

CITY OF VICTORIA

PHYSICAL DEMANDS ANALYSIS

Effective Date: March 1, 2010

Job Title:	Irrigation Technician	Date of Job Site Visit:	Jan. 8, 2010
Department:	Parks, Recreation & Culture	On-Site Contact	Todd Stewardson
Division:	Parks	Person(s):	(Manager – Parks Construction & Natural Systems)
Section:	Parks Operations		
Location:	Various City Parks, Trails, Playgrounds, Sports Fields	Classification:	Regular Duty

POSITION FUNCTION

The Irrigation Technician is responsible for participating in the design, installation and maintenance of irrigation systems within the network of parks, trails, playgrounds, and sports fields within the City of Victoria. This involves a vast array of tasks including (but not limited to) the following:

- Installing and maintaining irrigations systems,
- Operating vehicles to transport equipment and materials,
- Operating a tractor with related attachments (e.g. blade, hoe, etc.),
- Operating various equipment, including (but not limited to) the following: 'ditch-witch', and turf equipment,
- Performing equipment maintenance as required,
- Reading and interpreting engineering plans, and laying out irrigation systems for construction,
- Determining and ordering materials and equipment as required,
- Analyzing, troubleshooting, and repairing irrigation systems,
- Understanding and operating irrigation controllers,
- Utilizing software program for water management and irrigation scheduling,
- Performing tests on backflow-prevention devices and electrical components of irrigation/water features systems,
- Performing system audits and outputs of various water features and devices,
- Completing daily work records and equipment slips.

TOOLS & EQUIPMENT

The Irrigation Technician uses the following tools / equipment to perform his/her duties:

- Vehicles – tractors, cube vans, pick-up trucks
- Hand Tools – shovels, picks, mattocks, pry bars, digging bars, hack saws, ratchet cutters, sledge hammers, trowels, assorted hand tools
- Equipment / Power Tools – trenchers, 'ditch-witch', plate-tampers, 'hole-hog', propane torch, air compressor, and turf equipment
- Clean-Up Tools – rakes, square-mouth shovels, push-brooms, corn-brooms, hose
- Chemicals – PVC glues & primers, oil / gas mixtures, gasoline in jerry cans
- Ladders – extension ladders, and 6 & 8-foot step-ladders
- Safety Equipment – nitrile gloves, leather gloves, utility gloves, safety footwear, hard hats, knee pads, dust masks, safety glasses, ear plugs / muffs, high-visibility reflective vests, coveralls, rain gear, flashlight, first aid kit, sharps container

ADMINISTRATIVE ISSUES

The shifts for Irrigation Technicians extend from 07:00 am to 15:30 pm. Shifts are scheduled Monday to Friday, and the workers receive two 15-minute rest periods, and one 30-minute lunch break during each shift. This position is classified as Full-Time Permanent. Work is performed according to seasonal schedule, or is assigned by supervisor; and is reviewed while in progress. Any repairs or mechanical maintenance that vehicles or power equipment require is completed within the Parks Operations mechanical shop.

WORK ENVIRONMENT

Physical Effort:

- Lift, move, and utilize moderate to heavy materials and equipment (occasional to frequent)
- Work in awkward positions (occasional)
- Dig by hand (occasional to frequent)

Mental Effort:

Within normal limits

Visual / Auditory Effort:

Within normal limits

Work Environment:

- *Work outside in all weather conditions (frequent to continuous, approx. 95% of shift)
- Work inside (rare, approx. 5% of shift)
- Work in close proximity to moving traffic (frequent)
- Exposure to equipment-noise (occasional; e.g. tractors, trenchers, 'ditch-witch', plate-tampers, 'hole-hog', air compressor, turf equipment, etc.)
- Exposure to equipment-vibration (occasional; e.g. tractors, trenchers, 'ditch-witch', plate-tampers, 'hole-hog', air compressor, turf equipment, etc.)
- Exposure to exhaust / chemical fumes, airborne particulates – dirt / dust or saw-cutting particulates (occasional); including working in an environment where protective measures must be taken to avoid exposure to chemical fumes from primers and glues. (occasional)

*Note: the environmental conditions can considerably alter the degree of challenge of this job. It is possible to be exposed to widely varying conditions, including:

- extremely hot conditions (i.e. with implications for dehydration, sunburn, and heat stroke)
- extremely wet conditions (i.e. with implications for less reliable footing, less stability of trenches, increased heaviness when shovelling wet dirt / mud / clay, a need for higher grip forces due to slipperiness of shovels / tools / equipment / irrigation components, and potential for increased awkwardness of lifting due to slipperiness of items & less reliable footing as noted above)
- extremely cold conditions (i.e. with implications for less reliable footing due to snow / ice, less stability of trenches due to slushy wetness, increased heaviness when shovelling wet dirt / mud / clay, a need for higher grip forces due to slipperiness of shovels / tools / equipment / irrigation components, and potential for increased awkwardness of lifting due to slipperiness of items & less reliable footing as noted above)

KEY SKILLS AND ABILITIES

- Understand and discuss job-related matters.
- Organize and prioritize work.
- Ensure schedules, procedures, and established performance-standards are met.
- Operate various hand-tools, power equipment, and a variety of light to heavy industrial equipment and vehicles.
- Understand and apply all aspects of irrigation; including operation of software program for water management & irrigation scheduling.
- Read and interpret engineering plans, and lay-out irrigation systems for construction.
- Maintain accurate records, sketches, and reports for maintenance and new installations.
- Establish and maintain effective working relationships.
- Respond appropriately to enquiries from the public, staff, and outside agencies regarding general parks information.
- Deal with the public in a courteous and tactful manner.
- Work safely on widely varying job sites (i.e. city parks, trails, playgrounds, sports fields, etc.).

INDEPENDENCE

- Level of independence when completing work tasks can vary widely (i.e. depending on work tasks being completed), and may range from fully independent to fully supervised.
- Work is completed according to an assigned schedule, or assigned by supervisor.
- Issues such as plan changes to work projects are discussed with supervisor.
- Work quality is reviewed by assistant supervisor on a regular basis, and further follow-up (if required) will involve the supervisor.
- Irrigation Technician independently performs equipment maintenance as required.
- Malfunctioning or damaged tools / power equipment are reported to supervisor and Parks Operations mechanical shop.
- Problems such as an inability to complete certain tasks or complaints are referred to supervisor.

QUALIFICATIONS

Formal Education, Training and Occupational Certification:

- Grade 12 education minimum,
- Certified Irrigation Technician – Level 2 (Irrigation Industry Association of BC),
- Cross Connection Control Certification (40 Hours),
- Current and valid Class 5 B.C. Driver's Licence.

Experience:

- 3 years of related experience as identified under certification ... *or* ... an equivalent combination of education and experience.

OTHER:

- May be requested to substitute in a more senior position.

IRRIGATION TECHNICIAN - SUMMARY TABLE

JOB TASK	TASK DETAILS
Lifting Floor to Waist	<p>Max = 101 lbs (rare, when lifting 'hole-hog')</p> <p>Avg = 15 - 25 lbs (occasional to frequent)</p> <p>e.g. Lifting of various items, including (but not limited to) the following:</p> <ul style="list-style-type: none"> • 'hole-hog' (101 lbs), • digging bars (15 - 25 lbs), • irrigation controller (12 lbs),
Lifting Waist to Shoulder / Head	<p>Max = 10 lbs (rare, when lifting various materials into storage bins)</p> <p>Avg = 5 - 10 lbs (rare)</p>
Lifting Floor to Shoulder / Head	<p>Max = 20 lbs (occasional, lifting of 20-foot length of PVC pipe onto high truck-racks)</p> <p>Avg = 10 - 20 lbs (occasional)</p>
Carrying Two-Handed	<p>Max = 75 lbs (rare, when carrying generator over distances of 20 - 30 feet)</p> <p>Avg = 10 - 30 lbs (occasional to frequent)</p> <p>e.g. Bilateral Carrying of various items, including (but not limited to) the following:</p> <ul style="list-style-type: none"> • generator (75 lbs) carried over distances of 20 - 30 feet, • box of materials, such as sprinkler heads (10 - 30 lbs) carried over distances of up to 200 metres.
Carrying One-Handed	<p>Max = 25 lbs (occasional, when carrying a largest digging bar over a distance of up to 200 metres)</p> <p>Avg = 10 - 15 lbs (occasional to frequent)</p> <p>e.g. Unilateral Carrying of various items, including (but not limited to) the following:</p> <ul style="list-style-type: none"> • digging bars (15 - 25 lbs) carried over distances of up to 200 metres, • carrying case (10 - 15 lbs) containing fittings, glue, etc. carried over distances of up to 200 metres.

Carrying Over-the-Shoulder	Max = 20 lbs (occasional, carrying 20-foot length of PVC pipe in an 'over-the-shoulder' style) Avg = 10 - 20 lbs (occasional)
Pushing / Pulling	Max = 80 lbs of <u>force</u> (rare, when using wrench to loosen firmly-tightened pipe fittings) Avg = widely varying and impossible to quantify certain job tasks due to non-standardized work scenarios (e.g. using digging bar to lever large rocks in ground) e.g. Pushing / Pulling associated with varied tasks, including (but not limited to) the following: <ul style="list-style-type: none"> wrench to loosen firmly-tightened pipe fittings (up to 80 lbs of push / pull <u>force</u>), varied, but high push / pull forces when using digging bar to lever large rocks in the ground in order for their removal, varied, but moderate to high push / pull forces required with wheelbarrow usage (heaviest loads involve transport of rock and wet soil).
Reaching Above Shoulder	Max Duration = *15 minutes (rare, position of approx. 135° of shoulder flexion is required when prone-lying on the ground with arm extended in order to access valve box situated below ground-level). *Note: realistically there would be an option to <i>interrupt</i> this sustained posture; however, this would add time to overall task completion. Avg Duration = 5 seconds (e.g. pulling PVC pipe off of high racks).
Reaching Below Shoulder	Frequency = Frequent e.g. Reaching: frequent reaching to low levels during the vast majority of job tasks.
Neck Motion - Flexion (look down) - Extension (look up) - Rotation (side turn)	Flexion: Max Duration = 5 seconds to several minutes (i.e. widely varying) Extension: Max Duration = 5 seconds to several minutes (i.e. widely varying) Rotation Max: Duration = 5 sec
Sitting	Max Portion of Shift = 5% of shift (when working in valve box, or when driving to / from work sites) Max Sustained Duration = 15 - 20 minutes

Standing / Walking	<p>Max Portion of Shift = 95% of shift (frequent to continuous, while performing a vast array of job demands that require workers to remain on their feet)</p> <p>Max Sustained Duration = 2.5 hours sustained (i.e. remaining on one's feet until break periods)</p>
Climbing Ladders / Stairs	<p>Ladders = climbing approx. 5 feet up ladder (rare, when using ladder to access irrigation controllers that are mounted in elevated positions on lamp-posts, hydro poles, etc.)</p> <p>Stairs = climbing one flight of stairs (rare)</p>
Bending / Stooping	<p>Max Duration = 15 minutes sustained bending (i.e. working on a single valve)</p> <p><i>Optional Bending Posture:</i> a worker may choose to assume a combined kneeling + bending posture while working on valves, for up to up to 1.5 hours sustained (Note: realistically there would be opportunities to <i>interrupt</i> this sustained posture; however, this would add time to overall task completion).</p> <p>Avg Duration = 10 minutes sustained bending (i.e. repairing pipe)</p> <p>Frequency = Frequent requirement for bending.</p> <p><i>Note: squatting / kneeling may be acceptable postural-substitutions for bending during certain Irrigation Technician job task scenarios. Alternating work-postures may also be a preferred option.</i></p>
Ground-Level Postures (i.e. Kneeling and/or Squatting)	<p>Not a mandatory job requirement for kneeling or squatting, as long as the worker is ... (a) physically able to get into and out of a prone-lying position, such as when accessing valve boxes situated below ground-level ... and ... (b) maintain this prone-lying position for potentially long durations.</p> <p><i>Optional <u>Kneeling</u> Posture:</i> a worker may choose to assume a combined kneeling + bending posture while working on valves, for up to up to 1.5 hours sustained (Note: realistically there would be opportunities to <i>interrupt</i> this sustained posture; however, this would add time to overall task completion).</p> <p><i>Optional <u>Squatting</u> Posture:</i> a worker may choose to assume a squatting posture while completing valve double-checks, for up to 10 minutes sustained (Note: realistically there would be opportunities to <i>interrupt</i> this sustained posture; however, this would add time to overall task completion).</p> <p>Frequency = Rare to frequent requirement for kneeling and/or squatting in various work task scenarios (i.e. the frequencies are directly dependent upon the work-postures selected by the worker).</p> <p><i>Note: bending may be an acceptable postural-substitution for kneeling or squatting during certain Irrigation Technician job task scenarios, depending upon each worker's preference. Alternating work-postures may also be a preferred option.</i></p>

Sweeping	Max Duration = 10 - 15 minutes sustained (rare)
	e.g. Sweeping during the following tasks: <ul style="list-style-type: none"> • using a push-broom to clean dirt off sidewalk upon completion of other Parks-related job tasks that involve digging.
Raking	Max Portion of Shift = 100% of shift (occasional, e.g. when back-filling trenches) Max Sustained Duration = 2.5 hours sustained (i.e. continuous raking of soil until break periods)
Shovelling	Max Portion of Shift = 100% of shift (occasional to frequent, e.g. cleaning out trench after trencher-machine has finished the initial dig-out process) Max Sustained Duration = 2.5 hours sustained (i.e. continuous shovelling until break periods)