



# Bock Consulting

## Job Analysis

Job Title	HVAC Shop Crew Chief (MM)	Worker	
DOT Number	637.261-014 and 827.131-018	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 Shop Crew Chief working for Marine Maintenance.

### Essential Functions:

The HVAC Shop Crew Chief is responsible for managing and directing the daily work activities of the HVAC Shop personnel, including receiving work orders, prioritizing and assigning work tasks, coordinating with other trades, conducting inspections, and servicing and repairing 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 work performed by the HVAC Shop Crew Chief can be categorized as follows:





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Work Category	Estimated Time
Office/desk/administrative work (including meetings)	15-20%
Supervising work and personnel and providing assistance in and around shop	0-5%
Supervising work and personnel and providing assistance in the field	0-15%
Performing trade-specific work	65-85%
Total	100%

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 upgrades or system installations. The Crew Chief works with contract administration personnel to help manage the existing contracts, and oversees and inspects work completed by the outside entities. The Crew Chief may also review invoices and bills submitted by outside entities.

Tasks assigned to HVAC Shop Crew Chiefs may include:

- Receive and review notifications of new HVAC work orders (via telephone, email, or job tracking system). Review work scope, materials, equipment, and staffing needs. Plan for material, equipment, and personal protection equipment needs.
- Order supplies and/or materials needed for projects. Work with Purchasing to ensure correct products and items are ordered and available when needed.
- Coordinate scheduling with other trades to ensure materials, equipment, and workers from other trades are available as needed to complete projects. Coordinate with outside vendors/contractors/ entities as needed. Coordinate scheduling with Port Facility Maintenance Managers and tenants as necessary.
- Work with HVAC Technician(s) on a daily basis to assign tasks, identify work priorities, and address issues. Provide instructions/input about assigned work tasks.





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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.
- 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: The HVAC Shop Crew Chief generally works 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.
- Restart HVAC equipment after equipment has been offline, or after a power outage.
- Enter time by work order on a daily basis into job tracking system (Maximo). Review entries by the



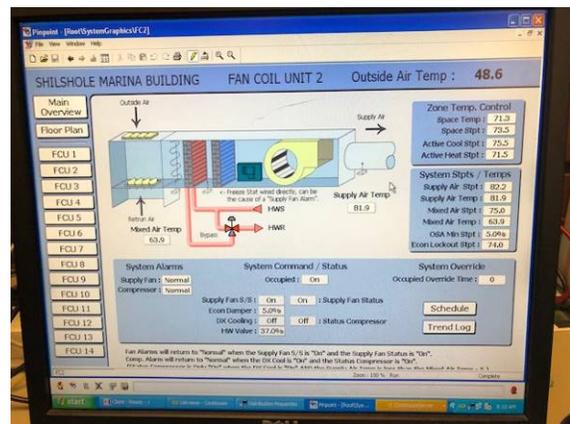
<sup>1</sup> If an issue is traced to a boiler at one of the Seaport Division facilities, HVAC Shop personnel will contact the Operating Engineer group that is responsible for the operations and maintenance of the boilers about the needed repair.



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Technician(s).

- 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.
- Identify and share identified opportunities to create greater energy efficiencies.
- Provide training to a crew member to cover duties of Crew Chief when Crew Chief is not working/available.
- Visit project sites and oversee/inspect completed work. Ensure work is being performed in a safe manner.
- Lead periodic meetings to provide training and discuss important safety issues.
- Attend meetings with supervisors, real estate, engineers and other entities.
- Coordinate work priorities with supervisors.
- Assist HVAC Technicians with technical input, answer questions from crew, and provide troubleshooting advice as needed.
- Ensure HVAC Technician(s) have current certifications and/or training as required by policy, law, or ordinance.
- Review documents related to potential HVAC projects. Conduct walk-throughs with other Port and outside personnel, and provide input on project plans.
- Work with contract administration personnel to help manage the contracts with outside vendors that perform HVAC system repairs, or on-going maintenance. Oversee and inspect work completed by the outside vendors. Review bills submitted by vendors as needed.
- Review HVAC system installations and upgrades completed by outside contractors. Provide feedback to supervisors or other Port personnel overseeing the projects.
- 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.



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- 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 Shop Crew Chief is visible to Port tenants and the public, and the Crew Chief needs represent the Port well while working.
- Ability to manage personnel, and work performed by others.
- 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.

**Machinery, Tools, Equipment, Personal Protective Equipment:**

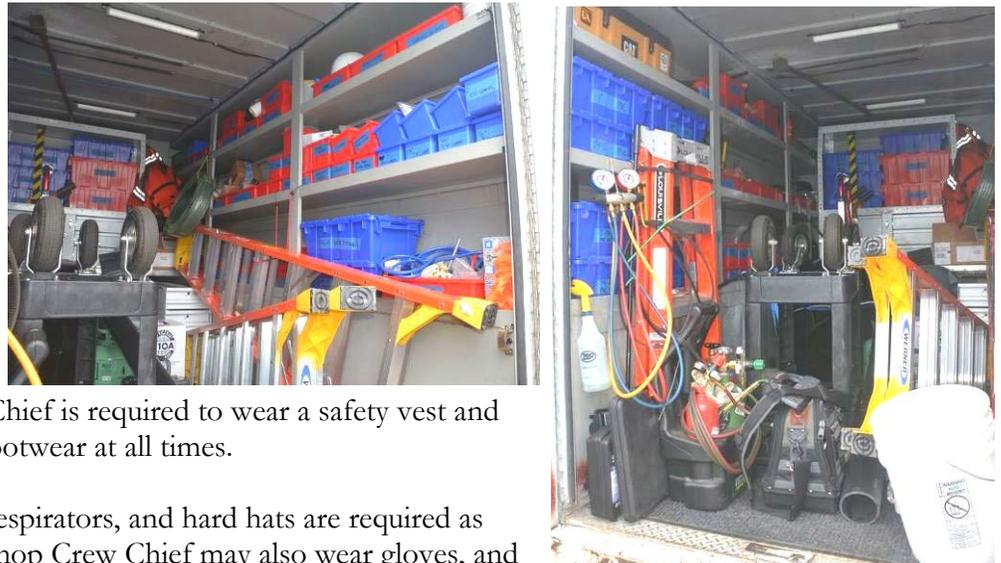
- Hand tools and power tools, including screwdrivers, pliers, snips, drills, wrenches, hammers, reciprocating saws, roto-hammers, and tape measures.
- Pipe or tube cutting and bending equipment and tools.
- Adhesives, caulking, and Teflon tape.
- Tool bags. Tool pouches.
- Lengths of pipe, tube, and 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.





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



The HVAC Shop Crew Chief is 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. The HVAC Shop Crew Chief 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 Shop Crew Chiefs must wear personal floatation devices (“PFDs”).



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**Education / Training:**

- The HVAC Shop employees, including the Crew Chief, are represented by the Plumbers, Pipe Fitters, Refrigeration & HVAC Union Local #32.
- The HVAC Shop Crew Chief would have significant Journeyman level experience in HVAC, refrigeration, and/or related pipefitting work and duties of the trade.
- EPA Universal License and Electrical 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.
- The Crew Chief must also complete the Front Line Supervisor Training as a Port of Seattle requirement. This training is offered once a year and must be completed during the first year as a Crew Chief.



**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)

**827.131-018 Supervisor, Air-Conditioning Installer 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.		
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.		Occasionally	
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.		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	
Tasking and Planning			
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.		Frequently	
Directing, controlling, or planning for others as necessary for complex tasks.		Frequently	
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.	Rarely

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>	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 Shop Crew Chiefs climb ladders as needed (ladders can range from stepstools to 14' ladders).



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Working at Heights/ Balancing	<b>S-O</b>	Frequency depends on assigned tasks. HVAC Shop Crew Chiefs 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>	<b>50</b>   % Pinch Grasp   <b>50</b>   % 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>O</b>	Entering time and work performed on a daily basis, creating and responding to electronic mails, and preparing orders. 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.





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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**