



Bock Consulting

Job Analysis

Job Title	<u>Electrician (MM)</u>	Worker	_____
DOT Number	<u>829.261-018</u>	Claim Number	_____
Employer	<u>Port of Seattle</u>	Employer Phone	<u>(206) 787-3000</u>
Employer Contact	<u>Chris Todd</u>	Date of Analysis	<u>1/18/08; 6/1/11; 1/19/17; 4/18/18</u>

- Job of Injury
 Transferable Skills Job
 New Job
 40 Hours Per Week
 5 Days Per Week

Job Description, Essential Functions, Tasks and Skills:



The Port of Seattle is a municipal corporation created on September 5, 1911 by the voters of King County. The Port of Seattle is divided into operating divisions, plus other departments that support the divisions and the broad mission of the Port:

1) Aviation Division, 2) Maritime Division, and 3) Economic Development Division.

The Maritime Division owns and operates approximately 1,200 acres of moorage, cargo-related, and cruise ship facilities. The Maritime Division employs a maintenance staff, which is responsible for general facility upkeep, pier and moorage system repairs, and utility maintenance.

This job analysis is for an individual working as an Electrician for Marine Maintenance.

Essential Functions:

Electricians perform all electrical maintenance, repair, and modification tasks for properties managed by the Port of Seattle Real Estate Division.

Electricians have central workshops, but most of their work is performed on-site at one of the properties owned by the Port of Seattle. Work may be performed in buildings, outside, or from a boat or work float under piers and docks.

Tasks assigned to Electricians may include:

- Meet/connect with Crew Chief on a daily basis.
- Request parts, supplies, and or materials needed for projects.





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- Prepare and or review job hazard analysis for each project. Review job plan. Ensure work is performed in a safe manner.
- Perform maintenance, troubleshooting, and repair tasks of electrical systems associated with Real Estate Division facilities.
- Repair/replace breakers, vaults, cables, power centers, power and lighting panels, emergency power generation equipment, HVAC motor controls, programmable logic controllers (“PLCs”), watt hour and demand metering, automated monitoring and control systems, fault indicators, capacitors, regulators, and surge suppression devices.
- Provide power to miscellaneous vessels from dock-based systems.
- Respond to emergency power problems and/or requests for assistance. NOTE: Electricians generally work 40-hour work weeks, however it is possible that a worker may have to work overtime and/or be called in during the evening hours to address a critical situation.
- Enter time by work order on a daily basis into job tracking system (Maximo).
- Enter description of work completed in work log.
- Send and respond to electronic mails.
- Attend periodic meetings during which training is provided and important safety issues are discussed.
- Assist other crafts as requested.
- Potentially supervise apprentices or mentor students.
- Complete all required forms and documents.
- Perform other tasks as requested.



Necessary skills and abilities may include:

- Identifying the best method to correctly complete an assigned task.
- Having a working knowledge of the National Electrical Code, OSHA, WISHA and Port of Seattle requirements.
- Have working knowledge of “Arc Flash” exposure environments along with PPE and proper procedures.
- Ability to read and interpret blueprints.
- Having the skills to complete the assigned task(s) in a timely and efficient manner.
- Must have the ability to operate all applicable shop tools, meters for testing, troubleshooting, repair of electrical equipment, tools of the trade, and assigned maintenance support equipment.
- Having well-developed interpersonal skills that are conducive toward working effectively in a team-oriented environment, but also being able to work independently without immediate direct supervision.



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- Must have good communication skills (including on radio).
- Working in a professional manner while in the field. Often the Electricians/Wiremen are visible to Port tenants and the public, and the Electricians need represent the Port well while working.
- Must have the ability to safely operate a motor vehicle.
- Must have the ability to perform assigned duties in various types of weather, and be able to complete work heights, in confined spaces, or from a boat.
- Having the ability to follow directions closely and to be detailed oriented while working.
- Working knowledge of Windows-based computers, related accessories, time tracking software, keyboarding, data input skills, and electronic mail software.

Machinery, Tools, Equipment, Personal Protective Equipment:

- Hand tools and power tools, including pliers, drills, wrenches, hammers, screwdrivers, mauls, reciprocating saws, roto-hammers, conduit benders, fish tape, and tape measures.
- Tool boxes, buckets, or bags.
- Spools of wire.
- Electrical assemblies and components.
- Nylon straps and ropes.
- Hand trucks. Wheeled carts.
- Portable generators. Air compressors.
- Work trucks with storage boxes (some with hoists).
- Shovels and brooms. Wet/dry vacuums.
- Scissor lifts, manlifts, ladders, and boom lifts. Forklifts.
- Work skiffs/boats (14 and 16 foot boats) with outboard engines.
- 2-way radios. Traffic cones.
- Tide chart.
- Computer, computer accessories, and project management software (Maximo). General office equipment, such as fax machine and telephones. General office supplies, such as pens/pencils, notepads, binders, and copy paper.



Electricians are required to wear a safety vest and approved safety boots/footwear at all times. Eye and ear protection, respirators, and hard hats are required as necessary. Electricians may also wear gloves, kneepads, and rain gear. Fall arrest harnesses are worn when working at heights, or may be worn when working over or near a sub-surface station.

When working on or within 6 feet of an edge of the water, Electricians must wear personal floatation devices (“PFDs”).



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Education / Training:

Electricians working for the Port of Seattle are certified as Journeyman Electricians/Wiremen. Journeyman Electricians are qualified to work in all phases of work (i.e., construction, tenant improvements, and maintenance), and on various types of electrical systems. The Electricians in Marine Maintenance are represented by the International Brotherhood of Electrical Workers Local #46.

Minimum Requirements: Completion of a Washington State approved electrical apprenticeship or equivalent program or experience. Must have a valid Washington State EL01 Electricians Certificate. Must possess a valid Washington State driver's license, and have the ability to obtain a Commercial Driver's License (CDL) (if required), and pass a security background check.

Preferred Qualifications: Five years working experience as a Journey level Electrician/Wireman in a maintenance environment. Strong background with electronics, PLCs, ladder logic, VFDs, and GPUs. Windows-based computer knowledge and radio communication skills. Certified Cable Splicer.

Training and or enough hands-on experience with computers to have a working knowledge of Windows-based computers, related accessories, time tracking software, keyboarding, data entry, and electronic mail software.

Per the Dictionary of Occupational Titles (DOT): 829.261-018 Electrician, Maintenance
Specific Vocational Preparation (SVP): 8 (From four to ten years)



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COGNITIVE AND BEHAVIORAL ELEMENTS/DEMANDS

Frequency Definitions:			
Continuously	= Occurs 66-100% of the time.	Occasionally	= Occurs 1-33% of the time
Frequently	= Occurs 33-66% of the time.	Rarely	= May occur less than 1% of the time.
Never	= Does not ever occur.		
Comprehension			
	Articulating and comprehending information in conversations.		Continuously
	Reading, comprehending, and using written materials.		Occasionally
	Understanding and solving problems involving math and using the results.		Frequently
	Using technology/instruments/tools & information systems.		Continuously
	Working with two and three dimensional formats.		Frequently
Remembering			
	Remembering spoken instructions.		Continuously
	Remembering written instructions.		Frequently
	Remembering visual information.		Continuously
	Recalling information incidental to task at hand.		Continuously
	Memorizing facts or sequences.		Frequently
	Remembering simple instructions.		Continuously
	Remembering detailed instructions.		Continuously
Learning & Processing			
	Effectively learning and mastering information from classroom training.		Occasionally
	Effectively learning and mastering information from on-the-job training.		Continuously
	Learning from past directions, observations, and/or mistakes.		Continuously
	Using common sense in routine decision making.		Continuously
	Recognizing and anticipating potential hazards and taking precautions.		Continuously
	Thinking critically and making sound decisions.		Occasionally
	Integrating ideas and data for complex decisions.		Occasionally
	Determining and following precise sequences.		Frequently
	Coordinating and compiling data and information.		Occasionally
	Analyzing, synthesizing data and information.		Occasionally
Tasking and Planning			
	Performing repetitive or short-cycle work.		Continuously
	Working under specific instructions.		Continuously
	Completing complex tasks.		Occasionally
	Directing, controlling, or planning for others as necessary for basic tasks.		Occasionally
	Directing, controlling, or planning for others as necessary for complex tasks.		Rarely
	Multi-tasking.		Continuously
	Planning, prioritizing, and structuring daily activities.		Continuously



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Use Appropriate Behavior for Professional Work Environment	
Receiving criticism and accepting limits appropriately.	Frequently
Maintaining emotional control and organization under increased stress.	Continuously
Maintaining socially appropriate affect, temperament, and behavior.	Continuously
Monitoring own quality of performance and altering behaviors to correct mistakes or improve outcome.	Continuously
Working independently and/or unsupervised.	Continuously
Adapting to frequent interruptions, changes in priorities, or changes in work location.	Occasionally
Responding effectively to emergency situations.	Occasionally

Frequency Designations: Required Beneficial Not Necessary	
Maintaining Attendance and An Assigned Work Schedule	
Maintaining predictable and reliable attendance each work shift.	Beneficial
Being punctual.	Beneficial
Taking rest periods at set times or only at times determined by breaks in job responsibilities.	Not Necessary
Adjusting to a flexible schedule of work days and or shifts.	Beneficial



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PHYSICAL DEMANDS

N/A: Not Applicable

S: Seldom (1-10% of the time)

O: Occasional (10-30% of the time)

STRENGTH: Sedentary Light

F: Frequent (30%-70% of the time)

C: Constant (Over 70% of the time)

WNL: Within Normal Limits (talking, hearing, etc.)

Medium Heavy Very Heavy

Frequency

Comments

Sitting	S-O	While driving to job sites, attending meetings, or for short periods of time while working in the field.
Standing	F	Interchange with walking. Frequency will depend on assigned tasks. May include standing in a boat while working.
Walking	F	Interchange with standing (larger percentage of time is spent walking than standing). Frequency will depend on assigned tasks. Walking may be over concrete, asphalt, grating, or tile, or over uneven (such as rip-rap (large rocks) or dirt) or slippery surfaces (including mud and wet wooden docks).
Lifting (up to 10 pounds)	F	Electrical parts and accessories; smaller electrical assemblies; hand and smaller power tools; rolls/spools of wire (500' reel of 12 gauge wire is approx. 10 lbs.); boxes of electrical supplies; smaller ladders; traffic cone.
Lifting (10 to 25 pounds)	O	Lifting mid-sized assemblies and components; larger power tools; bucket/bag of tools; larger ladders.
Lifting (25 to 90 pounds)	S	Lifting large assemblies and components; larger hook-up cables for large moored ships; coils of flex conduit (35 lbs.); toolbox or bucket of tools; disconnects for large ships moored at piers (approx. 70 lbs.); moving generators or compressors. Note: Heavier items can be lifted by two workers, and/or equipment (including hoists or forklifts) is available to reduce the amount of necessary lifting.
Carrying (up to 10 pounds)	F	Electrical parts and accessories; smaller electrical assemblies; hand and smaller power tools; rolls/spools of wire (500' reel of 12 gauge wire is approx. 10 lbs.); boxes of electrical supplies; smaller ladders; traffic cone.
Carrying (10 to 25 pounds)	O	Carrying mid-sized assemblies and components; larger power tools; bucket/bag of tools; larger ladders.
Carrying (25 to 90 pounds)	S	Carrying large assemblies and components; larger hook-up cables for large moored ships; coils of flex conduit (35 lbs.); toolbox or bucket of tools; disconnects for large ships moored at piers (approx. 70 lbs.); moving generators or compressors. Note: Heavier items can be carried by two workers, and/or equipment (including hoists or forklifts) is available to reduce the amount of necessary carrying.
Pushing/Pulling (Up to 25 pounds of force)	F	Pulling wire through conduit; pushing while using drill or roto-hammer; pushing while using screw driver; using wrenches to tighten or loosen bolts/nuts; using a hammer or maul; pulling wheeled carts holding tools, supplies, and equipment; opening manhole or a hatch covering connections used for ships.
Pushing/Pulling (25 to est. 90 pounds of force)	S	Pushing while using drill or roto-hammer; pushing while using screw driver; using wrenches to tighten or loosen bolts/nuts; using a hammer or maul; pulling wheeled carts holding tools, supplies, and equipment (particularly when wheeling a cart up a dock ramp when the tide is out); opening manhole or a hatch covering connections used for ships.



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Climbing Stairs/Ladders	O	Workers may encounter stairs in the field. There are also stairs in the Maintenance Shop. Electricians climb ladders as necessary (ladders can range from stepstools to 24' extension ladders).
Working at Heights/ Balancing	O	Frequency depends on assigned tasks. Electricians climb ladders, and may work from a man lift or while standing on staging constructed under docks. Electricians in Marine Maintenance may also have to work from boats when necessary, which can take a significant amount of balance.
Bending at Waist	F	Performing assessments, inspections, installations, and repairs. While working at a shop workbench. Any work performed in a trench. Gathering materials and supplies from carts, shelves, or work truck.
Bending Neck	C	All of the assigned tasks involve neck movement: conducting inspections, performing repairs, pulling new wire; installing fixtures and assemblies; climbing ladders; gathering electrical parts and components.
Twisting at Waist	O	While maneuvering/reaching into work areas, installing fixtures.
Crouching/Kneeling	O	Working below waist level; gathering items stored at or below waist level; potentially while working below the Electrician's feet (in a hole in the dirt or on a dock). Note: Workers may wear kneepads while working.
Crawling	S	Workers may wear kneepads while working.
Stooping	O	While entering/exiting work truck cab and enclosure on back of truck; maneuvering into and out of work areas.
Reaching	F	Uninstalling and installing assemblies; disconnecting and removing wires; pulling wires through conduit and making electrical connections; climbing ladders; gathering supplies and materials from truck or supply area. Note: Reaching heights would be from the floor to over the shoulder on an equal frequency. Note: Workers try to position themselves where the work is primarily performed between shoulder and waist heights.
Driving	S-O	Driving work trucks to work sites.
Foot Controls	S-O	Driving work trucks, and using safety switches on man lifts.
Repetitive Motion	O	Frequency will depend on assigned tasks. Pulling wire through conduit. Gripping wire strippers and pliers. With effort, a worker can vary the sequence of the tasks being completed to mitigate repetitive motions.
Handling/Grasping	F	40 % Pinch Grasp 60 % Whole Hand Grasp
Fine Finger Manipulation	F	Using wrenches, screwdrivers, and pliers, triggers on power tools, keys to start truck and enter buildings, gathering and holding couplings/small parts, and operating two-way radio.
Talking	F	Communicating with supervisors, co-workers, tenants, and the public.
Hearing	F	Communicating with supervisors, co-workers, tenants, and the public.
Seeing	C	Within normal limits, with or without correction.
Writing	S	While documenting inspections and completed preventive maintenance tasks; taking notes regarding completed work; drafting reports regarding system issues.



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Keyboarding	S	While entering time and work performed on a daily basis, creating and responding to electronic mail. Potentially while documenting inspections and writing reports regarding system issues.
Normal Job Site Hazards	C	Working with electricity (risk of electrocution), working at heights (ladders, man lifts, or roofs), in confined spaces, carrying heavy objects, falling objects, striking head on overhead objects, working near moving vehicles, slippery walking surfaces, sharp tools, fumes, dust, noise, odors, vibrations, and capsizing while working in a boat.
Expected Environmental Conditions	C	Work may be performed inside temperature-controlled buildings, or outside exposed to the weather. Worker may be exposed to noisy environments, dust, and fumes.

The above job analysis represents the requirements of a specific job based on personal observations, discussions with employer representatives, and/or workers. On occasion, practicality and feasibility prevent the direct observation and/or gathering of objective quantifiable data. For this reason, a "best estimate" may have been used when reporting physical demand frequencies.

Analysis was done on the job site? Yes No

Job Analysis Reviewed By: Chris Todd

Completed by Vocational Provider Brice York, BA, CDMS

Date April 18, 2018 Signature of Vocational Provider 



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FOR PHYSICIAN'S/EVALUATOR'S USE ONLY

- The injured worker can perform the physical activities described in the job analysis and can return to work on _____
- The injured worker can perform the physical activities described in the job analysis on a part-time basis for _____ hours per day. The worker can be expected to progress to regular duties in _____ weeks/months.
- The injured worker can perform the described job, but only with the modifications/ restrictions in the attached report and/or listed below. These modifications/restrictions are (check one):
 - Temporary for _____ weeks _____ Months
 - Permanent
- The injured worker cannot perform the physical activities described in the job analysis based on the physical limitations in the attached report and/or listed below. These limitations are (check one):
 - Temporary for _____ weeks _____ months
 - Permanent

COMMENTS:

Date _____ Physician's/Evaluator's Signature _____

Physician's/Evaluator's Name Printed _____

PLEASE RETURN COMPLETED FORM VIA FACSIMILE TO:

Port of Seattle Employee Health & Safety Department at (206) 787-3406