

## **ELECTRICAL MECHANIC (3841)**

### **TASKS LIST – 2024**

#### **Station Maintenance**

1. Services insulators associated with equipment such as transformers, circuit breakers, busses, or cables including washing with high pressure water, hand washing with cloths and soap solution, scouring with steel wool, and/or coating with insulating compound.
2. Tests oil in equipment such as transformers and circuit breakers for presence of moisture and/or various gasses to determine need for filtering and/or processing and for indications of specific types of malfunctions.
3. Filters oil in equipment such as transformers and circuit breakers using either a portable oil filter or an oil purification unit by attaching hoses for output and return of oil, turning on pump, and operating unit until tests are below maximum acceptable levels of moisture and gasses.
4. Services high voltage power circuit breakers.
5. Services oil filled and air core transformers.
6. Services capacitor banks.
7. Services feeder voltage regulators.
8. Services electronic control circuits.
9. Services other station equipment such as reactors, switches, and busses.
10. Services station mechanical equipment such as pumps, ventilators, and chain drive lifting equipment

#### **Unique Converter Station**

11. Services thyristor converters including replacing malfunctioning thyristors.

#### **Construction Tasks**

The following tasks are done in order to construct new stations and/or additions to existing receiving stations, power plants, or the high voltage d.c converter station.

12. Installs cable trays by cutting sections to correct length: fastening sections for long runs by welding bolting, or using concrete anchors or power actuated anchors; hanging from the ceiling using screw eyes and hangers; hanging from higher levels of trays with hangers: and/or fastening to walls.

13. Prepares conduit for installation by cutting to length using a manual or power saw and threading using manual or power pipe threaders.
14. Bends conduit or bus bar to correct dimensions using a power bender by calculating the length of material required for the bend, marking the beginning of the bend; setting the radius of the bend by using a radius/diameter chart or by calculation; positioning the material in the pipe bender; and operating the pipe bender by closing the switch, watching the gage, and opening the switch when the conduit is bent to the correct angle.
15. Bends conduit or bus bar to correct dimensions using manual bending equipment by calculating the length of material required for the bend, the angle of the bend, and offset or other dimensions; marking the beginning of the bend; setting the material in place; and operating the ratchet to bend the material.
16. Installs conduit by setting it in place and connecting the section to the conduit already in place by screwing and tightening threaded connectors.
17. Installs cable by placing it in trays; pulling it through conduit using fish tape or pull cord; splicing; and/or preparing ends for connection by stripping the sheath, separating the conductors, and stripping the insulation from individual conductors.
18. Installs busses by cutting to length required, placing in position, connecting by welding or by bolting to connectors or terminals.
19. Installs heavy equipment such as transformers, circuit breakers, or reactors by signaling crane operator to lower equipment, making final adjustments in position, and securing equipment in place using bolts or other fasteners built into the base.
20. Installs insulators by fastening insulators to terminals, buses, or cables using bolts, R-heads, and/or bus supports.
21. Installs other high voltage equipment such as capacitors, disconnects, power circuit breakers, protective relays, and feeder voltage regulators by connecting them to terminals, busses, and cables or other wiring.
22. Installs equipment and lines operating below 600v such as lighting circuits, fans, ventilators, and control panels.
23. Installs wiring in control boards and/or panels by attaching stripped wires or lugs soldered to wires to correct terminal with screws, solder, compression lugs, or special connectors to connect permanently installed devices such as meters, gages, recording meters, switches, relays, electronic controls, and alarm lights to equipment to be monitored or controlled through the panel or board.

24. Installs ground network by building a grid into the foundation of the facility, putting ground wells on the surface, and connecting equipment to ground wells with heavy duty connectors.

### **General Craft Tasks**

25. Uses wiring diagrams, plans, and maintenance manuals as a guide for installation and/or service of electrical equipment.
26. Tests electrical circuits for load, shorts, grounds, open conditions, and proper insulation using meters such as multimeters, high potential testers, and meggers.
27. Performs switching operations in stations in conformance with Department Operating Orders and Load Dispatchers instructions.
28. Checks customer stations and observes areas for possible violations of Department of Water and Power Electric Service Requirements.
29. Maintains hand tools such as screwdrivers, pliers, strippers, hammers, wrenches, diagonal cutters, and hacksaws in condition for use in servicing electrical equipment and circuits.
30. Maintains portable power tools such as drills, saws, pumps, filters, blowers, and compressors in condition for use in servicing electrical equipment and circuits.
31. Sets, adjusts, and makes minor repairs on testing and diagnostic equipment such as multi-meters, meggers, and high potential meters in order to use them correctly and to get accurate readings.
32. Rigs heavy electrical equipment for moving by attaching ropes, wire ropes, hoisting shackles, and/or slings.
33. Operates light equipment such as forklifts, bridge cranes, or power winches in order to move heavy equipment for installation or replacement.
34. Operates heavy equipment such as truck cranes, and aerial lifts:-

### **Safety**

In order to avoid injury to workers, damage to equipment and lost time:

35. Follows Cal/OSHA regulations and general safety procedures such as wearing personal protective equipment such as hard hats, safety belts and 'lines, and/or personal breathing apparatus in areas where they are needed; keeping work areas clean and clear: and ensuring proper ventilation when working in confined spaces.
36. Follows safety procedures for working with high-voltage equipment and/or circuits.

37. Follows Department procedures and state safety orders having electric circuits and equipment de-energized obtaining accident prevention tags such as CLEARANCES or OKS TO in order to work safely with electrical equipment.
38. Tests atmosphere in confined spaces using -testers such as gas-techs, or oxygen meters in order to determine conditions for safe entry.
39. Visually checks for presence of asbestos in substructures and ensures that workers wear respirators and required protective clothing (moon suits/tyvek suits) when working in areas where asbestos is found in order to provide safe working conditions.
40. Applies cardiopulmonary resuscitation (CPR) or other appropriate first aid when needed for such conditions as electrocution, shock, falls, and burns.
41. Uses the correct fire extinguisher or other methods for putting out or controlling fires which may occur in or in close proximity to electrical wiring and/or equipment.
42. Informs trainees and coworkers of correct safety procedures and sees that they are followed.

### **Communication**

43. Discusses jobs with supervisors, lead workers, and coworkers in order to arrange work activities and to resolve problems.
44. Reads maintenance manuals, Department procedures manuals and other resource materials as a guide to procedures such as those for routine maintenance, security, and safety.
45. Keeps records of work done through written reports and/or entries in a log for such purposes as confirming regular inspection and maintenance schedules and recording time required for major installations or repairs.
46. Completes standard forms such as job reports, service records, and accident reports which are required by Department procedures
47. Notifies supervisor or fills out forms for requisition to order parts, materials, and tools needed to install, maintain, and/or repair electric station equipment so that necessary work can be done promptly.

### **Driving**

48. Drives a vehicle in order to move personnel, material, and tools between job locations.