



# Bock Consulting

## Job Analysis

Job Title	HVAC Technician (MM)	Worker	
DOT Number	637.261-014	Claim Number	
Employer	Port of Seattle	Employer Phone	(206) 787-3000
Employer Contact	Daniel Basher	Date of Analysis	August 2, 2018

- 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) Seaport Division, 3) Real Estate Division, and 4) Capital Development Division.

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

This job analysis was developed for a HVAC Technician working for Marine Maintenance.

### Essential Functions:

In this position, the Technician services and repairs the environmental control systems and equipment, such as heating, ventilating and air-conditioning (“HVAC”) systems, heat pumps, and chillers, installed in buildings managed by Marine Maintenance.

The HVAC Shop has an office in the main Marine Maintenance shop; however, almost all of the assigned work is performed on-site at the properties managed by the Seaport Division. Work in the field may be performed both inside and outside buildings (often times on the top/roof of the building).

Several buildings under Seaport Division management have contracts with outside vendors to perform HVAC system repairs, or on-going maintenance tasks. In addition, outside contractors are used to implement major system





***Job Analysis: HVAC Technician (Marine Maintenance) – Port of Seattle  
DOT #637.261-014***

upgrades or system installations. A Technician may oversee and inspect work completed by the outside entities.

Tasks assigned to HVAC Technicians may include:

- Meet/connect with Crew Chief on a daily basis.
- Request parts, supplies, and/or materials needed for projects. Order items as directed.
- Prepare and/or review job hazard analysis for each project. Review job plan. Ensure work is performed in a safe manner.
- Utilize knowledge of refrigeration theory, pipefitting, and system design to perform maintenance, troubleshooting, and repair work on heating, ventilating, air conditioning, glycol, heating, hot water, and steam distribution equipment and systems to optimize performance and energy use.
  - Monitor and inspect operations of equipment. Some buildings have centralized or remote HVAC monitoring systems.
  - Troubleshoot faulty equipment/components to identify necessary repairs. Read blueprints, sketches, schematics, and wiring diagrams as needed.
  - Repair/replace compressor, condenser, and evaporator units, motors, electrical components, pumps, temperature controls, humidity controls, circulating-ventilation fans, control panels, thermostats, and switches.<sup>1</sup>
  - Maintain and repair plumbing system components. Cut and bend tubing to correct length and shape. Cut and thread pipe. Join tubing or pipe to various refrigerating units with sleeves, couplings, or unions. Solder or braze joints to form circuits for refrigerant. Test joints and connections for leaks.
  - Replace expansion and discharge valves.
  - Capture, and then add refrigerant into systems to build up prescribed operating pressure. Observe pressure and vacuum gauges, and adjust system controls to ensure efficient equipment operation.
  - Perform required preventative and corrective maintenance on HVAC systems.
  - Replace filters when necessary.
- Respond to requests for assistance with HVAC systems. Adjust or reprogram thermostats to ensure comfortable/reasonable temperatures inside the Seaport Division's facilities and buildings. NOTE: HVAC Technicians generally work 40-hour work weeks, however it is possible that a worker may



<sup>1</sup> If an issue is traced to a boiler at one of the Seaport Division facilities, the HVAC Shop personnel will contact the Operating Engineer group that is responsible for the operations and maintenance of the boilers about the needed repair.



***Job Analysis: HVAC Technician (Marine Maintenance) – Port of Seattle  
DOT # 637.261-014***

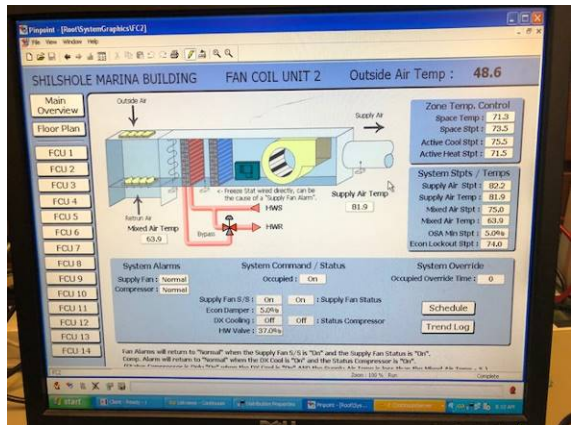
have to work overtime and/or be called in during the evening hours to address a critical situation.

- Restart HVAC equipment after equipment taking offline, or after a power outage.
- 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.
- Request assistance from other crafts to complete assigned tasks.
- Assist other crafts as requested.
- Complete all required forms and documents.
- Send and respond to electronic mails.
- Identify and share identified opportunities to create greater energy efficiencies.
- Perform other tasks as requested.



Necessary skills and abilities may include:

- Strong technical knowledge of a variety of commercial HVAC systems and designs, with the skills to complete the assigned task(s) in a timely and efficient manner.
- Knowledge of environmental refrigerant laws, and other applicable regulations.
- Strong troubleshooting and problem solving skills.
- Excellent customer service and communication skills.
- Ability to work in a professional manner while in the field. Often the HVAC Technician is visible to Port tenants and the public, and the Technician needs represent the Port well while working.
- Must have the ability to operate all applicable equipment, tools, and vehicles, and perform work tasks in a safe manner. Ability to perform assigned duties in various types of weather, and be able to complete work at heights (ladder or lift), or in confined spaces.
- Ability to logically diagnose issues and identify the best solution/method to correct an issue or complete an assigned task.
- Ability to work independently without constant supervision, but also as part of a team.
- Ability to learn new technologies and system design.
- Ability to read and interpret blueprints, sketches, schematics, and wiring diagrams.
- 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.

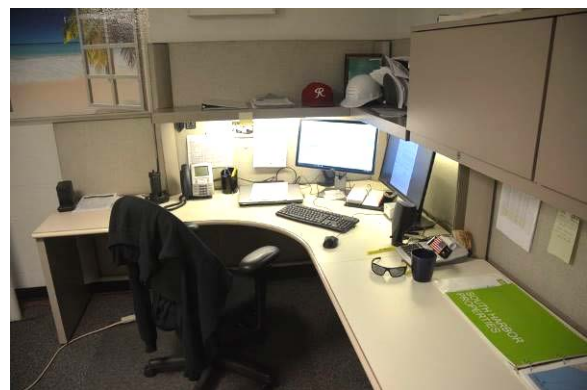
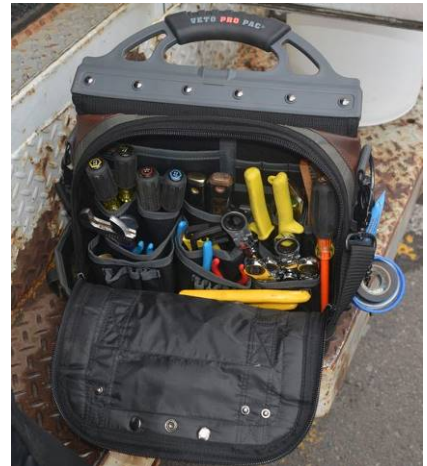




***Job Analysis: HVAC Technician (Marine Maintenance) – Port of Seattle  
DOT # 637.261-014***

Machinery, Tools, Equipment, Personal Protective Equipment:

- Hand tools and power tools, including screwdrivers, pliers, snips, drills, wrenches, hammers, reciprocating saws, roto-hammers, and tape measures.
- Pipe or tube cutting and bending equipment and tools.
- Adhesives, caulking, and Teflon tape.
- Tool bags. Tool pouches.
- Lengths of pipe, tube, and hose.
- HVAC system assemblies and components.
- Refrigerant recovery equipment, scales, and vacuum pumps.
- Wheeled carts.
- Handtruck.
- Forklifts.
- Portable generators.
- Air tanks.
- Brazing (Oxy-Acetylene torch kit) and soldering equipment and supplies.
- Work trucks with rear box, tool boxes and extensive parts and equipment storage capacity.
- Plastic totes.
- Electronic meters.
- Pressure and vacuum gauges.
- Ladders. Manlift.
- 2-way radios. Cell phones.
- Flashlights.
- Traffic cones.
- Rope. Chains.
- Dust pan and brush set.
- Computer, computer accessories, printers, project management software (Maximo), and electronic mail software.





***Job Analysis: HVAC Technician (Marine Maintenance) – Port of Seattle  
DOT # 637.261-014***

- General office equipment, such as desks, chairs, fax machine and telephones.
- General office supplies, such as pens/pencils, notepads, binders, and copy paper.

HVAC Technicians 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. HVAC Technicians may also wear gloves, and rain gear.

Fall arrest harnesses are worn when working at heights. When working on or within 6 feet of an edge of the water, HVAC Technicians must wear personal floatation devices (“PFDs”).



**Education / Training:**

- High School diploma or GED equivalent.
- HVAC Technicians working for Marine Maintenance are represented by the Plumbers, Pipe Fitters, Refrigeration & HVAC Union Local #32.
- EPA Universal License.
- Valid Washington State Driver’s License.
- Must have the ability to pass a security background check.
- 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.

Minimum: 2 years of related HVAC maintenance and repair experience in a commercial facility at an Apprentice level.

Preferred: 5 years of related HVAC maintenance and repair experience in a commercial facility at a Journeymen level.

**Per the Dictionary of Occupational Titles (DOT):**

**637.261-014 Heating and Air Conditioning Installer-Servicer**

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





**Job Analysis: HVAC Technician (Marine Maintenance) – Port of Seattle  
 DOT # 637.261-014**

**COGNITIVE AND BEHAVIORAL ELEMENTS/DEMANDS**

Frequency Definitions:		
<p><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.</p>		
<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.	Occasionally
<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.	Continuously
	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.	Occasionally
	Working under specific instructions.	Continuously
	Completing complex tasks.	Frequently
	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



***Job Analysis: HVAC Technician (Marine Maintenance) – Port of Seattle  
DOT #637.261-014***

<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.	Rarely

Frequency Designations: <b>Required</b> <b>Beneficial</b> <b>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



**Job Analysis: HVAC Technician (Marine Maintenance) – Port of Seattle  
DOT # 637.261-014**

**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>	Driving to job sites, for short periods of time while working in the field, working on computer, and attending meetings.
Standing	<b>F</b>	Interchange with walking. Frequency will depend on assigned tasks.
Walking	<b>F</b>	Interchange with standing (larger percentage of time is spent walking than standing). Frequency will depend on assigned tasks. Walking may be over concrete, asphalt, tile, or carpet, or over wet/slippery surfaces.
Lifting (up to 10 pounds)	<b>F</b>	System parts, components, assemblies, materials, and supplies, hand and smaller power tools, small tool pouch of frequently used items (1-2 pounds), bins and boxes of parts, and stepstools and smaller ladders.
Lifting (10 to 25 pounds)	<b>O</b>	System parts, components, and assemblies, larger power tools, bins and boxes of parts, tool bags (up to 25 pounds), larger ladders (6' ladder 20 pounds), and vacuum pump (25 pounds).
Lifting (25 to 75 pounds)	<b>S</b>	Lifting large assemblies and components, brazing equipment (Oxy-Acetylene torch kit 35 pounds), wheeled cart (35 pounds), tanks of refrigerant (35 pounds), generator (50 pounds), and portable air conditioner (est. 75 pounds). Note: Heavier items can be lifted by two workers to reduce the amount of necessary lifting. Forklifts and hoists are available for very heavy items.
Carrying (up to 10 pounds)	<b>F</b>	System parts, components, assemblies, materials, and supplies, hand and smaller power tools, small tool pouch of frequently used items (1-2 pounds), bins and boxes of parts, and stepstools and smaller ladders.
Carrying (10 to 25 pounds)	<b>O</b>	System parts, components, and assemblies, larger power tools, bins and boxes of parts, tool bags (up to 25 pounds), larger ladders (6' ladder 20 pounds), and vacuum pump (25 pounds).
Carrying (25 to 75 pounds)	<b>S</b>	Lifting large assemblies and components, brazing equipment (Oxy-Acetylene torch kit 35 pounds), wheeled cart (35 pounds), tanks of refrigerant (35 pounds), generator (50 pounds), and portable air conditioner (est. 75 pounds). Note: Heavier items can be carried by two workers, or items can be transported on a wheeled cart, to reduce the amount of necessary carrying. Forklifts and hoists are available for very heavy items.
Pushing/Pulling (Up to 10 pounds of force)	<b>F</b>	Opening truck and building doors, opening access panels, using tools, meters and gauges, connecting hoses, replacing filters, pushing wheeled cart, driving truck, gathering supplies and materials in truck or supply area.
Pushing/Pulling (10 to est. 50 pounds of force)	<b>S</b>	Using tools, and initial force to move a loaded/heavy wheeled cart.
Climbing Stairs/Ladders	<b>S-O</b>	Office space is located on the 2 <sup>nd</sup> floor of shop building, and workers may encounter stairs in the field. HVAC Technicians climb ladders as needed (ladders can range from stepstools to 14' ladders).





**Job Analysis: HVAC Technician (Marine Maintenance) – Port of Seattle**  
**DOT # 637.261-014**

Working at Heights/ Balancing	<b>S-O</b>	Frequency depends on assigned tasks. HVAC Technicians climb and work from ladders, and may work from a manlift. Some tasks are performed on the roofs of buildings (fall arrest harnesses are worn when required).				
Bending at Waist	<b>F</b>	Entering/exiting truck, driving truck, accessing system components and equipment, gathering and using tools, meters, and gauges, repairing equipment, climbing ladders, reprogramming or adjusting thermostats, performing inspections, placing items on wheeled cart, pushing cart, driving truck, gathering supplies and materials in truck or supply area, and while working at desk.				
Bending Neck	<b>C</b>	Within normal limits. All assigned tasks involve neck movements.				
Twisting at Waist	<b>S</b>	Accessing system components and equipment, repairing equipment, performing inspections, driving truck, and gathering supplies and materials in truck.				
Crouching/Kneeling	<b>S</b>	Working below waist level, and gathering items stored at or below waist level.				
Crawling	<b>N/A-S</b>	Limited.				
Stooping	<b>N/A-S</b>	Entering/exiting truck cab and enclosure on back of truck, and maneuvering into and out of work areas.				
Reaching (up to shoulder)	<b>F</b>	Accessing system components and equipment, troubleshooting issues, gathering and using tools, meters, and gauges, repairing equipment, replacing filters, climbing ladders, reprogramming or adjusting thermostats, performing inspections, placing items on wheeled cart, pushing cart, driving truck, gathering supplies and materials in truck or supply area.				
Reaching (over shoulder level)	<b>S-O</b>	Frequency depends on assigned task. Accessing system components and equipment, troubleshooting issues, using tools, repairing equipment, replacing filters, climbing ladders, gathering supplies and materials in truck, performing inspections, and pulling oneself into back of truck.				
Driving	<b>S-O</b>	Driving work truck.				
Foot Controls	<b>S-O</b>	Driving work trucks.				
Repetitive Motion	<b>N/A</b>	The variety of tasks, and the ability to change the sequence and duration of the tasks being completed to mitigate repetitive motions.				
Handling/Grasping	<b>F</b>	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">50</td> <td style="text-align: center;">% Pinch Grasp</td> <td style="text-align: center;">50</td> <td style="text-align: center;">% Whole Hand Grasp</td> </tr> </table>	50	% Pinch Grasp	50	% Whole Hand Grasp
50	% Pinch Grasp	50	% Whole Hand Grasp			
Fine Finger Manipulation	<b>F</b>	Using tools, meters, and gauges, using brazing equipment, gathering and installing small parts/connections/ hardware, reprogramming thermostats, using controls of HVAC equipment, using cell phone and two-way radio, and using computer mouse.				
Keyboarding	<b>S</b>	Entering time and work performed on a daily basis, creating and responding to electronic mails, and preparing orders. Potentially while documenting inspections and writing reports.				
Writing	<b>S</b>	Documenting completed work tasks and inspections, and taking notes.				
Talking	<b>F</b>	Communicating with supervisors, co-workers, tenants, vendors, contractors, and the public.				





***Job Analysis: HVAC Technician (Marine Maintenance) – Port of Seattle  
DOT # 637.261-014***

**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**