



# Bock Consulting

## Job Analysis

Job Title	Plumber – Marine Maintenance	Worker	
DOT Number	862.381-030	Claim Number	
Employer	Port of Seattle	Employer Phone #	(206) 787-3000
Employer Contact	Jeff Gunn	Date of Analysis	7/6/06; 6/21/11; 11/22/16

- Job of Injury   
 Transferable Skills Job   
 New Job   
 40 Hours Per Week   
 4 or 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 a Plumber for Marine Maintenance. Plumbers provide services to all of the various business groups within the Seaport and Real Estate Divisions.

### Essential Functions:

Plumbers complete a wide variety of plumbing-related tasks. In general, the Plumbers will be called for installation, maintenance or repair issues related to potable (drinkable) water, sewer, storm water, and air, and may be called for issues related to natural gas lines or heating systems (steam/boiler systems).<sup>1</sup> This work may be located below ground, above ground, or under docks.



<sup>1</sup> Work related to water main and fire hydrant installations, or fire protection system maintenance is generally assigned to the Sprinkler Fitters group.



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It was estimated that 75%-80% of the work performed by the Plumbers can be classified as basic plumbing work, including unclogging toilets and pipes, repairing leaking fixtures and pipes, removing old fixtures and pipes, and installing new fixtures and pipes. Plumbers generally work with pipe sizes from 1/4 inch to 3 inches, although they may also work with pipes up to 12 inches in diameter.

Plumbers have a shop located at 25 S. Horton St. in Seattle, but most of their work is performed on-site at one of the Port's Seaport properties. Work may be performed in buildings, yard areas, or from a boat under piers and docks.

Tasks assigned to Plumbers may include:

- Conducting inspections of Port properties to identify potential issues. Documenting issues and creating work orders if the issue(s) cannot be addressed immediately.
- Completing preventative maintenance ("PM") tasks, such as flushing sewer lines, replacing damaged or corroded pipe, and performing routine building and dock inspections.
- Request parts, supplies, and or materials needed for projects.
- Prepare and or review job hazard analysis for each project. Review job plan. Ensure work is performed in a safe manner.

- Responding to emergency requests for assistance and act as a coordinator for other trades that may be used in the response (i.e., a contractor digs up a pipe or a pipe bursts underground, Equipment Operators and Laborers may be used to reach the area in need of repair).

Note: The Plumbers generally work 40-hour work weeks, however it is possible that the workers may have to work overtime and/or be called in during the evening hours to address a critical situation.

- Repairing and/or obtaining and installing plumbing fixtures in buildings. The Plumbers will repair or replace fixtures depending on what is most cost effective on a long-term basis.
- Working in a trench to repair or replace storm water pipes. Plumbers do not dig the trenches, but may have to shovel dirt out of the way to access plumbing fittings or other items once the primary underground access is created (usually by the Equipment Operators or Laborers).





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- Replacing pumps in sewer lift stations when the installed pumps fail.
- Testing backflow prevention assemblies as required by the City of Seattle. Backflow prevention devices are installed in water systems to prevent contaminants from reaching the potable/ drinkable water supply (the Plumbers must test approx. 385 assemblies). If the assembly being tested is found to be faulty, the Plumbers repair or replace the backflow prevention assembly.
- 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.
- Meet/connect with Crew Chief on a daily basis.
- 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.
- Some tasks and work may be performed while in a boat or standing on a work float.



Necessary skills and abilities may include:

- Identifying the best method to correctly complete an assigned task.
- Having the skills to complete the assigned task(s) in a timely and efficient manner.
- Work in a professional manner while in the field. Often the Plumbers are visible to Port tenants and the public, and the Plumbers need represent the Port well while working.
- Using hand and power tools to perform assigned tasks.
- Having the physical abilities to perform all of the tasks assigned to a Plumber.
- Having the ability to follow directions closely and to be detailed oriented while working.
- Being able to work independently without immediate direct supervision, but also within a team environment when necessary.
- Being able to work in any kind of weather, including working from a boat.
- Working knowledge of Windows-based computers, related accessories, time tracking software, keyboarding, data input skills, and electronic mail software.





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Machinery, Tools, Equipment, Personal Protective Equipment:

- Hand tools and power tools, including pipe wrenches (generally made of aluminum to reduce weight), hammers, screwdrivers, pliers, mauls, drills, reciprocating saws, roto-hammers, shovels, and tape measures.
- Toolboxes or buckets.
- Concrete, steel, cast iron, copper, PVC/plastic pipe. May encounter asbestos and clay pipe when working on older systems.
- Pipe fittings, threaded rod, and other hardware. Containers holding fittings.
- Soldering torches and related items (including gas canisters and solder). Pipe glue.
- Sewer machines/motorized snakes (50 lbs. to 100 lbs.)
- Chop saw (used for cutting sections of larger pipes – 40 lbs.). Chain saw.
- Burk bars. Pry bars.
- Pipe threaders. Pipe cutters.
- Nylon straps and ropes.
- Hand trucks. Wheeled carts.
- Portable generators. Air compressors.
- Water/sewage pumps.
- Work trucks with storage boxes and hoists.
- Shovels and brooms. Wet/dry vacuums.
- Scissor lifts and boom lifts. Forklifts.
- Work skiffs/boats (14 and 16 foot boats) with outboard engines (larger boat has center console steering).
- 2-way radios. Traffic cones.
- Tide chart.
- Computer, computer accessories, and project management software (Maximo).



Workers are required to wear a safety vest at all times. Eye and ear protection, respirators, and hard hats are required as necessary. Plumbers may also wear gloves, kneepads, approved safety boots, rain gear, and chainsaw chaps. Fall arrest harnesses are worn when working at heights, or may be worn when working over or near a sewer lift station.

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



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Education / Training:

Plumbers that work for the Port of Seattle are certified as Journeyman Plumbers. The Washington State Department of Labor and Industries administers plumber certification laws, and anyone who works in the plumbing construction trade must be certified as a Journeyman, Residential Specialty or Backflow Specialty plumber. Journeyman plumbers are qualified to work in all phases of the plumbing construction trade. To become a Certified Plumber in the State of Washington, workers must have specific levels of experience and pass an examination. To qualify for the Journeyman certification level, trainee Plumbers must have a total of 8,000 documented hours working under a Journeyman Plumber, of which 4,000 must be commercial or industrial work. The examination to obtain become a Certified Plumber is a closed book, three-part examination based on Washington State's current plumbing code. It also includes water, and waste and vent sizing from schematic drawings.

Plumbers at the Port of Seattle are members of the United Association Plumbers and Pipefitters, Local 32-Seattle.

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): 862.381-030 Plumber, Maintenance**

Specific Vocational Preparation (SVP): 7 (From two to four years)



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**COGNITIVE AND BEHAVIORAL ELEMENTS/DEMANDS**

Frequency Definitions:	
<b>Continuously</b> = Occurs 66-100% of the time.	<b>Occasionally</b> = Occurs 1-33% of the time
<b>Frequently</b> = Occurs 33-66% of the time.	<b>Rarely</b> = May occur less than 1% of the time.
<b>Never</b> = Does not ever occur.	
<b>Comprehension</b>	
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
<b>Remembering</b>	
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
<b>Learning &amp; Processing</b>	
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
<b>Tasking and Planning</b>	
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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<b>Use Appropriate Behavior for Professional Work Environment</b>	
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: <b>Required Beneficial Not Necessary</b>	
<b>Maintaining Attendance and An Assigned Work Schedule</b>	
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	<b>O</b>	While driving to job sites, attending meetings, or for short periods of time while working in the field.
Standing	<b>F</b>	Interchange with walking. Frequency will depend on assigned tasks. May include standing in a boat while working.
Walking	<b>F</b>	Interchange with 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)	<b>F</b>	Tools, fittings, short lengths of pipe, smaller valves, paperwork, supplies, 2-way radio, and cellular phone.
Lifting (10 to 25 pounds)	<b>O</b>	Boxes of plumbing fittings (up to 20 lbs.); bucket containing selected tools; cast iron snap cutter (20 lbs.).
Lifting (25 to 60 pounds)	<b>S</b>	Toolbox of tools; toilets; new water heaters; larger pipe fittings (10" repair flange – 50 lbs.); chop saw (40 lbs.). Largest sewer machine/snake (100 lbs.–would be lifted by two workers). Lengths of pipe, larger valves, portable compressors and generators. Note: Heavier items are lifted by two workers, and machinery/equipment is used as much as possible to lift heavier items.
Carrying (up to 10 pounds)	<b>F</b>	Tools, fittings, short lengths of pipe, smaller valves, paperwork, supplies, 2-way radio, and cellular phone.
Carrying (10 to 25 pounds)	<b>O</b>	Boxes of plumbing fittings (up to 20 lbs.); bucket containing selected tools; cast iron snap cutter (20 lbs.).
Carrying (25 to 60 pounds)	<b>S</b>	Toolbox of tools; toilets; new water heaters; larger pipe fittings (10" repair flange – 50 lbs.); chop saw (40 lbs.). Largest sewer machine/snake (100 lbs.–would be carried by two workers). Lengths of pipe, larger valves, portable compressors and generators. Note: Heavier items are carried by two workers, and machinery/equipment is used as much as possible to carry heavier items.
Pushing/Pulling (Up to 25 pounds of force).	<b>F</b>	Using wrenches to tighten or loosen bolts/nuts, using a hammer or maul, using a shovel, and removing and sliding hatch (if lifted would weigh approx. 80 lbs.) or manhole covers out of the way.
Pushing/Pulling (25 to est. 50 pounds of force).	<b>S</b>	While using wrenches to loosen bolts/nuts that are rusted in place (or otherwise seized), using a road box key (5' tall metal "T") to open a main line valve under ground, pulling wheeled carts with tools up marina ramps when the tide is out, and removing and sliding heavier hatch and manhole covers out of the way.
Climbing Stairs/Ladders	<b>O</b>	Workers may encounter stairs in the shop facilities or when working in the field. Plumbers climb ladders when necessary (ladders can range from stepstools to extension ladders).





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Working at Heights/ Balancing	O	Frequency depends on assigned tasks. Plumbers climb ladders, and may work from a man lift or while walking on staging constructed under docks. Plumbers in Marine Maintenance are also required to work from boats when necessary, which can take a significant amount of balancing.
Bending at Waist	F	Performing assessments and inspections. Repairing and/or installing items at or below waist level. Any work performed in a trench. Gathering materials and supplies.
Bending Neck	C	All of the assigned tasks involve neck movement: conducting inspections, performing repairs, placing new pipe, installing new fixtures, climbing ladders, placing supports, digging, and gathering pipe and fittings.
Twisting at Waist	F	While maneuvering/reaching into work areas, uninstalling fixtures or pipes, installing fixtures or pipes, opening flow control valves, shoveling, and gathering supplies materials.
Crouching/Kneeling	O	Working below waist level, which may include working on plumbing located within cabinets, or working below the Plumber's feet in a hole in the dirt or on a dock. Note: Workers may wear kneepads while working.
Crawling	S	Limited. Note: Workers may wear kneepads while working.
Stooping	O	While entering/exiting work truck cab and enclosure on back of truck, and maneuvering into and out of work areas, including chases/utility corridors.
Reaching	C	Disassembling/removing fixtures and pipes, placing and securing new fixtures and pipes (including installing hot water tanks in ceilings), climbing ladders, and 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.
Driving	O	Driving work trucks.
Foot Controls	O	Driving work trucks, and using safety switches on man lifts.
Repetitive Motion	S	The variety of tasks assigned to the Plumbers and the different steps necessary to complete the tasks limits the amount of repetitive motion encountered by the Plumbers.
Handling/Grasping	C	60 % Pinch Grasp 40 % 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 plumbing parts, and operating two-way radio.
Keyboarding	S	While entering time and work performed on a daily basis, creating and responding to electronic mail.
Talking	O	Communicating with supervisors and other co-workers.
Hearing	O	Communicating with supervisors and other co-workers.
Seeing	C	Visual abilities would be considered important in this position.
Writing	S	While documenting inspections, completing backflow reports for the City of Seattle, and marking measurements.
Normal Job Site Hazards	C	Raw sewage, working in trenches (collapse), carrying heavy objects, working at heights (ladders, man lifts, or roofs), 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. Drain cleaner, solder/flux, pipe glue, and caulking.



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Expected Environmental Conditions	<b>C</b>	<b>Work may be performed inside temperature-controlled buildings, or outside exposed to the weather. Worker may be exposed to noisy environments, dust, and fumes.</b>
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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:      Tom Berg, Jeff Gunn

Completed by Vocational Provider      Brice York, B.A., CDMS

Date      November 22, 2016      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**