



Disability Services
Safety and Claims Management
Department of Executive Services
Human Resources Management Division
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JOB ANALYSIS

Job Title:	Rail Electrical Worker	DOT Title:	Line Installer, Street Railway (closest match)
SVP:	7	DOT #:	821.361-022
Location of Analysis:	Traction Power Rail Station 3407 Airport Way S. Seattle, WA. 98134	Name of Employee:	
Analyst:	Jennifer Kabacy, CDMS	JA Source:	
Presenting VRC:	Jennifer Kabacy, CDMS	Employer Contact:	
Date Analysis Completed:	1/17/14	Supervisor Contact Information	

☒ On-Site ☐ Interview ☐ Representative

JOB DUTIES:

The responsibilities of this classification include performing skilled journey level work to troubleshoot, maintain, repair, upgrade, and perform comprehensive preventative maintenance on rail electrical systems as well as electrical systems and equipment in Light Rail shops, offices, park and ride lots, and tunnels.

This is a single level classification. Rail Electrical Workers safely operate power distribution equipment in support of revenue and non-revenue service; work in high places from mechanical lift devices, support structures and poles; and use common and specialized tools and equipment to perform inspection, maintenance, and repair tasks. Rail Electrical Workers prioritize emergency tasks in the absence of on-site supervision.

The Rail Electrical Worker classification is distinguished from other rail classifications in that incumbents perform electrical work exclusively on rail electrical systems.

Essential Functions according to the employer:

All King County jobs require ability/essential function to:

- Demonstrate predictable, reliable, and timely attendance.
- Follow written and verbal directions to complete assigned tasks on schedule.
- Read, write, and communicate in English & understand basic math.
- Learn from directions, observations, and mistakes and apply procedures using good judgment.
- Work independently or as part of a team and interact appropriately with others.

Essential functions

- Maintain LR Overhead Contact System (OCS); maintain light rail overhead lines and associated components, underground feeders, switches, electrical wiring and systems including a variety of single phase, three phase, and DC systems.
- Perform routine inspection, maintenance, repair, and upgrades to OCS components such as messenger wire, contact wire, section insulators, pole and enclosure mounted switches, air gaps,



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insulated and un-insulated overlaps, poles, and associated equipment.

- Perform inspections, maintenance and upgrades of substations and their components such as switches, transformers, rectifiers, fuses, relays, programmable logic controllers (PLCs), batteries, chargers and associated equipment (including the LRV shop stinger system).
- Maintain and repair equipment in Light Rail shops, offices, park and ride lots, and tunnels.
- Perform high voltage hot-line work; maintain and repair low voltage systems such as fire and security alarms; maintain and repair auxiliary power plants, transfer switches, and uninterruptible power supplies; perform high voltage tests on power cables and equipment; splice, maintain and terminate all types of low and high voltage cable; pull, rack, and secure high and low voltage cables in manholes, conduits, tunnels, and vaults.
- Program and troubleshoot PC, PLC, and micro-processor based control systems.
- Manually operate power switches and breakers under direction of the Link Control Center (LCC).
- Flag track-way to provide safe rail work zones. Set up work zone traffic control areas.
- Maintain work records and complete work requires.
- Load and unload tools, materials, and equipment.
- Trim trees and other vegetation which may interfere with train movement or electrical installations.
- Maintain appropriate parts stock on assigned vehicles.
- Operate company assigned vehicles, including hi-rail and aerial lift equipment and perform rolling inspections from raised aerial equipment.
- Install, troubleshoot, and repair equipment required for underground distribution systems, traction power systems, and facilities.
- Locate, repair, and clear faults in underground systems.
- Bend, install, maintain, and repair all types of conduit.
- Read and interpret distribution maps, feeder maps, and other drawings in performing switching and tagging.
- Plan, schedule, and coordinate activities and work with other trades and divisions.
- Pump water from vaults and manholes. Perform snow and ice removal.
- Respond to emergency calls as necessary.
- May inspect work completed by contractors.
- Assist other trades as needed. Perform other duties as assigned.
- Work independently or with a team while being aware voltage at all times in order to keep self and crew members safe while working with over 1500 volts of electricity.



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EXPERIENCE, QUALIFICATIONS, KNOWLEDGE, SKILLS:

Knowledge/Skills (May vary by position):
Knowledge of national, state, and local electrical codes and means of compliance.
Knowledge and understanding of electrical theory, high voltage work and modern industrial controls.
Knowledge required safety procedures.
Skill in locating underground cables; installing conduit and pulling underground cable.
Skill in maintaining overhead lines and components.
Skill in the use of tools and equipment required to perform cable placing and repair.
Skill in safely and efficiently utilizing appropriate test equipment.
Skill in reading and interpreting blueprints, schematics and drawings.
Skill in working in arc flash protection suits.
Skill in dealing proactively and sensitively with customers.
Skill in oral and written communications.
Mechanical skills.
Problem solving and analytical skills.

NECESSARY SPECIAL QUALIFICATIONS:

Washington State A CDL with air brake endorsement is required within 90 days of employment.
Washington State Journey Electrician Certificate or Journey Line Worker Certificate or equivalent may be required.
Hi-Rail, Forklift, Aerial Lift, Confined Space, First-Aide/CPR and other certifications or requirements determined to be necessary to meet the business needs of the employing unit may be required.
Work both indoors and outdoors in inclement weather.

Machines, Tools, Special Equipment, Personal Protective Equipment Used: Hy-Rail vehicle, forklifts, and aerial lifts. Electrical components including breakers, contact wire, messenger wire, meters, braces, brackets, etc. Tools and equipment including ladders, "hot sticks" (extendable poles to hook onto the overhead wires), crimpers, wire cutters, sledgehammers, wrenches, sand bags, chains, ground cables, etc. Safety equipment including ventilators, hard-hat, reflective gear, cones, etc.

PHYSICAL REQUIREMENTS

Frequency Scale	Strength	Work Pattern	
N = Never	<input type="checkbox"/> Sedentary*	<input checked="" type="checkbox"/> Full-time	
S = Seldom (1-10 %, up to 48 min)	<input type="checkbox"/> Light	<input type="checkbox"/> Part-time	
O = Occasional (11-33%, 48 min. – 2 hr 25 min)	<input type="checkbox"/> Medium	<input type="checkbox"/> Seasonal	
F = Frequent (34-66%, 2 hr 26 min – 5 hr 35 min)	<input type="checkbox"/> Heavy	8	Hours Per Day**
C = Constant (67-100%, more than 5 hr 35 min)	<input checked="" type="checkbox"/> Very Heavy*	40	Days Per Week

*This is classified as a Very Heavy job by the US Department of Labor, involving the ability to exert in excess of 100 pounds of force occasionally, in excess of 50 pounds of force frequently, in excess of 20 pounds of force constantly to move objects.

**There are two shifts at this facility picked by seniority: day shift from 8:30am-5:00pm, and night shift from 10:00pm to 6:00am.



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PHYSICAL DEMANDS		FREQUENCY						ACTIVITY DESCRIPTION
	% Time	N	S	O	F	C		
Sitting	20%			X				When driving to job site location, and when operating Hi-Rail intermittently at the job site.
Standing	80%					X		Alternated standing and walking up to six hours per shift, and up to 4 hours at a time, to pull equipment and electrical components from storage, to load truck, and to perform electrical inspection and repairs, often in bucket of Hi-Rail in confined area.
Walking	80%					X		Alternated standing and walking up to six hours per shift, and up to 4 hours at a time, to pull equipment and electrical components from storage, to load truck, and to perform electrical inspection and repairs,

Lifting* floor – waist	N	S	O	F	C		Worker seldom lifts large electrical components (ie: breakers, etc) weighing up to 100 pounds, typically with another worker. Lifting of up to 60 pounds occurs occasionally to obtain components, wire, tools, etc. from storage, and when maneuvering components into place when making repairs. Worker will also carry ground cables weighing 30-40 pounds to test electrical components. Frequent lifting of up to 30 pounds, and constant lifting up to 10 pounds to handle tools and components.
		100	60	30	10		
Lifting waist–shoulder	N	S	O	F	C		To lift electrical components and tools (same as floor to waist lifting).
			60	30	10		
Lifting above shoulder	N	S	O	F	C		Occasionally up to 45 pounds, frequently up to 20 pounds, and constantly up to 10 pounds over shoulder level to lift electrical components into place overhead, often while working in bucket of Hi-Rail vehicle; to maneuver extendable “hot stick” to hook wires overhead; and to make repairs using tools and electrical components.
			45	20	10		
Carry* (Dist.)	N	S	O	F	C	Up to 100 feet	Seldom up to 100 feet at a time, while carrying ground cables weighing 30-40 pounds, and can be two at a time (one in each hand). Frequently carry tools and components weighing up to 20 pounds for
		Up to 40		Up to 20			



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							up to 50 feet at a time.
Pushing/ Pulling*	N	S	O	F	C		Occasionally with very heavy force, to use wire crimpers and cutters. Frequently with moderate force, to maneuver wire and electrical components into place, often overhead.
			Very Heavy	Moderate			

	N	S	O	F	C	
Climbing			X			Occasionally climb ladders, and in/out of Hi-Rail vehicles (approximately 2 feet up into cab of truck).
Balancing				X		When climbing in/out of Hi-Rail vehicle and when working in confined space in bucket and while working with tools overhead.
Stooping / Bending			X			To retrieve electrical components and tools from storage. To tighten bolts on electrical poles at ground level, using wrench.
Twisting				X		At torso and neck, and with hands/arms when inspecting and repairing electrical components. Much of the work is performed in Hi-Rail Aerial bucket, and therefore worker must twist in order to work in confined space.
Squatting / Kneeling			X			To retrieve electrical components and tools from storage. To repair electrical system at low levels, such as bolts on poles, wiring in tunnels, etc.
Crawling			X			When working in confined spaces such as vaults or manholes.
Foot Controls			X			To operate Hi-Rail vehicle.

	N	S	O	F	C	
Reaching Forward (Level) Below Waist Above Shoulder				X		To inspect and repair electrical components, retrieve parts from storage area, store components in vehicle, etc.
			X			To retrieve parts from storage area, tighten bolts on poles, obtain tools, etc.
				X		To inspect and repair electrical components/wire, to use "hot stick" to maneuver wire into place, etc.
Handle/Grasp					X	With "heavy" force to twist, turn, push/pull components into place, handle tools, wire-cutters, crimpers, etc.
Fine Finger Manipulation				X		To make repairs on small components or parts.
Hand Controls				X		To operate Hi-Rail controls, Aerial lift controls, come-along, pumps, etc.
Repetitive Motion				X		With hands/arms to install and repair electrical components using tools and specialized equipment.
Vibratory Tasks			X			To operate power equipment, pumps.



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	N	S	O	F	C	
Talking				X		To communicate with other workers for assignments and safety.
	N	S	O	F	C	
Hearing				X		To communicate with other workers for assignments and safety.

Visual:	Near Acuity	X	Far Acuity	X	Depth Perception	X	Accommodation	X
					Color Discrimination	X	Field of Vision	X

ENVIRONMENTAL CONDITIONS	FREQUENCY						ENVIRONMENTAL CONDITIONS	FREQUENCY				
	N	S	O	F	C			N	S	O	F	C
Exposure to Weather				X			Noise Intensity			X		
Extreme Cold				X			Atmospheric Conditions	X				
Extreme Hot		X					Exposed Heights (ladders)				X	
							Protected Heights (bucket)				X	
Wet and / or Humidity			X				Exposure to Electricity (high voltage – 1500 volts)				X	
Proximity to Moving Mechanical Parts			X				Exposure to Toxic / Caustic Chemicals		X			
Exposure to Explosives			X				Exposure to Radiation	X				
Other:												

Analyst's Comments:

Employee must maintain concentration and awareness for extended periods of time and frequently work with a crew who rely on him or her for issues of safety and sound independent judgment. Mistakes could result in employee's death or the death of colleagues.

Possible Employer Modifications:



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Note: The information for this job analysis was gathered by either on-site observation, and verified by the employer for accuracy. Additional data may have been obtained from standardized industry resources such as the DOT, GOE, COJ, OOH, WOIS and O-NET. 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.

Analyst:

Presenting VRC signature:

Jennifer A. Kabacy

1/23/14

Jennifer Kabacy, CDMS
Vocational Consultant

Date

Jennifer A. Kabacy

1/23/14

Jennifer Kabacy, CDMS
Vocational Consultant

Date

Employer Verification:

Employee Verification: (optional)

Eddie Holmes

1-23-14

Eddie Holmes, Power Chief
Name

Date

Name

Date



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MEDICAL PROVIDER:

- ☐ I agree that the employee can perform the physical activities described in this job analysis and can return to work.

State date employee is released to return to work if different from today's date _____

- ☐ I agree the employee can perform the described job but only with modifications (describe in comments section). Modifications are needed on a permanent ☐ or temporary ☐ basis.

- ☐ The employee **temporarily** cannot perform this job based on the following physical limitations:

Anticipated release date: _____

Treatment plan: _____

- ☐ The employee is **permanently** restricted from performing the physical activities described in this job analysis based on the following physical limitations (state objective medical findings):

Comments:

Signature

Date

Print Name

- | | | |
|--|---|---|
| <input type="checkbox"/> Attending Physician | <input type="checkbox"/> Consulting Physician | <input type="checkbox"/> Pain Program Physician |
| <input type="checkbox"/> IME Physician | <input type="checkbox"/> PCE Therapist | <input type="checkbox"/> OT / PT Therapist |
| <input type="checkbox"/> PEP Physician | | |