

***Nothing in this job description restricts management's right to assign or reassign duties and responsibilities to this job at any time.***

**DUTIES** Serves as journey (full performance) level Interior Electrician at Washington Dulles International Airport (IAD). Installs, tests, troubleshoots, repairs, modifies, and maintains interior electrical systems and internal power distribution equipment within airport terminal buildings, shops, and related facilities such as building and street lighting, fire alarm, public address system, and emergency lighting systems; automatic equipment such as compressors, gates, and overhead doors with motors from fractional horsepower to 1000 horsepower, pumps and heaters; internal electric distribution centers with circuit breakers; network systems with transformers, switchgear, meters and relays; etc., with voltages from 120/208 to 277/480 involving automatic double ended substations ranging in size from 1500 to 4000kVA. Applies the theories, principles, requirements, and standards of the electrical trade and uses the full range of tools and equipment of the trade, including specialized tools and software to diagnose problems, perform repairs, and install/adjust interior electrical lighting and equipment. Performs related functions.

Works on low voltage (600 Volts up to 2500kVA) electrical systems, parallel alternating current (AC) and direct current (DC) circuitry, internal electric distribution substations, transformers, switchgears, suppression circuits, motor control center and motors, integrated circuits, DC controls, compressors, AC controls, air circuit breakers, and interior lighting.

Troubleshoots, repairs, performs preventive maintenance on, and installs electrical systems (lighting and utility systems) and equipment (illuminated signs, pumps, light fixtures, outlets, power panels, etc.). Replaces/repairs failed light fixtures and signage and installs new ones. Removes and replaces ballasts, transformers, capacitors, sockets, starters, fuses, and lamps in lighting systems. Isolates faults in wiring, and replaces and splices wire. Locates tripped circuit breakers, and troubleshoots and/or repairs equipment to prevent reoccurrence of tripping.

Responds to trouble calls about malfunctioning electrical equipment and power outages. Determines whether issue is minor or major; whether it involves equipment on contract (e.g., elevators, escalators, moving walkways, and baggage carrousel) and whether on contract should service be called or whether it could/should be corrected without calling for service; and if not on contract, whether the issue is something that can/should be done immediately or if it is part of something that requires the submission of a work order. May replace couplings, adjust and install belts and reduction gear assemblies, replace bearings, etc., on electrical/mechanical equipment. Performs troubleshooting and limited repairs/modifications on electrified overhead and automatic doors, fire alarms, electrified gates, and public address systems, e.g., repairs safety catches, realigns automatic doors to slide freely on rollers, and tightens loose connections. (More complicated repairs and modifications may be referred to a contractor to complete). May assist an Electronics Technician in modifying or repairing electronic controls and related equipment and systems.

Troubleshoots, repairs, performs preventive maintenance on, or replaces motors (fractional horsepower to 1000 horsepower), heating coils, timers, compressors, switches, and other electrical equipment such as air conditioning and air handling equipment and controls. Services

motor starters and lighting contactors, cleans or replaces contacts and springs, and replaces coils and thermal overloads, as required.

Alone or in a team, installs wiring, junction boxes, switches, outlets, power connectors, panel boards, control schemes, and conduit and other devices associated with electrical systems in new build outs or renovations that are not contracted out according to plans or from directions supplied by Supervisor. May use pipe threading and bending machines in the installation of conduits. Ensures electrical work performed is to code and passes required inspections.

Regularly reads, updates, and reviews design and as-built blueprints, block diagrams, schematics, manuals, and construction drawings to troubleshoot, repair, and/or install interior electrical systems and lighting (e.g., conduit, wiring, circuits, and devices for electrical systems). May make corrections or updates to “as built” plans/drawings.

Follows safe-clearance switching orders to create temporary electrical outage by taking feeder off line in the electrical vaults to safely complete repairs or installations, as necessary.

Regularly uses tools and equipment such as meters (Ohm, Amp, Phase Rotation, Voltage, and Proximity), micro-ohm resistance testers, adjustable wrenches, side cutters, screw drivers, side cutters, lineman’s pliers, wire strippers, voltage tester, amp battery impedance testers, circuit locators, fault locators, hot gloves, hydrometers, thermographic imagers, computers, etc., in the performance of duties.

May repair switchgears, transformers, regulators, generators, automatic transfer switches, motor control centers, UPSs, and variable speed drives.

May troubleshoot, replace and install kWh meters and record readings for tenant billing purposes.

May interpret, troubleshoot, and repair faulty electric and electronic components such as circuit boards, programmable logic controllers (PLCs) and digital, electromechanical, electronic and pneumatic relays.

Performs miscellaneous electrical work as directed on electrical systems critical to airport operations following the National Electric Code (NEC) and the Airports Authority Design Manual.

May occasionally or incidentally work with Exterior Electricians in exterior work or work which involves both inside and outside equipment on medium voltage equipment and systems for cross/increased training purposes or in conjunction with performing emergency repairs.

Drives a pick-up truck to various airport areas in the performance of duties. May operate an articulating lift truck, scissor lift, or forklift to work on shop, terminal or hangar overhead lights (repair, re-lamp, or install) and/or to install conduit/electrical feeds. Operates vehicle for snow removal.

Uses a computer, office suite software (such as MS Office), specialized software [such as the Computerized Maintenance Management System (CMMS) and supply and procurement modules of Oracle used by the Airports Authority], and radio and telecommunication devices, to plan, schedule, communicate, research part information, keep up with technology, obtain/close out work orders, etc.

Communicates and interacts effectively with internal and external business contacts, including but not limited to other members of the unit/team, other Airports Authority employees (such as managers, supervisors, professionals, and support staff), vendors/suppliers/service contractors/tenants, airport users, and the general public.

Performs recurring duties such as cleaning shop/work area as required or when instructed by the supervisor/leader or inputting information and completing work orders via computer for all equipment maintained, overhauled or repaired.

May escort design engineers, consultants and contractors for site surveys or other activities within the secure areas of the airport.

\*Performs other duties as assigned.\*

***Critical features of this job are described under the headings below. They may be subject to change through reasonable accommodation or otherwise.***

### **MINIMUM QUALIFICATIONS (MQs)**

To be rated qualified for this job, an applicant must meet all of the MQs listed below at the time of vacancy announcement closure.

1. A high school diploma or a Certificate of General Educational Development (GED), or an equivalent combination of education, experience, and training.
2. Four years of progressively responsible experience (post high school) in the maintenance and repair of electrical equipment and systems, which includes one year specializing in installation, test, diagnosis, maintenance, and repair of a range of electrical equipment and systems, such as, but not limited to, air conditioning and air handling controls, interior lighting systems, emergency lighting systems, integrated circuits, motors, pumps, starters, suppression circuits, switches, and parallel and AC and DC circuitry, and similar equipment. This includes knowledge of the theories, principles, requirements, and standards of the electrical trade.

A Journey License as an Electrician is evidence of four years of progressively responsible electrical trade experience, but is not, by itself, evidence of the one year of experience specializing in test, diagnosis, maintenance, and repair of a range of electrical equipment and systems, as specified.

## **PREFERRED QUALIFICATIONS (PQs)**

The qualifications listed below (if any) are preferred and may be considered in the selection process, but they are not required to be rated qualified for this job.

1. A Journey License (or higher) as an Electrician.
2. Experience working safely in a trade on a busy airfield or in an equivalent work environment such as, but not limited to, working in a trade requiring prolonged concentration and attention to detail amid maritime or motor freight cargo loading/unloading or other types of near-constant movements/operations that requires continuous situational awareness and alertness to continually changing circumstances and events.

***Critical features of this job are described under the headings below. They may be subject to change through reasonable accommodation or otherwise.***

## **KNOWLEDGE, SKILLS, ABILITIES AND OTHER FACTORS (KSAOs)**

The following KSAOs are required for successful performance of this job and are a basis for rating and ranking applicants who are found to meet the MQs. *Local, Federal, airport industry, or Airports Authority specific bodies of knowledge listed below may be acquired on the job, typically; ability to rapidly acquire them is required at the time of vacancy announcement closure.*

1. Full performance (journey) level knowledge of, and skill in, low voltage electrical equipment and systems installation, testing, adjustment, maintenance, troubleshooting, and repair/replacement. This includes but is not limited to:

Knowledge of the theories, principles, requirements, and standards of the electrical trade and the National Electric Code (NEC), altogether, as they apply to transformers, rectifiers, series and parallel AC and DC circuitry, integrated circuits and suppression circuits, AC and DC controls, switches, air circuit breakers, starters, switchgear, motor control centers, variable speed drives and cables to perform preventive maintenance, recognize malfunctions and locate their causes, and determine the best methods for correcting defects to maintain or restore electrical service.

Knowledge of Federal and State regulations, codes and standards and Federal Aviation Administration (FAA) regulations as they pertain to low voltage electrical distribution systems, and emergency battery systems. Skill in installing and modifying electrical systems, subsystems, and components used for interior lighting and low voltage service to troubleshoot, repair, and perform preventive maintenance on various lighting systems.

Ability to rapidly acquire technical knowledge of new equipment and systems as they come on line and off warranty.

Knowledge of the mechanical and technical (hydraulic, pneumatic, electrical, and electronic) functions of automatic doors, baggage conveyor systems, escalators, elevators, and other equipment/systems maintained by the Interior Electrical team to diagnose the causes of common malfunctions and make necessary adjustments/repairs or shut off systems for safety and repair by others.

2. Skill in using tools, technical manuals, schematics, materials, and other equipment and guides in journey level electrical work. Examples include:

Skill in using hand and power tools of the trade in routine and non-routine work, such as lineman's pliers, drills, socket set, amp probe, hydraulic knock-out punch, various fault locators, battery impedance testers, micro-ohm meters, resistance testers, infra-red cameras, phase rotation meters, current meters, and volt/ohm meters to locate areas of malfunction; to determine whether a line is energized, de-energized, or where energy is lost; to repair equipment such as electrical distribution systems, low voltage electrical systems, and uninterruptible power supply (UPS) power back-up systems, and to perform related functions.

Skill in working with or without manufacturers' manuals, specifications, schematics, and drawings (including construction drawings, block diagrams, schematics and wiring diagrams) to trace and correct malfunctions in electrical equipment, determine appropriate settings or alignments, trace circuits, and perform related functions.

Skill in using test equipment, data loggers, and computer software when working with electrical systems.

3. Skill in problem solving to select, organize, and logically process relevant information (verbal, numerical, or abstract) to solve a problem. This includes the ability to recognize subtle aspects of problems, identify relevant information, and make balanced recommendations and decisions. Examples include diagnosing and troubleshooting electrical problems and determining the most positive way to handle an electrical outage in a busy airport.
4. Skill in oral communication to understand verbal information (including instructions, descriptions, and ideas) and to express such information verbally so that others will understand. Examples include exchanging routine and non-routine operational and procedural information with co-workers, contractors, and customers especially concerning corrective actions for electrical emergency situations such as power outages.
2. Skill in written communication to understand written information (including instructions, descriptions, and ideas) and in written communication to express such information in writing so that others will understand. Examples include reading technical-operational materials (such as technical manuals, maintenance schedules, and work orders) and administrative-programmatic materials (such as DCA and Airports Authority supply procedures), and writing briefly about similar types of matters, such as closing out work orders and completing Material Safety Data Sheets (MSDS).

5. Skill in using a computer, modern office suite software (such as MS Office), specialized software (such as the CMMS and supply and procurement modules of Oracle used by the Airports Authority), and radio and telecommunication devices to plan, schedule, communicate using MS Outlook for interdepartmental communication, word processing (light word processing only), and perform research (Internet use, as in searching for performance information and keeping up with technology), etc. This includes skill in using electrical-electronic diagnostics software for troubleshooting.
6. Ability to work safely and knowledge of the safety rules and procedures needed to do so.
7. Interpersonal skills to interact with business contacts in a businesslike, customer service-oriented manner.

**RESPONSIBILITY** Is responsible, at the journey (full performance) level, for working safely in installing, testing, troubleshooting, repairing, modifying, and maintaining electrical systems, and equipment in compliance with preventive maintenance guides, established priorities and the National Electric Code (NEC). Independently plans, lays out, and completes regularly recurring work. Typically seeks assistance on unusual or complex problems. Makes decisions and recommendations within the scope of one's assignments and authority, keeps the Supervisor informed and brings matters not covered by established procedures or other guidelines forward for guidance or resolution. Works within established tolerances calibrating equipment, making alignments, and fine-tuning to specific voltages. Work is subject to review in process, upon completion, and in other ways (such as performance of electrical equipment/systems after repair, nature and number of call-backs, and comments by customers) in terms of quality, quantity, timeliness, customer service, teamwork, adherence to requirements, and other factors, including attainment of specified performance management goals and objectives.

**EFFORT** Work requires moderate to heavy physical exertion (such as frequent, prolonged periods of exerting 20 to 40 pounds of force or continual exertion of force in the range of 10 to 20 pounds), and considerable mental attention (as in working in very close proximity to energized electro-mechanical equipment). Frequently goes to various parts of the terminal and other buildings in inspecting and troubleshooting, often ascending and descending stairs and transporting tools and small parts weighing up to 50 pounds and sometimes more. Usually moves objects weighing over 50 pounds in a hand truck. Must be constantly alert for indications of potential equipment problems or safety issues, such as stuck gauges, overheating motors, and changes in motor sounds or alarm bells. Frequently encounters hard-to-reach or hard-to-see problems which require maneuvering self to reach overhead, bend, stoop, crouch, or work in a cramped position. May use ladder, scissor lift, bucket truck, or scaffolding to reach work objects. Distinguishes color coded wiring. **Uses a computer.** Obtains work information from dials, gauges and small numbers on parts. Communicates by two-way radio and telephone. Operates vehicle using judgment in consideration of traffic, weather, and other factors.

**WORKING CONDITIONS** Works inside most of the time, however, may be required to work may be required to work outside in all types of weather, including inclement weather (rain, fog, snow, ice, cold, and high heat/humidity). Some work areas are dusty, dirty or greasy and

incumbent is exposed to dust, dirt, dampness, noise of jet aircraft and motors, moving vehicles, and vibrations of equipment. Is exposed to various risks and hazards: hazardous substances, such as asbestos and chemicals; possibility of injury from driving/working on airfield and streets; falls, cuts, bruises, eye injuries, and electrical shocks and burns from working amid energized electrical systems. May work at heights of 40+ feet and is subject to fall from high elevations while performing various duties. Exercises care; follows safety precautions and procedures; wears personal protective equipment; and uses gas detector, safety-recovery harness with tripod, and other safety devices, as required. Is subject to time pressures of restoring operations of equipment or systems essential to airport or airline functions, safety or security.

**OTHER SIGNIFICANT JOB ASPECTS** Is subject to hold over or recall on a 24 hour basis for essential services and emergencies such as snow removal and restoration of electrical power and systems for which the unit is responsible. This position is required to work various shifts as needed based on work load, operational needs, shift coverage, etc. May be required to work night hours or weekends.