

Electrician (3863)
Task List 2022

A. Electrical Construction

1. Installs and connects conduit, including but not limited to, rigid, flexible, electrical metallic tubing (EMT), intermediate metal conduit (IMC), and poly-vinyl chloride (PVC) tubing, using hand tools, power tools, hydraulic tools, powder actuated tools, heating blankets, heating boxes, heating guns, primer, glue and appropriate fittings or connectors in order to physically connect power systems, control systems, equipment, or appliances such as motors, lights, and heaters in accordance with applicable provisions of the Electrical Code and in a cost efficient and effective manner.
2. Installs rigid conduit using hand tools, power tools, hydraulic tools, and/or powder actuated tools and appropriate fittings or connectors; flexible conduit using hand tools and appropriate fittings or connectors; EMT conduit using hand tools, power tools, and/or hydraulic tools and appropriate fittings or connectors; IMC conduit using hand tools, power tools, and/or hydraulic tools and appropriate fittings or connectors; PVC conduit using heating blankets, heating boxes, or heating guns, primer, and glue; panel boards, pull boxes, sub-panels, branch circuits, and circuit breakers using hand and hydraulic tools; wiring of the appropriate size, using hand tools, power pullers, pull ropes, power blowers, or vacuums; electrical devices, including but not limited to, switches, receptacles, and timers to the wiring system using hand tools, wire connectors, and electrical tape, in order to physically connect power systems, control systems, equipment, or appliances such as motors, lights, and heaters in accordance with specifications and applicable provisions of the Electrical Code and in a cost efficient and workmanship-like manner.
3. Tests newly installed circuits using instruments such as digital and analog multimeters, megger insulation tester, voltage testers, phase rotation meters, and other tools to check for safety and soundness of energized operation.
4. Adjusts, focuses, and secures specialized lighting and related equipment such as outdoor, field, security, and stage lights using meters and hand tools sufficient to provide adequate lighting for public safety.
5. Applies algebraic equations, electrical formulas, and theory (e.g., addition, subtraction, multiplication, division, algebra, trigonometry, geometry, Ohm's law, Kirchhoff's laws) to verify electrical calculations such as voltage drop and ampacity to determine current, voltage, power, or resistance, to perform calculations such as capacitive or inductive reactance and impedance, or to determine the proper sizing of wires, conduits, and devices in accordance with Electrical Code provisions.

B. Maintenance and Troubleshooting

6. Recognizes, identifies, and implements the process for establishing and verifying an electrically safe work condition by performing actions such as following lockout and tagout procedures, confirming that the circuit is de-energized and locked out, and erecting proper barriers or barricades prior to beginning work in order to minimize the chances of injury to self, other employees, and/or the public.
7. Tests electrical equipment or power systems using ohmmeters, digital multimeters, meggers, ammeters, circuit tracers, data logging equipment, and other hand tools in order to troubleshoot and identify electrical problems such as short circuits, ground faults, circuit overloads, faulty equipment, defective electrical devices, and unserviceable equipment.
8. Cleans, lubricates, and replaces motor or generator components, including bearings and bushings, using hand or power tools in order to maintain proper operation of electrical equipment.
9. Cleans, adjusts, lubricates, tightens, or replaces relays, contacts, coils, and magnetic starters using hand or power tools in order to repair or maintain electrical components, including but not limited to, lighting contactors, manual switches, limit switches, transfer switches, motors, and generators.
10. Removes, reinstalls, and adjusts electrical equipment or devices, including but not limited to, fluorescent lamps, ballasts, light emitting diode (LED) fixtures, LED drivers, dimmer switches, receptacles, circuit breakers, and light fixtures using hand tools in order to replace or upgrade defective electrical equipment or devices.
11. Repairs large or specialized equipment, including but not limited to, transformers, generators, light standards, motors, switchboards, panel boards, photovoltaic systems, electrical vehicle infrastructure, appliances, and other utilization equipment.
12. Performs operational tests on a regular basis by moving test switches or depressing test buttons on emergency backup power systems such as generators, Uninterrupted Power Supply (U.P.S.'s) , battery operated power systems, or electrical fire preventive systems in order to determine if optional standby or emergency backup systems are operating as designed.
13. Inspects and maintains optional standby and emergency backup power systems by checking various parts, such as corroded or loose electrical and mechanical connections, fuel and oil levels, fluid levels of battery banks, and overheating in order to prevent malfunction of emergency backup systems.

C. Use of Tools and Equipment

14. Accesses elevated or suspended areas of a work site by climbing scaffolds, ladders, catwalks, bridges, and rooftops, and operating personnel lifts (e.g., scissor lifts, aerial lifts, truck-mounted lifts, self-powered lifts) in a manner that is safe to the employee and others in the area.
15. Digs trenches using small gasoline and electric equipment (e.g., trencher, track hoe) in order to place conduit or low voltage wiring.

D. Vehicle Operation

16. Transports electrical construction material and equipment by driving trucks and pulling trailers to and from job sites in a safe and legal manner.
17. Moves and loads equipment and material by operating specialized equipment on vehicles such as forklifts, telehandlers, winches, electric cranes, and lift gates in order to perform electrical work.

E. Interpretation of Written Materials

18. Identifies the scope and details of a work assignment by reviewing work orders, electrical plans, drawings, schematics, diagrams, preventative maintenance tasks, and other job-related material (e.g., electrical, building, and safety codes, such as Cal/OSHA Title 8 General Safety Orders, Electrical Code [NFPA 70], Electrical Safety in the Workplace [NFPA 70]; manufacturer specifications; technical literature; trade publications; Safety Data Sheets; written technical procedures) in order to determine what electrical work needs to be done, the location of the job, the labor needed, and what equipment, tools, types, and amount of materials will be needed to perform work in compliance with laws and regulations.

F. Documentation

19. Revises and updates a variety of electrical plans, drawings, schematics, and diagrams of completed work or work in progress showing alterations or modifications to the plans or completed "as built" prints in order to provide accurate information on installations.
20. Keeps accurate records by writing comments and attaching work site photos to work orders in order to document what was found at the location and additional work, materials, or equipment needed, or to report work completed.
21. Prepares material take-offs (lists) from field evaluations, electrical plans, or blueprints in order to record specific types and amounts of materials needed for a job.

22. Fills out pre-printed and electronic forms such as material requisition forms, daily job reports, accident reports, special occurrence reports, or timesheets in order to document and maintain records of daily occurrences or to obtain needed materials.

G. Interactions

23. Speaks with the general public, contractors, and other City department personnel in a professional and courteous manner in order to provide electrical assistance or exchange information regarding the nature or location of electrical problems.
24. Communicates orally with immediate supervisors in a professional and courteous manner in order to receive assignments, discuss work progress and proposed changes, inform of any problems, and report completed jobs.
25. Directs laborers and helpers in manual skills related to electrical construction and maintenance work by giving specific oral instructions regarding the safe performance of tasks such as digging trenches, and moving and handling equipment.
26. Acts as a lead worker to oversee a small crew of Electricians, Apprentices, and Electrical Craft Helpers by performing actions such as delegating job assignments, preparing daily job reports, reviewing work, ordering materials, providing job estimates, contacting vendors, and giving recommendations for labor needs.

H. Emergency Situations

27. Responds to on-the-job injuries such as cuts, electrical shocks, abrasions, punctures, and falls by using first aid treatment procedures. Immediately notifies emergency services in accordance with Departmental procedures.