



CANADIAN AGRICULTURAL  
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## NATIONAL OCCUPATIONAL ANALYSIS

Landscape Horticulturist

April 2008

This occupational analysis (also referred to as a national occupational standard) was developed by the Canadian Agricultural Human Resource Council (CAHRC) and industry professionals. It describes the skills, knowledge and abilities required to perform the duties of a Landscape Horticulturist. Occupational standards can be used for a variety of purposes, including: acting as the basis for training; curriculum development; accreditation of training programs; recruitment; performance improvement; career development and the certification of practitioners.

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## OBJECTIVES

The primary objectives of the National Occupational Analysis project are:

- To develop a revised national occupational analysis for Landscape Horticulturists that recognizes the needs of the industry;
- To integrate Essential Skills into the National Occupational Analysis;
- To communicate and market the National Occupational Analysis to the industry and other key stakeholders; and
- To gain industry buy-in and use of the analysis.

## USE OF THE STANDARDS

The National Occupational Analysis for Landscape Horticulturist may be used to support the following activities:

- Developing or revising basic and advanced training programs;
- Developing transition training programs to assist practitioners in achieving journey person status in the occupation;
- Establishing or improving certification or credentialing programs;
- Establishing or improving accreditation programs for institutions delivering training programs;
- Developing criteria for prior learning assessment and recognition;
- Developing policies that may assist the goal of worker mobility; and
- Providing guidance to employers for recruiting, selecting, training and retaining Landscape Horticulturists.

# GUIDE TO THE NATIONAL OCCUPATIONAL ANALYSIS

## Development of the National Occupational Analysis

The National Occupational Analysis (NOA) was developed and validated by industry professionals with extensive knowledge and experience in all sectors of the landscaping business, including production, installation, maintenance and retail sales.

In January 2008, an Occupational Analysis workshop was conducted in Toronto. A total of 20 industry stakeholders participated in these sessions.

The analysis was validated through industry consultations in February and March 2008. Feedback was solicited from industry associations, employers, and individual practitioners from across Canada.

Funds for this project were provided by the Government of Canada's Sector Council Program.

## Methodology

The method chosen for developing the NOA was the Canadian Vocational Association's DACUM (Developing A Curriculum) methodology, where highly skilled and experienced job incumbents attend a facilitated DACUM session. The key components of this methodology are:

- the occupational and task analysis results from a structured consultation with seasoned practitioners designated by industry;
- each competency statement reflects a consensus achieved by the committee of expert practitioners created to perform these analysis;
- the occupational analysis contains five levels of analysis:
  - (1) the occupation's definition and the scope
  - (2) General Areas of Competencies, or GAC, Blocks
  - (3) a series of tasks within each Block
  - (4) a series of subtasks or steps within each task
  - (5) technical knowledge and abilities needed to perform the subtasks;

- at least one Block is dedicated to Personal Competencies; and
- all Blocks and Task statements start with an action verb.

In addition, opinions on performance and occupational contexts for each task were collected and Essential Skills information was developed based on the responses of workshop participants.

## Validation

Industry representatives from across the country were asked to provide commentary on the draft NOA. Information was gathered using both an on-line and a paper-based survey tool.

The survey asked participants for some basic demographic information for analysis purposes:

- province(s) where participants work;
- sector(s) of the landscape industry (install, maintenance, production, retail, etc.) where participants work; and
- participant's job title.

Validation information representing individual provinces as follows:

British Columbia	11
Alberta	17
Saskatchewan	1
Ontario	24
Quebec	6
New Brunswick	13
Prince Edward Island	2
Nova Scotia	15
Newfoundland and Labrador	5
<b>Total</b>	<b>94</b>

Validation information representing various sectors of the industry as follows:

Participants – All Types of Work	82
Participants – Landscape Contracting and/or Construction	66
Participants – Landscape Maintenance	41
Participants – Nursery and/or Garden Centres	14
Participants – Landscape Design	20

### *Importance and Frequency Ratings*

The survey asked participants to carefully review the task from the perspective of a Landscape Horticulturist:

- On a scale of 1 (NOT important) to 5 (EXTREMELY important), how important is this task to the job of a Landscape Horticulturist?
- On a scale of 1 (Never) to 5 (Daily), estimate how frequently you perform the task.

Participants were also requested to provide task specific comments.

## GLOSSARY

The following terms are commonly used in this occupation, and are provided here as an aid to comprehension.

Accelerator	Any substance used to assist the decomposition of organic matter in the preparation of garden compost.
Acid Soil	Soil with a pH measure below 7, also called sour soil. Most soils in the eastern third of the United States, Canada and the West Coast are naturally acid.

Aeration	Introduction of air to compacted soil by mechanically removing plugs of topsoil. Aeration helps oxygen, water, fertilizer and organic matter to reach roots. Also, incorporating air into compost by turning the pile. Incorporating air into compost helps the plant material decompose more quickly.
Agronomy	Applied agricultural science dealing with rural economy and husbandry. In recent years, it has concentrated mainly in the theory and practice of crop production and soil management.
Alkaline Soil	Soils where limestone is present are usually alkaline. Acidic loving plants (Ericaceous Plants) such as Rhododendron and Mountain Laurel will need soil supplements to establish themselves successfully.
Amendments	Organic or mineral materials, such as peat moss, compost, and perlite, to name a few, that are used to improve the soil.
Annual	A plant that germinates, grows, flowers, produces seed and dies in the course of a single growing season.
Architectural Development Plan	This is a comprehensive plan that includes proposed and existing landscape features in conjunction with a new building or addition to an existing building.
Available Nutrient	That quantity of a nutrient element or compound in the soil that can be readily absorbed and assimilated by growing plants.
Bid	The proposed price to perform the work outlined on an accompanying plan or document. <i>See also Quote.</i>
Biennial	A plant sown one year to flower or fruit the next, then dying or being discarded. Many vegetables are biennial, but are treated as annuals and harvested in their first year before they have flowered.

Certified Horticultural Technician (CHT)	This person has passed a national certification by the Canadian Nursery Landscape Association (CNLA).	Deadhead	To remove old flowers to prevent seedpods from forming.
Certified Landscape Designer (CLD)	This person has passed a national certification by the CNLA.	Deciduous	Having leaves that fall at the end of a growing season.
Certified Landscape Professional (CLP)	This person has passed a national certification by the CNLA.	Design-Build Firm	A company that has Landscape Architects and/or Landscape Designers as well as Landscape Contractors on the staff. They work with the property owner to develop a landscape plan and then implement the plan themselves. If the scope of the work is extensive, they may hire outside specialty contractors to perform specialized tasks such as asphalt paving or swimming pool installation.
Chlorosis	A condition in plants resulting from the failure of chlorophyll to develop caused by a deficiency of an essential nutrient. Leaves of chlorotic plants range from light green through yellow to almost white.	Dieback	Progressive dying from the extremity of part of the plant.
Compost	Humus made by decomposing vegetative matter in a compost bin or pile.	Dormant	Alive but in a state of suspended animation until all conditions are right for growth.
Contract	A signed document that outlines the work to be performed by the installer and a schedule of payments to be made by the customer, and the circumstances under which the work will be done and payments will be made.	Drainage	The movement of water through the soil. With good drainage, water disappears from a planting hole in less than a few hours. If water remains standing overnight, drainage is poor.
Cool-season grasses	Grasses that thrive in northern areas, including Canada, and in high elevations in the South, such as blue grass or fescue.	Drip Irrigation	This is the practice of applying water slowly through various types of pipes, tubes or specialized hoses. The simplest form would be the use of soaker hoses commonly found in garden centers. More sophisticated systems can be installed by homeowners or irrigation contractors that are preset to go on by a computer.
Cross Pollination	The transfer of pollen from one plant variety to another.	Edging	A shallow trench or physical barrier of metal, wood, brick or synthetic material used to define the border between lawn turf and another area, such as paving or a flowerbed.
Crown	The part of a plant where the roots and stem meet, usually at soil level.	Endophytes	Fungi that live in some grasses (called endophytic) and make them harmful or deadly to a variety of above ground grass-eating insects.
Cultivars	A cultivated variety of plant, often bred for a desired trait, such as pest or disease resistance, flower color, fruit color and/or persistence, habit/size, foliage color/texture, etc.		
Damping-Off	A fungal disease that attacks seedlings, causing them to shrivel at the base. Damping-off is brought on by one of several fungi, including Pythium and Rhizoctonia, which thrive in stagnant air and high humidity.		

Estimate	The price to perform work that has been agreed to in principal. There may be no plan associated with an estimate. There may be unknown circumstances (such as physical underground features that cannot be accurately determined without extensive – and often expensive – exploration). The final price can vary according to these and/or other circumstances.
Exposure	The intensity, duration and variation in sun, wind and temperature that characterize any particular lawn or planting site.
Frost heave, frost heaving	A disturbance or uplift of soil, pavement or plants caused by moisture in the soil freezing and expanding.
Full Shade	A site that receives no direct sun during the growing season.
Full Sun	A site that receives at least eight hours of direct sun each day during the growing season.
Geotextile	<i>See Landscape Fabric.</i>
Grade	The degree and direction of slope on an area of ground.
Green Manure	Any crop that is grown expressly to be ploughed or dug under so as to improve the soil.
Ground Cover	A plant, such as ivy, Loire or juniper, used to cover the soil and form a continuous low mass of foliage. Often used as a substitute for turf grass, especially in shade, embankments, or other areas where turf grasses do not perform well or are difficult to maintain.
Hardiness	A plant's ability to survive the winter without protection from the cold. The temperature range in which a plant will grow and thrive. Cold is usually the main consideration; however, heat and humidity can also cause plants to fail.

Hardiness Zone	Typically, the regions where the coldest winter temperatures occur will determine the zone, such as 0 to 10. More recently, the heat and humidity are being considered as equally limiting and upper hardiness zones are beginning to be listed as well. Additionally, it should be noted that Zone 7 on the West Coast and Zone 7 on the East Coast are not the same climates due to humidity, rainfall, number of days below freezing, cloud cover, etc.
Hardscaping	The installation of non-plant features in the landscape. These include features such as: walls, walks, driveways, curbs, patios, pools, tennis courts, etc.
Heading Back	Also called stubbing, dehorning, or lopping. Main branches are cut to stubs with little regard for their location. Regrowth from below the cuts is dense, vigorous, and upright. The new shoots create a dense head and shade and are weakly attached. While this pruning method is often used to reduce the height of large trees, it is not recommended.
Heartwood	The nonliving inner core of wood, usually darker than sapwood.
Heat Zone	A region determined by the average annual number of days its temperatures climb above 86 degrees.
Herbaceous	Having no persistent woody stem above ground.
Herbicide	A chemical used to kill plants. Permanent herbicides, <i>pre-emergents</i> , are used to kill weed seeds as they sprout and thus to prevent weed growth. Post-emergent herbicides kill plants that are already growing.
Horticulture	The use and study all types of plants.
Horticulturist	Someone who has extensive knowledge of plants, their care and their requirements for survival.

Humus	Thoroughly decayed organic matter. Added to lawns gardens or beds, it will increase a soil's water-holding capacity, improve aeration and support beneficial microbial life in the soil.
Infection	The establishment of a parasite within a host plant.
Interiorscaping	The installation of plants and other features in enclosed spaces that are not subject to outdoor weather.
Invasive Species	A species that by its establishment and dominance can cause widespread harm to public health, an ecological system or an economic system.
Irrigation	This is the practice of applying supplemental water to plant and lawn areas. New regulations in most states require the computer that automatically turns on sprinklers or drip emitters to apply water only as needed based on recent rains. An exterior water meter sends the recent rainfall totals to the computer to help monitor the water needed so as not to waste water that does not need to be applied. It also helps the plants to prevent them from getting too much water that can often lead to disease and death.
Landscape	This is 'the lay of the land' which includes plants and other physical features such as lawn or meadow areas, waterways, pavement, utilities, structures, etc. Mistakenly used to refer only to planting in many instances.
Landscape Contractor	A firm that implements landscape plans prepared by Landscape Architects or Landscape Designers. They may bid on a job or work with the designer throughout the design process. Depending on their in-house expertise, they may hire sub-contractors to perform specialized tasks such as masonry, paving, carpentry, etc.

Landscape Design-Build Firm	Landscape Design-Build firms usually perform the work themselves using their own employees, although the use of outside sub-contractors is not uncommon. Landscape Architects and/or Landscape Designers are usually employed to do the designing. Often they are the firm's principals.
Landscape Designer	A person who has education and/or training in the design of residential and commercial properties. Jobs can include plantings, walkways, walls, water features, landscape lighting, fences, and other similar features. LDs are often employed by a design-build firm that does most of the work themselves. They may contract some tasks to other companies. They may have a Landscape Architecture degree from an accredited college. They are not registered Landscape Architects.
Landscape Fabric	A synthetic fabric that is usually water-permeable, it is spread under paths or mulch to serve as a weed barrier. Also known as geotextile.
Landscape Maintenance Contractor	An individual or firm that maintains landscapes in ways such as: 1) Lawn mowing or fertilizing; 2) Shrub and tree pruning; 3) Fertilizing and mulching of planting beds; 4) Integrated pest management for lawns and gardens.
Landscape Plan	A series of drawings used by a Landscape Contractor to complete the landscape portions of a project. There are often individual sheets for each of the specific landscape tasks, which could include: earthwork (cut and fill); paving for vehicular travel; pedestrian walks; retaining structures; building plans and locations; planting; etc. This term is often (and mistakenly) used to refer solely to the planting portion of a job.

Landscaping	A term that is very comprehensive and sometimes misleading. It is usually used to indicate only planting, instead of planting in conjunction with the installation other landscape features – walks, walls, patios, decks, etc.
Larva, Larvae (plural)	A young insect that hatches from the egg and differs fundamentally in form from the adult. A maggot, the larval stage of a fly, is a good example of this difference.
Lawn Restoration	Improving a lawn by a combination of fertilization, aeration, turf plug planting, and/or seeding without killing or removing all existing turf.
Lime, Limestone	A white or grayish mineral compound used to reduce soil acidity and to supply calcium for plant growth.
Loam	An ideal soil type for growing, loam contains an equal balance of sand, silt and clay. It has benefits of both clay and sand in that it will hold moisture and organic compounds, yet it is porous and will drain well.
Mass Planting	Filling an area with one or a few kinds of plants, such as ground covers, spaced closely together. Often planted to create a bold, dramatic effect or to reduce lawn maintenance.
Microclimate	Conditions of sun, shade, exposure, wind, drainage and other factors that affect plant growth at any particular site.
Mulch	A layer of bark, peat moss, compost, shredded leaves, hay or straw, lawn clippings, gravel, paper, plastic or other material spread over the soil around the base of plants. During the growing season, mulch can help retard evaporation, inhibit weeds and moderate soil temperature. In the winter, mulch of evergreen boughs, coarse hay or leaves is used to protect plants from freezing.

Native Plants	North American plants which grew in an ecosystem (or ecosystems) prior to 1492 AD. Pennsylvania native plants were a part of the climax coniferous forest ecosystems of the pre-Columbian mid-Atlantic region.
Node	A joint in plants from which leaves emerge.
Nutrients	Nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron and other elements needed by growing plants and supplied by minerals and organic matter in soil and by fertilizers.
Organic Matter	Plant and animal residues, such as leaves, trimmings and manure, in various stages of decomposition.
Ornamental Horticulture	The study of plants that are generally considered by most horticulturists to create beauty in a wide variety of circumstances. Plants commonly known as vegetables or weeds can, in certain circumstances, be ornamental, but are generally not thought of as being plants that are generally used for ornamental purposes.
Over seeding	Spreading seed over established turf that has been prepared for restoration.
Parasite	An organism that lives on or in another living organism (called a host). The parasite obtains its food supply from the host.
Pathogen	Any organism capable of causing disease.
Perennial	A plant that lives more than two years or three seasons and normally flowers annually. Many die down during the winter but the roots are unaffected by frost and new growth appears as the weather improves and the temperature rises.
Plugs	Young perennials or grasses used to cover large areas of beds or lawns; so-called because they are “plugged” into small holes drilled or dug into the soil.

Pollen	The powder produced by anthers, consisting of pollen grains. The male gametophyte is confined to the pollen grain. Each pollen grain contains two cells: the vegetative cell from which the pollen tube develops; and the generative cell which produces sperm.	Sod	Carpet like sheets of turf about ¾ inch thick, 1½ feet wide and approx. 6 feet long. Sheets may be laid over prepared soil to establish new lawns. Many types of grasses are available. More recently, wildflower sod is being grown for rapid establishment of meadows.
Pressure-treated lumber	Lumber treated under high pressure with chemicals that protect it from decay.	Species	A natural group of plants composed of individuals similar in structure and physiology capable of producing similar fertile offspring; usually including several minor variations (subspecies). Different in structure and/or physiology from other such groups and normally do not interbreed with them.
Proposal	The proposed contract between the installer and the client. It outlines the work and timing of that work to be performed by the installer and a schedule of payments to be made by the prospective client. It becomes a contract between the installer and the client when signed by both parties.	Spore	In fungi, the microscopic reproductive unit consisting of one or more cells; it is analogous to the seeds of green plants.
Quote	The proposed price to perform the work outlined on an accompanying plan or document. <i>See also Bid.</i>	Sprigs	Cut-up lengths of rhizomes or stolons (above and underground runners) that can be broadcast and pressed into the soil to establish new lawns.
Retaining Wall	A wall built to stabilize a slope and keep soil from sliding or eroding downhill.	Sprinkler Zone	A sprinkler zone is a single line of pipe with sprinkler heads attached controlled by a manual or electric valve. The valve provides water to all of the sprinkler heads fed by that zone.
Rhizome	Underground runners of some types of plants that extend laterally to create new plants. An underground stem. The rhizomes of grasses are usually slender and creeping.	Stolons	Aboveground runners from which some grasses, particularly warm season varieties, spread.
Sapwood	Living outer layers of wood, usually light in color.	Subsoil	A light-colour soil layer of varying consistencies found beneath the topsoil. It contains little or no humus.
Scalping	Removing an excessive quantity of functioning, green leaves at any one mowing; exposes crowns, stolons, dead leaves and even bare soil resulting in a shabby appearance.	Thatch	A mat like build-up of grass roots and stems (but not of grass blade clippings) that if too thick can inhibit healthy growth.
Seedling	A young plant grown from seed.		
Selective Pruning	Using pruning shears to remove or cut back the branches of woody plants.		

Tillers	Above ground side-shoots of some types of grass plants.
Tilth	The state of a soil, which makes it suitable to plant growth.
Top dressing	A prepared soil mix added to the turf surface; usually incorporated into the soil by raking or irrigating.
Trickle Irrigation	<i>See Drip Irrigation.</i>
Tuber	A short, thick, usually but not always subterranean stem or branch bearing buds or “eyes” and serving as a storage organ.
Warm-season grasses	Grasses that grow best in southern regions, thriving in the heat of summer, such as Bermuda or zoysia.
Weed	Any undesirable plant or grass species; any plant growing where you don’t want it.
Winter Annual	Germinates at the end of the summer and over winter as small dormant, but green plants. These plants usually complete their life cycle by the mid-summer.
Xeriscaping	The use and installation of plants that, once established, require little or no supplemental water to thrive. These are plants that are often found in desert areas, however, there are numerous indigenous plants throughout Canada that require minimal moisture to perform well during drought years.
Xylem	The principal strengthening and water/nutrient conducting tissue of branches, stems and roots. The wood of woody plants.

## SCOPE OF THE OCCUPATION

Landscape Horticulturists are skilled in all aspects of the landscaping industry. For the purposes of this occupational analysis, the title refers to individuals who are directly involved in or directly supervise landscaping activities. While numerous job titles commonly describe people in these positions, the title “Landscape Horticulturist” was deemed most suitable.

Landscape Horticulturists apply knowledge of soil and plant science and pest management in developing and maintaining interior and exterior landscape environments.

In addition to horticultural skill and knowledge, Landscape Horticulturists use skills from construction trades including carpentry, masonry and equipment operations, as well as mechanical and preventive maintenance skills, such as basic small engine mechanics.

Landscape Horticulturists may work as individuals, as part of a team, or they may supervise a team. Customer service and interpersonal skills are important.

The work of the Landscape Horticulturist covers all four seasons, although certain activities may be concentrated at certain times of the year. It is not unusual for Landscape Horticulturists to be employed in related work, including snow removal and general maintenance duties during certain times of the year.

Emerging trends in the industry include a proactive move to green construction practices, as well as an increased focus on environmentally sustainable practices, which require sound horticultural knowledge.

The landscape horticulturist is also expected to be aware of and apply regulations related to environmental, safety and labour standards compliance.

## SAFETY

Safety is of paramount importance in the landscaping industry, and Landscape Horticulturists are key in ensuring workplace safety. It is imperative that Landscape Horticulturists are aware of circumstances that may lead to injury or property loss. It is generally recognized that a safety conscious attitude and work practices contribute to a healthy, safe and accident-free working environment, and it is the responsibility of the Landscape Horticulturist to ensure the safety culture on the jobsite.

It is imperative that Landscape Horticulturists are very familiar with and apply occupational health and safety rules and best practices as an integrated part of their job functions. As well, it is essential to identify hazards and take necessary measures to protect oneself, co-workers, the public and the environment.

## SOIL AND PLANT SCIENCE

The importance of soil and plant science to the Landscape Horticulturist occupation cannot be overemphasized. It is the foundation upon which expertise in the observable tasks of the occupation is based, and as such, it underpins virtually every aspect of the job.

While it is true that “soil and plant science” is not a task in and of itself, the necessary knowledge and skills related to this vital occupational component have been included within the technical skills and knowledge for each task in the occupational standard.

## STRUCTURE OF THE NATIONAL OCCUPATIONAL ANALYSIS

To facilitate an understanding of the nature of this occupation, the work performed is divided into the following divisions:

<b>BLOCK</b>	The largest division within the analysis, it reflects a major function or responsibility of a particular occupation.
<b>TASK</b>	A specific, observable unit of work complete in itself (having a definite start and end point), which can be broken down into two or more steps (subtasks); can be performed in a limited period of time; when completed, results in a product, service or decision; and is something a worker is normally paid to do.
<b>Occupational Context</b>	Defines the parameters of the task and provides additional information to amplify the nature of the task.
<b>Performance Context</b>	Descriptors for the observable conditions when correct performance of a task is in evidence.
<b>SUBTASK</b>	The smallest division into which it is practical to subdivide any work activity, and, combined with others, fully describes all duties constituting a task.
<b>Supporting Technical Knowledge and Abilities</b>	The elements of skill and knowledge an individual must acquire to adequately perform the subtask.
<b>Level of Learning (Bloom)</b>	<p>The required level of learning for supporting knowledge and abilities, per Bloom's Taxonomy. The taxonomy recognizes six different levels of processing thought. These levels relate directly to rigor and complexity in thinking and learning, and are provided as guidance to training providers and instructional designers:</p> <ul style="list-style-type: none"><li>• <b>Level 1: Knowledge</b> – ability to recall information</li><li>• <b>Level 2: Comprehension</b> – ability to understand information and grasp its meaning</li><li>• <b>Level 3: Application</b> – the ability to use ideas in particular situations</li><li>• <b>Level 4: Analysis</b> – the ability to break down information into its parts</li><li>• <b>Level 5: Synthesis</b> – the ability to put parts of information together to form new knowledge</li><li>• <b>Level 6: Evaluation</b> – the ability to make judgements about the value of methods or materials for a given purpose</li></ul>

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**Essential Skills**

Essential Skills are foundation skills required for all types of work. They are not technical skills but the core skills people need to acquire knowledge and complete workplace tasks and daily activities. They are included in the NOA as guidance for training providers and instructional designers to identify potential academic upgrading needs and related training.

Essential Skills are defined as Reading Text, Document Use, Writing, Numeracy, Oral Communication, Thinking Skills (includes Problem Solving, Decision Making, Critical Thinking, Job Task Planning and Organizing, Finding Information, and Significant Use of Memory), Computer Use, Working With Others, and Continuous Learning.

Tasks within the NOA have a list of the key essential skills. Only the highest complexity level of use required to complete the particular task is shown.

*See Appendix C for a detailed essential skills profile of Landscape Horticulturists. See Appendix D for detailed descriptions of the nine Essential Skills.*

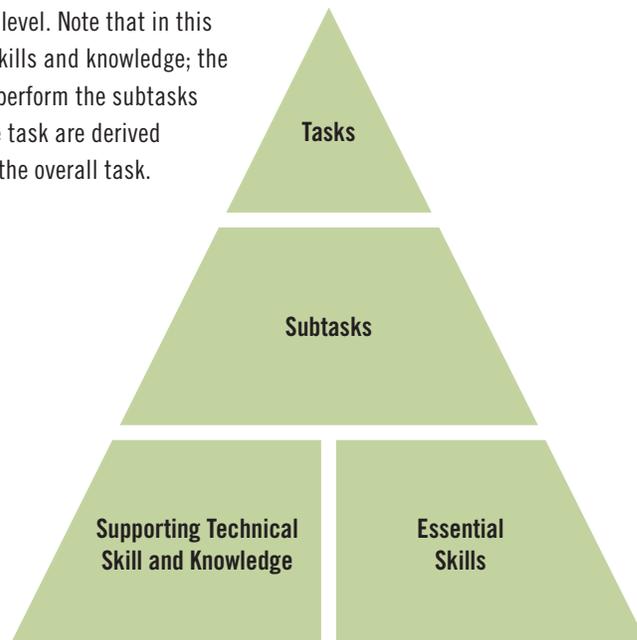
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**Personal and Professional Attributes**

Describes the generic personality attributes desirable for individuals in an occupation. They are useful for describing characteristics of the type of individual required for recruiting, retention and advancement in an occupation.

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These elements combine to form a “Pyramid of Competency” at the Task level. Note that in this model, Essential Skills are not subordinate to the supporting technical skills and knowledge; the two elements support each other and underpin an individual’s ability to perform the subtasks that make up a task. Note also that the performance requirements of the task are derived from the abilities at the subtask level, when performed in the context of the overall task.



## OCCUPATIONAL ANALYSIS

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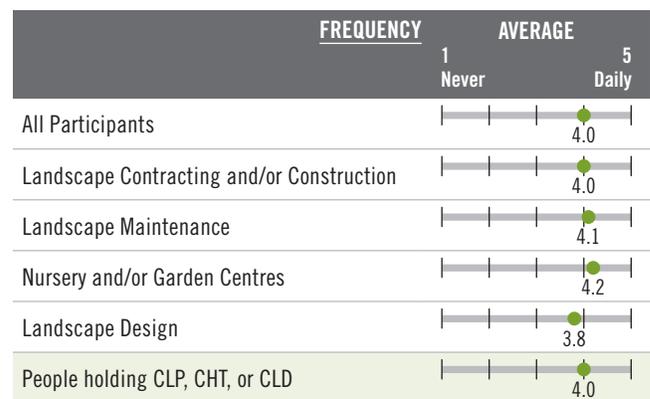
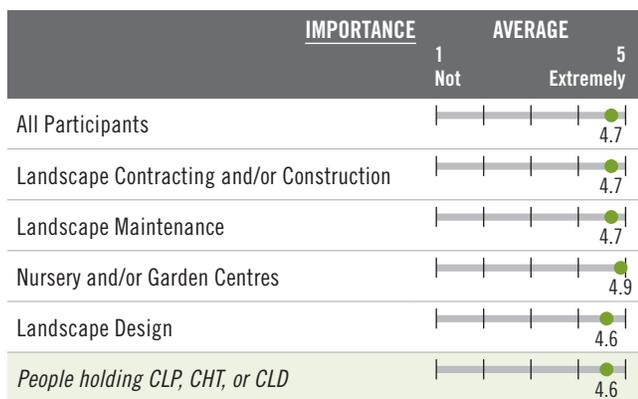
***Note:** The occupational analysis encompasses the entire scope of the Landscape Horticulturist occupation. Not every task or subtask will be performed by every Landscape Horticulturist on every project, and some variation may exist across sectors of the industry or in particular regions.*

## BLOCK A: COMPLY WITH WORKPLACE REGULATIONS

### Task A1: Maintain Safe Worksite

**Occupational Context:** Landscape Horticulturists need sufficient knowledge of safety regulations and policies to spot potential issues and incidents before they turn into accidents. The Landscape Horticulturist must be able to judge when it is appropriate to stop work and/or seek the advice of specialists or more senior people.

**Performance Context:** When a Landscape Horticulturist is performing this task correctly, there are few if any reportable incidents or accidents, work is being accomplished, and workers are in compliance with all applicable safety rules and regulations.



SUBTASKS			
A1.01	Review occupational health and safety (OH&S) regulations	A1.03	Ensure crew compliance with OH&S regulations, employer policies, and site-specific procedures
A1.02	Brief crew/sub-contractors on OH&S regulations	A1.04	Document safety infractions and incidents

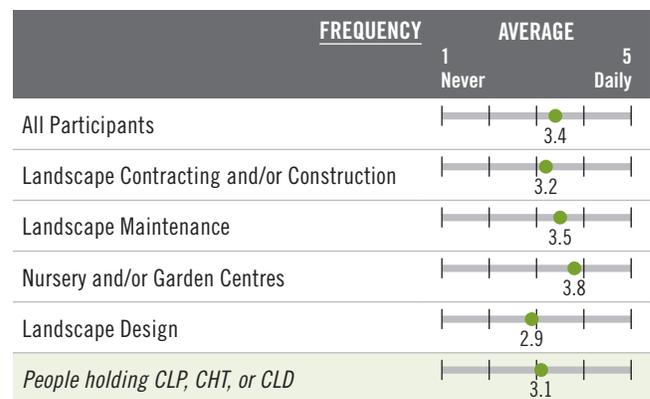
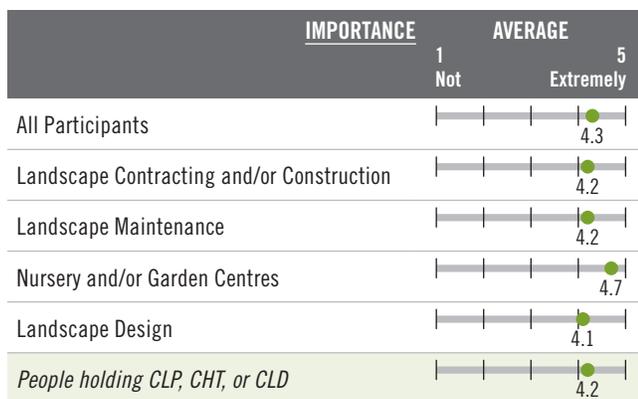
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>May read safety audit and hazard assessment reports</li> <li>Read their organization's safety policies and procedures for accident prevention</li> <li>Read and interpret regulations for OH&amp;S</li> </ul>
Oral Communication	2	<ul style="list-style-type: none"> <li>Lead worksite and safety meeting</li> <li>Seek advice from senior people</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Complete forms and checklists such as site safety, incident and accident reports</li> </ul>
Critical Thinking	2	<ul style="list-style-type: none"> <li>Judge the safety of jobsites and practices and quality of equipment</li> </ul>
Writing	2	<ul style="list-style-type: none"> <li>Write details of incidents such as safety breaches in reports</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of OH&S regulations and accident prevention procedures	3
• Ability to provide effective crew briefings	2
• Ability to detect OH&S infractions or potential infractions	3
• Ability to intervene in unsafe situations	3
• Ability to assess OH&S risk on the job	3
• Knowledge of company policies and procedures for accident prevention	2
• Knowledge of company formats and protocols for incident reporting/logging	3
• Ability to keep accurate records of relevant information related to OH&S	3

## Task A2: Ensure Compliance with Environmental Regulations

**Occupational Context:** Landscape Horticulturists need sufficient knowledge of environmental regulations and policies to spot potential environmental issues and incidents before they turn into major problems. The Landscape Horticulturists need to know when it is appropriate to stop work and/or seek the advice of specialists or more senior people. The Landscape Horticulturist must act to minimize the impact of environmental incidents that do occur.

**Performance Context:** If the task is being performed correctly, there are few incidents or violations, and any that do occur are reported promptly and dealt with efficiently and effectively by the crew.



SUBTASKS			
A2.01	Review federal environmental regulations	A2.07	Apply proper leachate controls
A2.02	Review provincial environmental regulations	A2.08	Monitor surface water drainage
A2.03	Review municipal environmental regulations	A2.09	Monitor for erosion prevention
A2.04	Review company environmental policy and procedure	A2.10	Implement erosion control measures
A2.05	Respond to spills	A2.11	Monitor dangerous chemical use and storage
A2.06	Ensure spill containment equipment is in place	A2.12	Transport dangerous materials appropriately

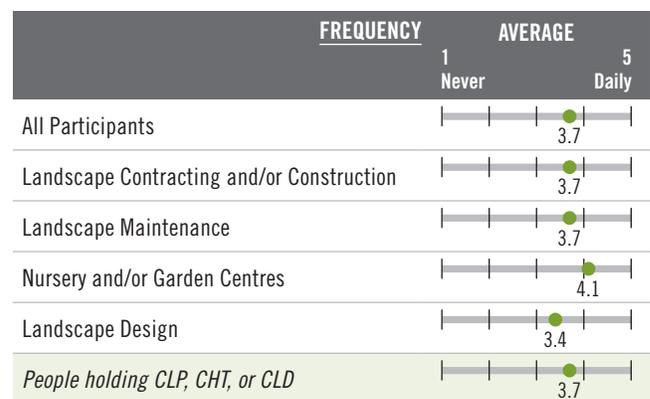
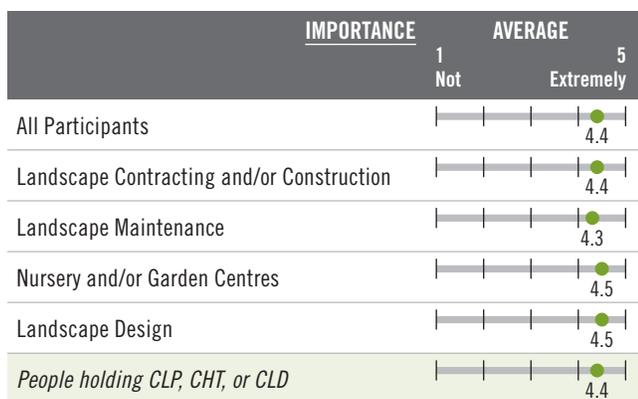
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read and interpret government regulations and company policies for chemical use, storage and transport, and spill management protocols</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate data from WHMIS and other technical data sheets</li> <li>• Complete forms and checklists such as environmental incident reports</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Seek advice from supervisors and managers</li> <li>• Speak with their crew and other people to co-ordinate hazard containment</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Evaluate the safety of worksites</li> <li>• Identify when contamination has occurred and assess levels of damage</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Choose methods for spill management, hazard containment and erosion control</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of federal environmental regulations applicable to the task	3
• Knowledge of provincial environmental regulations applicable to the task	3
• Knowledge of municipal environmental regulations applicable to the task	3
• Knowledge of company environmental policy	3
• Knowledge of spill management protocols	3
• Ability to use spill management kit	3
• Knowledge of water/soil contamination factors	2
• Ability to assess risk of contamination	3
• Ability to assess erosion risk	3
• Knowledge of erosion management protocols	2
• Ability to apply erosion management protocols	3
• Ability to assess runoff for contamination	3
• Knowledge of WHMIS procedures	2
• Knowledge of company policies and procedures related to chemical use, storage and transport	2
• Ability to assess requirements for Personal Protective Equipment	3

## Task A3: Ensure Compliance with Municipal Bylaws and Ordinances

**Occupational Context:** Landscape Horticulturists are subject to a wide variety of municipal bylaws and regulations that affect the way that work is performed. This could include site layout, parking and site access rules, noise bylaws, etc. At a minimum, a Landscape Horticulturist must ensure a compliant worksite, and know when it is necessary to refer issues to more senior managers.

**Performance Context:** If the task is being performed correctly, there are few incidents or violations with respect to bylaws and ordinances, and any that do occur are reported promptly and dealt with efficiently and effectively by the crew.



SUBTASKS			
A3.01	Assess site conditions	A3.04	Brief subordinates on site-specific compliance issues
A3.02	Review bylaw requirements	A3.05	Monitor site for compliance
A3.03	Plan work to ensure compliance	A3.06	Document incidents

ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	3	<ul style="list-style-type: none"> <li>Read and interpret municipal bylaws and ordinances</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>Evaluate worksite conditions for compliance to regulations and requirements</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Complete site safety plans and hazard, incident and accident reports</li> <li>Review drawings to verify designs meet regulations and specifications</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>Receive instructions and seek advice from supervisors and managers</li> <li>Provide direction and instructions to their crew and other people</li> </ul>
Writing	2	<ul style="list-style-type: none"> <li>Write details of incidents such as non-compliance to bylaw requirements</li> </ul>
Finding Information	2	<ul style="list-style-type: none"> <li>Find local ordinances applying to current landscaping projects</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
<ul style="list-style-type: none"> <li>Knowledge of municipal bylaw requirements as pertains to scope of work</li> </ul>	2
<ul style="list-style-type: none"> <li>Ability to apply knowledge of regulations to various project sites, scope of work</li> </ul>	3
<ul style="list-style-type: none"> <li>Ability to recognize infractions</li> </ul>	3
<ul style="list-style-type: none"> <li>Ability to intervene to prevent or mitigate infractions</li> </ul>	3
<ul style="list-style-type: none"> <li>Ability to document incidents and infractions</li> </ul>	3

## Task A4: Ensure Compliance with Labour Standards and Laws

**Occupational Context:** The landscaping industry is subject to a wide variety of laws, standards and regulations related to labour and human rights, and the Landscape Horticulturist needs a basic understanding of all of these elements. At a minimum, Landscape Horticulturists must be able to ensure a respectful and effective worksite, and know when it is necessary to refer issues to more senior managers.

**Performance Context:** When this task is being performed correctly, crew members can be observed to be working together effectively without tension or strained relations. There are no instances of harassment, discrimination or other violations of human rights and labour standards laws.

	IMPORTANCE	AVERAGE
	1 Not	5 Extremely
All Participants		4.5
Landscape Contracting and/or Construction		4.5
Landscape Maintenance		4.5
Nursery and/or Garden Centres		4.7
Landscape Design		4.5
<i>People holding CLP, CHT, or CLD</i>		4.5

	FREQUENCY	AVERAGE
	1 Never	5 Daily
All Participants		3.9
Landscape Contracting and/or Construction		4.0
Landscape Maintenance		3.9
Nursery and/or Garden Centres		4.5
Landscape Design		4.0
<i>People holding CLP, CHT, or CLD</i>		4.0

SUBTASKS			
A4.01	Comply with established laws related to workplace standards (human rights, labour and other workplace standards)	A4.03	Report incidents to senior managers
A4.02	Monitor for workplace incidents		

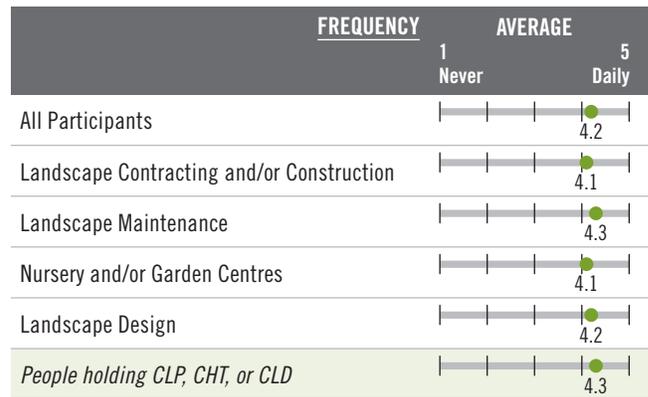
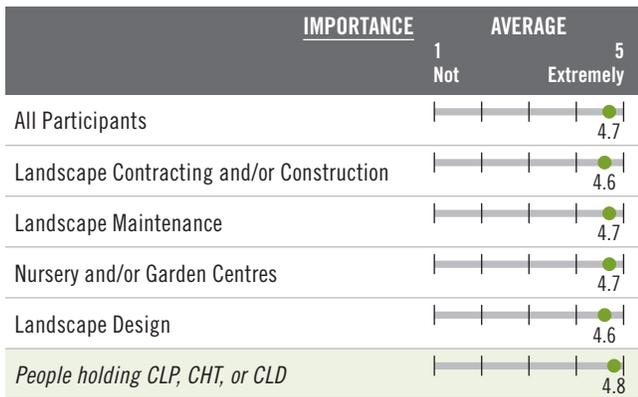
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>Read and interpret laws, regulations and standards related to the workplace such as labour standards for hours of work and legislation for harassment</li> <li>Read collective agreements</li> </ul>
Decision Making	2	<ul style="list-style-type: none"> <li>Choose to issue disciplinary warnings to crew and infraction reports to sub-contractors</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Complete forms to track incidents, infractions and progressive disciplinary actions</li> </ul>
Writing	3	<ul style="list-style-type: none"> <li>Write descriptions and details about infractions in reports</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
<ul style="list-style-type: none"> <li>Basic familiarity with human rights legislation, including harassment</li> </ul>	2
<ul style="list-style-type: none"> <li>Basic familiarity with labour standards, including hours of work legislation</li> </ul>	2
<ul style="list-style-type: none"> <li>Knowledge of work rules including progressive discipline</li> </ul>	2
<ul style="list-style-type: none"> <li>Knowledge of collective agreements</li> </ul>	2
<ul style="list-style-type: none"> <li>Ability to document incidents and infractions</li> </ul>	3

## Task A5: Ensure Compliance with Company Policies and Standards

**Occupational Context:** Landscape Horticulturists are key to the effective implementation of a company’s human resource and management policies at the front line. They need a thorough understanding of company and/or jobsite specific policies to ensure a safe, productive and effective workplace. They must set the example with respect to compliance, ensure that their crew follows established procedures, and be ready to refer issues to more senior managers when and if appropriate.

**Performance Context:** When this task is being performed correctly, the result is a safe, productive crew working harmoniously to achieve tasks. Landscape Horticulturists set the example for the crew, demonstrating strict adherence to company and/or site policies. If questioned, the Landscape Horticulturist is able to articulate the business reasons for policies as well as the implications if they are not followed.



SUBTASKS			
A5.01	Follow established policies	A5.04	Administer collective agreements
A5.02	Monitor for violations of established policies (such as safe vehicle operations, cell phone use, safe work practices, substance abuse, etc.)	A5.05	Enforce work rules
A5.03	Report incidents		

ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	3	<ul style="list-style-type: none"> <li>• Read and integrate company policies and procedures for workplace behaviours</li> <li>• Read and interpret collective agreements</li> </ul>
Critical Thinking	2	<ul style="list-style-type: none"> <li>• Assess the performance and behaviours of workers</li> </ul>
Finding Information	2	<ul style="list-style-type: none"> <li>• Gather information about company resources and services</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Complete tracking forms such as incident and infraction reports</li> </ul>
Writing	3	<ul style="list-style-type: none"> <li>• Write descriptions and details about incidents in reports</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Choose to stop work, reassign tasks and enforce work rules to prevent damage to facilities or injury to workers</li> </ul>

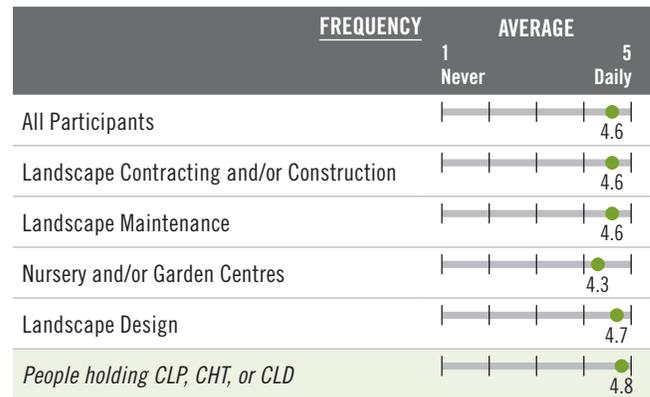
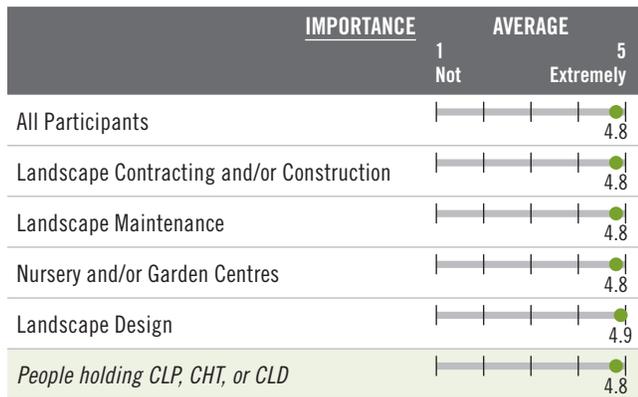
SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
<ul style="list-style-type: none"> <li>• Knowledge of company policies and procedures related to workplace behaviour</li> </ul>	2
<ul style="list-style-type: none"> <li>• Knowledge of company work rules</li> </ul>	2
<ul style="list-style-type: none"> <li>• Knowledge of the collective agreement</li> </ul>	2
<ul style="list-style-type: none"> <li>• Ability to apply company policies in the workplace</li> </ul>	3
<ul style="list-style-type: none"> <li>• Knowledge of company resources and processes to access aid</li> </ul>	2
<ul style="list-style-type: none"> <li>• Ability to document infractions in accordance with company policies</li> </ul>	3

## BLOCK B: OPERATE LANDSCAPING TOOLS AND EQUIPMENT

### Task B1: Use Hand Tools

**Occupational Context:** The Landscape Horticulturist utilizes a variety of hand tools in the safe and effective accomplishment of tasks. (See Appendix B for tool and equipment list.)

**Performance Context:** When the task is being performed correctly, appropriate hand tools are being used and maintained safely and properly.



SUBTASKS			
B1.01	Assess safety requirements	B1.05	Use tools in accordance with manufacturer's specifications and/or accepted trade practices
B1.02	Assess job requirements	B1.06	Maintain tools in accordance with manufacturer's specifications and/or accepted trade practices
B1.03	Select appropriate tool	B1.07	Store tools safely
B1.04	Select appropriate personal protection equipment (PPE)		

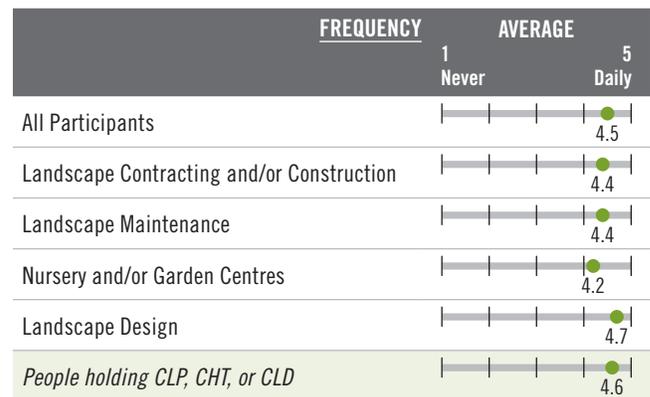
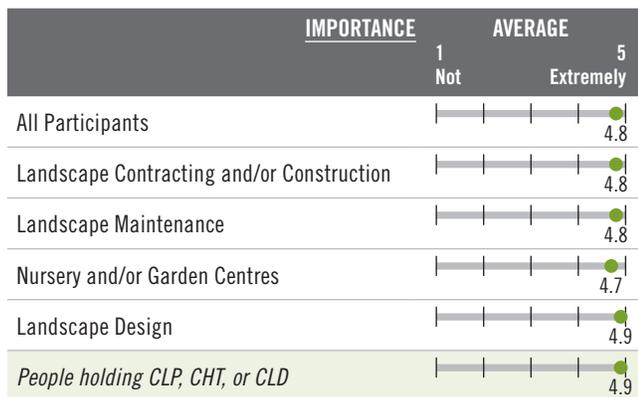
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	3	<ul style="list-style-type: none"> <li>Read instruction manuals for hand tools</li> <li>Read instructions on work orders and landscape drawings</li> </ul>
Critical Thinking	2	<ul style="list-style-type: none"> <li>Judge the safety of jobsites and quality of hand tools</li> </ul>
Decision Making	2	<ul style="list-style-type: none"> <li>Select appropriate hand tools and personal protective devices considering safety requirements, materials being used and project specifications</li> <li>Choose to complete approved maintenance activities to prevent damage to tools and injuries to workers</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Complete maintenance and equipment inspection forms</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
<ul style="list-style-type: none"> <li>Knowledge to select proper tool for task</li> </ul>	2
<ul style="list-style-type: none"> <li>Knowledge of safe tool use</li> </ul>	2
<ul style="list-style-type: none"> <li>Knowledge of personal protective equipment (PPE) required</li> </ul>	2
<ul style="list-style-type: none"> <li>Ability to physically use tools safely</li> </ul>	3
<ul style="list-style-type: none"> <li>Knowledge of safe tool storage</li> </ul>	2

## Task B2: Use Power Tools

**Occupational Context:** The Landscape Horticulturist utilizes a variety of power tools in the safe and effective accomplishment of tasks. (See Appendix B for tool and equipment list.)

**Performance Context:** When the task is being performed correctly, appropriate power tools are being used and maintained safely and properly.



SUBTASKS			
B2.01	Assess safety requirements	B2.05	Use power tools in accordance with manufacturer's specifications and/or accepted trade practices
B2.02	Assess job requirements	B2.06	Maintain power tools in accordance with manufacturer's specifications and/or accepted trade practices
B2.03	Select appropriate power tool	B2.07	Store power tools safely
B2.04	Select appropriate personal protective equipment (PPE)		

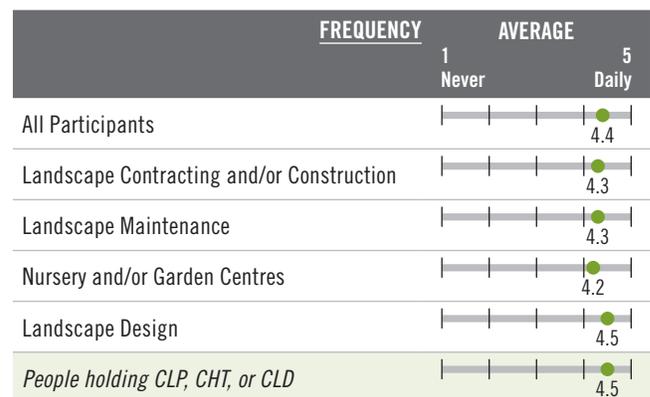
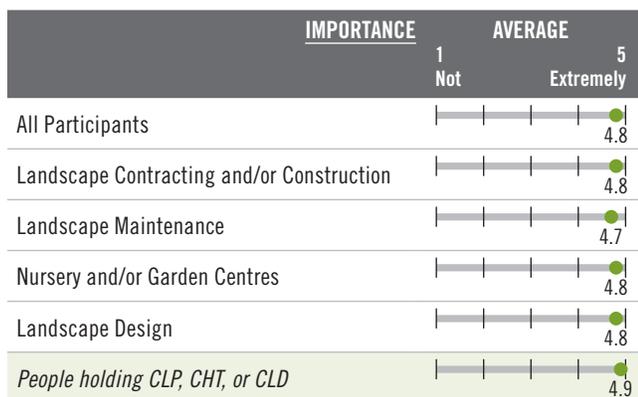
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	3	<ul style="list-style-type: none"> <li>Read instruction manuals for power tools</li> <li>Read instructions on work orders and landscape drawings</li> </ul>
Critical Thinking	2	<ul style="list-style-type: none"> <li>Judge the safety of jobsites and quality of power tools</li> </ul>
Decision Making	2	<ul style="list-style-type: none"> <li>Select appropriate power tools and personal protective devices considering safety requirements, materials being used and project specifications</li> <li>Choose to complete approved maintenance activities and to shut down power tools to prevent damage to tools and injury to workers</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Complete maintenance and inspection forms</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
<ul style="list-style-type: none"> <li>Knowledge to select proper tool for task</li> </ul>	2
<ul style="list-style-type: none"> <li>Knowledge of safe tool use</li> </ul>	2
<ul style="list-style-type: none"> <li>Knowledge of personal protective equipment (PPE) required</li> </ul>	2
<ul style="list-style-type: none"> <li>Ability to physically use tools safely</li> </ul>	3
<ul style="list-style-type: none"> <li>Knowledge of safe tool storage</li> </ul>	2

## Task B3: Operate Self-Propelled Equipment

**Occupational Context:** The Landscape Horticulturist may utilize a variety of self-propelled equipment in the safe and effective accomplishment of tasks. This may include riding mowers, tractors, compactors, excavators, vehicles, etc. (See Appendix B for tool and equipment list.)

**Performance Context:** When the task is being performed correctly, appropriate self-propelled equipment is being used and maintained safely and properly.



SUBTASKS			
B3.01	Assess safety requirements	B3.06	Select appropriate personal protective equipment (PPE)
B3.02	Assess site conditions	B3.07	Operate equipment in accordance with manufacturer's specifications, company policies and/or accepted trade practices
B3.03	Review scope of work and site controls	B3.08	Maintain equipment in accordance with manufacturer's specifications, company policies and/or accepted trade practices
B3.04	Assess job requirements	B3.09	Store and protect equipment on the site
B3.05	Select appropriate equipment		

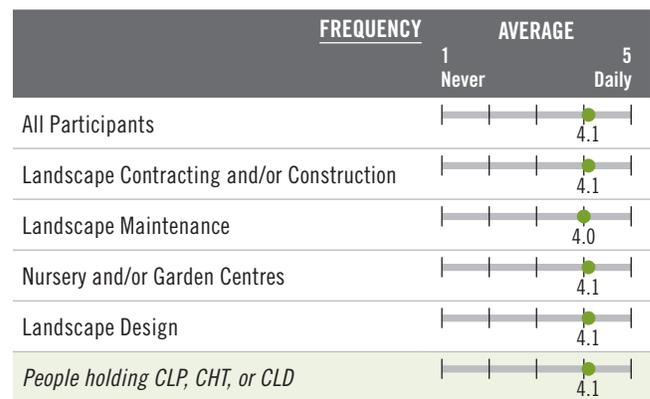
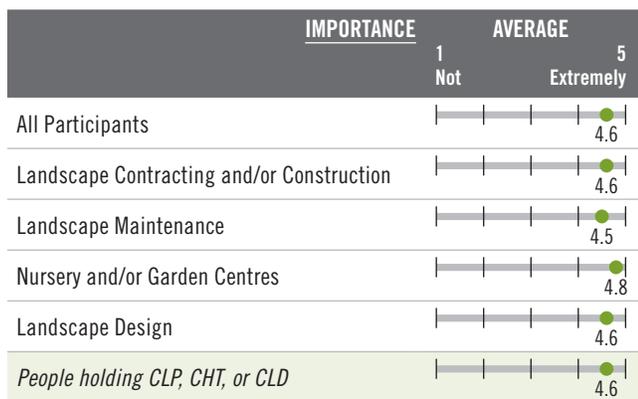
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	3	<ul style="list-style-type: none"> <li>Read instruction manuals for self-propelled equipment</li> <li>Read specifications and instructions for site controls on work orders and drawings</li> <li>Read company policies and procedures for equipment use</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>Evaluate the safety of jobsites and quality of equipment</li> </ul>
Decision Making	2	<ul style="list-style-type: none"> <li>Select appropriate equipment and personal protective devices considering safety requirements, materials being used and project specifications</li> <li>Choose to complete approved maintenance activities and to shut down equipment to prevent damage to equipment and facilities and injury to workers</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Complete maintenance and equipment inspection forms</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge to select proper piece of equipment for task	2
• Knowledge of safe equipment use	2
• Knowledge of personal protective equipment (PPE) required	2
• Ability to physically use equipment safely	3
• Knowledge of safe equipment storage	2

## Task B4: Operate Equipment Attachments

**Occupational Context:** The Landscape Horticulturist utilizes a variety of equipment attachments in the safe and effective accomplishment of tasks. This could include powered and unpowered attachments such as augers, seeders, harrows, shovels, etc. attached to self-propelled equipment. (See Appendix B for tool and equipment list.)

**Performance Context:** When the task is being performed correctly, appropriate equipment attachments are being used and maintained safely and properly.



SUBTASKS			
B4.01	Assess safety requirements	B4.06	Select appropriate personal protective equipment (PPE)
B4.02	Assess site conditions	B4.07	Operate equipment attachments in accordance with manufacturer's specifications, company policies and/or accepted trade practices
B4.03	Review scope of work and site controls	B4.08	Maintain equipment attachments in accordance with manufacturer's specifications, company policies and/or accepted trade practices
B4.04	Assess job requirements	B4.09	Store and protect equipment attachments on the site
B4.05	Select appropriate equipment attachments		

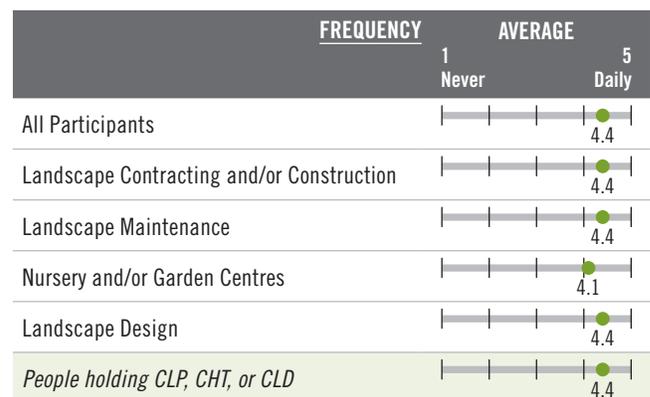
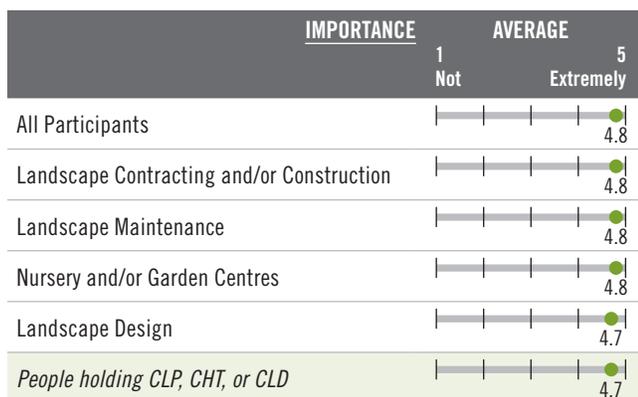
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	3	<ul style="list-style-type: none"> <li>Read instruction manuals for equipment attachments</li> <li>Read instructions for site controls on work orders and landscape drawings</li> </ul>
Critical Thinking	2	<ul style="list-style-type: none"> <li>Judge the safety of jobsites and quality of equipment attachments</li> </ul>
Decision Making	2	<ul style="list-style-type: none"> <li>Select appropriate equipment attachments and personal protective devices considering safety requirements, materials being used and project specifications</li> <li>Choose to complete approved maintenance activities and to stop using attachments to prevent damage to equipment and facilities and injury to workers</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Complete maintenance and equipment inspection forms</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
<ul style="list-style-type: none"> <li>Knowledge to select proper attachment for task</li> </ul>	2
<ul style="list-style-type: none"> <li>Knowledge of safe equipment and attachment use</li> </ul>	2
<ul style="list-style-type: none"> <li>Knowledge of personal protective equipment (PPE) required</li> </ul>	2
<ul style="list-style-type: none"> <li>Ability to physically use equipment and attachments safely</li> </ul>	3
<ul style="list-style-type: none"> <li>Knowledge of safe equipment and attachment storage</li> </ul>	2

## Task B5: Transport Equipment

**Occupational Context:** The reality of the landscape industry is that equipment used for projects must be moved from company premises to client locations in order to perform the work. Travel to the worksite may constitute the largest safety hazard on a given job.

**Performance Context:** When performed correctly, there are no incidents, violations or infractions. Equipment arrives on the jobsite on time and in working order.



SUBTASKS			
B5.01	Assess safety requirements	B5.05	Secure equipment in accordance with regulations and specifications
B5.02	Select appropriate personal protective equipment (PPE)	B5.06	Transport equipment in accordance with traffic rules
B5.03	Inspect trailers for compliance with transport regulations	B5.07	Unload equipment at destination
B5.04	Load equipment for transport		

ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>Read and apply provincial regulations and company policies and procedures to load, secure loads, transport and unload equipment</li> </ul>
Document Use	2	<ul style="list-style-type: none"> <li>Complete equipment transportation checklists to verify inspections were done and safety requirements met</li> </ul>
Oral Communication	2	<ul style="list-style-type: none"> <li>Maintain ongoing discussions with crew and others to load and unload equipment</li> </ul>
Critical Thinking	2	<ul style="list-style-type: none"> <li>Assess the quality of procedures completed to verify requirements were met</li> </ul>

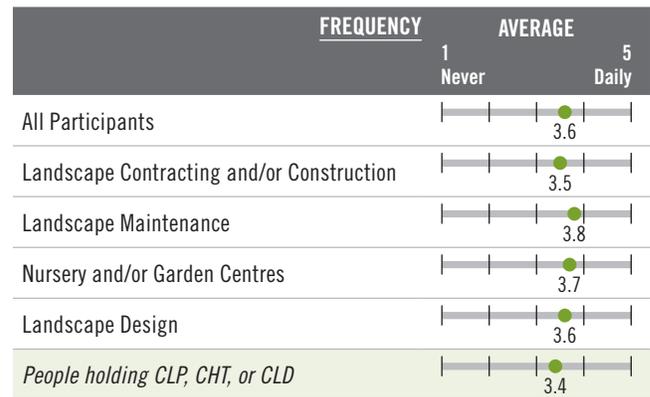
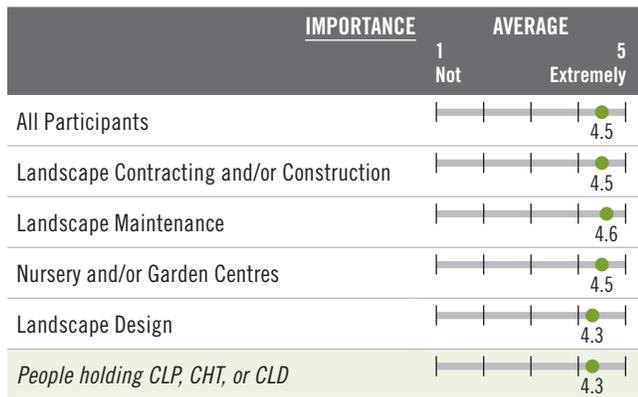
SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
<ul style="list-style-type: none"> <li>Knowledge of provincial regulations – weight, load, securing loads, safe transport of equipment, etc.</li> </ul>	2
<ul style="list-style-type: none"> <li>Knowledge of safe loading, transporting and off loading procedures</li> </ul>	2
<ul style="list-style-type: none"> <li>Ability to execute safe loading, transporting and off loading of equipment</li> </ul>	3
<ul style="list-style-type: none"> <li>Knowledge of regulations related to trailer maintenance and serviceability rules</li> </ul>	2
<ul style="list-style-type: none"> <li>Ability to inspect loads and trailers for compliance</li> </ul>	3

## BLOCK C: INSTALL SOFTSCAPE

### Task C1: Install Turf from Seed

**Occupational Context:** Large areas requiring grass are often seeded. The Landscape Horticulturist must be able to take all steps necessary to grow turf from seed successfully.

**Performance Context:** When performed correctly, healthy new grass grows where required in an appropriate timeframe.



SUBTASKS			
C1.01	Review plans and specifications	C1.12	Interpret results of soil tests
C1.02	Ensure appropriate tools, equipment and materials are on site	C1.13	Amend soil as required
C1.03	Recognize and mark hazards	C1.14	Select appropriate turf varieties
C1.04	Identify utility locates	C1.15	Select propagation method
C1.05	Orient crew to site and scope of work	C1.16	Grading and preparing seedbed
C1.06	Co-ordinate sub-trades	C1.17	Apply seed
C1.07	Review drainage requirements	C1.18	Protect seed from erosion and animals
C1.08	Assess site drainage	C1.19	Ensure adequate irrigation
C1.09	Secure site for environmental impact (erosion, runoff, etc.)	C1.20	Monitor plant health and growth
C1.10	Protect existing gardens, trees and structures including root zones	C1.21	Over seed turf as required
C1.11	Perform soil tests		

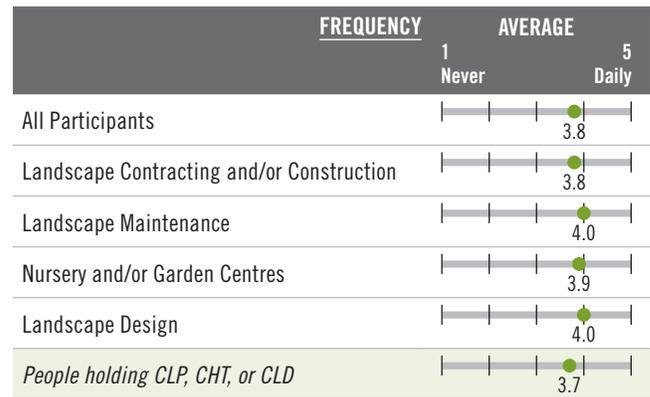
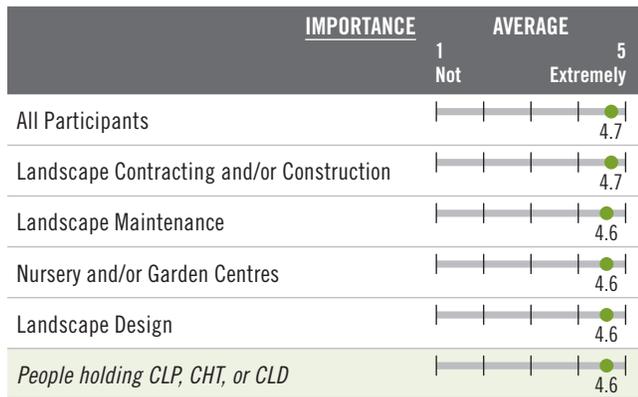
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders</li> <li>• Read comments and instructions in Environmental Health and Safety (EH&amp;S) reports</li> <li>• Read and apply IPM principles and company policies and procedures for site assessment, safety, chemical use, and quality standards</li> <li>• Read textbooks and manuals about plant and soil sciences</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the quality of soil and growing environment and the health of turf</li> <li>• Assess the effectiveness of techniques and approaches to treat damaged and diseased turf and amend soil</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Choose seed varieties</li> <li>• May select methods to amend soils and maintain turf</li> <li>• Choose methods and materials to protect existing structures and secure areas from environmental impact</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate details about seeds such as required growing conditions on labels</li> <li>• Locate product codes, material quantities and instructions on work orders</li> <li>• Examine pictures and tables to locate data about pests and diseases</li> <li>• Make entries in logs and tables to record details about turf and tasks completed to maintain turf, to note concerns and to verify that requirements were met</li> <li>• Review plans and specifications to locate utilities, structures and hazards, to understand the layout of worksites and to locate dimensions and other features</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Numeracy – Data Analysis	3	<ul style="list-style-type: none"> <li>• May collect and analyze data for variables such as diseases, pests and treatments in lawns, rainfalls and soil acidity</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>• Calculate weights and liquid volumes to prepare mixtures and solutions</li> <li>• Measure and calculate distances and angles to determine drainage requirements, install drain systems and geotextiles and grade sites to specifications</li> <li>• Take various precise measurements. For example, they may take precise site measurements using laser distance and height instruments</li> </ul>
Problem Solving	2	<ul style="list-style-type: none"> <li>• Resolve unexpected difficulties such as the discovery of big boulders and tree stumps</li> </ul>
Finding Information	2	<ul style="list-style-type: none"> <li>• Search a wide range of sources including textbooks, trade publications, scientific journals and suppliers' websites for information about turf and turf maintenance</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of locate indicators	2
• Ability to communicate and lead crew to complete scope of work	3
• Knowledge of safe worksite standards	2
• Knowledge of basic management and leadership theories	2
• Ability to grade sites to ensure satisfactory drainage (per plan)	3
• Ability to perform site layout according to plan	3
• Ability to determine soil needs	3
• Knowledge of turf variety best suited to application	3
• Knowledge of turf seeding standards and practices	2
• Knowledge of seed bed establishment practices	2
• Ability to monitor plant health	3
• Knowledge of plant science applicable to lawns	2
• Knowledge of soil science applicable to lawns	2

## Task C2: Install Sod

**Occupational Context:** Landscape Horticulturists must be able to install sod in a manner that results in a healthy, sustainable lawn as a component of the green space.

**Performance Context:** When this task is performed correctly, the sodded area is properly graded, drains effectively and the sod is healthy and becomes a lawn.



SUBTASKS			
C2.01	Review plans and specifications	C2.12	Interpret results of soil tests
C2.02	Ensure appropriate tools, equipment and materials are on site	C2.13	Amend soil as required
C2.03	Recognize and mark hazards	C2.14	Select appropriate sod varieties
C2.04	Identify utility locates	C2.15	Ensure delivered sod is healthy and meets specifications
C2.05	Orient crew to site and scope of work	C2.16	Grade and prepare site
C2.06	Co-ordinate sub-trades	C2.17	Lay sod
C2.07	Review drainage requirements	C2.18	Compact sod
C2.08	Assess site drainage	C2.19	Protect sod from erosion and animals
C2.09	Secure site for environmental impact (erosion, runoff, etc.)	C2.20	Ensure adequate irrigation
C2.10	Protect existing gardens, trees and structures including root zones	C2.21	Monitor sod health and growth
C2.11	Perform soil tests		

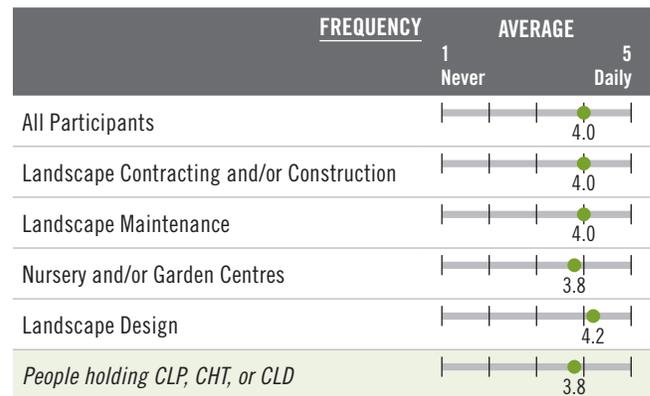
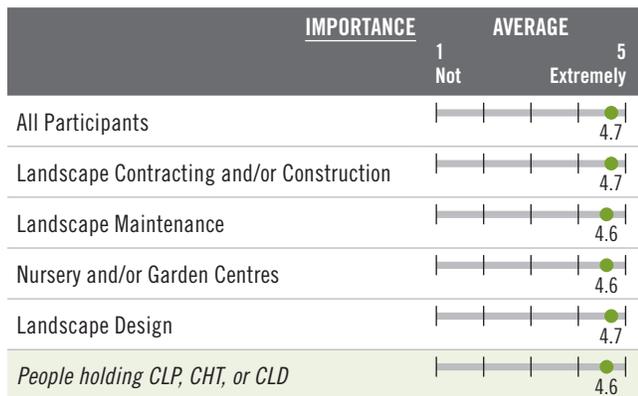
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders</li> <li>• Read comments and instructions in EH&amp;S reports</li> <li>• Read and apply IPM principles and company policies and procedures for site assessment, safety, chemical use, and quality standards</li> <li>• Read textbooks and manuals about plant and soil sciences</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the quality of soil and growing environment and the health of turf</li> <li>• Assess the effectiveness of techniques and approaches to treat damaged and diseased turf and amend soil</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Choose turf varieties</li> <li>• May select methods to amend soils and maintain turf such as types of pest control agents and fertilizers to use</li> <li>• Choose methods and materials to protect existing structures and secure areas from environmental impact</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, material quantities and instructions on work orders</li> <li>• Locate data such as pictures and descriptions of pest and diseases in tables</li> <li>• Make entries in logs and tables to record details about turf and tasks completed to maintain turf, to note concerns and to verify that requirements were met</li> <li>• Review plans and specifications to locate utilities, structures and hazards, to understand the layout of worksites and to locate dimensions and other features</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Numeracy – Data Analysis	3	<ul style="list-style-type: none"> <li>• May collect and analyze data from soil tests for variables such as diseases, pests and treatments in lawns, rainfalls and soil acidity</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>• Calculate weights and liquid volumes to prepare mixtures and solutions</li> <li>• Measure and calculate distances and angles to determine drainage requirements, install drain systems and geotextiles and grade sites to specifications</li> <li>• Take various precise measurements. For example, they may take precise site measurements using laser distance and height instruments</li> </ul>
Finding Information	2	<ul style="list-style-type: none"> <li>• Search a wide range of sources including textbooks, trade publications, scientific journals and suppliers' websites for information about turf and turf maintenance</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Ability to determine soil needs	3
• Ability to perform site layout according to plan	3
• Knowledge of turf variety best suited to application	3
• Knowledge of sod installation standards and practices	2
• Knowledge of sod establishment practices	2
• Ability to monitor plant health	3
• Knowledge of plant science applicable to lawns	2
• Knowledge of soil science applicable to lawns	2

### Task C3: Install Greenhouse Plants

**Occupational Context:** The Landscape Horticulturist must be able to interpret landscaping plans to determine which plants are required where, and then install the specified plants in a manner appropriate to the plant species and site environment and climate.

**Performance Context:** When performed correctly, the finished landscape matches the plan, and installed plants are healthy.



SUBTASKS			
C3.01	Review plans and specifications	C3.11	Perform soil tests
C3.02	Ensure appropriate tools, equipment and materials are on site	C3.12	Interpret results of soil tests
C3.03	Recognize and mark hazards	C3.13	Amend soil as required
C3.04	Identify utility locates	C3.14	Select appropriate greenhouse plant varieties (per plan)
C3.05	Orient crew to site and scope of work	C3.15	Ensure delivered plants are healthy and meet specifications
C3.06	Co-ordinate sub-trades	C3.16	Grade and prepare planting site
C3.07	Review drainage requirements	C3.17	Install plants
C3.08	Assess site drainage	C3.18	Protect plants from erosion and animals
C3.09	Secure site for environmental impact (erosion, runoff, etc.)	C3.19	Ensure adequate irrigation
C3.10	Protect existing gardens, trees and structures including root zones	C3.20	Monitor plant health and growth

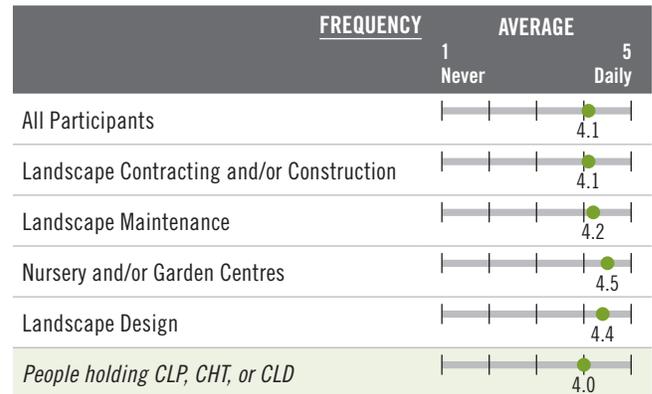
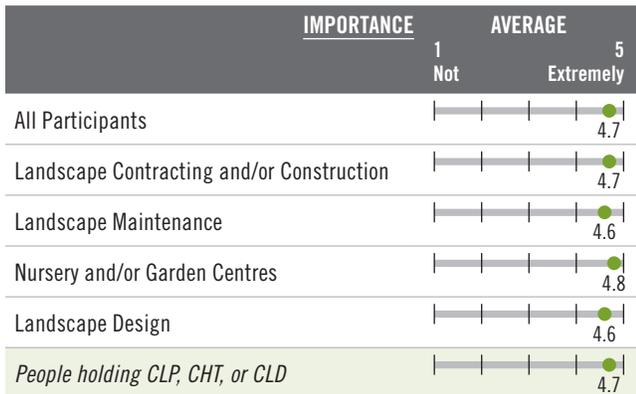
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders</li> <li>• Read comments and instructions in EH&amp;S reports</li> <li>• Read and apply IPM principles and company policies and procedures for site assessment, safety, chemical use and quality standards</li> <li>• Read textbooks and manuals about plant and soil sciences</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the quality of soil and growing environment and the health of plants</li> <li>• Assess the effectiveness of techniques and approaches to treat damaged and diseased plants and to amend soil</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Select appropriate plants</li> <li>• May select methods to amend soils and maintain plants such as types of pest control agents and fertilizers to use</li> <li>• Choose methods and materials to protect existing structures and secure areas from environmental impact</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, quantities and instructions on work orders</li> <li>• Locate data such as soil composition, planting instructions and pictures and descriptions of pest and diseases in tables</li> <li>• Make entries in logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> <li>• Review plans and specifications to locate utilities, structures and hazards, to understand the layout of worksites and to locate dimensions, elevations and other data</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Numeracy – Data Analysis	3	<ul style="list-style-type: none"> <li>• May collect and analyze data for variables such as diseases, pests and treatments in plants, rainfalls and soil composition</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>• Calculate weights and liquid volumes to prepare mixtures and solutions</li> <li>• Take measurements from landscape drawings and at worksites to determine and verify the location of plants</li> <li>• Measure and calculate distances and angles to determine drainage requirements, install drain systems and geotextiles and grade site to specifications</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Ability to read plans and complete plant layout	3
• Knowledge of proper soil preparation	2
• Ability to identify plants	3
• Knowledge of plant health best practices	2
• Knowledge of plant science applicable to greenhouse plants	2
• Knowledge of soil science applicable to greenhouse plants	2

## C4: Install Container Plants

**Occupational Context:** Landscape Horticulturists must be able to interpret landscaping plans to determine which plants are required where, and then install the specified plants in a manner appropriate to the plant species and site environment and climate.

**Performance Context:** When performed correctly, the finished landscape matches the plan, and installed plants are healthy.



SUBTASKS			
C4.01	Review plans and specifications	C4.11	Perform soil tests
C4.02	Ensure necessary tools, equipment and materials are on site	C4.12	Interpret results of soil tests
C4.03	Recognize and mark hazards	C4.13	Amend soil as required
C4.04	Identify utility locates	C4.14	Select appropriate container plant varieties (per plan)
C4.05	Orient crew to site and scope of work	C4.15	Ensure delivered plants are healthy and meet specifications
C4.06	Co-ordinate sub-trades	C4.16	Grade and prepare planting site
C4.07	Review drainage requirements	C4.17	Install plants
C4.08	Assess site drainage	C4.18	Protect plants from erosion and animals
C4.09	Secure site for environmental impact (erosion, runoff, etc.)	C4.19	Ensure adequate irrigation
C4.10	Protect existing gardens, trees and structures including root zones	C4.20	Monitor plant health and growth

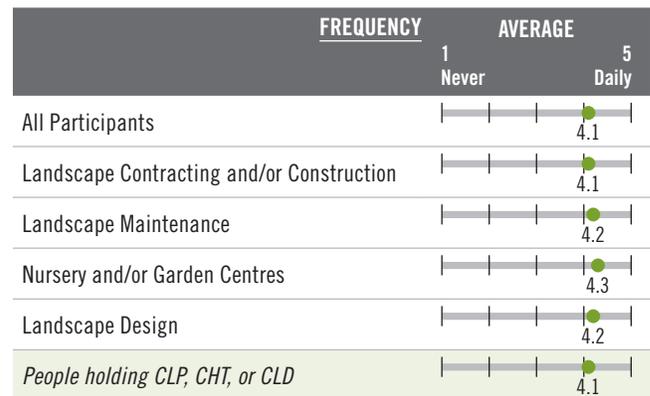
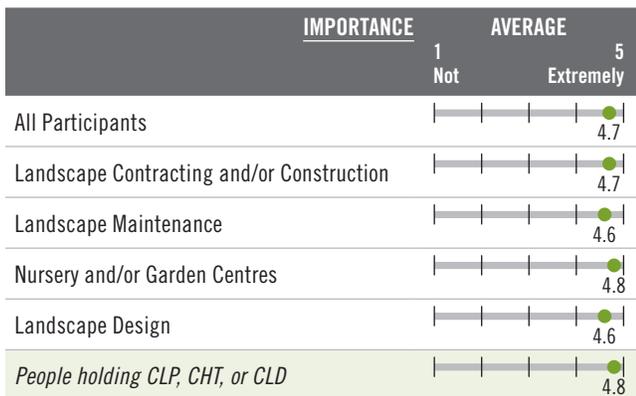
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders</li> <li>• Read comments and instructions in EH&amp;S reports</li> <li>• Read and apply IPM principles and company policies and procedures for site assessment, safety, chemical use and quality standards</li> <li>• Read textbooks and manuals about plant and soil sciences</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the quality of soil and growing environment and the health of plants</li> <li>• Assess the effectiveness of techniques and approaches to treat damaged and diseased plants and to amend soil</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Select appropriate plants</li> <li>• May select methods to amend soils and maintain plants such as types of pest control agents and fertilizers to use</li> <li>• Choose methods and materials to protect existing structures and secure areas from environmental impact</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, quantities and instructions on work orders</li> <li>• Locate data and information such as soil compositions, planting instructions and pictures and descriptions of pest and diseases in tables</li> <li>• Make entries in logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> <li>• Review plans and specifications to locate utilities, structures and hazards, to understand the planting layout and to locate dimensions, elevations and other data</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Numeracy – Data Analysis	3	<ul style="list-style-type: none"> <li>• May collect and analyze data from soil tests for variables such as diseases, pests and treatments in plants and soil composition</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>• Calculate weights and liquid volumes to prepare mixtures and solutions</li> <li>• Take measurements from landscape drawings and at worksites to determine and verify the location of plants</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Ability to read plans and complete plant layout	3
• Knowledge of proper soil preparation	2
• Ability to identify plants	3
• Knowledge of plant health best practices	2
• Knowledge of plant science applicable to container plants	2
• Knowledge of soil science applicable to container plants	2

## C5: Install Field-Grown Plants

**Occupational Context:** Landscape Horticulturists must be able to interpret landscaping plans to determine which plants are required where, and then install the specified plants in a manner appropriate to the plant species and site environment and climate.

**Performance Context:** When performed correctly, the finished landscape matches the plan, and installed plants are healthy.



SUBTASKS			
C5.01	Review plans and specifications	C5.11	Perform soil tests
C5.02	Ensure necessary tools, equipment and materials are on site	C5.12	Interpret results of soil tests
C5.03	Recognize and mark hazards	C5.13	Amend soil as required
C5.04	Identify utility locates	C5.14	Select appropriate field-grown plant varieties (per plan)
C5.05	Orient crew to site and scope of work	C5.15	Ensure delivered plants are healthy and meet specifications
C5.06	Co-ordinate sub-trades	C5.16	Grade and prepare planting site
C5.07	Review drainage requirements	C5.17	Install plants
C5.08	Assess site drainage	C5.18	Protect plants from erosion and animals
C5.09	Secure site for environmental impact (erosion, runoff, etc.)	C5.19	Ensure adequate irrigation
C5.10	Protect existing gardens, trees and structures including root zones	C5.20	Monitor plant health and growth

ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders</li> <li>• Read comments and instructions in EH&amp;S reports</li> <li>• Read and apply IPM principles and company policies and procedures for site assessment, safety, chemical use and quality standards</li> <li>• Read textbooks and manuals about plant and soil sciences</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the quality of soil and growing environment and the health of plants</li> <li>• Assess the effectiveness of techniques and approaches to treat damaged and diseased plants and to amend soil</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Select appropriate plants</li> <li>• May select methods to amend soils and maintain plants such as types of pest control agents and fertilizers to use</li> <li>• Choose methods and materials to protect existing structures and secure areas from environmental impact</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, quantities and instructions on work orders</li> <li>• Review tables to locate data such as soil compositions, information such as planting instructions and pictures and descriptions of pests and diseases</li> <li>• Make entries in logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> <li>• Review plans and specifications to locate utilities, structures and hazards, to understand the layout of worksites and to locate dimensions, elevations and other data</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Numeracy – Data Analysis	3	<ul style="list-style-type: none"> <li>• May collect and analyze data for variables such as diseases, pests and treatments in plants, rainfalls and soil composition</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>• Calculate weights and liquid volumes to prepare mixtures and solutions</li> <li>• Take measurements from landscape drawings and at worksites to determine and verify the location of plants</li> <li>• Measure and calculate distances and angles to determine drainage requirements, install drain systems and geotextiles and grade site to specifications</li> </ul>

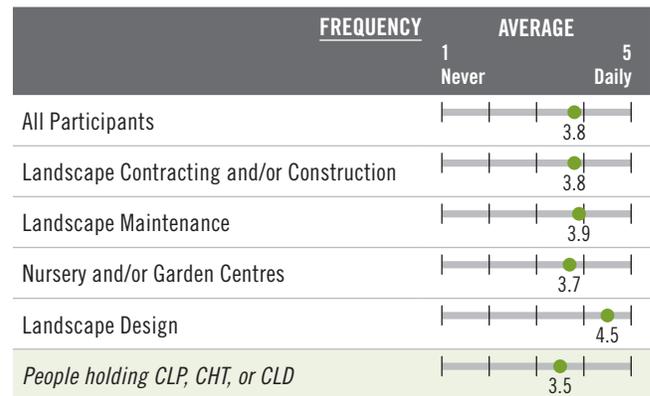
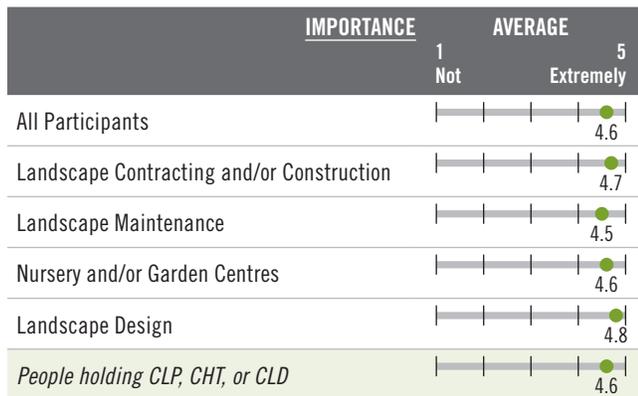
SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Ability to read plans and complete plant layout	3
• Knowledge of proper soil preparation	2
• Ability to identify plants	3
• Knowledge of plant science applicable to field plants	2
• Knowledge of soil science applicable to field plants	2
• Knowledge of plant health best practices	2

## BLOCK D: INSTALL HARDSCAPE

### Task D1: Install Paving Materials

**Occupational Context:** Landscape Horticulturists must be able to install paving materials including pre-cast concrete pavers, natural stone, etc., in a way that ensures the longevity of the surface with minimal maintenance.

**Performance Context:** When this task is performed correctly, paved surfaces are completed according to plans, drain properly, and do not settle or become uneven.



SUBTASKS			
D1.01	Assess site condition (including surface and soil)	D1.14	Establish grades to ensure proper drainage
D1.02	Read/interpret plans and specifications	D1.15	Add aggregate as required
D1.03	Identify utility locates	D1.16	Prepare base to meet specifications
D1.04	Recognize and mark hazards	D1.17	Compact surfaces as required
D1.05	Orient crew to site and scope of work	D1.18	Install paver restraints
D1.06	Co-ordinate sub-trades	D1.19	Lay bed materials
D1.07	Assess site environmental requirements	D1.20	Screed/level bed materials
D1.08	Secure site for environmental impact (erosion, runoff, etc.)	D1.21	Lay paving materials
D1.09	Protect existing gardens, trees and structures including root zones	D1.22	Apply joint materials
D1.10	Ensure appropriate tools, equipment and materials are on site	D1.23	Clean surfaces
D1.11	Ensure delivered paving products meet specifications	D1.24	Seal surfaces
D1.12	Review drainage requirements	D1.25	Clean/repair surrounding site
D1.13	Excavate as required	D1.26	Dispose of waste materials and debris (appropriately)

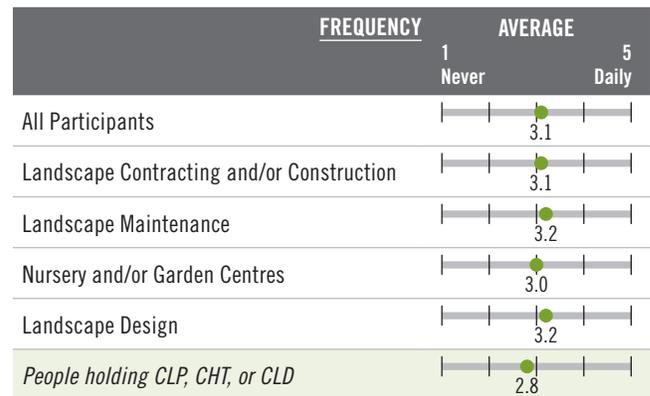
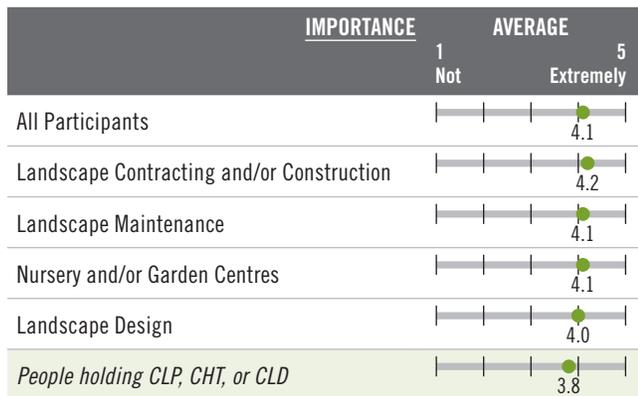
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders</li> <li>• Read comments and instructions in EH&amp;S reports</li> <li>• Read and apply government regulations and company policies and procedures related to EH&amp;S</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Enter product codes, material quantities and work completed in tracking forms</li> <li>• May complete EH&amp;S checklists and reports to verify requirements were met</li> <li>• Review plans to locate utilities, structures and hazards, to understand the layout of worksites and to locate dimensions, elevations and other data</li> <li>• Review project specifications to understand the scope of work and various procedures and techniques required to complete work</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Evaluate the safety of worksites and identify safety hazards</li> <li>• Assess the acceptability of site conditions to determine remediation requirements</li> <li>• Evaluate the quality and acceptability of completed installations and repairs</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Choose methods and materials to protect existing structures, secure areas from environmental impact and prepare base to meet specifications</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>• Take measurements from landscape drawings and at worksites to determine and verify the location of paving materials</li> <li>• May take precise site measurements using laser distance and height instruments</li> <li>• Calculate quantities and volumes required to prepare surfaces and install paving materials</li> <li>• Measure and calculate distances and angles to determine drainage requirements, install drain systems and geotextiles and prepare base to specifications</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Ability to identify and install materials as per plan + spec.	3
• Knowledge of excavation practices	2
• Knowledge of steps involved for proper execution	2
• Knowledge of paving materials, their applications (walkway/patio vs. driveway)	2
• Knowledge various drainage techniques and protocols	3
• Knowledge of proper joint material for application	3
• Knowledge of paving material surface sealants and applications	3
• Knowledge of manufacturer's installation requirements relative to materials and application	2
• Knowledge of applicable Codes and standards related to paving materials	2
• Knowledge of site restoration practices	3

## Task D2: Install Landscape Water Features

**Occupational Context:** Landscape Horticulturists must be able to install landscape water features (ponds, fountains, etc.) that meet design specifications in a way that ensures the longevity of the feature with minimal maintenance.

**Performance Context:** When this task is performed correctly, water features are completed according to plan.



SUBTASKS			
D2.01	Assess site condition (including surface and soil)	D2.16	Rough in drains
D2.02	Read/interpret plans and specifications	D2.17	Rough in filtration
D2.03	Review bylaw requirements for site and job	D2.18	Rough in water source
D2.04	Identify utility locates	D2.19	Install liner/barrier
D2.05	Recognize and mark hazards	D2.20	Finish plumbing
D2.06	Orient crew to site and scope of work	D2.21	Install pumps and filters
D2.07	Co-ordinate sub-trades	D2.22	Test liner
D2.08	Assess site environmental requirements	D2.23	Add aggregate
D2.09	Secure site for environmental impact (erosion, runoff, etc.)	D2.24	Add decorative features
D2.10	Protect existing gardens, trees and structures including root zones	D2.25	Install materials to create watercourse
D2.11	Ensure appropriate tools, equipment and materials are on site	D2.26	Install softscape elements
D2.12	Ensure delivered materials and products meet specifications	D2.27	Drain and refill with clean water
D2.13	Review drainage requirements	D2.28	Add ecosystem products
D2.14	Excavate as required	D2.29	Dispose of waste and debris
D2.15	Establish grades to ensure proper drainage	D2.30	Restore surrounding site

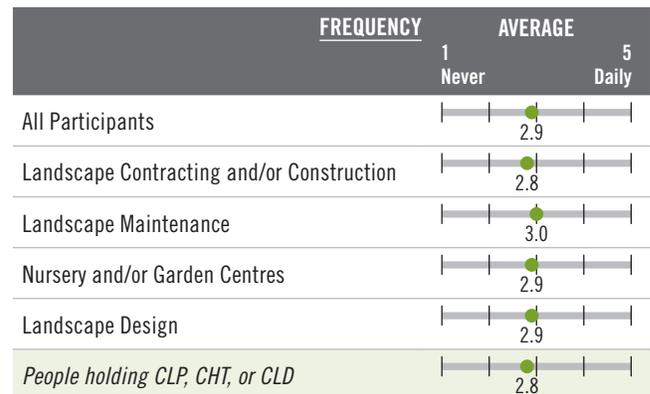
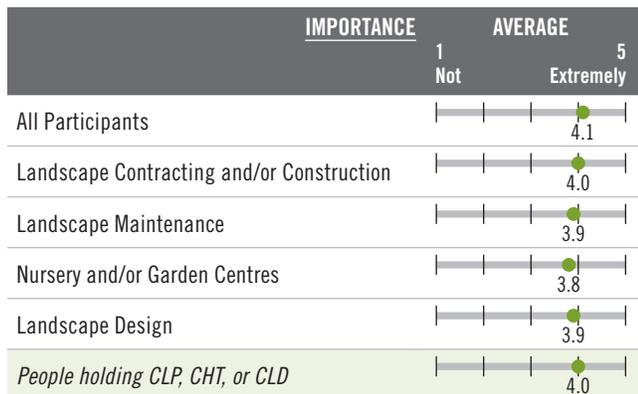
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders</li> <li>• Read comments and instructions in EH&amp;S reports</li> <li>• Read and apply government regulations and company policies and procedures related to EH&amp;S</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Enter product codes, material quantities and work completed in tracking forms</li> <li>• May complete EH&amp;S checklists and reports to verify requirements were met</li> <li>• Review drawings to locate utilities, existing structures, dimensions, elevations and other data</li> <li>• Review drawings in conjunction with specifications to understand the scope of work, project specifications and construction sequences</li> <li>• Study assembly drawings to assemble or repair landscape water features, components and equipment</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Evaluate the safety of worksites and identify safety hazards</li> <li>• Assess the acceptability of site conditions to determine remediation requirements</li> <li>• Assess the quality and acceptability of completed installations and repairs</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Choose methods and materials to protect existing structures, secure areas from environmental impact and meet safety requirements</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>• Take measurements from landscape drawings and at worksites to determine and verify the location of landscape water features</li> <li>• May take precise site measurements using laser distance and height instruments</li> <li>• Calculate quantities and volumes of materials required for installation of water landscape features</li> <li>• Measure and calculate distances and angles to determine drainage requirements, install drain systems and geotextiles and grade site to specifications</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of safety and environmental regulations	2
• Knowledge of steps of installation and order for successful completion	3
• Knowledge of materials and components	3
• Ability to interpret plan and install accordingly	3
• Ability to create attractive ornamental planting	3
• Knowledge of ecosystem products and best practices	2
• Knowledge of Codes and standards relative to waterscape	2
• Knowledge of manufacturer's requirements relative to materials and application	2
• Knowledge and ability to perform site restoration	3

## Task D3: Install Landscape Irrigation Systems

**Occupational Context:** Landscape Horticulturists must be able to install landscape irrigation systems that meet design specifications and bylaw requirements in a way that ensures the functionality and longevity of the system with minimal maintenance.

**Performance Context:** When this task is performed correctly, installed irrigation systems operate in accordance with specifications and performance requirements.



SUBTASKS			
D3.01	Assess site condition (including surface and soil)	D3.12	Ensure delivered materials and products meet specifications
D3.02	Read/interpret plans and specifications	D3.13	Evaluate water source for volume, pressure and water quality
D3.03	Review bylaw requirements for site and job	D3.14	Review drainage requirements
D3.04	Identify utility locates	D3.15	Select irrigation components
D3.05	Recognize and mark hazards	D3.16	Identify soil-plant-water relationships
D3.06	Orient crew to site and scope of work	D3.17	Install irrigation components
D3.07	Co-ordinate sub-trades	D3.18	Program irrigation system
D3.08	Assess site environmental requirements	D3.19	Test irrigation system
D3.09	Secure site for environmental impact (erosion, runoff, etc.)	D3.20	Dispose of waste and debris
D3.10	Protect existing gardens, trees and structures including root zones	D3.21	Restore surrounding site
D3.11	Ensure appropriate tools, equipment and materials are on site		

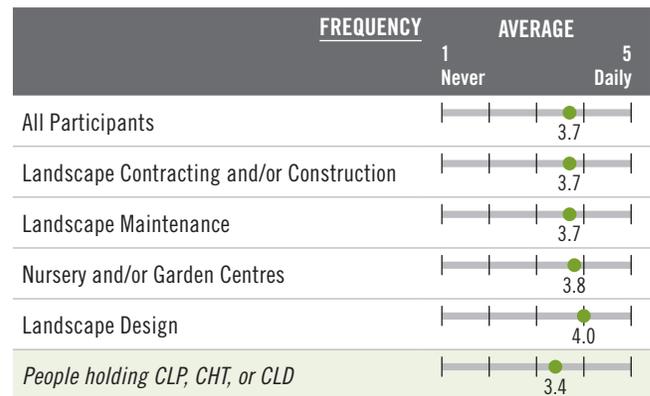
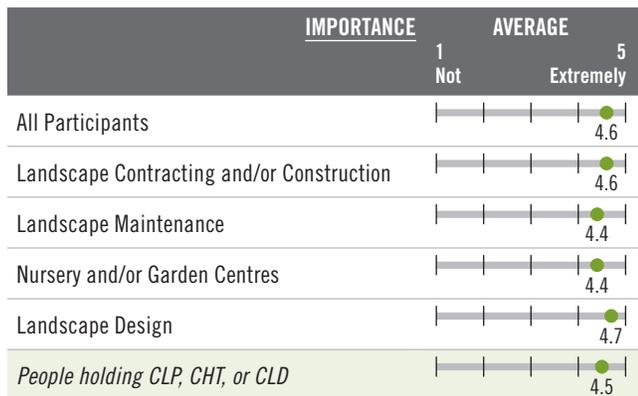
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders</li> <li>• Read comments and instructions in EH&amp;S reports</li> <li>• Read and interpret municipal bylaws and ordinances</li> <li>• Read textbooks about plant and soil sciences and manuals about irrigation systems</li> <li>• Read and apply government regulations and company policies and procedures related to EH&amp;S</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Enter product codes, material quantities and work completed in tracking forms</li> <li>• May complete EH&amp;S checklists and reports to verify requirements were met</li> <li>• Make entries in logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> <li>• Study assembly drawings to assemble and repair irrigation systems and components</li> <li>• Review plans and specifications to locate utilities, structures and hazards, to understand the layout of worksites, sequence of construction and to locate dimensions, elevations and other data</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Evaluate the safety of worksites and identify safety hazards</li> <li>• Assess the quality and acceptability of completed installations and repairs</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>• Take measurements from landscape drawings and at worksites to determine and verify the location of landscape irrigation systems</li> <li>• May take precise site measurements using laser distance and height instruments</li> <li>• Calculate quantities of materials and water volumes</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• May select the number and type of irrigation features if not specified</li> <li>• Choose methods and materials to protect existing structures, secure areas from environmental impact and meet safety requirements</li> <li>• Choose irrigation schedule and requirements considering site conditions</li> </ul>
Computer Use	2	<ul style="list-style-type: none"> <li>• Use computer software applications to program irrigation systems</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of site assessment process	2
• Knowledge of irrigation systems and components	2
• Knowledge of plant science related to water requirements and site conditions	3
• Knowledge of soil types and characteristics	2
• Ability to read and interpret landscape plans and specifications	3
• Ability to complete basic plumbing tasks	3
• Knowledge of Codes and standards relative to irrigation	2
• Knowledge of manufacturer's requirements relative to components and application	2
• Ability to interpret manufacturer's specs for programming and set-up	3

## Task D4: Install Retaining Walls

**Occupational Context:** Landscape Horticulturists must be able to build retaining walls using a variety of materials (block, precast, poured, timber, etc.) that meet design specifications, Code and/or bylaw requirements in a way that ensures the functionality and longevity of the system with minimal maintenance.

**Performance Context:** When this task is performed correctly, the retaining wall is structurally sound and meets Code and design requirements while integrating into the overall landscape plan.



SUBTASKS			
D4.01	Assess site condition (including surface and soil)	D4.13	Review drainage requirements
D4.02	Read/interpret plans and specifications	D4.14	Excavate as required
D4.03	Review bylaw requirements for site and job	D4.15	Establish proper drainage
D4.04	Identify utility locates	D4.16	Add aggregate as required
D4.05	Recognize and mark hazards	D4.17	Prepare base to meet specifications
D4.06	Orient crew to site and scope of work	D4.18	Install wall materials per manufacturer's specification, applicable Codes/standards, or accepted trade practice
D4.07	Co-ordinate sub-trades	D4.19	Install geotextiles and material separation membranes as required by specs
D4.08	Assess site environmental requirements	D4.20	Finish wall (coping, etc.) as required
D4.09	Secure site for environmental impact (erosion, runoff, etc.)	D4.21	Backfill as required with appropriate materials
D4.10	Protect existing gardens, trees and structures including root zones	D4.22	Dispose of waste and debris
D4.11	Ensure appropriate tools, equipment and materials are on site	D4.23	Restore surrounding site
D4.12	Ensure delivered materials and products meet specifications		

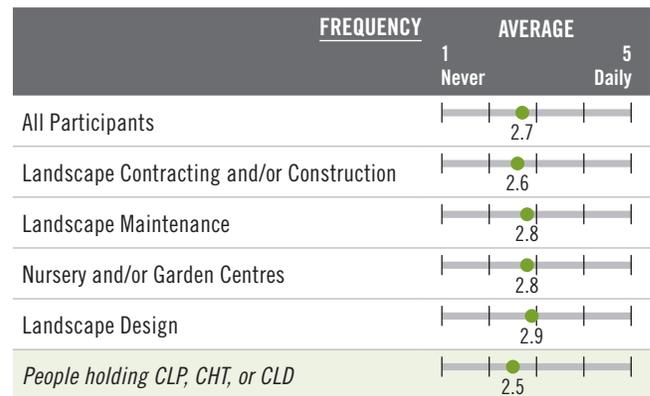
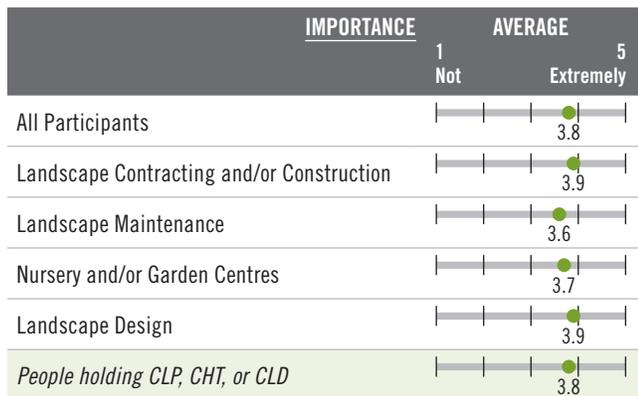
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders</li> <li>• Read comments and instructions in EH&amp;S reports</li> <li>• Read product brochures and trade publications</li> <li>• Read and interpret municipal bylaws and ordinances</li> <li>• Read and apply government regulations and company policies and procedures related to EH&amp;S</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the suitability of sites and soils to determine remediation activities</li> <li>• Evaluate the safety of worksites and identify safety hazards</li> <li>• Evaluate the quality and acceptability of products before installing and of completed installations</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Select materials for retaining walls if not specified</li> <li>• Choose methods and materials to protect existing structures, secure areas from environmental impact and prepare bases to meet specifications</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, material quantities and instructions on work orders</li> <li>• Make entries in logs and tables to record details about materials used and work completed and to note concerns and verify that requirements were met</li> <li>• Review plans and specifications to locate utilities, structures and hazards, to understand scope of work and construction sequences, and to locate dimensions and other features</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Numeracy – Measurement and Calculation Math	4	<ul style="list-style-type: none"> <li>• Take measurements to confirm placements, heights, depths and widths</li> <li>• Measure and calculate distances and angles to determine drainage requirements, to grade sites and install drain systems, geotextiles and retaining walls to specifications</li> <li>• Take various precise measurements. For example, they may take precise site measurements using laser distance and height instruments</li> <li>• Calculate the quantities of materials and supplies needed to complete jobs</li> </ul>
Problem Solving	2	<ul style="list-style-type: none"> <li>• Encounter bad weather, substandard materials, staff shortages and other unexpected difficulties such as large boulders and tree stumps</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Ability to interpret plan/specs and install accordingly	3
• Knowledge of excavation/grading practices	2
• Knowledge of base preparation details	2
• Knowledge of wall materials and corresponding installation protocol for various types of walls	3
• Knowledge of Codes and standards relative to retaining walls	2
• Knowledge of manufacturer's recommended procedures relative to materials and applications	2

## Task D5: Install Landscape Lighting

**Occupational Context:** Landscape Horticulturists install landscape lighting as part of a landscape plan. Depending on jurisdiction and specifications, licensed electricians may be required to complete part of this task.

**Performance Context:** When this task is performed correctly, the installation meets design, manufacturer specifications and appropriate Codes and regulations.



SUBTASKS			
D5.01	Assess site condition (including surface and soil)	D5.10	Ensure delivered materials and products meet specifications
D5.02	Read/interpret plans and specifications	D5.11	Excavate as required
D5.03	Review bylaw requirements for site and job	D5.12	Install lighting system components per design requirements, manufacturer's specifications, applicable Building Codes/standards, or accepted trade practice
D5.04	Identify utility locates	D5.13	Layout components per plan
D5.05	Recognize and mark hazards	D5.14	Install components per plan and/or specs
D5.06	Orient crew to site and scope of work	D5.15	Program lighting
D5.07	Co-ordinate sub-trades	D5.16	Test lighting system
D5.08	Protect existing gardens, trees and structures including root zones	D5.17	Dispose of waste and debris
D5.09	Ensure appropriate tools, equipment and materials are on site	D5.18	Restore surrounding site

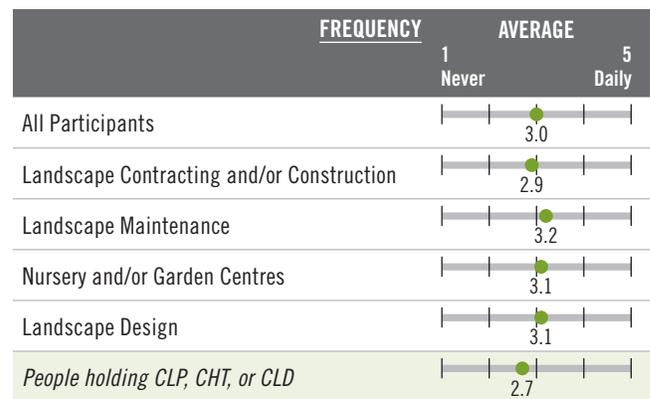
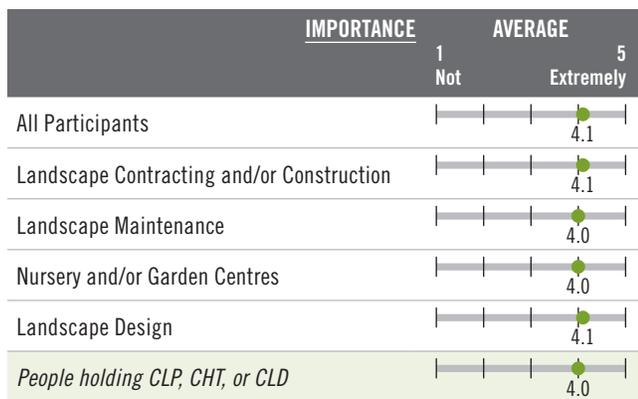
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders and EH&amp;S reports</li> <li>• Read instructions in installation manuals for lighting features and systems</li> <li>• Read and interpret municipal bylaws and ordinances</li> <li>• Read and apply government regulations and company policies and procedures for electrical and EH&amp;S</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, material quantities and instructions on work orders</li> <li>• May complete EH&amp;S checklists and reports to verify requirements were met</li> <li>• Make entries in logs and tables to record details about materials used and work completed and to note concerns and verify that requirements were met</li> <li>• Review plans and specifications to locate utilities, structures and hazards, to understand scope of work and construction sequences, and to locate dimensions and other features</li> <li>• Study assembly drawings and electrical schematics to assemble and install lighting systems</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Evaluate the safety of worksites and identify safety hazards</li> <li>• Evaluate the quality and acceptability of products before installing and of completed installations</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• May select the number and type of lighting features and components if not specified</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>• Take measurements from landscape drawings and at worksites to determine and verify the location of electrical features</li> <li>• May take precise site measurements using laser distance and height instruments</li> <li>• Calculate quantities of materials required for installation and repair of lighting systems</li> </ul>
Computer Use	2	<ul style="list-style-type: none"> <li>• Use computer software applications to program irrigation systems</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of electrical safety regulations	2
• Ability to interpret plan and install according	3
• Ability to identify components	2
• Ability to program timers	3
• Ability to troubleshoot electrical problems	3
• Knowledge of manufacturer's recommended procedures relative to components and applications	2
• Knowledge of Codes and standards relative to outdoor electrical installations	2
• Knowledge and ability to perform site restoration	3

## Task D6: Install Landscape Structures

**Occupational Context:** Landscape Horticulturists construct or install landscape structures (gazebos, sheds, bridges, playground equipment, trellises, arbours, fences, decks, statuary and other decorative/artistic features) as part of a landscape plan. Depending on jurisdiction and specifications, sub-trades may be required to complete part of this task.

**Performance Context:** When this task is performed correctly, the installation meets design, manufacturer specifications, and appropriate Codes and regulations.



SUBTASKS			
D6.01	Assess site condition (including surface and soil)	D6.09	Ensure appropriate tools, equipment and materials are on site
D6.02	Read/interpret plans and specifications	D6.10	Ensure delivered materials and products meet specifications
D6.03	Review bylaw requirements for site and job	D6.11	Excavate as required
D6.04	Identify utility locates	D6.12	Construct/install landscape structures per plans, specifications and Codes
D6.05	Recognize and mark hazards	D6.13	Finish surfaces as required
D6.06	Orient crew to site and scope of work	D6.14	Dispose of waste and debris
D6.07	Co-ordinate sub-trades	D6.15	Restore surrounding site
D6.08	Protect existing gardens, trees and structures including root zones		

ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders and EH&amp;S reports</li> <li>• Read instructions in installation manuals for landscape features</li> <li>• Read and interpret municipal bylaws and ordinances</li> <li>• Read and apply government building codes and regulations and company policies and procedures for EH&amp;S</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, material quantities and instructions on work orders</li> <li>• Make entries in forms, logs and tables to record details about materials used and work completed and to note concerns and verify that requirements were met</li> <li>• Review plans and specifications to locate utilities, structures and hazards, to understand scope of work and construction sequences, and to locate dimensions and other features</li> <li>• Study assembly drawings to assemble and install landscape structures to specifications</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Lead worksite meetings with crew and sub-trades to discuss scope of the work and safe worksite standards and practices</li> <li>• Discuss ongoing work and safety protocols with their crews and co-ordinate activities with sub-trades</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Evaluate the safety of worksites and identify safety hazards</li> <li>• Evaluate the quality and acceptability of products before installing and of completed installations</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• May select finishing features if not specified</li> <li>• Choose methods and materials to protect existing structures, secure areas from environmental impact and to meet safety requirements</li> </ul>
Numeracy – Measurement and Calculation Math	4	<ul style="list-style-type: none"> <li>• Take measurements from landscape drawings and at worksites to determine and verify the construction and location of landscape structures</li> <li>• May take precise site measurements using laser distance and height instruments</li> <li>• Calculate quantities of materials required for installation of landscape structures</li> </ul>

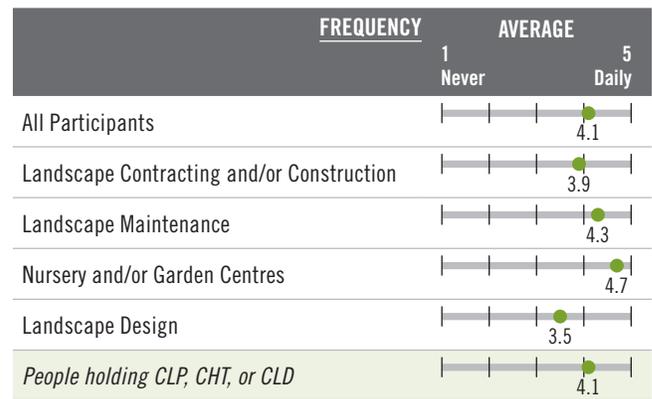
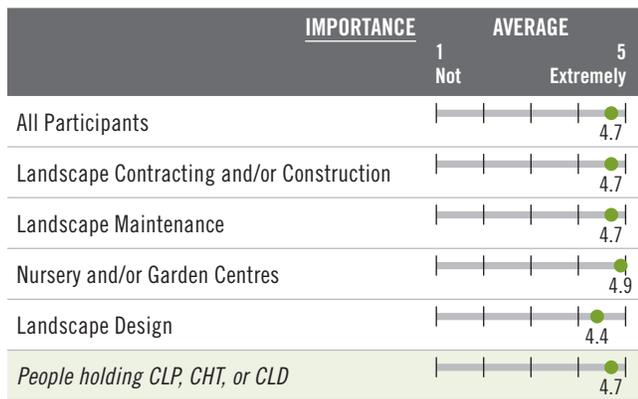
SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Ability to interpret plan/specs and install accordingly	3
• Knowledge of excavation/grading practices	2
• Knowledge of materials and corresponding installation protocol for various structures	3
• Knowledge of Codes and standards relative to landscape structures	2
• Knowledge of selection of surface finishes	2

## BLOCK E: MAINTAIN SOFTSCAPE

### Task E1: Maintain Turf

**Occupational Context:** The Landscape Horticulturist cares for turf in an environmentally sustainable way using industry Best Practices and Integrated Pest Management (IPM) principles.

**Performance Context:** When performed correctly, result is healthy well-maintained turf with minimal environmental impact.



SUBTASKS			
E1.01	Inspect site for hazards and debris	E1.10	Conduct soil tests
E1.02	Identify turf varieties	E1.11	Evaluate soil tests
E1.03	Protect existing gardens, trees and structures including root zones	E1.12	Amend soil as required
E1.04	Ensure appropriate tools, equipment and materials are on site	E1.13	Fertilize in accordance with best management practices
E1.05	Mow lawns	E1.14	Over seed lawns
E1.06	Edge trim lawns	E1.15	De-thatch lawns
E1.07	Clean up site	E1.16	Aerate lawns
E1.08	Evaluate turf health	E1.17	Manage turf irrigation
E1.09	Integrate appropriate treatments in accordance with IPM principles	E1.18	Top dress lawns

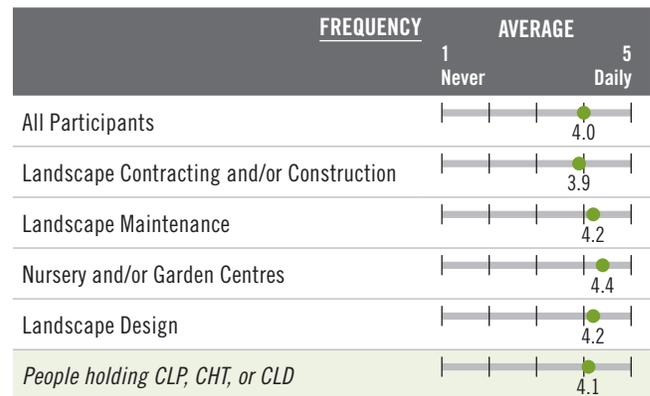
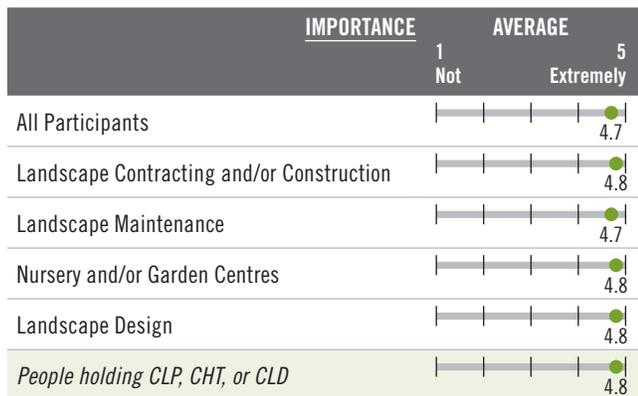
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders and maintenance contracts</li> <li>• Read and apply IPM principles and company policies and procedures for site assessment and safety, chemical use and turf maintenance</li> <li>• Read textbooks and manuals about turf and soil sciences</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the quality of soil and health of turf</li> <li>• Assess the effectiveness of techniques and approaches to maintain turf and to treat damaged and diseased turf</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• May select methods to amend soils and to maintain and treat turf such as levels of irrigation and aeration and types of pest control agents and fertilizers to use</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, quantities and instructions on work orders</li> <li>• Review pictures and tables to locate data about turf varieties, pests and diseases, and details about compositions and health hazard of chemical products</li> <li>• Make entries in logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> </ul>
Numeracy – Data Analysis	3	<ul style="list-style-type: none"> <li>• May collect and analyze data for variables such as diseases, pests and treatments in turf, rainfalls and soil composition</li> </ul>
Numeracy – Measurement and Calculation Math	2	<ul style="list-style-type: none"> <li>• Calculate weights and liquid volumes to prepare mixtures and solutions</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Ability to operate maintenance tools and equipment	3
• Knowledge of integrated pest management (IPM) practices	3
• Knowledge of Industry standard for maintaining edges, trimming, mowing, aerating, topdressing, etc.	2
• Knowledge of plant science applicable to lawns	2
• Knowledge of soil science applicable to lawns	2

## Task E2: Maintain Herbaceous Planting

**Occupational Context:** Landscape Horticulturists maintain all types of interior and exterior herbaceous plants to ensure plant health in an environmentally sustainable manner, and in accordance with principles of integrated plant management.

**Performance Context:** When performed correctly herbaceous plants are healthy and contribute to the overall landscape plan.



SUBTASKS			
E2.01	Inspect site for hazards and debris	E2.11	Edge garden beds
E2.02	Assess garden environment	E2.12	Weed beds
E2.03	Protect existing gardens, trees and structures including root zones	E2.13	Cultivate and aerate soils
E2.04	Ensure appropriate tools, equipment and materials are on site	E2.14	Fertilize garden plants
E2.05	Identify plant species	E2.15	Irrigate garden plants
E2.06	Evaluate plant health	E2.16	Thin/split perennials
E2.07	Manage plant health in accordance with IPM principles	E2.17	Prune/deadhead plants
E2.08	Test planting media	E2.18	Add mulch
E2.09	Evaluate test results	E2.19	Clean up litter and debris
E2.10	Amend media as required by tests	E2.20	Winterize beds as necessary

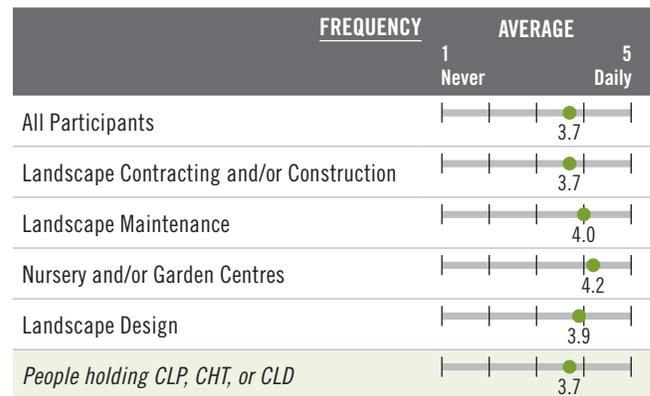
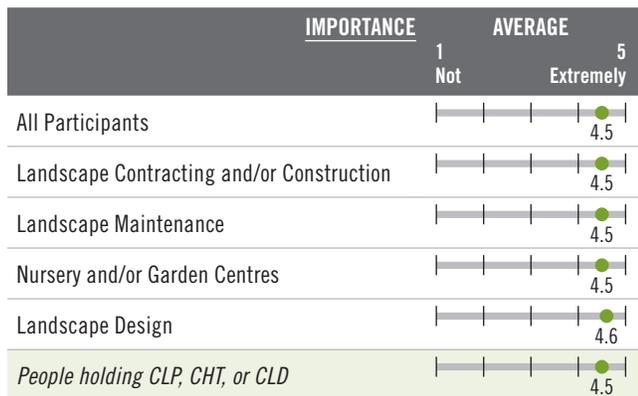
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders and maintenance contracts</li> <li>• Read and apply IPM principles and company policies and procedures for site assessment and safety, chemical use and plant maintenance</li> <li>• Read textbooks and manuals about plant and soil sciences</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the quality of soil, the health of plants and the safety of worksites</li> <li>• Assess the effectiveness of techniques and approaches to maintain plants and to treat damaged and diseased plants</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• May select methods to amend soils and to maintain and treat plants such as the amount to prune, thin and irrigate plants and the types of pest and weed control agents, fertilizers and mulch to use</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, quantities and instructions on work orders</li> <li>• Review tables to locate data about chemical products and plants, and descriptions and pictures of plant varieties, pests and diseases</li> <li>• Make entries in forms, logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> </ul>
Numeracy – Data Analysis	3	<ul style="list-style-type: none"> <li>• May collect and analyze data for variables such as diseases, pests and treatments in plants, rainfalls and soil composition</li> </ul>
Numeracy – Measurement and Calculation Math	2	<ul style="list-style-type: none"> <li>• Calculate weights and liquid volumes to prepare mixtures and solutions</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of annuals, biennials, perennials identification	3
• Knowledge of maintenance protocol for garden plants	3
• Ability to monitor nutrient/irrigation needs and amend accordingly	3
• Knowledge of pruning/deadheading/division principles	3
• Knowledge of plant science relative to herbaceous plantings	2
• Knowledge of soil science relative to herbaceous plantings	2

## Task E3: Maintain Container Plants

**Occupational Context:** The Landscape Horticulturist maintains all types of interior and exterior container plants (movable) to ensure plant health in an environmentally sustainable manner, and in accordance with principles of integrated plant management.

**Performance Context:** When performed correctly container plants are healthy and contribute to the overall landscape plan.



SUBTASKS			
E3.01	Inspect site for hazards and debris	E3.10	Amend media as required by tests
E3.02	Assess garden environment	E3.11	Weed containers
E3.03	Protect existing gardens, trees and structures including root zones	E3.12	Cultivate and aerate soils
E3.04	Ensure appropriate tools, equipment and materials are on site	E3.13	Fertilize container plants in accordance with best management practices
E3.05	Identify plant species	E3.14	Irrigate container plants
E3.06	Evaluate plant health	E3.15	Prune/deadhead plants
E3.07	Manage plant health in accordance with IPM principles	E3.16	Add mulch
E3.08	Test planting media	E3.17	Clean up litter and debris
E3.09	Evaluate test results	E3.18	Winterize containers as necessary

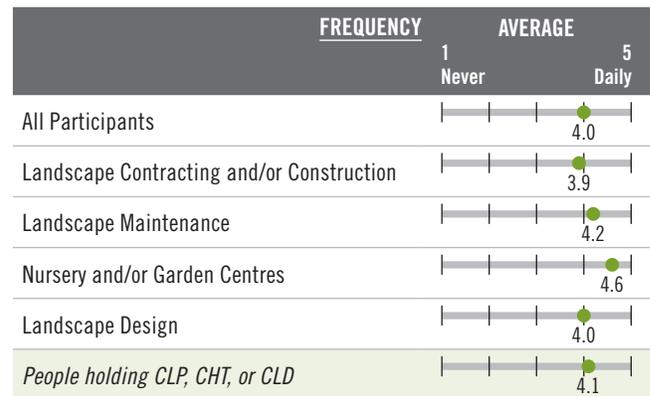
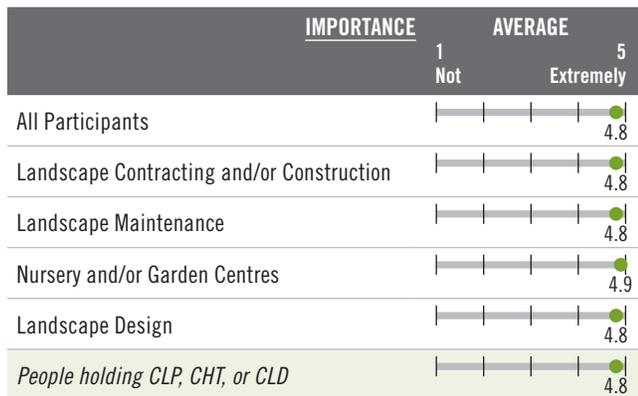
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders and maintenance contracts</li> <li>• Read and apply IPM principles and company policies and procedures for site assessment and safety, chemical use and plant and container maintenance</li> <li>• Read textbooks and manuals about plant and soil sciences</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the quality of soil, the health of plants and the safety of worksites</li> <li>• Assess the effectiveness of techniques and approaches to maintain plants and to treat damaged and diseased plants</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• May select methods to amend soils and to maintain and treat plants such as the amount to prune, thin and irrigate plants and the types of pest and weed control agents, fertilizers and mulch to use</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, quantities and instructions on work orders</li> <li>• Review tables to locate data about chemical products and plants, and descriptions and pictures of plant varieties, pests and disease</li> <li>• Make entries in forms, logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> </ul>
Numeracy – Data Analysis	3	<ul style="list-style-type: none"> <li>• May collect and analyze data for variables such as diseases, pests and treatments in plants, rainfalls and soil composition</li> </ul>
Numeracy – Measurement and Calculation Math	2	<ul style="list-style-type: none"> <li>• Calculate weights and liquid volumes to prepare mixtures and solutions</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of nutrient requirements based on plant appearance	3
• Knowledge of pruning principles	3
• Ability to apply integrated pest management (IPM) principles for container plants	3
• Knowledge of plant science relative to container plants	2
• Knowledge of soil science relative to container plants	2

## Task E4: Maintain Trees and Shrubs

**Occupational Context:** The Landscape Horticulturist maintains all types of interior and exterior trees and shrubs to ensure plant health in an environmentally sustainable manner, and in accordance with principles of integrated plant management.

**Performance Context:** When performed correctly trees and shrubs are healthy and contribute to the overall landscape plan.



SUBTASKS			
E4.01	Inspect site for hazards and debris	E4.10	Evaluate test results
E4.02	Assess garden environment	E4.11	Amend media as required by tests
E4.03	Protect existing gardens, trees and structures including root zones	E4.12	Prune trees and shrubs containers
E4.04	Ensure appropriate tools, equipment and materials are on site	E4.13	Fertilize trees and shrubs in accordance with best management practices
E4.05	Identify tree and shrub species	E4.14	Irrigate trees and shrubs plants
E4.06	Evaluate tree and shrub health	E4.15	Add mulch
E4.07	Manage tree and shrub health in accordance with IPM principles	E4.16	Clean up litter and debris
E4.08	Co-ordinate sub-trades where required (arborists, etc.)	E4.17	Winterize trees and shrubs as necessary
E4.09	Test planting media	E4.18	Stake trees and shrubs as necessary

ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read descriptions and instructions in work orders and maintenance contracts</li> <li>• Read and apply IPM principles and company policies and procedures for site assessment and safety, chemical use and maintenance of trees and shrubs</li> <li>• Read textbooks, manuals and articles in trade publications about trees, shrubs and soil sciences</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the quality of soil, health of trees and shrubs, and safety of worksites</li> <li>• Assess the effectiveness of techniques and approaches to maintain and to treat damaged and diseased trees and shrubs</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• May select methods to amend soils and to maintain and treat trees and shrubs such as pruning techniques and the types of pest control agents, fertilizers and mulch to use</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate product codes, quantities and instructions on work orders</li> <li>• Review tables to locate data about chemical products and plants, and descriptions and pictures of plant varieties, pests and disease</li> <li>• Make entries in forms, logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> </ul>
Numeracy – Data Analysis	3	<ul style="list-style-type: none"> <li>• May collect and analyze data for variables such as diseases, pests and treatments in trees, shrubs and ornamentals, rainfalls and soil composition</li> </ul>
Numeracy – Measurement and Calculation Math	2	<ul style="list-style-type: none"> <li>• Calculate weights and liquid volumes to prepare mixtures and solutions</li> </ul>

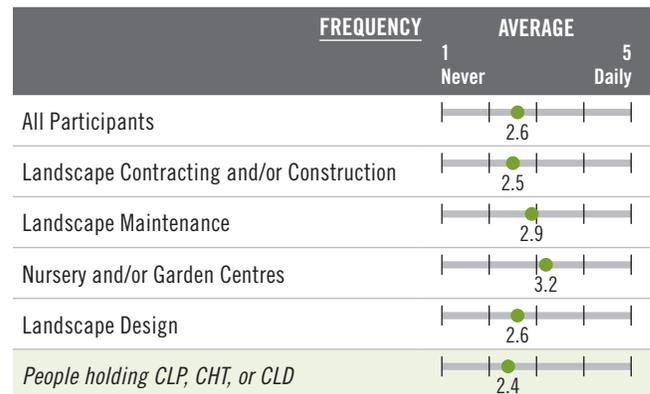
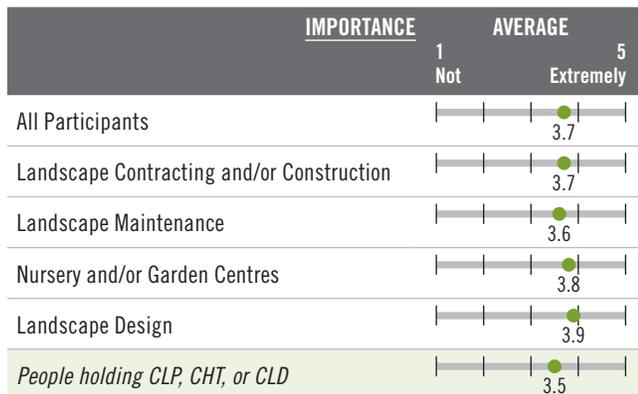
SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of proper pruning standards and seasons to prune particular species/varieties	3
• Knowledge of plant science related to trees and shrubs	3
• Ability to identify plants	3
• Knowledge of appropriate winterizing techniques/protocol	3
• Ability to apply integrated pest management (IPM) principles to trees and shrubs	3
• Knowledge of plant science relative to trees and shrubs	2
• Knowledge of soil science relative to trees and shrubs	2

## BLOCK F: MAINTAIN HARDSCAPE

### Task F1: Maintain Landscape Lighting

**Occupational Context:** Landscape Horticulturists maintain landscape lighting as part of a landscape plan. Depending on jurisdiction and specifications, licensed electricians may be required to complete part of this task.

**Performance Context:** When this task is performed correctly, landscape lighting functions correctly and meets design, manufacturer specifications, and appropriate Codes and regulations.



SUBTASKS			
F1.01	Assess safety requirements	F1.05	Clean components as required
F1.02	Co-ordinate sub-trades as required	F1.06	Program lighting system
F1.03	Troubleshoot system	F1.07	Replace worn, damaged or missing components
F1.04	Test system components	F1.08	Document work performed

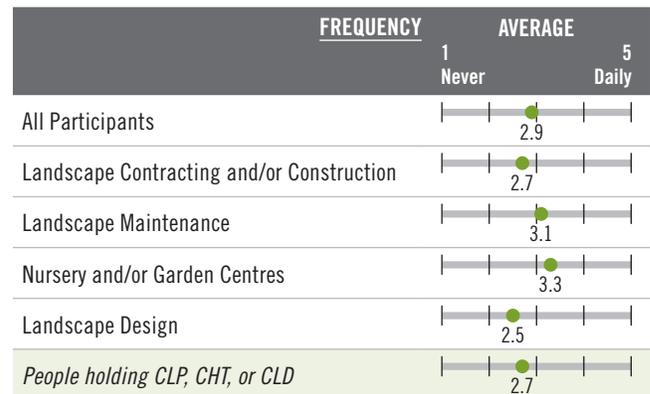
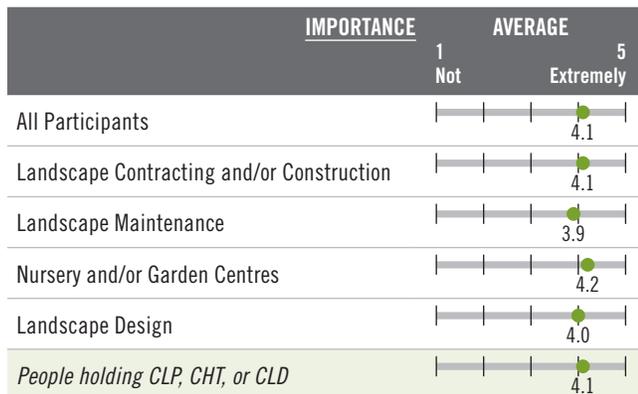
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>Read comments and instructions in EH&amp;S reports, work orders and maintenance contracts</li> <li>Read and apply government regulations and company policies and procedures related to electrical and EH&amp;S</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Locate operating specifications from specification tables</li> <li>Make entries in forms, logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> <li>Scan schematics and assembly drawings to troubleshoot and repair systems</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>Evaluate the performance of landscape lighting and individual components</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>Decide to replace defective parts, components and systems</li> </ul>
Numeracy – Data Analysis	2	<ul style="list-style-type: none"> <li>May compare readings and test results for systems to specifications</li> </ul>
Numeracy – Measurement and Calculation Math	2	<ul style="list-style-type: none"> <li>Take measurements such as depth, height and width using rulers and tape measures</li> <li>May calculate dimensions to confirm the location and orientation of components</li> </ul>
Oral Communication	2	<ul style="list-style-type: none"> <li>Discuss maintenance requirements and co-ordinate activities with licensed trades persons such as electricians</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of electrical troubleshooting techniques	3
• Knowledge of electrical safety regulations	2
• Ability to maintain lighting according to safety standard	3
• Knowledge of manufacturer's recommended procedures relative to components and applications	2
• Knowledge of Codes and standards relative to outdoor electrical applications	2

## Task F2: Maintain Landscape Irrigation Systems

**Occupational Context:** Landscape Horticulturists maintain and repair landscape irrigation components and systems as part of a landscape plan. Depending on jurisdiction and specifications, licensed tradespersons may be required to complete part of this task.

**Performance Context:** When this task is performed correctly, the landscape irrigation system functions correctly and meets design, manufacturer specifications, and appropriate Codes and regulations.



SUBTASKS			
F2.01	Assess safety requirements	F2.07	Clean components as required
F2.02	Co-ordinate sub-trades as required	F2.08	Program watering schedule
F2.03	Perform spring start up	F2.09	Replace worn, damaged or missing components
F2.04	Troubleshoot system	F2.10	Winterize irrigation system
F2.05	Evaluate irrigation system performance	F2.11	Document work performed
F2.06	Test and adjust system components		

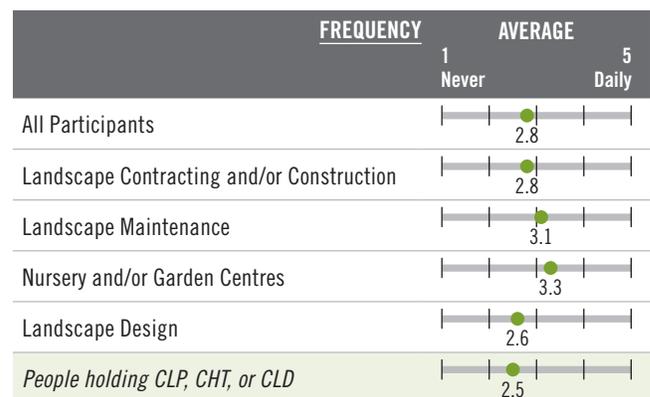
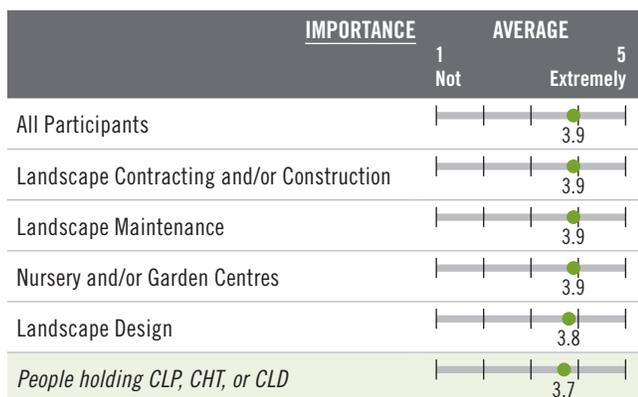
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read comments and instructions in EH&amp;S reports, work orders and maintenance contracts</li> <li>• Read and apply government regulations and company policies and procedures for electrical and EH&amp;S</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate operating specifications from specification tables</li> <li>• Make entries in forms, logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> <li>• Scan schematics and assembly drawings to troubleshoot and repair systems</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Evaluate the performance of landscape irrigation systems and individual components</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Decide to replace defective parts, components and systems</li> </ul>
Numeracy – Data Analysis	2	<ul style="list-style-type: none"> <li>• May compare readings and test results to specifications for variables such as pressure and rates per minute</li> </ul>
Numeracy – Measurement and Calculation Math	2	<ul style="list-style-type: none"> <li>• Take measurements such as depth, height and width using rulers and tape measures and pressure using gauges</li> <li>• May calculate dimensions to confirm the location and orientation of components</li> </ul>
Oral Communication	2	<ul style="list-style-type: none"> <li>• Discuss maintenance requirements and co-ordinate activities with licensed trades persons such as electricians</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of spring start up and winter shut down practices and standards	2
• Ability to calibrate systems	3
• Ability to troubleshoot systems	3
• Ability to identify parts for replacement	3
• Ability to replace worn parts	3
• Knowledge of programming system according to zones	2
• Knowledge of manufacturer's recommendations relative to components and applications	2
• Knowledge of Codes and standards relative to irrigation	2

### Task F3: Maintain Landscape Water Features

**Occupational Context:** Landscape Horticulturists maintain and repair landscape water features as part of a landscape plan. Depending on jurisdiction and specifications, licensed tradespersons may be required to complete part of this task.

**Performance Context:** When this task is performed correctly, landscape water features function correctly and meet design, manufacturer specifications and appropriate Codes and regulations.



SUBTASKS			
F3.01	Assess safety requirements	F3.07	Amend water in accordance with test and evaluation
F3.02	Co-ordinate sub-trades as required	F3.08	Clean components as required
F3.03	Troubleshoot system	F3.09	Replace worn, damaged or missing components
F3.04	Test system components	F3.10	Maintain water plants
F3.05	Perform water tests	F3.11	Winterize system
F3.06	Evaluate test results	F3.12	Document work performed

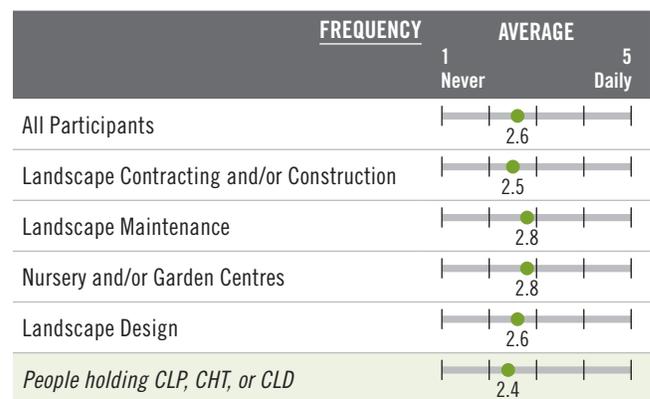
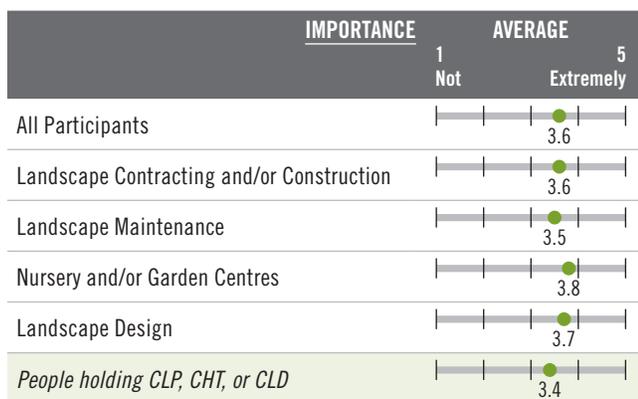
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read comments and instructions in EH&amp;S reports, work orders and maintenance contracts</li> <li>• Read and apply government regulations and company policies and procedures related to EH&amp;S</li> <li>• Read textbooks and manuals about water plant sciences</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>• Locate operating specifications from specification tables</li> <li>• Make entries in forms, logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> <li>• Scan schematics and assembly drawings to troubleshoot and repair systems</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Assess the quality of water and health of water plants</li> <li>• Evaluate the performance of system components for landscape water features</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>• Decide to replace defective parts, components and systems</li> <li>• Select methods to amend water and maintain water plants</li> </ul>
Numeracy – Data Analysis	2	<ul style="list-style-type: none"> <li>• May compare readings and test results to specifications for variables such as pressure and rates per minute</li> <li>• May collect and analyze data about water such as bacteria levels</li> </ul>
Numeracy – Measurement and Calculation Math	2	<ul style="list-style-type: none"> <li>• Take measurements such as depth, height and width using rulers and tape measures and pressure using gauges</li> <li>• Calculate weights and liquid volumes to prepare mixtures and solutions</li> </ul>
Oral Communication	2	<ul style="list-style-type: none"> <li>• Discuss maintenance requirements and co-ordinate activities with licensed trades persons such as electricians</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of spring start up and winter shut down procedures	2
• Knowledge of water quality needs	2
• Ability to troubleshoot water quality issues	3
• Ability to identify parts and components	2
• Ability to replace broken parts	3
• Knowledge of water feature plant maintenance	2
• Knowledge of ecosystem maintenance	2
• Knowledge of manufacturer's requirements relative to components and applications	2
• Knowledge of Codes and standards relative to water features	2

## Task F4: Maintain Other Hardscape Features

**Occupational Context:** Landscape Horticulturists maintain and repair landscape structures (gazebos, sheds, bridges, playground equipment, trellises, arbours, fences, decks, statuary and other decorative/artistic features) as part of a landscape plan. Depending on jurisdiction and specifications, sub-trades may be required to complete part of this task.

**Performance Context:** When this task is performed correctly, the landscape structures are safe and meet design, manufacturer specifications and appropriate Codes and regulations.



SUBTASKS			
F4.01	Assess safety requirements	F4.04	Replace worn, damaged or missing components
F4.02	Co-ordinate sub-trades as required	F4.05	Refinish surfaces as required
F4.03	Clean components as required	F4.06	Document work performed

ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>Read comments and instructions on product labels and in EH&amp;S reports, work orders and maintenance contracts</li> <li>Read and interpret company policies and national and provincial codebooks and regulations to ensure worksite practices and constructions meet requirements</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Enter product codes, material quantities and work completed in tracking forms</li> <li>Make entries in forms, logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> <li>Study assembly drawings to repair landscape structures</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>Evaluate the safety of worksites and identify safety hazards</li> <li>Assess the quality and wear of landscape structures</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>Take measurements from drawings and worksites to determine and verify the location of hardscape features</li> <li>Calculate quantities of materials required for repair of hardscape features</li> </ul>
Decision Making	2	<ul style="list-style-type: none"> <li>Choose methods and materials to protect existing structures and secure areas from environmental impact and to meet safety requirements</li> <li>Choose what components to repair, replace and refinish if not specified</li> </ul>

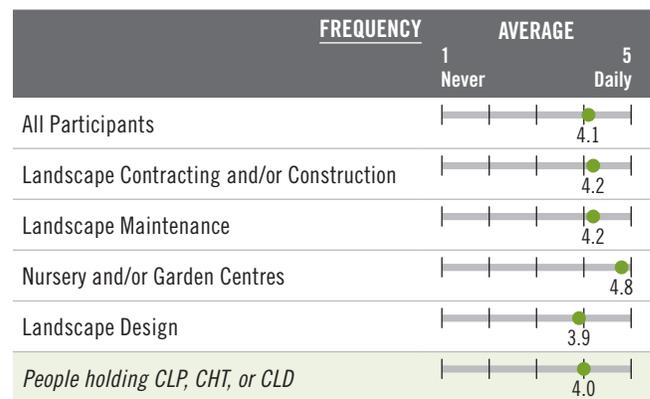
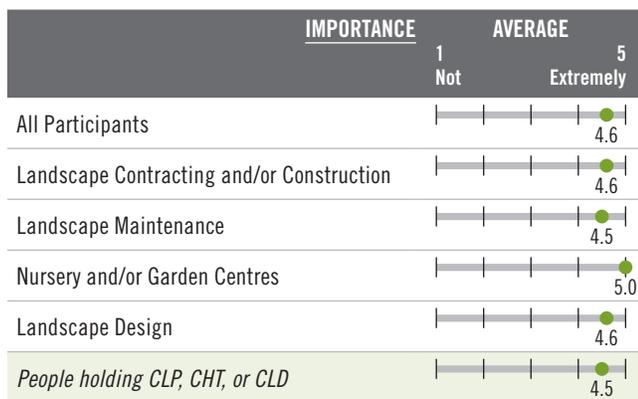
SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of repair and replace techniques	2
• Knowledge of cleaning and resurfacing products and materials	2
• Knowledge of manufacturer's requirements relative to components and applications	2
• Knowledge of Codes and standards relative to landscape features	2

## BLOCK G: SUPERVISE LANDSCAPE ACTIVITIES

### Task G1: Participate in Basic Job Planning and Estimating Activities

**Occupational Context:** While Landscape Horticulturists do not generally conduct long-term planning, or detailed cost estimating, they do plan the activities the crew will perform in the short term. The planning horizon may vary from one day ahead to a few weeks ahead depending on the size and complexity of the project. Once work is planned, it must be scheduled to ensure resources are optimized.

**Performance Context:** When this task is being performed correctly, production is on time, and there are no shortages or overages of material or equipment at the worksite.



SUBTASKS			
G1.01	Perform quantity take offs from technical documents	G1.04	Determine resources required
G1.02	Ensure that there is sufficient material on hand to complete the day's work	G1.05	Schedule work
G1.03	Determine work to be performed within time constraints	G1.06	Adjust schedules for changing conditions

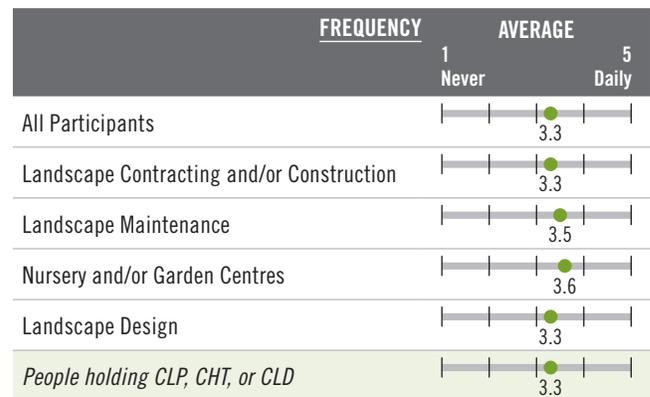
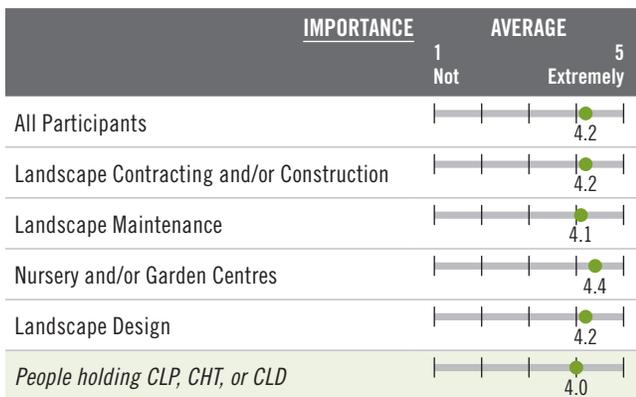
ESSENTIAL SKILLS	LEVEL	CONTEXT
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>Calculate material quantities using measurements from drawings and material packaging and sizes</li> </ul>
Numeracy – Scheduling, Budgeting, Accounting Math	3	<ul style="list-style-type: none"> <li>Plan and modify work schedules to establish timelines and daily work crew assignments</li> <li>Plan and monitor delivery schedules for timely receipt of supplies and equipment</li> <li>Manage worksite inventory levels</li> </ul>
Numeracy – Numerical Estimation	2	<ul style="list-style-type: none"> <li>Estimate the time to complete tasks</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Make entries in forms, logs and tables to record details about work completed, products and materials used and to note concerns and outstanding work</li> </ul>
Critical Thinking	2	<ul style="list-style-type: none"> <li>Evaluate the work performance of others</li> </ul>
Decision Making	2	<ul style="list-style-type: none"> <li>Choose assignments for workers they supervise</li> </ul>
Job Task Planning	3	<ul style="list-style-type: none"> <li>Organize, plan, schedule and monitor the activities of workers they supervise</li> <li>Plan and schedule activities in advance to manage changing priorities and circumstances to ensure they fulfill their responsibilities to employers, customers and co-workers</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
<ul style="list-style-type: none"> <li>Knowledge of blueprint/technical drawing symbols and protocols</li> </ul>	3
<ul style="list-style-type: none"> <li>Ability to interpret technical drawings and specifications</li> </ul>	3
<ul style="list-style-type: none"> <li>Ability to estimate time and materials</li> </ul>	3

## Task G2: Participate in Basic Landscape Design Activities

**Occupational Context:** While Landscape Horticulturists do not generally create landscape designs, they are required to act as part of the team and contribute to the design process so they can spot potential problems with the implementation of design and work with designers to make changes to designs to meet site requirements.

**Performance Context:** Landscape Horticulturists spot potential design problems and seeks collaborative solutions with the designers.



SUBTASKS					
G2.01	Assist in determining customer needs	G2.04	Draw basic plans		
G2.02	Assess site conditions	G2.05	Co-ordinate with design team for changes		
G2.03	Recognize discrepancies between plans and site realities	G2.06	Document work performed		

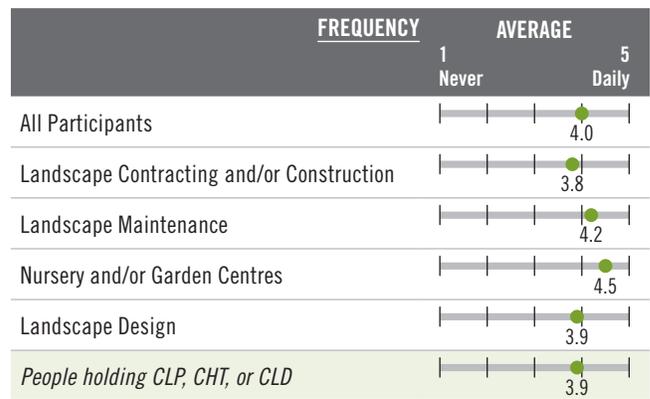
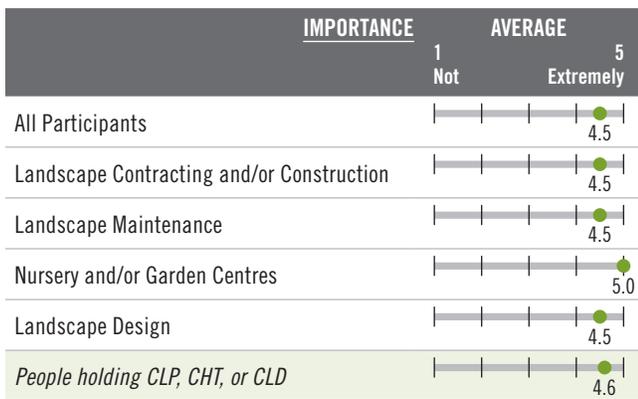
ESSENTIAL SKILLS	LEVEL	CONTEXT
Critical Thinking	3	<ul style="list-style-type: none"> <li>Judge customers' preferences and needs</li> <li>Assess soil and growing conditions</li> <li>Evaluate the suitability of landscape designs, features, products and materials</li> </ul>
Document Use	2	<ul style="list-style-type: none"> <li>Prepare sketches to illustrate proposed landscape designs and modifications (creating documents not rated)</li> <li>Prepare job quotes</li> </ul>
Oral Communication	2	<ul style="list-style-type: none"> <li>Speak with clients to assess their needs and receive input about landscape designs</li> <li>Suggest changes and offer opinions about design features to co-workers and colleagues</li> </ul>
Numeracy – Scheduling, or Budgeting and Accounting Math	3	<ul style="list-style-type: none"> <li>Calculate costs for job quotes. They calculate labour and equipment costs using hourly rates and costs for materials using prices per unit, packages, area, volume and weight</li> </ul>
Numeracy – Numerical Estimation	2	<ul style="list-style-type: none"> <li>Estimate times required to complete landscape activities</li> </ul>
Decision Making	3	<ul style="list-style-type: none"> <li>Select landscape designs and materials which fit clients' expectations and requirements for cost, aesthetics and functionality</li> <li>Select trees, shrubs and plants to recommend to customers</li> </ul>
Reading	4	<ul style="list-style-type: none"> <li>Read product bulletins, marketing brochures, catalogues and trade magazines for information about industry design trends and new products and materials</li> <li>Read textbooks and manuals about plant sciences and landscape design</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
• Knowledge of plant science	2
• Knowledge of design principles	2
• Knowledge of landscape materials	2
• Knowledge of site assessment principles	2
• Ability to interact with customer	3
• Ability to interpret customer requirements	3
• Ability to sketch basic landscape plans	2
• Ability to assess site conditions	3

### Task G3: Participate in Sales and Customer Service Activities

**Occupational Context:** Landscape Horticulturists seek opportunities to provide both internal and external customers with needed and/or value added products and services. Interaction with customers may occur on a landscaping worksite, in a garden centre, or during maintenance activities.

**Performance Context:** Landscape Horticulturists will show an aptitude for communicating respectfully with customers and will be able to suggest appropriate products and services to enhance the customer’s satisfaction with the job and the landscape company.



SUBTASKS			
G3.01	Interact with customers	G3.05	Interact with senior management
G3.02	Interpret customer requirements	G3.06	Document activities
G3.03	Suggest suitable products to meet customer needs	G3.07	Handle point-of-sale financial transactions
G3.04	Process change orders and/or work orders		

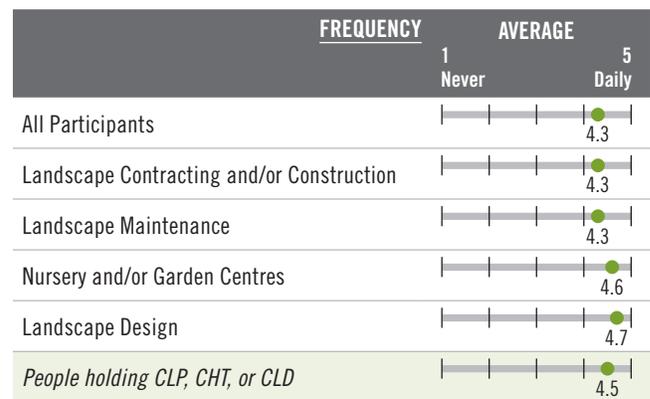
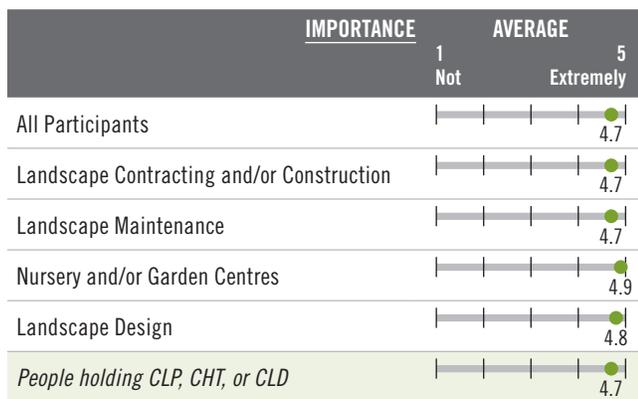
ESSENTIAL SKILLS	LEVEL	CONTEXT
Reading	4	<ul style="list-style-type: none"> <li>• Read reports such as sales and safety reports</li> <li>• Read bulletins and product brochures</li> <li>• Read textbooks and manuals about plant sciences</li> </ul>
Document Use	2	<ul style="list-style-type: none"> <li>• Locate and enter product codes, descriptions, quantities and costs on invoices</li> <li>• Complete tracking and quality control forms</li> </ul>
Writing	2	<ul style="list-style-type: none"> <li>• Write notes about a variety of matters to managers, co-workers and suppliers</li> </ul>
Numeracy – Money Math	3	<ul style="list-style-type: none"> <li>• Calculate invoice amounts and verify totals</li> </ul>
Numeracy – Numerical Estimation	2	<ul style="list-style-type: none"> <li>• Estimate the time it will take to complete tasks</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>• Discuss landscape products and materials with customers</li> <li>• Give directions and assign tasks to workers they supervise</li> <li>• Receive direction and discuss matters such as products, procedures, timelines, equipment problems, budgets and safety concerns with supervisors</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>• Evaluate the health of plants</li> <li>• Assess the effectiveness of techniques and approaches to treat damaged and diseased plants</li> </ul>
Problem Solving	2	<ul style="list-style-type: none"> <li>• Are sometimes unable to locate local suppliers for plants and trees of the types specified in contracts</li> </ul>
Decision making	3	<ul style="list-style-type: none"> <li>• Select products to recommend to customers</li> <li>• May select methods to maintain and treat plants such as types of pest control agents and fertilizers to use</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
<ul style="list-style-type: none"> <li>• Ability to determine product needs for re-ordering</li> </ul>	3
<ul style="list-style-type: none"> <li>• Knowledge of plants, and environmental needs</li> </ul>	2
<ul style="list-style-type: none"> <li>• Ability to identify plants</li> </ul>	2
<ul style="list-style-type: none"> <li>• Knowledge of product lines</li> </ul>	2
<ul style="list-style-type: none"> <li>• Ability to operate financial transaction equipment</li> </ul>	2

## Task G4: Supervise Landscape Worksite

**Occupational Context:** Landscape Horticulturists often act as foremen or crew chief for a worksite, supervising the activities of other Landscape Horticulturists, sub-trades, and semi-skilled or unskilled labour. They motivate and encourage people to ensure that jobs are accomplished safely, on time and at the expected quality level.

**Performance Context:** When this task is performed correctly, the crew works safely, effectively and efficiently and can be seen to be working well together to achieve production targets.



SUBTASKS			
G4.01	Interpret plans and specifications	G4.05	Motivate team members
G4.02	Plan activities	G4.06	Apply appropriate leadership styles to deal with various situations
G4.03	Brief crew	G4.07	Lead by example
G4.04	Co-ordinate with sub-contractors and other crews	G4.08	Provide performance feedback to crew

ESSENTIAL SKILLS	LEVEL	CONTEXT
Working with Others	3	<ul style="list-style-type: none"> <li>Assume a wide variety of roles to co-ordinate job tasks and other activities with their own and other workers, sub-contractors and suppliers. They work closely with managers, prime contractors and administrative personnel</li> </ul>
Oral Communication	3	<ul style="list-style-type: none"> <li>Give instructions and directions and provide feedback to their work crews</li> <li>Participate in and lead pre-work and ongoing work meetings to discuss topics such as safety, project specifications, timelines, co-ordination and sequence of construction activities and regulatory and reporting requirements with sub-contractors, their own and other crews</li> <li>Speak to vendors, suppliers and manufacturers about products and materials and make delivery arrangements</li> <li>Discuss landscape details with landscape designers, architects and engineers</li> <li>Answer questions from customers, co-workers, colleagues and supervisors</li> <li>Speak with their managers to provide project updates and to seek advice for handling situations</li> <li>Speak to inspectors to discuss regulatory requirements, code violations and processes to eliminate infractions</li> </ul>
Document Use	3	<ul style="list-style-type: none"> <li>Review drawings to locate utilities, existing structures, dimensions, elevations and other data</li> <li>Review specifications to understand the scope of work, plan construction methods and sequences</li> <li>Make entries in tracking and quality control reports to record details about work completed, products and materials used and to note concerns and outstanding work</li> </ul>
Reading	4	<ul style="list-style-type: none"> <li>Read instructions and descriptions in work orders</li> <li>Read and interpret company policies and national and provincial codebooks and regulations to ensure landscape projects meet requirements</li> </ul>
Decision Making	2	<ul style="list-style-type: none"> <li>Choose work assignments for workers they supervise</li> <li>Choose methods and materials to protect existing structures, to secure areas from environmental impact and to meet safety requirements</li> <li>Choose methods to enhance performance of workers they supervise</li> </ul>
Critical Thinking	3	<ul style="list-style-type: none"> <li>Evaluate workers' technical skills</li> <li>Evaluate the safety of worksites and identify safety hazards</li> <li>Assess the quality and acceptability of completed work</li> </ul>
Numeracy – Measurement and Calculation Math	3	<ul style="list-style-type: none"> <li>Calculate material quantities using measurements from drawings and material packaging and sizes</li> </ul>
Numeracy – Scheduling, Budgeting, Accounting Math	3	<ul style="list-style-type: none"> <li>Plan and modify work schedules to establish timelines and daily work assignments for workers</li> <li>Plan and monitor delivery schedules for timely receipt of supplies and equipment</li> </ul>
Writing	2	<ul style="list-style-type: none"> <li>Write notes in tracking and quality control forms to describe work completed, note concerns and follow-up actions required</li> <li>Write descriptions and explanations in incident and accident reports</li> </ul>
Problem Solving	2	<ul style="list-style-type: none"> <li>Find that their crew members are not following safety and performance protocols</li> <li>Encounter unexpected difficulties such as utilities and large boulders where working, bad weather and unavailability of supplies</li> </ul>

SUPPORTING TECHNICAL KNOWLEDGE AND ABILITIES	LEARNING LEVEL (BLOOM)
<ul style="list-style-type: none"> <li>Knowledge of environmental, bylaw and safety requirements for a worksite</li> </ul>	2
<ul style="list-style-type: none"> <li>Knowledge of time management</li> </ul>	2
<ul style="list-style-type: none"> <li>Basic knowledge of management and leadership</li> </ul>	2
<ul style="list-style-type: none"> <li>Ability to complete reports as required</li> </ul>	3
<ul style="list-style-type: none"> <li>Ability to co-ordinate several activities on site simultaneously</li> </ul>	3

## BLOCK H: PERSONAL AND PROFESSIONAL ATTRIBUTES

**Context:** Personal and Professional Attributes are those individual characteristics that lead to success in an occupation. They are “attitude” or “life skills” attributes that apply to many different tasks and subtasks.

Personal attributes are useful for recruiting the “right kind” of people into an occupation. They are not listed in any particular order of priority.

- **H1 Ambition:** A psychological need to progress personally and professionally. Persons with this attribute seek opportunities for promotion, increased responsibility and career advancement.
- **H2 Desire for self-improvement:** A psychological need to see personal skill sets grow and develop. Persons with this attribute seek training and development opportunities and seek to learn new things.
- **H3 Interpersonal skills:** An ability to understand and be understood by others. Individuals with this attribute have concern for others points of view and opinions. They seek to mediate disputes in a fair and equitable manner.
- **H4 Concern for order and quality:** A need for things to be done in a prescribed manner, and a concern that finished work meets specifications and craftsmanship expectations. Persons with this attribute will not accept behaviour, productivity or craftsmanship that is below the recognized standard.
- **H5 Focus on results:** A desire to see jobs completed. Persons with this attribute are never satisfied until the job is completed satisfactorily.
- **H6 Attention to detail:** An ingrained focus on the small things that lead to success. Persons with this attribute are fastidious and will spot the “little things” that add together to make or break a project.
- **H7 Honesty:** Telling the truth, honouring the truth.
- **H8 Integrity:** Doing what you say you will do; following through on your commitments. Persons with this attribute go out of their way to keep their promises and will always make contact if something comes up that prevents their doing so.
- **H9 Sense of responsibility:** A desire to do the right things, the right way. Persons with this attribute do not cut corners, bend rules or look for loopholes to excuse unacceptable or substandard behaviour or performance.



## APPENDICES

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## APPENDIX A: Competency Matrix Chart

Full details related to the Essential Skills components can be found in the Appendix B. Full details of tasks, subtasks and learning levels may be found in the body of the document.

### LEGEND

ESSENTIAL SKILLS	NOMENCLATURE
Reading Text	READ
Document Use	DOC
Writing	WRITE
Oral Communication	ORAL
Numeracy – Measurement and Calculation Math	NUM (MEASURE)
Numeracy – Scheduling, Budgeting and Accounting Math	NUM (SCHED)
Numeracy – Numerical Estimation	NUM (EST)
Numeracy – Data Analysis	NUM (DATA)
Thinking Skills – Problem Solving	PROB
Thinking Skills – Decision Making	DM
Thinking Skills – Job Task Planning and Organizing	JOB
Thinking Skills – Finding Information	INFO
Thinking Skills – Critical Thinking	CRIT
Working with Others	WORK
Computer Use	COMP

The following chart is a graphical representation of the National Occupational Standard. It shows the Blocks, Tasks, and associated Essential Skills components.

BLOCK A: COMPLY WITH WORKPLACE REGULATIONS				
A1: Maintain safe worksite	A2: Ensure compliance with environmental regulations	A3: Ensure compliance with municipal bylaws and ordinances	A4: Ensure compliance with labour standards and laws	A5: Ensure compliance with company policies and standards
Essential skills				
READ: 4	READ: 4	READ: 3	READ: 4	READ: 3
ORAL: 2	DOC: 3	CRIT: 3	DM: 2	CRIT: 2
DOC: 3	ORAL: 3	DOC: 3	DOC: 3	INFO: 2
CRIT: 2	CRIT: 3	ORAL: 3	WRITE: 3	DOC: 3
WRITE: 2	DM: 3	WRITE: 2		WRITE: 3
		INFO: 2		DM: 3

**BLOCK B: OPERATE LANDSCAPING TOOLS AND EQUIPMENT**

B1: Use hand tools	B2: Use power tools	B3: Operate self-propelled equipment	B4: Operate equipment attachments	B5: Transport equipment
Essential skills				
READ: 3	READ: 3	READ: 3	READ: 3	READ: 4
CRIT: 2	CRIT: 2	CRIT: 3	CRIT: 2	DOC: 2
DM: 2	DM: 2	DM: 2	DM: 2	ORAL: 2
DOC: 3	DOC: 3	DOC: 3	DOC: 3	CRIT: 2

**BLOCK C: INSTALL SOFTSCAPE**

C1: Install turf from seed	C2: Install sod	C3: Install greenhouse plants	C4: Install container plants	C5: Install field-grown plants
Essential skills				
READ: 4	READ: 4	READ: 4	READ: 4	READ: 4
CRIT: 3	CRIT: 3	CRIT: 3	CRIT: 3	CRIT: 3
DM: 3	DM: 3	DM: 3	DM: 3	DM: 3
DOC: 3	DOC: 3	DOC: 3	DOC: 3	DOC: 3
ORAL: 3	ORAL: 3	ORAL: 3	ORAL: 3	ORAL: 3
NUM (DATA): 3	NUM (DATA): 3	NUM (DATA): 3	NUM (DATA): 3	NUM (DATA): 3
NUM (MEASURE): 3	NUM (MEASURE): 3	NUM (MEASURE): 3	NUM (MEASURE): 3	NUM (MEASURE): 3
PROB: 2	INFO: 2			
INFO: 2				

**BLOCK D: INSTALL HARDSCAPE**

D1: Install paving materials	D2: Install landscape water features	D3: Install landscape irrigation systems	D4: Install retaining walls	D5: Install landscape lighting	D6: Install landscape structures
Essential skills					
READ: 4	READ: 4	READ: 4	READ: 4	READ: 4	READ: 4
DOC: 3	DOC: 3	DOC: 3	CRIT: 3	DOC: 3	DOC: 3
ORAL: 3	ORAL: 3	ORAL: 3	DM: 3	ORAL: 3	ORAL: 3
CRIT: 3	CRIT: 3	CRIT: 3	DOC: 3	CRIT: 3	CRIT: 3
DM: 3	DM: 3	NUM (MEASURE): 3	ORAL: 3	DM: 3	DM: 3
NUM (MEASURE): 3	NUM (MEASURE): 3	DM: 3	NUM (MEASURE): 4	NUM (MEASURE): 3	NUM (MEASURE): 4
		COMP: 2	PROB: 2	COMP: 2	

BLOCK E: MAINTAIN SOFTSCAPE			
E1: Maintain turf	E2: Maintain herbaceous planting	E3: Maintain container plants	E4: Maintain trees and shrubs
Essential skills			
READ: 4	READ: 4	READ: 4	READ: 4
CRIT: 3	CRIT: 3	CRIT: 3	CRIT: 3
DM: 3	DM: 3	DM: 3	DM: 3
DOC: 3	DOC: 3	DOC: 3	DOC: 3
NUM (DATA): 3	NUM (DATA): 3	NUM (DATA): 3	NUM (DATA): 3
NUM (MEASURE): 2	NUM (MEASURE): 2	NUM (MEASURE): 2	NUM (MEASURE): 2

BLOCK F: MAINTAIN HARDSCAPE			
F1: Maintain landscape lighting	F2: Maintain landscape irrigation systems	F3: Maintain landscape water features	F4: Maintain other hardscape features
Essential skills			
READ: 4	READ: 4	READ: 4	READ: 4
DOC: 3	DOC: 3	DOC: 3	DOC: 3
CRIT: 3	CRIT: 3	CRIT: 3	CRIT: 3
DM: 3	DM: 3	DM: 3	NUM (MEASURE): 3
NUM (DATA): 2	NUM (DATA): 2	NUM (DATA): 2	DM: 2
NUM (MEASURE): 2	NUM (MEASURE): 2	NUM (MEASURE): 2	
ORAL: 2	ORAL: 2	ORAL: 2	

BLOCK G: SUPERVISE LANDSCAPE ACTIVITIES			
G1: Participate in basic job planning and estimating activities	G2: Participate in basic landscape design activities	G3: Participate in sales and customer service activities	G4: Supervise landscape worksite
Essential skills			
NUM (MEASURE): 3	CRIT: 3	READ: 4	WORK: 3
NUM (SCHED): 3	DOC: 2	DOC: 2	ORAL: 3
NUM (EST): 2	ORAL: 2	WRITE: 2	DOC: 3
DOC: 3	NUM (SCHED): 3	NUM (SCHED): 3	READ: 4
CRIT: 2	NUM (EST): 2	NUM (EST): 2	DM: 2
DM: 2	DM: 3	ORAL: 3	CRIT: 3
JOB: 3	READ: 4	CRIT: 3	NUM (MEASURE): 3
		PROB: 2	NUM (SCHED): 3
		DM: 3	WRITE: 2
			PROB: 2

BLOCK H: PERSONAL AND PROFESSIONAL ATTRIBUTES								
H1: Ambition	H2: Desire for self-improvement	H3: Interpersonal skills	H4: Concern for order and quality	H5: Focus on results	H6: Attention to detail	H7: Honesty	H8: Integrity	H9: Sense of responsibility

## APPENDIX B: Tools and Equipment List

The following is a typical assortment of tools and equipment that a Landscape Horticulturist could be expected to be familiar with. It is not intended to be exhaustive and certain tools or equipment in the list will only be used by individuals in particular specialties within the occupation.

### Hand Tools

- Mallets
- Hammers
- Wood chisels
- Cold chisels
- Caping chisels
- Handsaw – crosscut, back saw
- Hand planes
- Levels
- Brick carriers
- Wheelbarrows, trolleys
- String lines
- Scythe
- Manual hedge shears
- Pruning shears
- Manual cultivators
- Shovel
- Spade (various types)
- Manual lawn edging tools
- Manual weeders
- Tape measures
- Transit
- Plumb line
- Rakes (various types)
- Wrenches (various types)
- Pliers (various types)
- Seed/fertilizer spreaders
- Laser level
- Paving stone cutter
- Manual Post hole auger

### Power Tools

- Electric rotary drill
- Hammer drill
- Powder-actuated nail driver
- Plate compactor
- Mortar/cement mixer (portable)
- Sabre saw
- 7-inch circular saw
- 12-inch circular saw
- Concrete saw (dry)
- Concrete saw (wet)
- Mitre/chop saw
- Table saw
- Chainsaw
- Mowers/mulchers
- Lawn/weed trimmers (gas and electric)
- Chippers
- Power aerator
- Power dethatcher
- Power cultivator (roto-tiller)
- Power seeder/spreader
- Hydro-seeding equipment
- Demolition hammer (electric)
- Demolition hammer (pneumatic)

### Self-Propelled Equipment

- Riding mowers/mulchers
- Tractors
- Skid-steer loader
- Backhoe
- Bucket loader
- Compact dozer
- Plate compactor
- Ram compactor
- Line-layer (irrigation)

### Equipment Attachments

- Auger/post hole digger
- Cultivator
- Fertilizer spreader
- Spray equipment
- Trailers

## APPENDIX C: Essential Skills Profile

### Essential Skills Profile: Landscape Horticulturist

#### i. Landscape Horticulturist Definition Introduction

Landscape Horticulturists include those who: survey and assess landscapes; draw sketches and build models of landscape designs; construct and maintain gardens, parks, golf courses and other landscaped environments; advise clients on issues related to horticulture; breed, cultivate and study plants; and treat injured and diseased trees and plants. They are employed by landscape designers and contractors, lawn service and tree care establishments, golf courses, nurseries and greenhouses, municipal, provincial and national parks or they may be self-employed.

The most important Essential Skills for Landscape Horticulturists are:

- Critical Thinking
- Oral Communication
- Working with Others

#### ii. Essential Skills Background

Essential Skills are foundation skills required for all types of work. They are not technical skills, but the core skills people need to acquire knowledge and complete workplace tasks and daily activities. These skills are considered essential for learning and completing workplace tasks. Therefore, the term “Essential Skills” has been adopted.

Understanding what Essential Skills are required for different occupations and training programs:

- allows individuals to compare their skills to those required; and
- assists training bodies in developing appropriate academic upgrading materials and programs. Training can be either stand-alone or embedded in other training to ensure individuals have the foundation skills necessary to be successful in training and as supervisors.

Human Resources and Social Development Canada has defined Essential Skills. They are:

- Reading Text
- Document Use
- Numeracy
- Writing
- Oral Communication
- Computer Use
- Working with Others
- Continuous Learning
- Thinking Skills:
  - Problem Solving
  - Decision Making
  - Critical Thinking
  - Job Task Planning and Organizing
  - Finding Information
  - Significant Use of Memory

#### *Definition of an “Example”:*

Example tasks are tasks generally performed by **most Landscape Horticulturists**. Each Essential Skill area includes a list of Examples to illustrate the use of that skill. While the Examples are not a comprehensive listing of the duties performed in that occupational group, they do provide a picture of the nature and range of tasks performed.

#### *The qualifier “may”:*

Some Examples use the qualifier “may”. This indicates that the task **may not relate to all Landscape Horticulturists or relate to only certain sectors in which they are employed**.

## LANDSCAPE HORTICULTURALIST

### A. Reading

The typical reading tasks of Landscape Horticulturists are at complexity 1 to 4. Their most complex text reading tasks are at complexity level 3 and 4.

#### *Examples of Reading Tasks*

Landscape Horticulturists:

1. Read short comments on forms and handwritten notes from co-workers, customers and supervisors. For example, they read instruction in work orders. (1)
2. May read directions on pesticide and fertilizer labels and in material Safety Data Sheets for details of handling, mixing, and application and first aid procedures. (2)
3. Read comments and instructions in Environmental, Health and Safety inspection reports to learn about jobsite hazards and to understand proper procedures for avoiding unsafe conditions and completing tasks. (2)
4. Read e-mail from clients or co-workers confirming meeting arrangements, responding to questions or enquiring about the status of landscape design, maintenance or horticultural activities. (2)
5. Read promotional materials such as brochures, pamphlets and product catalogues from suppliers to understand their offers and make informed purchasing decisions. (2)
6. Review specifications for quality standards and work practices written by contractors, architects and designers. For example, they may read specifications for tree planting to ensure that provisions have been made for tree protection in landscape architecture projects and landscape maintenance contracts. (2)
7. Read trade publications such as *Landscape Trades*, *Landscape Architecture*, *Turf and Recreation*, *Canadian Gardening*, *Shade Gardening*, *Grower Talk*, *Canadian Greenhouse*, *Échos municipaux de l'Association des responsables d'espaces verts du Québec* and *Québec vert* to stay abreast of industry trends and learn about new horticultural products, equipment and supplies. (2)
8. Read instruction manuals for landscaping equipment and supplies and computer programs. For example, they may refer to software user manuals to review specific functions or steps needed to create plant images, custom plant care packages and quotations using landscape design software. (3)
9. Read their organizations' policies and procedures manuals and the *Canadian Standards for Nursery Stock*. For example, they read their organizations' procedures for environmental, health and safety to apply them to specific situations such as accidents, injuries, and hazard identification and containment. They read standard procedures for planting and soil amendment. (3)
10. Read building codes, zoning regulations, bylaws and other federal, provincial and municipal legislation and updates. They read to understand requirements to ensure worksite practices and landscape designs are compliant. For example, they may check on the requirements for the landscaping of sites bordering bodies of water. They may read labour standards to learn about requirements for overtime pay. (4)
11. Read and interpret textbooks and articles in scientific journals such as the *Journal of Arboriculture*, *Compendium of Turfgrass Diseases* and *Turfgrass Science and Culture* to learn about plant sciences. They read to learn how to assess and amend soils, to select, propagate and maintain plants and to identify and control pests and diseases. For example, they may read *Journal de la Société internationale d'arboriculture* to learn about plant breeding experiments, the control of destructive pests or the diagnosis and treatment of diseases such as Sudden Oak Death. These articles contain specialized terminology intended for an expert audience. (4)

## READING TEXT SUMMARY

Type of Text	Purpose for Reading			
	To scan for specific information/To locate information	To skim for overall meaning, to get the 'gist'	To read the full text to understand or to learn	To read the full text to critique or to evaluate
Forms	✓	✓		
Labels	✓	✓	✓	
Notes, Letters, Memos	✓	✓	✓	
Manuals, Specifications, Regulations	✓	✓	✓	
Reports, Books, Journals	✓	✓	✓	

### B. Document Use

The typical document use tasks of a Landscape Horticulturist are at complexity 1 to 4. Their most complex document use tasks are at complexity level 3 and 4.

#### *Examples of Document Use Tasks*

Landscape Horticulturists:

1. Read lists of names and addresses of horticultural product suppliers. (1)
2. Scan labels on fertilizer, herbicide, insecticide and fungicide containers to find information on ingredients, concentrations, hazard warnings and expiry dates. (1)
3. Identify and use a variety of icons to search websites for information on plants, trees, shrubs and ornamentals and other horticultural products. (2)
4. Check coloured pictures of varied types of diseases to assess the health and conditions of trees, shrubs, plants and lawns. (2)
5. Enter data into tables. For example, they make entries in logs and tables to record details about turf, plants, trees and shrubs and to track dates and details about maintenance activities such as applications of fertilizers. (2)
6. Complete tracking and quality control forms. For example, they may complete pesticide application forms to describe the problems diagnosed and the treatment solutions used. They complete worksite safety reports. They complete timesheets and work summaries to track dates, times, locations, materials used, work completed and unusual problems encountered. They complete incident reports, which detail dates, times, parties involved, extent of injuries, property damages incurred and possible environmental effects. (3)
7. Locate and retrieve data from various tables, schedules and other table-like text. For example, they locate information about the composition and health hazard of chemical products on Material Safety Data Sheets and other technical data sheets. Review project specifications to understand the overall scope of projects, and the methods, techniques and standards to apply during landscape activities. (3)
8. Read assembly drawings to assemble or repair grounds maintenance and other equipment. For example, they may look at assembly drawings showing the proper way to assemble irrigation pumps or sprinkler heads. (3)
9. Scan schematics to locate components, understand the configuration of systems, complete installations and troubleshoot problems. For example, they use schematics to locate components of irrigation and lighting systems. (3)
10. Review landscape drawings to understand overall designs and to locate dimensions, elevations and other data. They use drawings to identify the locations of softscape features such as plants, shrubs and trees and the characteristics of features such as walkways, retaining walls and ponds. They may review drawings to identify utilities and existing structures, to determine supply quantities and to evaluate for errors. (3)
11. Interpret graphs contained in textbooks, trade publications, scientific journals and websites to learn about the effectiveness

of techniques used in the treatment of damaged or diseased trees, shrubs, plants or turf. They combine information from the graphs and accompanying texts to understand the effectiveness of techniques. (4)

### *Creating Documents Examples*

Landscape Horticulturists:

1. May sketch portions of landscaped environments to explain jobs to maintenance and installation crews.
2. Create tables and matrices to organize financial data and to schedule design, construction and maintenance activities. For example, they may create tables that explain the letter abbreviations of woody plants and herbaceous perennials used in landscape design drawings.
3. May create schematic drawings of irrigation systems.
4. May prepare drawings of landscape designs. For example, they may draw gardens to scale on graph paper. They indicate hardscape features and varied types of plants by using differing shapes and letter abbreviations.

### *Document Use Summary*

- Read signs, labels or lists
- Read completed forms
- Complete forms by marking check boxes, recording numerical information or entering words, phrases, sentences or texts of a paragraph or more
- Read completed forms containing check boxes, numerical entries, phrases, addresses, sentences or texts of a paragraph or more
- Read tables, schedules or other table-like text
- Enter information on tables, schedules or other table-like text
- Obtain specific information from graphs or charts
- Draw, sketch or form common shapes such as circles, triangles, spheres, rectangles, squares, etc.
- Interpret scale drawings (e.g., blueprints or maps)
- Take measurements from scale drawings
- Draw to scale
- Read assembly drawings

- Read schematic drawings (e.g., electrical schematics)
- Make sketches
- Obtain information from sketches, pictures or icons

## **C. Writing**

The typical writing tasks of a Landscape Horticulturist are at complexity 1 to 4. Their most complex writing tasks are at complexity level 3.

### *Examples of Writing Tasks*

Landscape Horticulturists:

1. Write comments in personal logs and daybooks. For example, they may record key points of discussions with employees, suppliers, sub-contractors and their managers. They write brief notes to record details of conversations, quality concerns, staffing issues and other matters that require follow-up. (1)
2. Write brief notes on workplace forms. For example, they record observations, concerns and suggestions for treatment on plant inspection forms. They write brief notes to describe work completed and other details on work orders. They write notes describing safety breaches, delays and maintenance requirements on tracking forms. They enter reasons for disposal, quantities, product codes and descriptions on shrinkage sheets. (2)
3. Write e-mail to co-workers, contractors, suppliers and clients to request information, co-ordinate activities and respond to enquiries. For example, they write e-mail to suppliers to confirm the availability and delivery of supplies. They write e-mail to customers providing alternative suggestions when requested products are unavailable. (2)
4. Write letters to accompany tenders for the construction or maintenance of gardens, parks, golf courses and other landscaped environments. They frequently use templates and may modify previous letters. (2)
5. Write investigation reports following the discovery of damaged or diseased trees, shrubs, plants and turf. These reports vary in length and complexity, but each of them describes the nature of the problem, the variables investigated to identify causes and the outcome of the investigation. (3)

6. May prepare detailed descriptions of work to be completed such as instructions for employees and comprehensive specifications for contractors. These instructions and specifications comprise a detailed description of tasks to be performed, inorganic and organic materials to be used, time frames to be achieved and other contract requirements. (4)
7. May write responses to requests for proposals for landscape design work. They must address key components of the requests and convey complex horticultural and landscaping concepts in an effective manner. They usually need to gather and select technical descriptions from multiple sources and adapt them for non-technical audiences. (4)
8. May write articles for newsletters, newspapers and magazines to inform peers about specific horticultural and business issues and introduce the public to general gardening practices and new products. For example, they may write about environmentally sound ways of controlling pests and maintaining the health and appearance of trees, shrubs, plants and lawns. (4)

WRITING SUMMARY							
Length	Purpose for Writing						
	To organize/to remember	To keep a record/to document	To inform/to request information	To persuade/to justify a request	To present an analysis or comparison	To present an evaluation or critique	To entertain
Texts requiring less than one paragraph of new text	✓	✓	✓	✓			
Texts rarely requiring more than one paragraph		✓	✓				
Longer text		✓	✓			✓	

## D. Numeracy Tasks

The numerical calculation tasks of Landscape Horticulturists involve:

- Money Math at complexity level 1 to 3
- Scheduling or Budgeting and Accounting Math at complexity levels 3 to 4
- Measurement and Calculation Math at complexity levels 1 to 4
- Data Analysis at complexity level 3
- Numerical Estimation at complexity levels 1 to 3

### Examples of Numerical Calculation Tasks

#### Money Math

Landscape Horticulturists:

1. May accept payment for landscaping or horticultural services and make change. (1)

2. Calculate or approve travel claim amounts. They calculate reimbursements for the use of personal vehicles at per kilometre rates, and add amounts for accommodation, meals and other expenses. (2)
3. Prepare and approve invoices for the design, construction or maintenance of gardens, parks, golf courses and other landscaped environments. They multiply the numbers of hours worked by hourly rates, add equipment and material costs, calculate applicable taxes and total the amounts. (3)

#### Scheduling, Budgeting and Accounting Math

Landscape Horticulturists:

1. May calculate costs for job quotes. They calculate labour and equipment costs using hourly rates. They calculate costs for materials by area, volume and weight. (3)
2. Identify lowest costs for goods and services. For examples, they calculate unit prices, total prices and net prices for landscape

materials such as geotextiles and paving stones and products such as plants, fertilizers and mulch. They review tenders and job quotes submitted by sub-contractors. They compare costs to identify which offer the best prices. (3)

3. May create and monitor budgets for the design, construction or maintenance of gardens, parks, golf courses and other landscaped environments. They must ensure that expenses incurred for equipment, organic and inorganic materials and labour remain within budgeted amounts. (4)
4. May prepare and monitor schedules, which identify major activities and target completion dates for the design, construction and maintenance of landscaped environments. For example, Landscape Horticulturists may prepare schedules for plant cultivating; tree planting, trimming and fertilizing; bed weeding, tilling, edging, raking and mulching; and shrub planting and pruning. They frequently adjust schedules because of weather conditions, loss of staff, or unforeseen outbreaks of diseases. (4)

### **Measurement and Calculation Math**

Landscape Horticulturists:

1. Take a variety of reading and measurements. For example, they take measurements to confirm the location of soft and hardscape features by measuring depths, heights, widths and distances. They may take readings to determine water pressures. (1)
2. Calculate and verify the dimensions and placement of hardscape structures and installations using measurements from scale drawings. For example, they calculate the areas of walkways and patios. They calculate the installation locations of irrigation pipes. (2)
3. May calculate weights and liquid volumes needed to prepare fertilizer, fungicide, herbicide and insecticide mixtures. They perform these calculations using ratios, rates and percentages. (2)
4. Take various precise measurements. For example, they may take precise site measurements using laser distance and height instruments. They may use callipers to take a series of measurements of diameters of plant stems and tree trunks at precise intervals as specified in manuals of standards. (3)

5. Determine the quantities of materials and supplies needed for jobs. For example, they may determine the number of pesticide capsules needed for a job by totalling the diameters of all trees to be treated and dividing the total by the number of centimetres treated per capsule. They may determine the quantity of paving stones in square feet required to meet design requirements. Golf course superintendents may determine the amount of sand needed for bunkers by calculating their areas. (4)

### **Data Analysis**

Landscape Horticulturists:

1. In retail settings, they review productivity, sales and safety data from timesheets, supplier invoices and other documents in order to identify problems and trends. For example, they compare safety incidents over time and monthly sales for individual staff in order to identify priorities for training. (3)
2. Analyze deviations from schedules and budgets. They compare budgeted amounts to actual expenditures and completion dates to target dates for each activity. They analyse successes and failures and identify lessons learned. For example, they may determine changes in the prices of organic and inorganic materials and depict trends in those prices. They may also identify items that were underestimated in previous projects, such as the number of damaged plants to be replaced. They may be able to improve the accuracy of their future cost estimates based on these analyses. (3)
3. Manage inventories of products and materials. In retail settings, they analyze monthly sales to identify consumers' purchasing trends. In landscaping project settings, they complete analysis of work progress, upcoming tasks and required supplies, tools and equipment to determine ideal inventory levels. (3)
4. May collect and analyze quantitative data on a number of variables such as diseases, pests and treatments in trees, shrubs, plants and lawns, outside temperatures, rainfalls and soil acidity. They interpret data to identify relationships between variables and assess the effectiveness of treatments. (3)

### **Numerical Estimation**

Landscape Horticulturists:

1. May estimate the time needed for activities such as removals and relocations of large trees using past experiences as a guide. (1)

2. Estimate the number of hours required for various landscape design, construction or maintenance tasks. They are guided by past requirements but they must allow time for unexpected difficulties. (2)
3. May estimate slope degree when determining drainage, erosion, retaining wall construction, mowing accessibility and planting strategies. (2)
4. Estimate quantities and amounts when preparing budgets for the design, construction and maintenance of landscaped environments, which may include trees, shrubberies, lawns, fences, decks, patios and other landscape structures. They take into consideration the quantities and unit costs of organic and inorganic materials and of labour. They factor in the time needed to locate materials and the probability of obtaining volume discounts. They need to be accurate to minimize budget overruns. (3)

#### MATH SKILLS SUMMARY

##### a. Mathematical Foundations Used

###### **Number Concepts**

Whole Numbers	Reading or writing the number of grounds-keeping staff; counting trees in a given area; calculating distances travelled for expense claims.
Integers	Reading and writing temperatures; monitoring and reporting budget deviations.
Rational Numbers – Fractions	Reading sizes of parts in equipment manuals; adding fractions of hours on time sheets to invoice clients; splitting distances into thirds, quarters and halves to achieve symmetry in design.
Rational Numbers – Decimals	Reading and writing site measurements in metres; totalling client bills; calculating labour costs for the construction of landscaped environments.
Rational Numbers – Percentages	Reading or writing percentage reductions in tree inventories; calculating mixture amounts when specified as percentages; calculating supplier discounts on shrubs and plants.
Convert between Fractions, Decimals and Percentages	Expressing injured, diseased or dead trees as a fraction or percentage of total tree inventories; converting percents to decimals to simplify tax calculations.
Other Real Numbers	Using powers to express areas and volumes of decks, patios and other landscape structures; using pi ( $\pi$ ) to calculate diameters and circumferences.

###### **Patterns and Relations**

Equations and Formulae	Constructing and solving equations to calculate the materials needed for new landscape installations; calculating the diameter of a tree at chest height given its circumference.
Use of Rate, Ratio, and Proportion	Determining dosage amounts when fungicide application rates are expressed in millilitres per centimetre of tree diameter at chest height; drawing gardens to scale using scaling ratios; using simultaneous ratios to determine the expected numbers of different species of trees in a forest given the ratio of species in a sample plot.

###### **Shape and Spatial Sense**

Measurement Conversions	Converting site dimensions between Imperial and SI measuring units.
Areas, Perimeters and Volumes	Calculating the areas of plant beds; calculating the perimeter fencing needed for proposed landscaped environments; calculating cut and fill volumes for the construction of retaining walls.
Geometry	Using geometry to lay out landscape designs; constructing circles, triangles and other plane figures when laying out gardens; setting the axes for oval planters; setting walkway angles and slopes.
Trigonometry	Using trigonometry to solve spatial triangulation problems in the analysis of structures in landscaped environments.

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## MATH SKILLS SUMMARY

### **Statistics and Probabilities**

Summary Calculations – Calculate Averages, Rates, Proportions and Ratios	Calculating the average tree diameter for a sample of trees; calculating the net precipitation rates of irrigation systems; calculating the ratio of architectural technicians to landscape architects on landscape design projects.
Statistics and Probabilities	Calculating the frequency distribution of trees of varying diameters; collecting, classifying, analysing and interpreting business and landscaping data such as prices and quantities; making predictions and inferences from these data.

### **b. Measurement Instruments Used**

Time	Using watches, clocks and timers.
Weight or Mass	Using weigh scales.
Distance or Dimension	Using tape measures, callipers and laser distance and height meters.
Liquid Volume	Using teaspoons, graduated cylinders and buckets.
Temperature	Using thermometers.
Pressure	Using pressure gauges.
Electrical Potential (Volt)	Using multimeters.
Angles	Using protractors.

### **c. Additional Measurement Instruments Used**

Measurement Unit Used: Acidity of Soils	Using pH meters.
Use SI Measuring Units	
Use Imperial Measuring Units	

## **E. Oral Communication**

The typical oral communication tasks of a Landscape Horticulturist are at complexity 1 to 3. Their most complex oral communication tasks are at complexity level 2 to 3.

### *Examples of Oral Communication Tasks*

Landscape Horticulturists:

1. Talk to customers and staff at nurseries and greenhouses about plants and plant care. (1)
2. Discuss ongoing work with co-workers. For example, they discuss regulations, building codes, safety protocols, work assignments and completion times. They may discuss the condition of damaged and diseased trees, shrubs, plants and lawns and suggest treatment plans. (2)
3. Lead staff meetings and worksite safety meetings. They lead discussions on topics such as task assignments, project timelines and safety protocols. (2)
4. Speak with suppliers and contractors to inquire about availabilities of materials and supplies, negotiate prices and clarify specifications. For example, they may speak to contractors to clarify specifications for the construction of gardens, parks, golf courses and other landscaped environments. They must be explicit and precise to avoid delays, cost overruns and ensure everyone understands contract requirements.(2)
5. May co-ordinate landscaping design and development processes with experts such as architects and engineers. (2)
6. May meet with supervisors to receive directions and discuss 'invitations to tender', landscape designs, project priorities, workloads, procedures, timelines, equipment problems, budgets and safety concerns. They may present landscape drawings, specifications and cost estimates and obtain guidance, recommendations and approvals. (3)
7. Give instructions, provide feedback and constructive criticism to workers they supervise. An important aspect of this communication is to reinforce safety protocols, motivate workers and instil good work ethics. For example, they coach workers, teach them new skills and demonstrate how to

complete tasks to improve efficiency and quality. They resolve conflicts between team members and outline expectations to workers for safety and quality. (3)

8. Speak with clients to assess their needs, get their input in the development of landscape designs and advise them on the maintenance of their landscaped environments. They question clients to identify their budgets, timeframes and preferences. They discuss horticultural issues and recommend trees, shrubberies, plants, lawns, fences, decks, patios and other landscape structures to address clients' needs. (3)
9. Speak with peers at trade fairs and association meetings to discuss relevant subjects such as new products and methods for plant propagation, disease control, market trends and certification. (3)

10. May give presentations to audiences such as clients, council members and peers on matters such as new landscape design projects, the prevalence of invasive insects and the treatment of damaged or diseased trees, shrubs, plants, lawns or turf. People attending these presentations may be unfamiliar with the topics presented and concepts conveyed so they often need to adapt presentation style and language to suit non-specialist audiences. (3)

ORAL COMMUNICATION SUMMARY						
Type	Purposes of Oral Communication (Part 1)					
	To greet	To take messages	To provide/receive information, explanation, direction	To seek, obtain information	To co-ordinate work with that of others	To reassure, comfort
Listening (little or no interaction)			✓			
Speaking (little or no interaction)			✓			
Interact with co-workers			✓	✓	✓	
Interact with those you supervise or direct			✓	✓	✓	
Interact with supervisor/manager			✓	✓	✓	
Interact with peers and colleagues from other organizations			✓	✓	✓	
Interact with customers/clients/public			✓	✓		
Interact with suppliers, servicers			✓	✓	✓	
Participate in group discussion			✓	✓	✓	
Present information to a small group			✓			
Present information to a large group			✓			

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## ORAL COMMUNICATION SUMMARY

Type	Purposes of Oral Communication (Part 2)					
	To discuss (exchange information, opinions)	To persuade	To facilitate, animate	To instruct, instil understanding, knowledge	To negotiate, resolve conflict	To entertain
Listening (little or no interaction)						
Speaking (little or no interaction)						
Interact with co-workers	✓			✓		
Interact with those you supervise or direct	✓			✓	✓	
Interact with supervisor/manager	✓			✓		
Interact with peers and colleagues from other organizations	✓			✓		
Interact with customers/clients/public	✓			✓		
Interact with suppliers, servicers	✓			✓		
Participate in group discussion	✓			✓		
Present information to a small group				✓		
Present information to a large group				✓		

## F. Thinking Skills

### Problem Solving

The typical problem-solving tasks of a Landscape Horticulturist are at complexity levels 2 to 3. Their most complex problem-solving tasks are at complexity level 3.

#### *Examples of Problem-Solving Tasks*

Landscape Horticulturists:

1. Encounter bad weather, which prevents landscaping operations from proceeding. They advise supervisors or clients and make schedule changes for their crews. (1)
2. Are sometimes unable to locate local suppliers for plants and trees of the types specified in contracts. The situation is further complicated if clients will not accept substitutes. In such instances, they contact distant suppliers until they locate the plants and trees and arrange for the fastest possible delivery. (2)
3. Face staffing shortages on particular days. They contact casual and on-call employees to check their availabilities. If they cannot find enough replacement workers, they revise their own schedules and work later than originally planned. They may have to reschedule any remaining work. (2)
4. Encounter unexpected difficulties such as the discovery of big boulders and tree stumps that are hard to remove. If they feel they will not be able to meet project deadlines, they meet with supervisors or clients to outline the difficulties and provide estimates of the additional time and resources required. (2)
5. May create landscape designs that exceed clients' budgets. They meet with clients to discuss whether additional funds will be made available to cover the added costs. If not, they must

modify their designs to reduce costs. For example, they may elect to reduce the number of trees planted. (3)

### **Decision Making**

The typical decision-making tasks of a Landscape Horticulturist are at complexity levels 2 to 3. Their most complex decision-making tasks are at complexity level 3.

#### *Examples of Decision-Making Tasks*

Landscape Horticulturists:

1. Choose assignments for workers they supervise. They consider each individual's skills, experience, attitude and ability to meet deadlines. (2)
2. Choose trees, shrubs and plants. For example, they select growing stock considering health and growth rates. They select plants, trees, ornamentals and shrubs to recommend to clients. They take into consideration factors such as the terrain, soil conditions, sun exposures and clients' preferences and budgets. (2)
3. Choose methods to enhance performance of workers they supervise to ensure jobs meet quality expectations and are completed safely. They decide which reward systems will best motivate workers and what additional training and supervisory measures are needed. (3)
4. Recommend and may select contractors for the construction or maintenance of gardens, parks, golf courses and other landscaped environments. They review various tenders and determine which contractors offer the best prices and most feasible work plans. Because most landscaping and horticultural work is seasonal, they may find plans delayed for a whole year and lose considerable time and money if contractors fail to perform as expected. (3)
5. Choose work procedures, installation and planting techniques and equipment. They select personal protective devices, equipment and tools, which meet safety and production requirements. They select installation and planting procedures and techniques and materials considering regulatory and project specifications, costs and availability of staff. (3)
6. May decide to bid on particular landscape design projects. They review invitations to tender to determine whether their organizations have the time and skills sets needed to write solid submissions, be competitive and eventually bring the proposed projects to fruition. They consult supervisors and co-workers to gather their input. (3)

7. May select fertilizers, pest and weed control agents and other chemicals to use. They consider principles for integrated pest management and the health and condition of trees, shrubs, plants and turf as key factors. They can cause significant environmental damage and waste money if they use the wrong product. (3)

### **Critical Thinking**

The typical critical thinking tasks of a Landscape Horticulturist are at complexity levels 2 to 3. Their most complex critical thinking tasks are at complexity level 3.

#### *Examples of Critical Thinking Tasks*

Landscape Horticulturists:

1. May assess the suitability of candidates applying for seasonal jobs in horticulture and landscaping. They review resumes to identify relevant work histories and educational achievements, interview potential candidates and analyse qualifications using predetermined guidelines. (2)
2. May evaluate the work performance of others. They may evaluate workers' interpersonal skills by monitoring their work, observing their behaviours with others and relying on feedback from co-workers and customers. They may also observe sub-contractors' behaviour on jobs, examine completed work and inspect their tools and equipment to recommend sub-contractors for future projects. (2)
3. May evaluate the quality of work done by contractors and employees who install and maintain landscaped environments. They verify that specified tasks have been performed, specified inorganic and organic materials and equipment operating procedures have been used, and timeframes, landscape design plans, Codes and regulations have been respected. (2)
4. Assess the health and conditions of trees, shrubs, plants and lawns. They complete visual examinations, analyse foliage and consider factors such as the shape of the trees and the presence of discoloured, peeling, splitting or cracking bark and stunted growth. They may also check coloured pictures of varied

types of diseases and take into account the characteristic appearance of these diseases at various stages in their life cycles. (2)

5. May evaluate the safety of workplaces and practices. For example, they review safety records, tour worksites, and identify safety hazards. They compare their observations to health and safety policies, standards and safety reports before starting work. They verify worksites meet safety criteria such as freedom from mechanical, electrical and chemical hazards, cleanliness, adequate safety barriers, warning signage, safety equipment and supplies, controlled traffic flows and proper equipment placements. (3)
6. May assess the effectiveness of various techniques and approaches for the treatment of damaged or diseased trees, shrubs, plants or turf. They may design and conduct experiments. They define variables to be investigated, such as outside temperatures, rainfalls, soil acidity, pests and previous treatments. They collect data on these interrelated variables, analyse results and offer opinions and recommendations. (3)

### **Job Task Planning and Organizing**

Landscape Horticulturists plan and organize their job tasks at complexity level 3.

#### *Own Job Planning and Organizing:*

Landscape Horticulturists work in dynamic environments with many conflicting demands on their time. Planning is complicated by the need to co-ordinate their own tasks with those of many landscape design, architecture, engineering, landscaping, urban planning, grounds maintenance, nursery and greenhouse professionals. They must be able to work on several projects at the same time and manage priorities. Changes in landscape designs or weather conditions, delays in the delivery of organic or inorganic materials, staffing shortages, pressures from supervisors or clients, equipment breakdowns and other emergencies force them to frequently reorganize job tasks. (3)

#### *Planning and Organizing for Others:*

Senior Landscape Horticulturists play a central role in organizing, planning, scheduling and monitoring the activities of employees and contractors who construct or maintain landscaped environments.

### **Significant Use of Memory**

1. Remember preferences mentioned by clients during meetings.
2. Remember the names, uses, prices and suppliers of a large variety of plant material, fertilizers, pesticides, and hardscape materials when designing and costing the installation of new gardens.
3. Remember procedures to deal with software errors and equipment idiosyncrasies.
4. Recall the names and duties of co-workers, contractors, colleagues and clients to facilitate communication and build rapport.

### **Finding Information**

Landscape Horticulturist tasks that involve finding information are at complexity levels 2 to 3.

#### *Examples of Tasks Involving Finding Information*

1. Find information about past landscaping or horticultural activities by searching databases. (2)
2. Find ordinances applying to current landscaping projects such as building codes, zoning regulations and bylaws. (3)
3. Search a wide range of sources including textbooks, trade publications, scientific journals and suppliers' websites to find information about trees, shrubs, plants, flowers, soils, inorganic materials, fertilizers, fungicides, herbicides, pesticides, treatment techniques and equipment. (3)

## **G. Working with Others**

Landscape Horticulturists work with others at complexity level 3.

### **Description**

Landscape Horticulturists co-ordinate and integrate job tasks with work crews, sub-contractors, landscape architects, architects, surveyors, urban planners and structural, mechanical, electrical and civil engineers and engineering technologists. They also work independently to carry out installation and maintenance of landscapes, complete research, prepare drawings, and develop specifications, cost estimates and schedules. They may lead work crews.

#### PARTICIPATION IN SUPERVISORY OR LEADERSHIP ACTIVITIES:

✓	Participate in formal discussions about work processes or product improvement.
✓	Have opportunities to make suggestions on improving work processes.
✓	Monitor the work performance of others.
✓	Inform other workers or demonstrate to them how tasks are to be performed.
✓	Orient new employees.
✓	Make hiring recommendations.
✓	Make hiring decisions.
✓	Select contractors and suppliers.
✓	Assign routine tasks to other workers.
✓	Assign new or unusual tasks to other workers.
✓	Identify training that is required by, or would be useful for, other workers.
✓	Deal with other workers' grievances or complaints.

## H. Computer Use

The computer use tasks of Landscape Horticulturists are at complexity levels 2 to 3.

### Examples of Computer Use Tasks

Landscape Horticulturists:

1. May use word processing. They write, edit and format documents such as 'requests for proposals', tenders and reports. (2)
2. May use graphics software. For example, they may create slide shows using presentation software such as *PowerPoint*. In order to develop effective demonstration packages for clients and supervisors and illustrate landscape design concepts, they may import photographs, scans, drawings, word processing files and spreadsheet tables. (3)
3. May use databases. For example, they may enter and view tree inventory, landscape design and horticultural project data in databases. They may also retrieve price information on fertilizers, pesticides, lime, spray gear and other equipment from suppliers' databases. (2)
4. May use spreadsheets. For example, they may create spreadsheets to track hours worked by employees and contractors. They may also enter formulas into spreadsheets to calculate

invoice amounts and estimates. (3)

5. May use computer-assisted design, manufacturing and machining. For example, they may use computer-assisted landscape design software to prepare scale drawings of proposed landscape designs. (3)
6. Use communication software. For example, they use communication software to exchange e-mail and attachments with contractors and co-workers. (2)
7. Use the internet. For example, they may perform keyword searches to get a variety of information about landscaping and horticulture from websites. They may also use the Internet to exchange larger files using file transfer protocol software. (2)
8. May use other computer and software applications. For example, they may use global positioning systems to verify the geographical co-ordinates of specific points in parks, golf courses and other landscaped environments. They may use photo editing software to enlarge and print photos taken with digital cameras. They may also use project management software to schedule activities and organize information related to human resources, equipment use and maintenance, and operational costs. (2)

## I. Continuous Learning

Landscape Horticulturists perform continuous learning tasks at complexity level 3.

### Description

Continuous learning is an integral part of the work of Landscape Horticulturists. They are expected to know where to get landscaping and horticultural information, stay abreast of changes in zoning, bylaws, regulations and standards and further their knowledge of trees, shrubs, plants, soils, inorganic materials, fertilizers, fungicides, herbicides, insecticides, treatment techniques and equipment. They need to master new technologies such as computer-assisted irrigation and landscape design technologies. On a day-to-day basis, they learn by talking to co-workers, colleagues and suppliers, touring garden and trade shows. They read information found in websites, trade publications, journals, government regulations, legislation and building codes, manuals and other textbooks.

Landscape Horticulturists may be governed by the regulatory body in the province in which they practise. They may be required to set up their own learning plans and achieve or exceed a certain number of continuous education units to maintain their certification. They generally obtain such units by attending lectures, courses, conferences, symposia, workshops or seminars.

## J. Other Information

In addition to collecting information for this Essential Skills profile, data was also collected for the following topics.

### **Physical:**

#### *Body Position*

Landscape Horticulturists make use of several different body positions in their day-to-day work. They sit to draw, create computer-assisted landscape designs and perform administrative tasks in the office. They stand, walk and bend to co-ordinate and inspect horticultural, landscaping and grounds maintenance activities. They crouch, stoop and bend when cultivating plants in gardens.

#### *Limb Co-ordination*

Landscape Horticulturists use upper limb co-ordination and hand-eye co-ordination to measure, draw, operate computers and calibrate equipment. They need multiple limb co-ordination to dig plant beds, drive mowers and sprayers, apply pesticides using hand held tanks and climb ladders to prune trees. They must have fine motor skills to prepare small-scale drawings and work with small components such as sprinkler heads.

#### *Strength*

Landscape Horticulturists use heavy strength to lift sod, fertilizer bags and evergreen trees and to push equipment such as spreaders and tanks of insecticide, fertilizer and herbicide.

#### *Other Sensory Requirements*

Landscape Horticulturists need good vision, the ability to smell and sensitive touch to inspect plants, assess growing conditions and diagnose plant diseases. A strong spatial sense is also required to look at two-dimensional images of landscape designs and visualize in three-dimensions.

### **Attitudes:**

Landscape Horticulturists must enjoy working with people and be comfortable using mechanical equipment. They must be patient, energetic and convey enthusiasm to clients. Diplomacy, tact, fairness and firmness are required in dealing with contractors, employees and property owners. Landscape Horticulturists work outdoors regardless of the weather, so they must not be afraid of doing strenuous physical work and getting dirty.

### **Future Trends affecting Essential Skills:**

Landscape Horticulturists must accommodate a clientele and a public who are increasingly concerned about environmental damage and demand landscaping that requires less pesticide and water use. In the future, Landscape Horticulturists will need to increase their knowledge of alternative ways of controlling pests and maintaining the health and appearance of trees, shrubs, plants and lawns. This will place an increasing demand on them to develop skills for finding and reading relevant information quickly, thinking critically and learning continuously. Moreover, as computer-assisted irrigation and landscape design technologies keep evolving, they will need to develop or enhance their computer use skills.

## APPENDIX D: Essential Skills Definitions<sup>1</sup>

### A. Reading Text Definition: 5-point complexity scale

**Reading Text** refers to reading material that is in the form of sentences and paragraphs. It generally involves reading notes, letters, memos, manuals, regulations and reports.

**Reading text** also includes:

- information on forms and labels (if it is at least one sentence in length);
- print and non-print material such as text on computer screens; and
- sentence length or more in tables, graphs and documents.

**Complexity levels are determined considering:**

- complexity of the reading process;
- number of pieces of information;
- required inferences;
- required choosing of relevant information;
- the need to integrate information to understand and complete tasks; and
- use of specialized knowledge.

Lower level reading tasks involve locating single sources of information in short text.

Higher level reading tasks involve learning and applying specialized information from multiple sources.

### B. Document Use Definition<sup>2</sup>: 5-point complexity scale

**Document Use** generally involves locating and entering information and data in graphs, lists, tables, blueprints, schematics, drawings, signs and maps:

- matrix documents with clearly defined rows and columns;
- graphic documents, which provide a visual summary – pie charts, bar charts and line graphs;
- locative documents or maps provide a visual summary of persons, places or things in space; and
- entry documents require the reader to provide information.

Some documents are a combination of documents, which require the use of other documents for their interpretation. For example, maps and graphs use legends that provide information that must be read and understood to use the map.

**Complexity levels are determined considering:**

- complexity of the document;
- complexity of finding and entering information; and
- complexity of information use.

Lower level document use tasks involve limited locating and entering information and data with little knowledge and analysis of content

Higher level document use tasks require multiple searches and entries within dense text which requires specialized knowledge

**Document Use**

If a document includes a paragraph of text such as on a label or a completed form, it is also included in *Reading Text*. Documents requiring the entry of words, phrases, sentences and paragraphs are also included in *Writing*.

### C. Writing Definition: 5-point complexity scale

**Writing** is generally text in the form of sentences and paragraphs and writing in documents (for example, filling in forms) and non-paper-based writing (for example, typing on a computer). It generally involves writing notes, letters, memos, manuals, regulations and reports.

**Complexity levels are determined considering:**

- purpose of writing;
- length of writing;

<sup>1</sup> Refer to the HRSDC User guide at URL: [http://srv108.services.gc.ca/awm/main/c\\_toc\\_e.shtml](http://srv108.services.gc.ca/awm/main/c_toc_e.shtml) for an overview of essential skills levels and complexities.

<sup>2</sup> HRSDC Profilers Workshop, Document Use Discussion – Draft, July 2006.

- the effectiveness of the writing where appropriate tone and mood are important; and
- originality.

Lower level writing tasks are generally about day-to-day matters and are done to organize information and remind or inform others.

Higher level writing tasks require originality and effectiveness and are done to provide explanations, comparisons and analysis.

#### D. Numeracy Definition: 5-point complexity scale

**Numeracy** refers to workers' use of numbers and thinking in quantitative terms.

Numerical calculation is rated within **four application settings**:

1. **Money Math** – financial transactions, such as handling cash, preparing bills or making payments.
2. **Scheduling or Budgeting and Accounting** – managing time and money as resources, planning and monitoring their use, assessing best value, and reducing waste. (The difference between handling money and carrying out accounting tasks is not always clear. The definition of money math indicates the need for a transaction.)
3. **Measurement and Calculation** – measuring and describing the physical world.
4. **Data Analysis** – analysis of numerical data such as an extrapolation of information, and determination of trends or statistically significant effects.

**Complexity levels are determined considering:**

- the type and number of operations required; and
- the amount of translation and number of formulae and calculations required to complete a task.

Lower level numeracy tasks involve simple math operations where the numbers are provided.

Higher level numeracy tasks involve multiple steps of calculations using advance math techniques and complex formulae, equations and functions. Numbers often need to be derived or estimated.

#### E. Oral Communication: 4-point complexity scale

**Oral communication** pertains primarily to the use of speech to give and exchange thoughts and information.

**Complexity levels are determined considering:**

- the range and complexity of communication functions;
- the range and complexity of the information about which one communicates;
- the range and complexity of the communication context; and
- the risk level in failing communication intent.

Lower level oral communication tasks are generally about day-to-day matters to exchange information.

Higher level oral communication tasks require the use of various communication methods to explain, make comparisons and analysis information.

#### F. Thinking Skills: 4-point complexity scale

**Thinking Skills** differentiates between six different types of cognitive functions. However, these functions are interconnected. The thinking skills section of the Profile has six components:

##### 1. Problem Solving

**Problem solving** involves situations and events that require solutions. Most problems concern mechanical challenges, people or situations.

**Complexity levels are determined considering:**

- the complexity of the problem;
- the complexity of identifying the problem;
- the complexity of identifying the solution steps; and
- the complexity of assessing the solution.

##### 2. Decision Making

**Decision making** refers to making selections among a range of options.

**Complexity levels are determined considering:**

- the consequence of error;

- the reversibility of the decision;
- the adequacy of the information available;
- whether there is a set procedure or decision tree to follow;
- whether there is a body of similar, past decisions to compare to; and
- the extent to which judgement is required to make an appropriate decision.

### 3. Critical Thinking

**Critical Thinking** refers to making rational judgments through logical thought process of evaluating ideas or information, and using objective criteria to make a judgment about value, or to identify strengths and weaknesses.

#### Complexity levels are determined considering:

- assessment criteria considered;
- assessment process; and
- effects of critical thinking.

### 4. Job Task Planning and Organizing

**Job Task Planning and Organizing** refers to the extent to which the workers plan and organize their own tasks. It does not refer to involvement in the planning function for the organization in which they work.

#### Complexity levels are determined considering:

- the extent of variety in work activities;
- whether the task sequence is provided to the worker or determined by the worker;
- whether priorities are provided to the worker or determined by the worker;
- the extent to which the day's work plan is disrupted;
- the extent to which the worker's own work plan must be integrated with the work plans of others;
- the number of sources for work assignments; and
- the extent to which the order of those tasks sequenced by the worker makes a difference to total efficiency.

### 5. Significant Use of Memory

**Significant Use of Memory** includes any significant or unusual use of memory for workers in the occupational group. It does not include normal memory use that is a requirement for every occupation.

There are no complexity ratings attached to use of memory.

### 6. Finding Information

**Finding Information** involves using any of a variety of sources including text, people, computerized databases or information systems.

Although finding information is listed as an essential skills, workers' use of various information sources may be referred to in other sections such as *Reading Text, Document Use, Oral Communication* and *Computer Use*.

#### Complexity levels are determined considering:

- the complexity of locating the desired information; and
- the complexity of extracting and processing the information.

### G. Working with Others: 4-point complexity scale

**Working with Others** outlines the ways in which workers interact with one another to carry out their tasks. This section covers four types of work contexts. Knowing whether workers work alone, independently, with partners or as team members will help readers understand the skills workers use in their jobs.

#### Complexity levels are determined considering:

- the extent to which they integrate task and co-ordination activities with others;
- the extent to which they are responsible for ensuring co-ordination occurs; and
- the types of leadership and supervisory activities.

### H. Computer Use: 5-point complexity scale

**Computer Use** indicates the variety and complexity of computer use within the occupational group.

#### Complexity levels are determined considering:

- the number of features and options used;

- the number of operations performed;
- variation in tasks performed; and
- whether they use software as is or adapt it for specific purposes.

### I. Continuous Learning: 4-point complexity scale

**Continuous Learning** examines the requirement for workers in an occupational group to participate in an ongoing process of acquiring skills and knowledge.

Continuous learning tests the hypothesis that more and more jobs require continuous upgrading, and that all workers must continue learning in order to keep or to grow with their jobs. If this is true, then the following will become essential skills:

#### **Complexity levels are determined considering:**

- responsibility for setting and achieving learning goals;
- complexity of learning process; and
- extent of inference needed to apply learning to the job.

### J. Other Information

**Other Information** summarizes additional information collected during the interviews.

Other information consists of three main sections:

1. physical aspects;
2. attitudes; and
3. future trends affecting Essential Skills.



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