

## Job Demands Analysis - HAND CART OPERATOR

### Purpose

- The purpose of the Hand Cart Operator is to remove garbage from the City of Vancouver's streets.

### Essential Duties

- The Hand Cart Operator has 1 essential duty:  
(1) Street cleaning

### Summary of Demands

	Sedentary	Light	Medium	Heavy	Very Heavy
Physical		X			
Cognitive		X			

Workers require physical endurance to:

- Continuously stand and walk (95 % of their shift).

### Shift Structure

- Hand Cart Operators work 7:00 am to 3:30 pm. They get a 30 minute meal break and two 15 minute rest breaks.



### Job Demands Analysis - Hand Cart Operator: Summary Table

a) Physical Demands		Frequency During Shift*					Weight		Comments	
		Never	Rare	Infrequent	Occasional	Frequent	Constant	Usual (kg)		Max (kg)
Strength	Lifting - Floor to Knuckle				X			1-5	15	Emptying dust pan/shovel
	Lifting - Knuckle to Waist				X			1-5	30	Lifting empty waste containers
	Lifting - Over Head		X					1-5	30	
	Carrying - with Handles			X				1-5	30	Waste containers
	Carrying - without Handles				X			1-5	30	Cleaning equipment
	Pushing - Upper Extremity				X			1-5	36	Hand Cart
	Pushing - Hips/Legs assist				X			1-5	36	Hand Cart
	Pulling - Upper Extremity			X				1-5	36	Hand Cart
	Pulling - Hip/Leg Assist			X				1-5	36	Hand Cart
	Reach - Shoulder or Above			X						
	Reach - Below Shoulder					X				Sweeping garbage from streets
	Handling				X					
	Mobility	Fine finger movements			X					
Neck - Static Flexion					X					
Neck - Static Neutral						X				
Neck - Static Extension					X					
Neck - Rotation					X					Looking for garbage
Throwing			X							
Sitting		X								
Standing							X			
Walking							X			
Running/Jumping		X								
Climbing			X							
Bending/Stooping				X						
Crouching				X						
Kneeling		X								
Crawling		X								
Twisting			X							
Balancing		X								
Travelling						X			Through assigned cleaning area	



Job Demands Analysis - Hand Cart Operator: Summary Table (continued)

a) Physical Demands (continued)		Frequency During Shift						Comments
		N	R	I	O	F	C	
Sensory / Perception	Hear/Conversations			X				
	Hear/Other Sounds						X	Vehicles, pedestrians
	Vision/Far						X	Looking for garbage
	Vision/Near		X					
	Vision/Colour		X					
	Vision/Depth						X	
	Perception/Spatial						X	
	Perception/Form			X				
	Feeling	X						
	Speech		X					
Work Environment	Inside Work		X					
	Outside Work						X	
	Slippery			X				Dependant upon the weather
	Congested worksite			X				Pedestrians on sidewalk, merchants placing items on sidewalk
	Chemical Irritants		X					Potential for chemicals in garbage
	Confined Space Entry	X						
	Vapour Fumes		X					Traffic exhaust
	Noise			X				Vehicles
	Proximity to Moving Objects					X		Vehicles on streets
	Hazardous Machines	X						
	Electrical hazard	X						
	Sharp Tools	X						
	Radiant/Thermal Energy	X						
	Hot/Cold				X			Dependent upon the weather
	Humid	X						
	Dust			X				
	Organic Substances		X					
	Medical Waste		X					May encounter used needles
	Blood Products		X					May encounter used needles
	Lighting - Direct						X	
Lighting - Indirect	X							
Vibration - Whole Body	X							
Vibration - Hand/Arm	X							



Job Demands Analysis - Hand Cart Operator: Summary Table (continued)

b) Cognitive and Psychosocial Demands	Frequency During Shift			Comments
	Never / Rare	Infrequent / Occasional	Frequent / Constant	
Degree of Supervision	X			
Time Pressure			X	Frequent occasions where there is a lot of garbage
Attention to Detail			X	Need to be able to spot litter
Memory		X		Need to remember where garbage bins are located in various areas.
Interact with co-workers	X			
Interact with public			X	Interactions with the general public
Work Alone			X	
Reading	X			
Writing	X			
Irregular Hours	X			
Operating Equipment	X			

Frequency rating definitions

\* The frequency rating definitions are from the Dictionary of Occupational Titles (DOT, 1991, 4th edition) published by the US Department of Labor.

	Time per Day	Percentage of Shift
Never	0 minutes	0 %
Rare	0 - 5 minutes	0-1 %
Infrequent	6 - 25 minutes	2-5 %
Occasional	26 minutes - 2.5 hours	6-33 %
Frequent	2.6 - 5.25 hours	34-66 %
Constant	5.26 - 8 hours	67-100 %



### Physical Environment

The work takes place at the City of Vancouver's streets. The Hand Cart Operator is required to travel through an area picking up garbage. Hand carts operate in areas where it would be difficult for a motorized hand cart to operate. The Hand Cart Operator is required to push their carts through the City's sidewalks and streets. Not all sidewalks have the wheel chair access. This may present difficulties for a Hand Cart Operator trying to access the sidewalk. The Hand Cart Operator works outside in a variety of weather conditions.

### Staffing Levels

The Hand Cart Operator will work alone for most of their shift.

### Tools and Equipment Used

The Hand Cart Operator uses a variety of supplies and tools while working. The list includes their hand cart, a rake or broom, shovel or dust pan, and a container (the yellow container in figure 1) and tongs for needles.





Figure 1: Hand Cart



Figure 2: Hand Cart resting

### Other Equipment

Garbage containers, gloves, high visibility safety vests.



## Description of Essential Duties

### Essential Duty 1: Street Cleaning

The tasks that make up Essential Duty 1 (Street Cleaning) are: rake/sweep streets (Task 1), empty waste container (Task 2), needle pick up (Task 3).

#### Rake/Sweep Streets (Duty 1, Task 1)



Figure 3: Rake and Shovel

Figure 4: Broom and Dust Pan

The Hand Cart Operator has an assigned territory to clean each week. They start their shift at a storage area in their territory. They collect their cart and push it (see Figure 1) through the territory. When they reach an area with litter, they let the front end of the cart rest on the ground (see Figure 3). They will either use a rake and shovel (see Figure 2) or a broom and dust pan (see Figure 4) to collect garbage lying in the street. They use the either the rake or the broom to sweep the accumulated debris into the shovel or long-handle dust pan. When the dust pan is full, the Hand Cart Operator will lift the shovel or dust pan and empty the contents into a waste container located in their hand cart. The lift is 1 metre.



### Empty Waste Container (Duty 1, Task 2)

When the waste container is full, the Hand Cart Operator needs to empty it. To empty it, the Hand Cart Operator takes the cart to a large garbage bin. They let the front end of the cart rest on the ground (see Figure 2), stand next to the cart, and then use the handles in the waste containers to lift the container out of the cart. The handles are 1 m high. The containers would have to be lifted 1.5 high to remove them from the cart. The front of the container will then need to be tipped into the garbage bin to empty the container. This height can vary, depending on the bin, but is approximately 1.5 m. Some of the waste containers have holes in the bottom to allow water to drain out. The Hand Cart operator will empty the cans up to 6 times a day during busy periods.

### Needle Pick Up (Duty 1, Task 3)

The Hand Cart Operator has a needle handling device (see figure 5). Any needles are picked up using the needle handler or are raked or swept up and deposited into a used needle container similar to the yellow container pictured in Figure 1. The needle container is taken to various needle exchange areas located within the Hand Cart Operator's territory when it gets full.







Figure 5: Needle Handler



### **Description of Non-essential Tasks**

The Hand Cart Operator may be required to perform other work tasks on an occasional basis. Examples of the tasks that may be performed are: taking down posters, cleaning up garbage around merchant garbage bins, giving directions to the public, and reporting blocked sidewalks to bylaw enforcement.

### **Data Collection**

The PDA observations took place on Oct, 2004. The employee was observed for 1 hour doing their duties in Chinatown.

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