations necessary for electronic and electrical troubleshooting.
- Prepare clear and concise technical reports.
- Work independently in the absence of supervision.
- Adhere to safe work practice and procedures.
- Use English effectively to communicate in person, over the telephone, and in writing.
- Establish, maintain, and foster positive and effective working relationships with those contacted in the course of work.

Employment Standards:

Any combination of education and experience that provides the required knowledge, skills, and abilities may be qualifying as determined by OCS&D.

Electrical Technician I

1. High school diploma or equivalent supplemented by trade school training in electrical technology or a related field; AND
2. Two (2) years of experience maintaining, repairing, and installing electrical equipment.

License or Certificate:

- Possession of a valid California class C driver's license.
- Possession of a valid Grade I Electrical/Instrumentation Certificate from the California Water Environment Association is desirable.

Electrical Technician II

1. High school diploma or equivalent supplemented by college level course work, or trade school training in electrical technology, or completion of an electrical apprenticeship program, or a related field, AND
2. Three years of experience maintaining, repairing, and installing electrical equipment at a level comparable to an Electrical Technician I with the District.

License or Certificate:

- Possession of a valid California class C driver's license.
- Possession of a valid Grade II Electrical/Instrumentation Certificate from the California Water Environment Association is desirable.

Disaster Service Workers:

All Orange County Sanitation District employees are designated Disaster Service Workers through state law (California Government Code Section 3100-3109). Employment with the Orange County Sanitation District requires the affirmation of a loyalty oath to this effect. Employees are required to complete all related training as assigned, and to return to work as ordered in the event of an emergency.

PHYSICAL DEMANDS

Must possess mobility to work in and around wastewater treatment plants and pump/lift stations and related utility systems and facilities; strength, stamina, and mobility to perform light to medium physical work, to work in confined spaces and around machines, to climb and descend ladders, and to operate varied hand and power tools and equipment, and to operate a motor vehicle and visit various District sites; vision to read printed materials and a computer screen; and hearing and speech to communicate in person and over the telephone or radio. The job involves fieldwork requiring frequent walking in operational areas to identify problems or hazards. Finger dexterity is needed to access, enter, and retrieve data using a computer keyboard or calculator and to operate above-mentioned tools and equipment. Positions in this classification bend, stoop, kneel, reach, and climb to perform work and inspect work sites. Employees must possess the ability to lift, carry, push and pull materials and objects weighing a minimum of 40 pounds, or heavier weights with the use of proper equipment.

ENVIRONMENTAL ELEMENTS

Employees work in and around facilities and are exposed to loud noise levels, cold and hot temperatures, inclement weather conditions, road hazards, vibration, confining workspace, chemicals, mechanical and/or electrical hazards, and hazardous physical substances and fumes. Employees may interact with upset staff and/or public and private representatives, and contractors in interpreting and enforcing departmental policies and procedures.