



JOB DEMANDS ANALYSIS

Company: City of Burnaby

Location: Burnaby Lake, Kensington,
Bill Copeland Arenas

Job Title: Arena Service Worker

Classification: Regular Duty

Purpose of Activities

The Arena Service Worker is responsible for the cleaning and maintenance of the ice surface, ice plant and arena building as well as the set up and take down for public and private functions in the building. The Arena Service Worker estimates that 60 percent of his time is spent cleaning and maintaining the building, setting up and taking down for events and the remaining 40 percent of his time is spent on ice maintenance tasks.

Tools and Equipment

The Arena Service Worker will use the following tools and equipment to perform his duties:

- Ice re-surfacer, Olympia or Zamboni (left hand drive), propane tanks (32-kg), spudder (8-kg), blades (34-kg), 60 metres of 5 centimetre hose for flooding ice
- Plexi-glass (1.2 X 1.2 m, 22-kg, two man lift; 1.2 X 1.8 m, 32-kg, three - four man lift), glass cart that holds ten panes of glass (220 – 320-kg), moved with a forklift when full, glass suction cups X 2
- Divida-Rink (portable boards to divide ice into smaller sections for young ice users)
- Arena boards (three metre sections require three men to lift)
- Portable basketball backboard and hoop
- Portable ticket booths, move into position by hand (<10-50 metres)
- Tables, chairs, chair and table dolly's, office/room dividers, low cart
- Hand and power tools – grinder, vacuum, hand saws, pliers, wrenches, pipe wrenches, screw drivers, chisels, hammers, grease gun, rasps, files, bench vise, extension cords, garden hose, 2.5 cm hose
- Cleaning tools and supplies – floor scrubber, wet mops and buckets, dust mops, push brooms, corn brooms, long handled doodle bug, general cleaning agents and chemicals, pressure washer, wet/dry vac, pressure washer
- Rubber gloves, leather gloves, half or full face respirator, charcoal mask, steel toe boots, goggles, ice spikes, ear protection
- Step and extension ladders



Usual Methods

Building Cleaning and Maintenance

1. Gather cleaning tools, materials and chemicals in storage room.
2. Walk to area that requires cleaning. Tasks will include cleaning toilets, sinks, mirrors, showers and stalls, dressing rooms, meeting rooms, common areas and building and arena windows and glass. Tasks are performed from the floor to overhead and often in a stooped, crouched or kneeling position.
3. Pick up garbage from the floor, dust mop the floor and then wet mop or wash the floor. Bill Copeland Arena has bleachers that require cleaning underneath at least once per week and after a Junior "A" hockey game. The Arena Service Worker is required to crouch or kneel to get into some locations under the bleachers.
4. Empty garbage containers into main garbage.
5. Visually inspect the room for defects or items that require replacing (burned out light bulbs, toilet paper, etc.).
6. Pick up and clean areas on an on-going basis throughout the shift.
7. Return cleaning tools, equipment and materials to storage.

Building Security

1. Walk to Arena or building doors and lock or unlock them depending on time of day and events occurring in the Arena or building.
2. At another person's (building staff, user groups), walk to a storage area in the building, unlock the door, retrieve the requested item(s), lock the door and walk back to the original task.
3. Fill out a written report after a break-in has occurred in the Arena or building.
4. During an Emergency Evacuation of the Arena and/or building, the Arena Service Worker is responsible for ensuring everybody has evacuated the building.

Event Set Up

1. Read daily event calendar to determine time and priority of equipment set up.
2. Walk to location of set up in building.
3. Determine if a quick cleaning is necessary. Clean are if required.
4. Walk to equipment storage area.**
5. Load equipment (tables, chairs, room dividers, Divida-Rink, etc.) onto cart if required.**
6. Pull cart from storage area to required set up location.
7. Lift equipment off cart and set up in room as required by user.
8. Return any unnecessary equipment and carts to the storage area.
9. Leave room.

Event Take Down

1. Walk to room location in building.
2. Retrieve empty or partially empty carts from storage area.**
3. Wipe down equipment with wet cloth.
4. Load equipment onto cart.
5. Repeat step 4 until entire room has been taken down or set up the room/area for the next user.
6. Push full carts back to storage area(s).



7. Sweep and mop room if required.
8. Leave room.

Ice Plant Maintenance

1. Walk to Ice Plant room.
2. Check to ensure alarms have not been activated and it is safe to enter the Ice Plant room. Call Fire Department if required and evacuate the building.
3. Put on respirator.
4. Enter the Ice Plant room.
5. Take and record Ice Plant readings on master sheet.
6. Make adjustments to the Ice Plant as required. Drain and refill Chiller oil as required.
7. Exit Ice Plant room.
8. Remove respirator.

Flood Ice

5. Fill Zamboni with hot water.
6. Open gates to ice surface. Put ice spike on over steel toe boots.
7. Walk on ice (60 metres) to remove nets or push them out of the way.
8. Walk back to Zamboni, climb onto Zamboni (two steps 0.3 and 0.6 metres from ground), sit in driver's seat, start Zamboni.
9. Back Zamboni onto ice surface.
10. Drive Zamboni around the ice surface working from the outside to inside and operate the hand controls to ensure proper function of Zamboni. This includes operating the blade handle adjustment wheel (beside Arena Service Worker) to adjust for depth of cut when scraping the ice.
11. Drive off the ice surface.
12. Press button to dump snow in the snow dump.
13. Climb off Zamboni.
14. Walk onto ice surface. Shovel snow and water from edge of gates onto grates in Zamboni room.
15. Walk on ice to return nets to proper location. Drill holes in ice to insert pegs. Insert pegs and lift the net onto pegs. Repeat at both ends of arena.
16. Walk off ice surface and close the gates.
17. Fill Zamboni with hot water.
18. Repeat throughout shift as required.
19. Propane cylinder is changed as required.

Change Ice Scraping Blade (one time per week – two-person task)

1. Gather socket set. Walk to back of Zamboni.
2. Get on knees and/or partially under the ice conditioner. Use sockets to loosen ten bolts on the blade.
3. Operate automatic control to lower the ice conditioner to a 2X4. Remove all bolts to drop old blade to the ground.
4. Lift and carry new blade (32-kg) case to the Zamboni. Set blade case under the ice conditioner.
5. Bolt new blade to the ice conditioner. Work from the centre of the blade out.
6. Pull old blade out from under the Zamboni. Set the blade in the case. Bolt the blade to the blade case.



7. Lift and carry the old blade to storage.
8. Level and adjust blade to proper angle on ice conditioner.

Edging/Spudding (once per night)

1. Open gate to ice surface. Put ice spikes on over steel toe boots.
2. Push Edger onto ice. Pull start Edger.
3. Push Edger around the boards to remove excess snow and ice build up at the base of the boards.
4. Shut off Edger. Return Edger to Zamboni room.
5. Grasp Spudder off the wall. Walk onto ice surface. Stand parallel to the boards with Spudder in hand.
6. Jam Spudder against the boards to break excess snow and ice from the base of the boards.
7. Repeat step six until entire arena has been completed.
8. Walk off the ice surface. Return Spudder to storage.
9. Clean ice surface as described above in Flood Ice.

Install Ice (Approximately first week in August)

1. Start up ice plant to cool arena pad.
2. Use a four centimetre hose to flood arena pad.
3. Let it freeze.
4. Repeat steps two and three every hour for one to two days to build ice to required thickness prior to painting.
5. Paint ice.
6. Flood again. Let the ice freeze. Repeat this step for two to three days until the ice reaches the required thickness.

Remove Ice – (Approximately April 15)

1. Turn off ice plant.
2. Use Zamboni to shave ice down so it is thin.
3. Repeat step 1 until ice is relatively thin.
4. Use a sledgehammer to break the ice.
5. Shovel the ice into a wheelbarrow.
6. Push wheelbarrow to snow dump outside the building.
7. Return the wheelbarrow to the ice.
8. Repeat steps 3-6 until ice has been removed.
9. Wash the arena pad with a floor scrubber.

Glass/Board Removal and Installation - Bill Copeland Only (two or more person task)

1. For special events, the boards and glass may be removed. Book extra staff and a forklift.
2. Push glass carts onto ice.
3. Place suction cups on glass.
4. Hold glass in position. One person will remove the metal glass standard that secures the glass in place.



5. Two people will lift the glass off the boards. Walk the glass to the cart and set it on the cart.
6. Repeat steps 3-5 until cart is full. Each cart holds ten glass panes.
7. Repeat steps 2-6 until all glass has been removed.
8. Glass carts are then removed from the ice surface by a forklift.
9. Push board carts onto ice surface.
10. Two to three men are required to remove the boards and place them on a cart.
11. Repeat step 10 until all boards have been removed.
12. Use a forklift to remove boards/cart from ice surface.
13. Install boards and glass by reversing steps as described.

Cover Ice - Bill Copeland Only

1. Determine when ice is to be covered for a special event. Book extra staff and forklift.
2. Use forklift to move carts and sheet of plywood onto ice.
3. Lift sheets of plywood off the cart and set down on the ice as required.
4. Repeat steps until ice has been covered.
5. Reverse steps after special event to remove the sheets of plywood

Open/Close Bleachers – Bill Copeland Only

1. Determine when bleachers are required to be closed for a special event. Book extra staff. Six to ten people are required to close or open the bleachers by hand.
2. Walk under bleachers to front edge.
3. Crouch down under bleachers. Grasp bleacher support with both hands.
4. One person will coordinate pulling effort so that everybody pulls at the same time to keep the bleachers in line and on track.
5. On the coordinators count, pull the bleacher support towards body. Be careful to ensure fingers, hands or feet do not get caught in between supports as they are pulled together.
6. As the bleachers are closed, the Arena Service Worker can come out of the crouch, move into a bend or stoop and finally to a full stand. Arena Service Workers can now go to the front of the bleachers and push them closed.
7. If the bleacher supports are not kept in line, the bleachers must be pulled out and the process repeated until the bleachers close properly. This occurs often.
8. Reverse steps 2-7 to pull bleacher out from the storage position.

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

Administrative Issues

The Arena Service Worker will work an eight-hour rotating day, evening or night shift. Day shift is from 0700 to 1500, evenings are from 1500 to 2300 and nights are from 2300 to 0700. User groups are in the arena from 0500 to 0100 seven days per week. Depending on the bookings there may be one to three Arena Service Workers per shift. There is typically only one Arena Service Worker per shift. The Arena Service Worker receives two ten-minute rest periods and a 30-minute lunch break during the day. The Arena Service Worker on the night shift is required to maintain and clean both ice surfaces and buildings.



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 and operate the Zamboni
- Change the blade on the Zamboni
- Change the propane tank on the Zamboni
- Flood the ice by hand when putting ice in
- Edge and spud the ice surface to remove excess ice and snow from the base of the boards nightly
- Operate and maintain the Ice Plant
- Clean and maintain the Arena building, common areas, dressing rooms, public washrooms
- Ensure building security which will include walking, standing and emergency evacuation of the building
- Set up and take down for special events in the building
- Remove and install Plexi-glass and boards
- Open and close the bleacher by hand at the Bill Copeland Arena
- Use sledge hammers, shovels and wheel barrows to take the ice out
- Stand on concrete, composite rubber and ice
- Walk on concrete, composite rubber and ice to perform duties and functions – several kilometres per day can be covered
- Climb up and down stairs in the buildings
- Bend, stoop, crouch, kneel to perform cleaning and maintenance tasks in the building and on the ice
- Lift, carry, push, pull tools and equipment to perform cleaning and maintenance tasks in the building and on the ice surface
- Work below and above shoulders to perform cleaning and maintenance tasks in the building and on the ice surface
- Work near or around ammonia gas, propane and brine, scolding hot water.
- Wear a respirator to work around ammonia gas

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.

- Lifting technique to some extent
- Body position during cleaning and maintenance tasks and set up and take down
- Sitting position while driving the Zamboni

Accommodative Considerations

1. People with injuries to the spine, in any region, may have difficulty with the static and dynamic movements required in this position.
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 in this position.



3. People with forearm and elbow injuries such as tennis elbow may have difficulty with the static grip forces required during lifting, carrying, Spudding and edging.
4. People with nerve compression injuries in the upper extremities may have difficulty with the repeated use of the Spudder and Edger (compression and vibration) below, at and above shoulder height.
5. People with injuries to the hand and fingers will have difficulty with the fine motor manipulation tasks required to perform the activities of this position.
6. People with lower extremity injuries to the hips, knees and ankles may have difficulty with standing on concrete, composite rubber and ice; climbing up and down stairs and ladders; and the varied bending, stooping, crouching and kneeling positions required to clean and maintain the building and ice surface and plant.
7. The Arena Service Worker requires Arena Service Worker and refrigeration courses and certifications to perform the duties and tasks required in this position

Prepared By: Jeffrey J. McGinn, Kinesiologist

May 27, 1999



Summary of Stresses

Metabolic Stresses

The aerobic energy system will supply the major source of energy while performing the duties and responsibilities of the Arena Service Worker. This energy system will be utilized during the building cleaning and maintenance tasks, event set up, take down, and ice surface and plant maintenance. The anaerobic energy systems may be required to supply energy for brief intense periods of work. This work may include heavy lifting of Plexi-glass/boards, pushing or pulling the bleachers in and out; or towards the end of the day when the aerobic energy system has been depleted. In this last instance, the anaerobic energy system becomes the primary energy source

Structural Stresses

Spine – Typically, flexion, extension, lateral flexion and rotation movements will be performed while the Arena Service Worker is handling a load (cleaning tools, chairs, tables, Zamboni blades, Plexi-glass, boards, etc., 1 to 34-kg single person lift.). Often two or more Arena Service Worker's are required to lift, carry and place Plexi-glass, boards, etc. Forward flexed postures during hand and power tool use and lifting tasks 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.

Driving the Zamboni utilizing a passive sitting posture (thoracic kyphosis, cervical extension) will tax the spine in the manner described above.

Neck, Shoulders and Upper Extremity– This position requires prolonged and repeated static and dynamic movements from below to above shoulder height. 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 constant and significant load. Spudger and Edger use (both hands) will increase the static and dynamic loading of the forearm flexors, extensors, supinator, pronator teres and the pronator quadratus. Spudger and Edger use will increase the jarring, vibration and compressive forces from the grip to the elbow and shoulder that may lead to over use tendon or nerve injuries. Impingement and inflammatory injuries to the shoulders are likely due to the prolonged static arm position (flexed and abducted shoulder and elbow) required during some work.

Almost all of the Arena Service Worker'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 – will be taxed in the many dynamic movements associated with walking, standing, climbing, lifting and carrying on hard, wet and icy surfaces.



Twisting an ankle or knee or a slip and fall injury are the most likely to the lower extremities. Climbing up and down stairs and ladders will also increase the risk of a slip and fall injury.

Burns – the Arena Service Worker is exposed to burns to his body from scolding water. This water is used to fill the Zamboni so that the ice can be resurfaced. Hot oil circulates through equipment in the Ice Plant and a ruptured hose will expose the Arena Service Worker to burns

Crush and Amputation Injuries – The Arena Service Worker is exposed to these types of injuries when changing the Zamboni blades, removing or installing Plexi-glass and the boards and opening or closing the bleachers at Bill Copeland Arena.

Vapors/Fumes – The Arena Service Worker can be exposed to ammonia gas, brine propane gas, etc. A full- face respirator is required when near the ammonia gas. Vapors and gases may cause minor irritation, skin rashes, vomiting and even death.

INTERVENTIONS

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

1. Encourage the Arena Service Worker to maintain an increased level of fitness away from work that will focus on cardiovascular endurance, muscular strength, muscular endurance and flexibility.
2. Provide the Arena Service Worker with postural awareness training that focus on the importance of proper body posture and how it relates to their ultimate physical comfort and reducing fatigue level.
3. Purchase lighter table and chairs. This will decrease the risk of injury to the Arena Service Worker when he is required to set up or take down this equipment.
4. Investigate larger storage facilities, so that tables and chairs do not have to be loaded and unloaded on a cart, as they are required. Permanent storage carts should also be purchased for each set of tables and chairs.
5. Purchase and install the power opening and closing mechanism on the bleachers (Bill Copeland Arena) so that the Arena Service Workers are not exposed to spinal, upper and lower extremity injuries, and crush and amputation injuries when performing this task by hand.
6. Redesign the handle on the Spudder so that a neutral body position can be adopted during use and so that the handle can be adjusted for different sized users. Pad the handle to decrease the static grip, jarring, compression and vibration forces throughout the upper extremity.
7. Encourage the Arena Service Worker to always wear ice spike whenever he is on the ice.

PJDC-Arena Service Worker

Referral: Lana Ho			Organization: City of Burnaby							Title: Arena Service Worker	
Dept.: Engineering			Division: Parks							Contact: Lana Harris	
PHYSICAL DEMANDS			REQ D E	SIDE	FREQUENCY*				Max. Weight (kg)	Usual Weight (kg)	COMMENTS
					Sel 1	Low 2	Mod 3	High 4			
S T R E N G T H	Lifting - Floor to Knuckle	X	B			X					tools, chairs, tables, blades, glass, boards, blade
	Lifting - Knuckle to Waist	X	B			X					tools, chairs, tables, blades, glass, boards, blade
	Lifting - Waist to Shoulder	X	B			X					tools, chairs, tables, blades, glass, boards, blade
	Lifting - Over Head	X	B			X					tools, chairs, tables, blades, glass, boards, blade
	Carrying - With Handles	X	D			X					tools, glass suction cups
	Carrying - Without Handles	X	B			X					tools, chairs, tables, blades, glass, boards, blade
	Pushing - Upper Extremity	X	R			X					Zamboni controls, brooms, mops
	Pushing - Hip/Leg Assist	X	E			X					spudder, brooms, mops, carts, bleachers
	Pulling - Upper Extremity	X	R			X					Zamboni controls, brooms, mops
	Pulling - Hip/Leg Assist	X	E			X					spudder, brooms, mops, carts, bleachers
	Reach - Shoulder or Above	X	E			X					stack chairs, tables, climb up to Zamboni
	Reach - Sho. or Above ext.	X	E			x					stack chairs, tables, climb up to Zamboni
	Reach - Below Shoulder	X	E			X					stack chairs, table, drive Zamboni, clean building
	Reach - Bel. Shoulder ext.	X	E			X					lift, carry tools, equipment, tables chairs
E N E R G Y + M O B I L I T Y	Handling	X	E			X					tools, tables, chairs, cleaning equipment, blades
	Gripping	X	E			X					tools, tables, chairs, cleaning equipment, blades
	Fine Finger Movements	X				X			max.	low	adjust gauges in ice plant, nuts/bolts for blade
	Aerobic (percent)	X						90	clean/maintain building & ice surface, set up/take down for events		
	Anaerobic (percent)	X			10				lift, carry, place glass and boards, push/pull bleachers		
	High Energy Expenditure	x			X				lift, carry, place glass and boards, push/pull bleachers		
	Low Energy Expenditure	X						X	clean/maintain building & ice surface, set up/take down for events		
	Neck - Static Flexion	X						X	work below shoulders to clean/maintain building		
	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 Zamboni, clean/maintain building		
	Throwing	X				X			snow from shovel in Zamboni room		
	Sitting	X					X		drive Zamboni to resurface ice		
	Standing	X						X	on concrete, ice, hard rubber composite floor		
Walking	X						X	in arena, 1-2 km/day			
G E N E R A L	Running/Jumping										
	Climbing - Arms and Legs	X				X			on/off Zamboni		
	Climbing - Legs Only	X				X			stairs in building		
	Bending/Stooping	X						X	clean/maintain building,set up/take down for events,change blades		
	Crouching	X				X			clean/maintain building,set up/take down for events,change blades		
	Kneeling	X			X				clean/maintain building,set up/take down for events,change blades		
	Crawling	X			X				change blades, under bleachers,push/pull bleachers		
	Twisting	X	E				X		drive Zamboni,change blades,push/pull bleacher,set up/take down		
	Balancing	X					X		on Zamboni, on ladders, stairs, side of boards, on ice		
	Traveling	X			X				to another arena to check on ASW		
	Work Alone	X						X	usually only one ASW, except for large events		
	Interact with Public	x						X	in arena		
	Operate Equip/Machinery	X						X	Zamboni, ice plant, cleaning equipment		
	Irregular/Extended Hours	X						X	days, evening, nights, rotating shift		

* 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.

PJDC-Arena Service Worker

Referral:		Organization:						Title: see 1st page header	
Dept.:		Division:						Contact:	
PHYSICAL DEMANDS		R E Q U I R E D	S I D E	FREQUENCY*				COMMENTS	
				Sel. 1	Low 2	Mod. 3	High 4		
P E R C E P T I O N	Hearing - Conversations	X				X		co-workers, public, 2 way radio	
	Hearing - Other Sounds	X					X	Zamboni, 2 way radio, ice plant alarms	
	Vision - Far	X					X	clean/maintain building and ice, set up/take down for events	
	Vision - Near								
	Vision - Colour	X			X			ammonia alarm	
	Vision - Depth	X					X	drive Zamboni, clean/maintain building and ice	
	Perception - Spatial	X					X	drive Zamboni, clean/maintain building and ice	
	Perception - Form								
	Feeling (Tactile)	X					X	drive Zamboni, use spudder on ice	
	Reading	X			X			compressor, brine readings	
W R I T I N G	Writing	X			X			compressor brine readings	
	Speech	X				X		co-workers, public	
W O R K	Inside Work	X					X	in arena and building	
	Outside Work	X			X			empty snow from Zamboni at outside snow dump	
	Hot Conditions >25 deg. C				X			compressor rooms	
	Cold Conditions <10 deg.C	X					X	on ice surface, in building	
	Humid	X			X			refill Zamboni with hot water in Zamboni room	
	Dust	X			X			sweep floor, clean building	
	Vapor Fumes	X					X	propane, from Zamboni, ammonia gas	
	Hazardous Machines	X					X	Zamboni, ice plant, hand and power tools	
	Proximity to Moving Object	X				X		drive Zamboni, hands near power tools	
	Noise	X					X	Zamboni, ice plant, hand and power tools, crowd noise	
E N V I R O N M E N T	Electrical Hazard								
	Sharp Tools	X				X		spudder, Zamboni blade	
	Radiant/Thermal Energy	X			X			hot water for Zamboni, washing floors	
	Slippery Conditions	X				X		walk on ice, drive Zamboni on ice	
	Vibration and Related	X				X		drive Zamboni, use spudder to break ice away from boards	
	Chemical Irritants	X			X			ammonia, brine, propane, cleaning supplies	
	Organic Substances	X			X			cleaning toilets, spit, urine	
	Medical Waste								
	Blood Products	X			X			first-aid, sanitary napkins	
	Congested Worksite								
T	Lighting - Direct	X					X	fluorescent and mercury vapor lights	
	Lighting - Indirect								
	Lighting - Adjustable								
	Lighting - Fluorescent	X					x	overhead lights	
	Lighting - Incandescent								
	Lighting - Shadows etc.	X			X			depends on location of building and lighting requirements	

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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