



Department of Human Resources

Employee Health & Safety Division
 Disability Services Section
 500 4th Avenue, Room 500
 Seattle, WA 98104
 (206) 477-3350
 (206) 296-0514 FAX
www.kingcounty.gov

Employee :

Claim # :

JOB ANALYSIS

Job Title:	Industrial Maintenance Mechanic, Master		
Department:	Natural Resources and Parks	Division	Wastewater Treatment
DOT Title:	Water and Sewer Systems Supervisor	DOT #:	862.137-018
SVP:	7	Requestor:	Autumn Musch
Worksite Address:	1400 Discovery Park Blvd. Seattle, WA 98199	Office Contact Name/ Phone/ Email:	Lester VanGelder 206-684-2420 lester.vangelder@kingcounty.gov
Original Analyst:	Kyle Pletz, VRC, CDMS		Analysis Date: 9-28-20
Update Analyst:			Update Date:

On-Site Interview Representative

JOB DUTIES:

Conducts complex maintenance, overhaul, and installation of mechanical equipment and providing leadership and direction to mechanical and other skilled craft personnel. This is a single level classification that is distinguished from other classifications in that the incumbent is required to have successfully completed the Maintenance Mechanic skills and knowledge test or interview, and to demonstrate a superior level of knowledge of equipment and processes. Incumbents provide leadership, direction and advanced knowledge and experience to journey-level mechanics.

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.

Job Specific Requirements:

1. Provides direction, trains other staff and performs major repairs to pumps, motors, gearboxes, hydraulic and pneumatic systems and equipment, compressors and large aeration blowers; replace bearings, volutes, shafts, impellers oxygen generation and distribution equipment. Salvage equipment for re-use.
2. Evaluates, tests and performs difficult troubleshooting of malfunctions in pumps, gearboxes, compressors, gravity belt thickeners, belt presses, complex centrifuges and other related equipment in a large industrial environment.
3. Uses state-of-the-art-technology to perform precision maintenance on equipment to extend life and reduce costs. This includes laser alignment vibration analysis. Applies root cause failure analysis to techniques to equipment. Calculates dollar savings on an annualized basis for estimate of returns on precision maintenance, using current draw measurements and historical data both inside and outside the Department of Metropolitan Services.
4. Supervises crew in environments containing such hazards as hydrogen sulfide, chlorine, rushing water, low oxygen content atmosphere, explosive methane atmosphere, hydrogen peroxide, caustic soda, bio-hazards, blood born pathogens and liquid nitrogen. Ensure use of proper, legal confined space entry procedures. Makes repairs in extreme weather.



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5. Provides direction to other staff and performs skilled machine shop assignments including milling, drilling and using a lathe, radial drill press, band saws, blue prints, engineering drawings, operations and maintenance manuals, vendor data and input based on prior experience.
6. Provides leadership and training to other staff in state-of-the-art welding including Metal Inert Gas (MIG), Tungsten Inert Gas (TIG) heli-arc, plasma cutter, oxyacetylene, carbon arc and stick welding in the fabrication of piping system, frames, fixtures, special tools, pump bases and repairs to machine housings, volutes, shafts and impellers.
7. Performs lead role in the overhaul and installation of mechanical equipment.
8. Directs the work of assigned maintenance mechanics, maintenance workers and other skilled trades in assigned tasks. Ensures safety procedures and regulations are followed.
9. Fills in and stands by to perform lead mechanic responsibilities including delegation of work based on individual skill levels. Determines priorities, workload and availability of staff, coordinates with operating sections, off site section and construction to plan and organize assigned duties.
10. Serves on interview board to hire new personnel and promote existing employees.
11. Provides input to engineering staff.

EXPERIENCE, QUALIFICATIONS, KNOWLEDGE, SKILLS:

Must possess a journey-level knowledge of industrial maintenance practices. Must have advanced knowledge of troubleshooting, welding methods, plumbing, pipefitting, pump and motor overhaul, machine shop practices, hazardous chemicals in the workplace, and mechanical repair technology. Must have skill in group presentation and oral and written communications, as well as equipment operation and installation, rigging, and hydraulics. Must also have skill in using a welder, solder, braze, MIG, TIG, and metallurgy. Must possess skills in leadership, teaching/coaching, negotiation/mediation, planning, and scheduling. The incumbent must possess a Washington State Driver's License and a basic first aid and medic card. Must be able to lift 50 pounds.

Machines, Tools, Special Equipment, Personal Protective Equipment Used:

Computer, telephone, cellular phone, two-way radio, forklift, crane, hoist (manual and electric), truck crane, wrenches, pry bars, hammer, chisel, screwdrivers, grinders, welding equipment, plasma cutter, reciprocating, roto-hammer, 50-ton arbor press, lathes, vertical and horizontal mills, drills, pneumatic and electric impact wrench, truck, hydraulic gear puller, micrometer, carbon arc, cutting torch, dial indicator, hydraulic impact tools and various hand and power tools.

Employees also may use protective equipment that may include the following:

Respiratory Protection: Dust mask, 1/2 face, full face, supplied air, and a Self Contained Breathing Apparatus (SCBA),

Hearing Protection: Ear plugs and earmuffs.

Eye Protection: Safety glasses and goggles.

Foot Protection: Steel toe boots.

Hand protection: Gloves.

Face/Head Protection: Welding hood and hardhat.



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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%, 49 min. – 2 hr 40 min)	<input checked="" type="checkbox"/> Medium	<input type="checkbox"/> Seasonal
F = Frequent (34-66%, 2 hr 41 min – 5 hr 20 min)	<input type="checkbox"/> Heavy	10 Hours Per Day
C = Constant (67-100%, more than 5 hr 20 min)	<input type="checkbox"/> Very Heavy	4 Days Per Week
		FLSA Exempt <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Work Pattern (continued)

Overtime required on emergency basis.

Job Demand	Frequency and Weight (lbs)					Activity Description
	N	S	O	F	C	
Lifting floor – waist		*51-100	16-50	1-15		<p>Up to 15 min./time, 3 hrs. total with 1-15 lbs. while using hand tools such as wrenches, impact wrenches, sockets, hammers, grinders, welding equipment, plasma cutter, reciprocating saw, drills and pry bars. Manipulating parts, pipes, valves, etc.</p> <p>Up to 1-2 min./time, 45 min total with 16-50 pounds while using power tools such as pneumatic and electric impact wrenches, grinders, welding equipment, roto-hammer, and pry bars. Manipulating parts, pipes, valves, etc.</p> <p>Up to 5 sec./time, 30 sec. total with 51-100 lbs. (with assistance) while moving electric motors or a bucket or toolbox containing multiple hand and power tools.</p> <p>*When the employer requires the employee to lift in excess of 50 pounds there are cranes, hoists and lifting assistance available.</p>



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Job Demand	Frequency and Weight (lbs)					Activity Description
	N	S	O	F	C	
Lifting waist-shoulder		*51-100	16-50	1-5 6-15		<p>Up to 15 min./time, 3 hrs. total with 1-15 lbs. while using hand tools such as wrenches, impact wrenches, sockets, hammers, grinders, welding equipment, plasma cutter, reciprocating saw, drills and pry bars. Manipulating parts, pipes, valves, etc.</p> <p>Up to 1-2 min./time, 45 min. total with 16-50 pounds while using power tools such as pneumatic and electric impact wrenches, grinders, welding equipment, roto-hammer, and pry bars. Manipulating parts, pipes, valves, etc.</p> <p>Up to 5 sec./time, 30 sec. total with 51-100 lbs. (with assistance) while moving electric motors or a bucket or toolbox containing multiple hand and power tools.</p> <p>*The employer does not require lifting in excess of 50 pounds. Cranes, hoists and lifting assistance is available.</p>
Lifting above shoulder		6-15 16-50	1-5			<p>Up to 5 min./time, 1.5 hrs. total with weights of 1-5 pounds while using hand tools such as wrenches, sockets, hammers, bolts, pipes, valves, pry bars, etc.</p> <p>Up to 1-2 min./time, 45 min. total with of 6-15 pounds while using power tools such as pneumatic and electric impact wrenches, grinders, welding equipment, roto-hammer, and pry bars. Manipulating parts, pipes, valves, etc.</p> <p>Up to 30 sec./time, 15 min. total with 16-50 pounds while using power tools such as pneumatic and electric impact wrenches, grinders, welding equipment, roto-hammer, and pry bars. Manipulating parts, pipes, valves, etc.</p> <p>*The employer does not require lifting in excess of 50 pounds. Cranes, hoists and lifting assistance is available.</p>



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Job Demand	Frequency and Weight (lbs)					Activity Description
	N	S	O	F	C	
Carry (Distance/Surface)		6-30 31-50	1-5			<p>Up to 5 min./time, 1 hr. total with 1-5 pounds while transporting hand tools from truck to pump station. Hand tools may include wrenches, sockets, hammers, and pry bars. Carts are available.</p> <p>Up to 5 min./time, 30 min. total with 6-30 pounds while transporting hand and power tools from truck to pump station. Hand and power tools may include wrenches, impact wrenches, sockets, hammers, grinders, welding equipment, plasma cutter, reciprocating saw, drills and pry bars.</p> <p>Up to 50 feet up to 4x in a work shift. Most commonly occurs with weights of 31-50 pounds while transporting hand and power tools from truck to pump station. Power tools may include pneumatic and electric impact wrenches, grinders, welding equipment, roto-hammer, and pry bars.</p>
Pushing/Pulling (Distance/Surface)		*50- 100	16-50	1-15		<p>Up to 15 min./time, 3 hrs. total with 1-15 lbs. while using hand tools such as wrenches, impact wrenches, sockets, hammers, grinders, welding equipment, plasma cutter, reciprocating saw, drills and pry bars. Manipulating parts, pipes, valves, etc.</p> <p>Up to 1-2 min./time, 45 min. total with 16-50 pounds while using power tools such as pneumatic and electric impact wrenches, grinders, welding equipment, roto-hammer, and pry bars. Manipulating parts, pipes, valves, carts, etc.</p> <p>Up to 5 sec./time, 30 sec. total with 51-70 lbs. while moving electric motors or a bucket or toolbox containing multiple hand and power tools; building materials, equipment carts. On an extremely rare occasion, employee may need to manipulate a 100 lb. piece of equipment, building materials, carts. *Cranes, hoists and lifting assistance are available on most occasions.</p>

Physical Demands	Frequency					Activity Description
	N	S	O	F	C	
Sitting			X			Up to 30 min./time, 1.5 hrs. total while driving as well as performing computer work.



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	N	S	O	F	C	
Standing				X		Up to 30 min./time, 4 hrs. total on flat cement, dirt, gravel, and uneven surfaces removing or rebuilding a pump, working on valves pipes, etc.
Walking			X			Up to ¼ mile (5 min./time), up to 1 hr. total in a work shift. Most commonly occurs while walking from work truck to pump station.
Perform Work on Ladders		X				At heights of 10' for 2 min/time, 10 min. total while inspecting upper areas such as pipes, valves and pumps.
Climbing		X				Occasionally on a ladder to heights of 10' for 5 sec./time, 3 min. total while inspecting upper areas such as pipes, valves and pumps.
Balancing			X			Up to 45 min./time, 2 hrs. total while repairing or removing pipes, valves and pumps while on scaffolding/lift equipment; traversing uneven and slick ground.
Stooping / Bending			X			Up to 45 min./time, 1 hr. total while removing or rebuilding a pump as well as performing plumbing duties.
Twisting at Neck			X			Up to 5 min/time, 1.5 hrs. total while working on pipes, valves, equipment, pumps etc. which may require awkward twisting postures to access bolts/screws/lines etc.
Twisting at Waist			X			Up to 5 min/time, 1.5 hrs. total while working on pipes, valves, equipment, pumps etc. which may require awkward twisting postures to access bolts/screws/lines etc.
Squatting / Kneeling			X			Up to 45 min./time, 1 hr. total while removing or rebuilding a pump as well as performing plumbing duties.
Crawling		X				Rarely.
Reach waist to shoulder				X		Up to 2 hrs./time, 8 hrs. total while removing, rebuilding or repairing a pump as well as performing plumbing and computer duties. Pumps are commonly placed on workbenches and saw horses at waist to shoulder height in the workshop during rebuilding. Worker also reaches while driving.
Reach above shoulder				X		Up to 5 min./time, 6 hrs. total while removing or repairing pumps as well as performing plumbing duties. Plumbing duties may include installing or repairing pipes on a ceiling/overhead.
Reach below waist			X			Up to 5 min./time, 1.5 hrs. total removing or repairing a horizontal pump on the floor as well as performing plumbing duties. Plumbing duties may include installing or repairing pipes on or near a floor
Keyboarding		X				Up to 5 min./time, 15 min. total while performing computer duties.
Wrist Flexion/Extension				X		Up to 15 min./time, 4 hrs. total using and holding various hand tools as well as manipulating equipment nuts, bolts, materials, etc.
Handle/Grasp					X	Up to 3 hrs./time, 9 hrs. total while using and holding various hand tools as well as operating an automobile.



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	N	S	O	F	C	
Forceful Grasp			X			Up to 5 min./time, 1.5 hrs. total while utilizing tools such as prybar, wrenches, torque wrenches, etc. Also forcefully grasps when manipulating, parts, tools, equipment and materials.
Fine Finger Manipulation				X		Up to 1 hr./time, 4 hrs. total while loosening and tightening screws, nuts and bolts with fingers; manipulating small hand tools, measuring, computer equipment.
Hand Controls			X			Up to 30 min./time, 2 hrs. total while operating various vehicles, welding equipment, shop machines or a crane. Shop equipment may include drill presses, lathe, mill, and hydraulic gear puller.
Foot Controls			X			Up to 30 min./time, 1.5 hrs. total while driving a work truck or electric cart.
Repetitive Motion			X			Body part Upper extremities Cycles/hr. 200+
Vibratory Tasks – High			X			Up to 1 hr./time, 2 hrs. total while using impact tools, demo gun/chipper, jackhammer, pneumatic chisel, de-scaler, needle gun, etc.
Vibratory Tasks – Low				X		Up to 15-30 min./time, 4 hrs. total while using sanders, grinders, etc.
Talking		X				Up to 5 min./time, 20 min. total while conversing with co-workers, receiving and giving instructions, roll call/checking in with station, utilizing a two-way radio and cellular phone.
Hearing					X	Up to 3 hrs./time, 10 hrs. total while listening for proper operation of machinery, listening for emergency sirens while driving, listening for danger alarms in wastewater treatment plant, conversing with co-workers, receiving and giving instructions, roll call/checking in with station, utilizing a two-way radio and cellular phone.
Visual – Near Acuity					X	Up to 3 hrs./time, 10 hrs. total assembling, disassembling, repairing, rebuilding, and inspecting pumps, motors and machinery.
Visual – Far Acuity			X			Up to 30 min./time, 1.5 hrs. total while driving.
Visual – Depth Perception			X			Up to 30 min./time, 1.5 hrs. total while driving.
Visual – Color Discrimination		X				Up to 5 sec./time, 30 sec total while identifying danger alarms at wastewater treatment plant.
Visual – Accommodation			X			Up to 30 min./time, 1.5 hrs. total while driving.
Visual – Field of Vision			X			Up to 30 min./time, 1.5 hrs. total while driving.
Exposure to Weather					X	Most work is performed outdoors.
Extreme Cold		X				Rarely
Extreme Hot			X			Boilers, OGADS, welding equipment, heat loops, engines and engine exhausts,
Wet and / or Humidity				X		Work is performed at a wastewater treatment plant.
Proximity to Moving Mechanical Parts					X	Work is performed around industrial equipment.
Exposure to Explosives	X					



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Atmospheric Conditions					X	Dusts, odors. Gases: methane, propane, sewer gas, etc.
Exposed Heights			X			Vaults (with fall protection and confined space requirements)
Exposure to Electricity			X			Working around other trade workers and equipment that may be electrified.
Exposure to Toxic / Caustic Chemicals			X			Sodium bisulfide, etc.
Exposure to Radiation	X					
Noise Intensity	<input type="checkbox"/> Very Quiet <input checked="" type="checkbox"/> Quiet <input checked="" type="checkbox"/> Moderate <input checked="" type="checkbox"/> Loud <input checked="" type="checkbox"/> Very Loud					The noise level varies from quiet to very loud. Hearing protection is required in some areas.
Other:			X			Work is performed in an industrial wastewater setting where the worker is exposed to or in close proximity to heavy operating machinery, high voltage, sewage, adverse weather conditions, uneven surfaces, cat walks/metal grating, noxious or toxic gasses and chemicals, as well as loud noises. The employee is occasionally exposed hazardous materials including sulfur dioxide, sodium hydrochloride, sodium hydroxide, methane, and hydrogen sulfide.



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Analyst's Comments:



Possible Employer Modifications:

Anti-vibration gloves for when working with impact or vibratory tools.



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Update Comments (if applicable):

Note: The information for this job analysis was gathered by either on-site observation, interview and / or is representative of the labor market as indicated on page one. 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: Kyle Pletz

Update (if applicable):

Oct 14, 2020

Vocational Consultant

Date

Vocational Consultant

Date

Employer Verification: Lester Van Gelder

Employee Verification: (optional)

Lester Van Gelder

Oct 13, 2020

Lester Van Gelder (Oct 13, 2020 09:56 PDT)

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. 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 basis 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

- Attending Physician
- Consulting Physician
- Pain Program Physician
- IME Physican
- PCE Therapist
- OT / PT Therapist
- PEP Physician