



Job Analysis

Job Title: Civil Engineering Technician **Worker:** _____
DOT Number: 018.167-034 **Claim Number:** _____
Employer: Port of Seattle **Employer Phone #:** 206-787-5846
Employer Contact: Braden Monson PLS **Date of Analysis:** July 14, 2014

Job of Injury New Job 4 10-hour shifts OR 8 Hours Per Day 5 Days Per Week

Job Description, Essential Functions, Tasks and Skills

The Port of Seattle (POS) 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) Capital Development Division
- 3) Corporate Division
- 4) Real Estate Division
- 5) Seaport Division



This job analysis is for Civil Engineering Technician. Port of Seattle survey teams are generally made up of three positions: Senior Civil Engineering Technician, Associate Civil Engineering Technician, and Assistant Civil Engineering Technician. The Senior Technician has primary responsibility for the team, and an Associate Technician assists by operating the surveying instruments. Survey crews generally work day shift.

Primary Tasks

- Operate survey instruments to obtain data pertaining to angles, elevations, points, and contours of a selected area of land for construction, mapping, and other purposes.
- Use surveying equipment to identify where earth should be dug, placed, and/or moved, and where features, such as buildings, trenches, pipe, roads, curbs, fences, or other elements on a site, should be placed by contractors hired to install the specified features/elements.
- Compile field notes, make sketches, and take digital pictures of a site.
- Perform necessary computations.
- Use computer aided drafting software to develop mapmaking information from data collected in the field.
- Clear brush and other foliage from sight lines.
- Drive stakes into the ground to establish reference points and final elevations for site features, such as roads.
- Utilize the Global Positioning System (GPS), a satellite system that locates points on the earth to a high degree of precision by using radio signals transmitted via satellites. To use this system, a surveyor places a satellite signal receiver (a small instrument mounted on a staff or tripod) at a desired point. The receiver simultaneously collects information from several satellites to establish a precise position.
- The survey crews may use the more traditional surveying equipment, "total stations," reflectors, tripods, and levels, to survey the land. The more traditional equipment is generally used when the surveyors are working in environments when the GPS technology does not work as well (e.g., under trees and near buildings).
- May utilize aerial photography and geographic information systems (GIS) to assist in their work. GIS are made up of computer hardware, software, and geographic/ spatial data.

Skills and Abilities

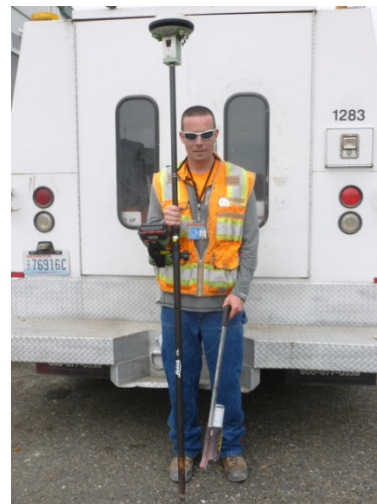
- Must be able to work as part of a team.
- Work assigned to a Survey Instrument Technician is very detail oriented and precision is key to ensure correct results.
- Ability to work productively without constant direct supervision.

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- Knowledge and good understanding of math and the ability to work with data from a variety of sources.
- Ability to recognize issues and take corrective action.
- Ability to walk and stand for extended periods of time.

Machinery, Tools, Equipment, Personal Protective Equipment

Leica GPS Rover (staff is 6' 6" and with GPS receiver mounted weighs 7#), PCMCIA data chip card that can be transferred between surveying instruments and computer, total stations (20# with case), reflectors mounted on adjustable staffs (5-6#), tripods (15#), rechargeable batteries (<1# each), hand tools including hammers, sledgehammers (8#), "frost pins" (steel stake used to start holes in hard or frozen ground for survey stakes), machetes, and levels, power tools including rotohammer and drills, lengths of lead wire to tap into holes in concrete to hold tacks, wooden pegs ("hubs") used to provide reference points and finished elevations for site elements such as roads, tacks and nails, tack holder/ball, aerosol spray paint, GMC work truck with winch, traffic cones, telephones, Motorola two-way radios, safety vests (may weigh up to 10# depending on what is being carried in the vest), personal protective equipment (PPE) including hard hats, rain gear, boots, and fall protection harness, laptop computer and docking station, and software including LIS CAD, MS Access, Word, Excel, Outlook.





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Education / Training

- Combination of formal and on the job training including 1-2 year vocational program beneficial.
- Practical knowledge of or experience in the construction field preferred.

Per the Dictionary of Occupational Titles (DOT)

018.167-018, Land Surveyor

Specific Vocational Preparation (SVP)

7 (over 2 years and up to and including 4 years)

COGNITIVE AND BEHAVIORAL ELEMENTS/DEMANDS

Frequency Definitions	
Continuously = Occurs 66-100% of the time	
Frequently = Occurs 33-66% of the time	
Occasionally = Occurs 1-33% of the time	
Rarely = May occur less than 1% of the time	
Never = Does not ever occur	
Comprehension	
Articulating and comprehending information in conversations.	Continuously
Reading, comprehending, and using written materials.	Continuously
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.	Continuously
Remembering spoken instructions.	Continuously
Remembering written instructions.	Continuously
Remembering visual information.	Continuously
Recalling information incidental to task at hand.	Continuously
Memorizing facts or sequences.	Continuously
Remembering simple instructions.	Continuously
Remembering detailed instructions.	Continuously



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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.	Continuously
Determining and following precise sequences.	Continuously
Coordinating and compiling data and information.	Continuously
Analyzing, synthesizing data and information.	Continuously
Tasking and Planning	
Performing repetitive or short-cycle work.	Occasionally
Working under specific instructions (following SOP's)	Continuously
Completing complex tasks.	Continuously
Directing, controlling, or planning for others as necessary for basic tasks.	Frequently
Directing, controlling, or planning for others as necessary for complex tasks.	Occasionally
Multi-tasking.	Continuously
Planning, prioritizing, and structuring daily activities.	Continuously
Use Appropriate Behavior for Professional Work Environment	
Receiving criticism and accepting limits appropriately.	Continuously
Maintaining emotional control and organization under increased stress.	Occasionally
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.	Continuously
Responding effectively to emergency situations.	Continuously

Frequency Designations	
Required	
Beneficial	
Not Necessary	
Maintaining Attendance and An Assigned Work Schedule	
Maintaining predictable and reliable attendance each work shift.	Required
Being punctual.	Required
Taking rest periods at set times or only at times determined by breaks in job responsibilities.	Beneficial
Adjusting to a flexible schedule of work days and or shift.	Required



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PHYSICAL DEMANDS

<p>Constant: Constant (Over 70% of the time) Frequent: Frequent (30%-70% of the time) Occasional: Occasional (10-30% of the time) Seldom: Seldom (1-10% of the time) WNL: Within Normal Limits (talking, hearing, etc.) N/A: Not Applicable</p>					
STRENGTH:	<input type="checkbox"/> Sedentary	<input type="checkbox"/> Light	<input checked="" type="checkbox"/> Medium	<input type="checkbox"/> Heavy	<input type="checkbox"/> Very Heavy
Action	Frequency	Comments			
Sitting	S-O	Driving a truck, working at computer. Frequency depends on task assignments.			
Standing (alternate with walking)	F	May require long periods of standing while working with instruments mounted on a tripod.			
Walking (alternate with standing)	F-C	Site may contain steep slopes, walking against contours of terrain to gather precise mapping data. May be through trees, bushes, through mud, over uneven terrain, or along edges of retaining walls.			
Lifting (up to 10 pounds)	F	Leica GPS rover & staff 6' 6" tall, with GPS receiver (7#), hand and power tools, level (10# with case), rechargeable batteries, traffic cones (8# each), safety vest (up to 10#); lifting and swinging machete (<5#), design plan books/drawings (up to 5#).			
Lifting (11 to 25 pounds)	O	Total station (20# in case), tripod (15#), portable generator (est. 25#), bag of wooden stakes (15#).			
Lifting (26 to 50 pounds)	O	Multiple equipment items up to 35#.			
Lifting (50 to 75 pounds)	N	n/a			
Lifting (75 to 100 pounds)	N	n/a			
Carrying (up to 10 pounds)	F	Leica GPS rover & staff 6' 6" tall, with GPS receiver (7#), hand and power tools, level (10# with case), rechargeable batteries, traffic cones (8# each), safety vest (up to 10#); lifting and swinging machete (<5#), design plan books/drawings (up to 5#).			
Carrying (11 to 25 pounds)	O	Carrying total station (20 lbs. w/case); tripod (15 lbs.); portable generator (est. 25 lbs.); bag of wooden stakes (est. 15 lbs.).			
Carrying (26 to 50 pounds)	S	Multiple equipment items up to 35#.			
Carrying (50 to 75 pounds)	N	n/a			
Carrying (75 to 100 pounds)	N	n/a			
Pushing/Pulling (negligible to 20 force pounds)	O	Opening/closing truck doors, swinging machete to clear brush, seldom use lever-tool to move manhole covers (est. 50# force)			
Climbing Stairs and Ladders	S	Stairs used to enter office or other airport buildings. Ladders may be used to enter/exit utility trenches.			
Working at Heights	S	May work close to edge of retaining walls. Fall protection is required within 6' of an edge of a retaining wall.			
Balancing	S	May work close to edge of retaining walls. Fall protection is required within 6' of an edge of a retaining wall.			



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Bending at Waist	F	Setting up surveying instruments, checking readings and settings on surveying equipment, getting in and out of truck, gathering equipment and supplies from supply room, pulling items from file drawers, placing data chip into computer below desk.
Bending Neck	C	Using surveying equipment, placing hubs, driving truck.
Reaching (up to shoulder level)		Pulling equipment and supplies from storage room and truck, setting up surveying instruments, holding staffs for surveying, using spray paint, pounding wooden stakes/hubs, gathering documents and other items in the office.
Reaching (over shoulder level)	S	When clearing brush in wooded area to create line of site for instrument
Stooping	O	Setting up surveying instruments, checking readings and settings on surveying equipment, and getting in and out of the truck.
Kneeling/Squatting	O	While driving stakes/hubs into the ground.
Crawling	N	n/a
Repetitive Motion	O	Limited by the variety of tasks assigned. Typing or pressing buttons on the Leica rover (GPS system).
Twisting at Waist	S	Gathering equipment, tools, and supplies from storage room and truck; pulling files while seated at desk.
Handling/Grasping	F	50% pinch grasp, 50% whole hand grasp
Fine Finger Manipulation	F	Picking up tacks, pressing buttons on surveying equipment, pulling and inserting data chip into and out of instruments, typing on keyboard, and using mouse.
Keyboarding	O	Intermittently throughout shift to enter data into instruments and computer and prepare reports.
Driving	S	Trucks are driven and parked as near to the survey site as possible. Crews may move to numerous sites throughout the day.
Foot Controls	S	Driving truck.
Talking	F-C	With supervisors, coworkers, and other team members.
Hearing	C	With supervisors, coworkers, and other team members.
Seeing	C	Good sight is an important attribute in this position.
Writing	F	Making notes and drawing sketches.
Normal Job Site Hazards	F	Moving construction equipment and trucks, walking and driving on uneven terrain, working near the edge of retaining walls.
Expected Environmental Conditions	O-F	Work is generally performed in the field (est. 75% of time spent in the field), so workers are exposed to variety of weather conditions. 25% spent in a temperature-controlled office environment.

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.



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Analysis was done on the job site?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Job Analysis Reviewed By	Braden Monson PLS
Date	July 14, 2014
Completed by Vocational Provider	Nicki Gorski VRC CDMS
Signature of Vocational Provider	<i>Nicki Gorski</i>



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FOR PHYSICIAN'S/EVALUATOR'S USE ONLY	
<input type="checkbox"/>	The injured worker can perform the physical activities described in the job analysis and can return to work on _____.
<input type="checkbox"/>	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.
<input type="checkbox"/>	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): <input type="checkbox"/> Temporary for _____ weeks _____ months <input type="checkbox"/> Permanent
<input type="checkbox"/>	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): <input type="checkbox"/> Temporary for _____ weeks _____ months <input type="checkbox"/> Permanent

COMMENTS

Physician's/Evaluator's Name (*printed*) _____

Physician's/Evaluator's Signature _____

Date _____

PLEASE RETURN COMPLETED FORM VIA FACSIMILE TO:
Port of Seattle Health and Safety Department at (206) 787-3406