



## JOB DEMANDS ANALYSIS

**Company:** City of Burnaby

**Location:** Works Yard

**Job Title:** Parking Control

**Classification:** Regular/Modified

### Purpose of Activities

The purpose of this position is to enforce the parking control bylaws within the City of Burnaby.

### Tools and Equipment

The following tools and equipment are used to perform their duties:

- Pick-up Truck.
- Safety Vest.
- Cell Phone.
- Ticket Computer (20 x 7.5 x 5 cm).
- Ticket Printer.
- Uniform

### Usual Methods – Non-metered Street Parking

At the beginning of each shift, the employee will pick up a computer and upload the current information from the mainframe computer. At the end of the day they will download the ticket information.

This job consists of driving from one location to another in a pick-up truck and then parking. Once parked, the individual will take their chalk out and mark vehicles as follows:

1. Walk up to vehicle.
2. Bend or squat down and place a mark on the driving surface of the back tire just under the fender.
3. Straighten up and continue walking (5 to 10 meters usually).
4. Repeat steps 1 to 3 up to 30 times before returning to the vehicle (mark time in notebook so that they can return and check for overtime parkers).
5. Drive away to check another spot.
6. Return to this spot at the appointed time and then follow the process outlined below in Metered Parking (giving tickets).

There is an alternative method which utilizes an extension bit for the chalk. This removes the requirement of having to bend over to mark the tire each time, but some individuals are not satisfied with the effect that it has.



## Usual Methods – Metered Parking

The individual drives to an area where there are cars parked at meters, stops the vehicle and then gets out with the ticket computer and the printer in hand (printer may be slung over shoulder on a strap). They then proceed from one vehicle to another checking for expired meters. If they find one, they will hold the computer in the non-dominant hand and punch in the ticket information with the dominant hand (about 40 seconds unless computer malfunctions). They then print the ticket, tear it off and place it under the windshield wiper of the vehicle (by bending slightly over the edge of the car). This process is repeated and can take up to 30 minutes in busy areas. The computers also keep track of vehicles with unpaid tickets and the parking control worker is allowed to place a sticker on the window indicating this. They can also call for a tow truck to remove the vehicle. Often this will involve directing traffic for the truck while it takes the vehicle.

Whenever tickets are being given, there is always a risk of a confrontation. It happens quite frequently and in busy places, can occur in even more often. Usually, these cases involve individuals who express verbal displeasure of varying intensities, but it can escalate into threats and even a physical confrontation.

## Administrative Issues

The hours of work in this position vary. It can be a shift from 0600 to 1400, 0830 to 1630 or 1000 to 1800. There is also a part-time running from 0800 to 1700 on Saturdays. They can take breaks at their discretion. Communication via cell phone to dispatch, towing company and the police (report stolen cars, plates, request assistance, etc.).

The environmental conditions can change this job appreciably. It is possible to be exposed to extreme hot conditions for brief periods of time. Wet weather is common and makes roadways more hazardous and the use of a raincoat preferable. Cold is also a possibility as is snow, although this is less likely than wet conditions.

## 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.

- Drive a vehicle through a variety of different traffic conditions.
- Walk over uneven ground, on steep slopes.
- Carry computer and printer.
- Manage confrontations with members of the public (potential for hostile situations).
- Carry out tasks under unpredictable outdoor conditions that often include steady rainfall.
- Work alone.
- Climb in and out of a truck cab many times each shift.



### 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.

- Choose postures for carrying out duties (e.g. bend over to chalk tire vs. using extension bit).
- Planning of breaks and the cycle of the day's activities.
- Choose manner of conflict resolution.
- Interpret technicalities of vehicle placement with respect to the by-laws.

### Accommodative Considerations

1. People with any hand/wrist problems may have difficulty with this position because of regular gripping, holding and carrying of the computer and printer.
2. Individuals who do not cope well in outdoor, high-autonomy work environments would have difficulty with this position.
3. People uncomfortable with confrontations and regular interaction with strangers would have difficulty with this position.
4. There is a slight significant learning curve associated with the tasks.

Prepared By:

Greg Hart, Kinesiologist

May 4, 1999



## Summary of Stresses

### **Metabolic Stresses**

The aerobic energy system supplies the vast majority of energy required to complete the tasks in this position since the work is primarily composed of seated activity or light walking and standing. There is potential anaerobic power demand associated with climbing a steep roadway or sidewalk. Energy expenditure can be much higher in cases where individuals squat down each time they mark a tire with chalk since this movement requires large muscle mass to move the body back to the standing position.

### **Structural Stresses**

**Spine** – there are a number of issues impacting the spine. While the individual is driving, the spine becomes flexed and the muscles do not act to support it. There is also increasing laxity of the rear ligaments and the outer ring of the disc with increased pressure on the disc nucleus. Further, if the individual chooses to bend down and mark with chalk, there are large, passive forces carried through the same structures.

**Arms and Hands** – frequent gripping, carrying and holding of the computer and the printer can be a concern for the muscles in the forearms and even into the neck (static load). Pushing the buttons on the computer while holding with the other hands contributes point load to the fingers.

### **Special Stresses**

This job can expose the individual to verbal and perhaps physical insult. There is constant interaction with the public at times and it is rarely a pleasant discussion. Add to this the wearing of a uniform that has some similarities to a police uniform and there is potential for conflict. It can be an emotionally demanding job.

## **INTERVENTIONS**

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

1. Encourage the workers to maintain an increased level of fitness away from work that will focus on cardiovascular endurance, anaerobic power, muscular strength, muscular endurance and flexibility. Especially cardiovascular endurance. Since the work tends to have low energy expenditure it is important that every opportunity is exploited outside of work to maintain good health.
2. Provide regular education in effective use of the body and neutral joint positions for this type of work.
3. Encourage individuals to utilize the chalk stick in order to reduce spinal flexion. Insure that this tool is effectively designed so that it is easy and attractive to use.
4. Be careful to not increase grip forces unnecessarily.



5. Review footwear to insure that safety wear also is as light as possible with excellent heel and forefoot support.
6. Consider reviewing uniform selection so that it is clear that these individuals are not connected with the police force. There may be a benefit of reduced risk of confrontation.
7. Review computer system for weight and effectiveness as I saw it malfunction several times.
8. Provide training in conflict resolution and self-defense to decrease the risks associated with the frequent confrontations. Make it an annual requirement.
9. Develop an alternative method of carrying the printer and computer (belt-based perhaps) that doesn't involve running a strap anywhere since a strap could be used against an individual in a confrontation.

PJDC - Parking Control

REFERRAL: Lana Ho		ORGANIZATION: City of Burnaby				TITLE: Parking Control Officer			
DEPT: Engineering		DIVISION:				DATE: May 4/99		CONTACT: David Kilpatrick	
PHYSICAL DEMANDS	REQD	SIDE	FREQUENCY*				Max. Weight (kg)	Usual Weight (kg)	COMMENTS
			Sel. 1	Low 2	Mod. 3	High 4			
Lifting - Floor to Knuckle									
Lifting - Knuckle to Waist									
Lifting - Waist to Shoulder		D		X			8	1	Picking up gear in morning, bicycle
Lifting - Over Head									
Carrying - With Handles									
Carrying - Without Handles		B				X	2	2	Handheld computer, printer
Pushing - Upper Extremity									
Pushing - Hip/Leg Assist									
Pulling - Upper Extremity									
Pulling - Hip/Leg Assist									
Reach - Shoulder or Above									
Reach - Sho. or Above extnd									
Reach - Below Shoulder		D				X	arm	arm	Mark tires with chalk, place ticket on car
Reach - Bel. Shoulder extnd		D			X		arm	arm	Mark tires with chalk, place ticket on car
Handling		B				X	8	2	Chalk, computer, printer, bike (perhaps)
Gripping		D				X	mod.	mod.	Holding computer (power), chalk(pinch)
Fine Finger Movements		B				X	mod.	mod.	Pressing buttons on computer, phone
E Aerobic (percent)						90			Standing, sitting, light walking (low power requirement)
N Anaerobic (percent)			5						Walking up hills
R High Energy Expenditure			X						Longer walking, up hills, squatting down to mark tires
G Low Energy Expenditure						X			Driving in vehicle, brief walking and standing
P Neck - Static Flexion					X				Looking at computer, license plates (<20 seconds)
O Neck - Static Neutral									
S Neck - Static Extension									
T Neck - Rotation		B			X				Shoulder check, direct traffic
U Throwing									
R Sitting						X			While driving vehicle (max. 20 minutes/time)
E Standing						X			Briefly while punching up ticket, direct traffic
+ Walking					X				Usually less than a 500 metres each time
M Running/Jumping									
O Climbing - Arms and Legs									
B Climbing - Legs Only				X					Walking up hills, can be steep (<200 metres)
I Bending/Stooping					X				To mark tires with chalk (can be done standing)
L Crouching					X				To mark tires with chalk (can be done standing)
I Kneeling									
T Crawling									
Y Twisting		D			X				Reaching to place ticket on windshield of car
G Balancing									
E Traveling						X			Throughout Burnaby in a small truck
N Work Alone						X			Not often isolated, but no colleague working with them
E Interact with Public						X			Often hostile(physically) public when dealing with tickets
N Operate Equip/Machinery		B				X			Computer, printer, small truck, cell phone
Irregular/Extended Hours						X			Some Saturday work and early mornings

\* 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 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 listed first. **D** refers to dominant and **B** to both sides.

PJDC - Parking Control

REFERRAL:		ORGANIZATION:				TITLE: see 1st page header			
DEPT.:		DIVISION:				DATE:		CONTACT:	
PHYSICAL DEMANDS		REQ	SIDE	FREQUENCY*				COMMENTS	
				Sel. 1	Low 2	Mod. 3	High 4		
P E R C E P T I O N	Hearing - Conversations	X	B				X	Colleagues, members of the public in person/on phone	
	Hearing - Other Sounds	X	B				X	Phones, vehicle traffic	
	Vision - Far	X	B				X	Driving, reading license plate numbers	
	Vision - Near	X	B			X		Details on the computer screen/tickets	
	Vision - Colour								
	Vision - Depth	X	B				X	Seeing and reaching under and around cars	
	Perception - Spatial	X	B				X	Placing tickets under windshield wipers, chalking tires	
	Perception - Form								
	Feeling (Tactile)	X	D			X		Holding computer, tickets, wipers, etc.	
	Reading	X					X	License plates, computer display, complaints	
	Writing	X	D			X		Filling out short forms and writing notes	
	Speech	X					X	Talking with colleagues and public in person/phone	
	W O R K E N V I R O N M E N T	Inside Work				X			Trailer building, brief meetings and administration
		Outside Work						X	On the streets
Hot Conditions >25 deg. C						X		In the summer months	
Cold Conditions <10 deg.C						X		In the fall, winter and early spring	
Humid							X	Often rains, can be humid in summer months	
Dust					X			Especially near construction sites and when windy	
Vapor Fumes							X	Vehicle exhaust	
Hazardous Machines									
Proximity to Moving Object		X					X	All manner of traffic on the streets	
Noise						X		Traffic noise can be significant in heavy situations	
Electrical Hazard								All equipment is grounded and conventional	
Sharp Tools									
Radiant/Thermal Energy						X		Through windshield, off of other cars and pavement	
Slippery Conditions		X			X			Heavy rain, ice and snow (infrequent)	
Vibration and Related				X			Light jarring while driving		
Chemical Irritants		B			X		Toner, possible treatments of book pages		
Organic Substances									
Medical Waste									
Blood Products									
Congested Worksite									
T	Lighting - Direct	X					X	Overhead	
	Lighting - Indirect	X					X	Reflections off of vehicles and buildings	
	Lighting - Adjustable								
	Lighting - Fluorescent								
	Lighting - Incandescent								
Lighting - Shadows etc.	X				X		Early and late in the day, around obstacles		

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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