



JOB DEMANDS ANALYSIS

Company: Greater Vancouver Regional District

Location: Lake City Yard

Job Title: Yardman

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Classification: Regular Duty

Purpose of Activities

The Yardman is responsible for building and yard maintenance, shop and yard clean up and assisting Tradesman, Truck Drivers, Equipment Operators and anyone else who requires assistance in the Lake City Yard. The Yardman is also required to fill in for the Timekeeper when she is away from work.

Tools and Equipment

The Yardman will use the following tools and equipment to perform his duties:

- Forklift
- Lawn mower, edgers, weed eater, rakes, shovels, loppers, garden hose, lawn fertilizer, weed killer, brooms, roto-tiller
- Snow shovels, ice scrapers, salt
- Pressure washer, extension handles for bristle brush, bristle brush, garden hose
- Chain saws, machete, hammers, sledge hammers, utility knife, grinders
- Hand tools, screw driver, pliers, wrenches, sockets, hammers, files, rasps, chisels
- Recycling bins (paper, coloured paper, cardboard)
- Desk, telephone, adjustable chair, pens, paper

Usual Methods

Yard Maintenance/Clean Up

1. The Yardman keeps the Lake City Works Yard free of clutter and debris, provides a storage area for surplus parts, components, materials, etc. that will be used by the Tradesman and crews.
2. Load office-recycling material into a truck/van and transport to the Recycling Depot.
3. Use weed eater to keep weed and grass down in Lake City Works Yard.
4. Perform fence repair tasks as the fence around the perimeter of the Works Yard becomes damaged.
5. Use forklift to transport parts, equipment and materials to areas in the Works Yard.

Building Maintenance/Clean Up

1. Receive work request from Supervisor.
2. Walk to area in building to determine exact nature of the work. Call Contractor if required.
3. Walk back to tools storage area, gather tools, equipment and necessary supplies.



4. Walk back to the work area.
5. Make the repair or perform the maintenance task.
6. Clean up the work area.
7. Walk back to the tool storage area. Put away tools, equipment and excess materials.

Fill in for Time Keeper

1. The Yardman will fill in for the Time Keeper when she is away. He will complete required paperwork, answer the telephone, direct telephone calls, take messages, etc.

Assist Tradesman

1. The Yardman on the request of a Tradesman will perform labouring duties associated with that trade.
2. Physical labour (removing tar from pipe, grinding pipe, holding materials, retrieving tools and equipment, etc.) is required by the Yardman.

Snow and Ice Removal

1. During infrequent periods of snow, the Yardman will clear snow away from the steps, sidewalks and entrances of the building with a snow shovel.
2. The Yardman will spread salt on walkways and the entrances of the building.

Gardening

1. The Yardman will cut the grass during growing season.
2. Use weed eater to trim the edges of the grass.
3. Fertilize the lawn, spray weeds with weed killer.
4. Roto-till flower beds. Plant flowers.
5. Water lawn and flowers.
6. Trim bushes, shrubs and trees in the spring, fall and winter.
7. Perform spring and fall lawn and yard clean up.

The presence of ** indicates non-value added tasks. These are tasks that do not contribute to the stated purpose of the work.

Administrative Issues

The Yardman works an eight-hour day, Monday to Friday from 0730 to 1600. He receives a ten-minute rest period in the morning, a 30-minute lunch break and a ten-minute rest period in the afternoon. The Yardman may work overtime to assist a Tradesman with his work. There may be one or two Yardmen on shift.

Activity Demand Variables

These variables are tasks that must be carried out by the employee and are implicitly or explicitly required as objectives of the job.

- Walk, stand on concrete floor, asphalt works yard
- Bend, stoop, crouch, kneel and crawl to perform maintenance, cleaning and labouring duties in the building and Works Yard



- Reach below, at and above shoulder height to perform maintenance, cleaning and labouring tasks
- Hand, power and air tool use is required
- Lift and carry tools, equipment and materials in the building and Works Yard
- Drive and operate the Forklift, half-ton truck and one-ton van
- Push/pull carts, lawn mowers, roto-tiller, recycling bins, etc. in the building and Works Yard
- Climb up and down stairs and ladders

Worker Decision Variables

These variables are the sub-routines and cognitive/physical decisions made by the worker in carrying out the objectives of the job.

- Sitting posture when driving the Forklift
- Lifting technique for most items
- Forklift to lift and move parts, equipment and materials around the Works Yard and Shops
- Hand dolly's and carts to move tools, equipment and materials around the building and Works yard

Accommodative Considerations

1. People with injuries to the spine, in any region, may have difficulty with the static and dynamic movements required to perform maintenance, cleaning and labouring tasks.
2. People with shoulder injuries such as rotator cuff tendonitis, bursitis and instability may have difficulty with dynamic and static loading and reaching activities required to perform maintenance, cleaning and labouring tasks.
3. People with forearm and elbow injuries such as tennis elbow may have difficulty with the repeated jarring from air tool use as well as the static grip forces required during any power or hand tool use.
4. People with nerve compression injuries in the upper extremities may have difficulty with the repeated and prolonged use of air, hand and power tools (compression and vibration).
5. Individuals who do not cope in open low-autonomy work environments would have difficulty with this position.
6. People with injuries to the lower extremities will have difficulty with the walking, standing, climbing up and down stairs and in and out of the Forklift, and the bending, crouching and kneeling required to perform the maintenance, cleaning and labouring tasks.

Prepared By: Jeffrey J. McGinn, Kinesiologist

May 27, 1999



Summary of Stresses

Metabolic Stresses

The aerobic energy systems will provide the major source of energy for the Yardman. This position requires a low to moderate level of aerobic activity to perform building and yard maintenance, cleaning and labouring tasks. The anaerobic energy system may not be required.

Structural Stresses

Spine – Significant loading of the spinal structures are likely in this position. Prolonged loaded and unloaded forward flexion, extension, lateral flexion and rotation of the spine are all movements required by the Yardman. Forward flexed postures require no activity from the torso musculature, but increase asymmetrical disc compression and passive stretch on the posterior spinal ligaments and disc fibres. This can contribute to disc integrity problems as well as decondition the torso support musculature. Lateral flexion and/or rotation with or without forward flexion (loaded or unloaded) will significantly increase the shear forces encountered by the discs, fibres and spinal ligaments.

Sitting and driving the Forklift will also stress the spine in the manner described above.

Neck, Shoulders and Upper Extremity – Building and yard maintenance, cleaning and labouring tasks require prolonged and repeated static and dynamic movements. The static and dynamic movements through the shoulder and upper extremity often require the rotator cuff muscle groups, upper trapezius and scalene muscles of the neck to maintain a significant load. Hand, air and power tool use (predominately dominant hand) will increase the static and dynamic loading of the forearm flexors, extensors, supinator, pronator teres and the pronator quadratus. Power and air tool use will also increase the vibration, jarring and compressive forces from the grip to the elbow and shoulder that may lead to over use tendon or nerve injuries.

Almost all of the Yardman's work is carried out in front of his body with some type of tool or implement. This position will weaken the shoulder girdle support structure and increase the risk of injury to this area. Rotator cuff and biceps tendon tendonitis injuries are likely as the muscle of the upper back and shoulder weaken through prolonged use. As this happens, thoracic spine kyphosis will increase and the cervical spine will be pulled forward out of its neutral position.

Hips and Lower Extremities – Standing and walking on concrete, asphalt, dirt, gravel, tile and carpeted floors for the entire shift increase the compressive forces through the ankles, knee, hips and spine. The awkward positions required to perform building and yard maintenance, cleaning and labouring tasks require the Yardman to work from an unstable base of support. This in turn will increase the risk of injury for all of the other structures.



INTERVENTIONS

Recommendations that could be implemented to increase productivity and lessen the risk of injury are listed below:

1. Provide regular education in effective use of the body and neutral joint positions for this type of work.
2. Encourage the Yardman to be active away from work focusing on cardiovascular endurance, muscular strength, muscular endurance and flexibility.
3. Encourage the Yardman to use the Forklift, hand carts and dolly's whenever his is required to move heavy or awkward tools, parts, equipment or materials around the Works yard and building.

Referral: Keith Arkell			Organization: GVRD							Title: Yardman	
Dept.: Engineering			Division:							Contact:	
PHYSICAL DEMANDS			R E Q D	S I D E	FREQUENCY*				Max. Weight (kg)	Usual Weight (kg)	Date: March 24, 1999
					Sel 1	Low 2	Mod 3	High 4			COMMENTS
S T R E N G T H	Lifting - Floor to Knuckle	X				X		25	<1-25	tools, parts, boxes, paper, equipment, snow	
	Lifting - Knuckle to Waist	X					X	25	<1-25	tools, parts, boxes, paper, equipment, snow	
	Lifting - Waist to Shoulder	X			X			25	<1-25	tools, parts, boxes, paper, equipment	
	Lifting - Over Head	X			X			25	<1-25	tools, parts, boxes, paper, equipment	
	Carrying - With Handles	X				X		25	<1-25	tools, gas cans, rollers, carts	
	Carrying - Without Handles	X					X	25	<1-25	tools, equipment, boxes,	
	Pushing - Upper Extremity	X				X		25	<1-25	tools, equipment, lids on bins, gates	
	Pushing - Hip/Leg Assist	X				X		25	<1-25	pipe, tools, lawn mower, snow	
	Pulling - Upper Extremity	X				X		25	<1-25	tools, equipment, lids on bins, gates	
	Pulling - Hip/Leg Assist	X				X		25	<1-25	pipe, tools, lawn mower, snow	
	Reach - Shoulder or Above	X			X			25	<1-25	tool use, lift to shelf, position	
	Reach - Sho. or Above extnd	X		X				25	<1-25	tools use, lift to shelf, position	
	Reach - Below Shoulder	X					X	25	<1-25	tool use, lift, carry, drive forklift, labour tasks	
	Reach - Bel. Shoulder extnd	X			X			25	<1-25	lift, carry tools, equipment, supplies, pipe	
	Handling	X					X	25	<1-25	tools, equipment, pipe, steel supplies, parts	
	Gripping	X					X	25	<1-25	tools, equipment, pipe, steel supplies, parts	
	Fine Finger Movements	X				X		max.	low	repair/maintain parts, equipment in yard/building	
E	Aerobic (percent)	X					95	perform cleaning, maintenance, labouring tasks in yard & building			
N	Anaerobic (percent)			neg.				possibly some heavy lift, carry, fatigue at end of day			
R	High Energy Expenditure										
G	Low Energy Expenditure	X					X	perform cleaning, maintenance, labouring tasks in yard & building			
P O S T U R E +	Neck - Static Flexion	X					X	work below shoulders cleaning, maintenance, labouring tasks			
	Neck - Static Neutral	X					X	stand, walk, sit			
	Neck - Static Extension	X				X		work above shoulders from bend, stoop, crouch, kneel			
	Neck - Rotation	X	E				X	drive/operate forklift, cleaning/maintenance/labouring tasks			
	Throwing	X		X				to garbage, snow/debris from shovel			
	Sitting	X				X		drive forklift, trucks, vans			
	Standing	X					X	on concrete, asphalt, dirt, grass in yard/buildings			
	Walking	X					X	concrete, asphalt, dirt, grass in yard/buildings, 1-2 km/day			
	Running/Jumping										
	Climbing - Arms and Legs	X			X			in/out of forklift cab, trucks, van, ladders to roof of building			
	Climbing - Legs Only	X			X			stairs, hills, uneven grade in yard			
	B	Bending/Stooping	X					X	to perform cleaning, maintenance or labouring task		
	I	Crouching	X		X				possibly to perform some cleaning, maintenance or labouring task		
L	Kneeling	X		X				possibly to perform some cleaning, maintenance or labouring task			
I	Crawling										
T	Twisting	X	E			X		drive forklift, trucks, vans, perform work related tasks			
Y	Balancing	X		X				on ladder, equipment, stairs			
G E N	Traveling	X		X				possibly to other GVRD locations			
	Work Alone	X					X	perform tasks alone, in yard and building with others			
	Interact with Public										
	Operate Equip/Machinery	X					X	hand, power tools, forklift, trucks, vans			
	Irregular/Extended Hours	X		X				0730-1600, Monday to Friday, occasional OT			

* Frequency Legend 1 = Seldom; Not Daily 2 = Low Daily Activity; < 1hr
 3 = Moderate Demand; Repetition 1 - 3 hrs daily 4 = High Frequency Demand; Repetition > 3 hrs daily
 The following shading denotes a HIGH RISK TASK: Modifications should be considered

REQD is marked with an X if the particular demand or category is relevant to the purpose of the job.

SIDE refers to the side or limb required to execute a task. If it is marked **E**, it indicates either side, the most common choice is listed first. **D** refers to dominant and **B** to both sides.

Referral:		Organization:						Title: see 1st page header	
Dept.:		Division:						Contact:	
PHYSICAL DEMANDS		R E Q D	S I D E	FREQUENCY*				COMMENTS	
				Sel. 1	Low 2	Mod. 3	High 4		
PERCEPTION	Hearing - Conversations	X				X		other yardman, co-workers in building	
	Hearing - Other Sounds	X					X	trucks, equipment, overhead speakers	
	Vision - Far	X					X	perform cleaning, maintenance & labouring tasks in yard & building	
	Vision - Near								
	Vision - Colour								
	Vision - Depth	X					X	perform cleaning, maintenance & labouring tasks in yard & building	
	Perception - Spatial	X					X	perform cleaning, maintenance & labouring tasks in yard & building	
	Perception - Form	X			X			some tool selection	
	Feeling (Tactile)	X						hand/power tool use, wear gloves	
	Reading	X			X			work list	
N	Writing	X			X			sign for deliveries	
	Speech	X				X		other Yardman, co-workers in building	
WORK	Inside Work	X					X	in building, shops	
	Outside Work	X					X	outside in yard, outside storage areas	
	Hot Conditions >25 deg. C	X		X				spring, summer, fall	
	Cold Conditions <10 deg.C	X		X				fall, winter, spring	
	Humid	X		X				wet weather conditions	
	Dust	X			X			in yard, grinding metal, wear dust masks	
	Vapor Fumes	X				X		in welding shop, vapors from heated pipe, burning pipe coating	
	Hazardous Machines	X					X	forklift, power tools, trucks, vans	
	Proximity to Moving Object	X					X	drive forklift, in yard/shop with trucks and equipment	
	Noise	X				X		in shop, other areas of building, hearing protection for some tasks	
ENVIRONMENT	Electrical Hazard								
	Sharp Tools	X			X			machete, knives, scissors, hand/power tools	
	Radiant/Thermal Energy	X		X				sun, assist welder, other tradesman	
	Slippery Conditions	X		X				water/oil on floor in yard, snow, ice, mud in yard	
	Vibration and Related	X			X			hand and power tool use	
	Chemical Irritants							lawn/garden chemicals, pipe covering, nitrogen, oxygen	
	Organic Substances	X		X				sewer parts/component disposal	
	Medical Waste								
	Blood Products								
	Congested Worksite	X		X				grind inside pipe, remove pipe covering from inside pipe	
TASKS	Lighting - Direct	X					X	day light,mercury vapor lights in shops,fluorescent lights in building	
	Lighting - Indirect	X					X	day light, sun light	
	Lighting - Adjustable	X		X				tasks lighting, flash light	
	Lighting - Fluorescent	X					X	overhead in building	
	Lighting - Incandescent	X		X				possibly in some areas of the building	
	Lighting - Shadows etc.	X		X				depends on location of work and/or time of day	

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For detailed descriptions of each of the different categories, please refer to the reference guide or inquire with Human Effort at 1-888-4EFFORT