Landscape and Horticultural Technicians and Specialists

NOC 2225

Introduction

Landscape and Horticultural Technicians and Specialists 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 and Horticultural Technicians and Specialists are:

- Oral Communication
- Critical Thinking

Document Sections

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

A. Reading Text

Reading Text

Tasks	Complexity Level	Examples
Typical	1 to 3	Landscape and Horticultural Technicians and Specialists • read short comments on forms and handwritten notes from co-workers, customers and supervisors. (1) • may read directions on pesticide and fertilizer labels and in Material Safety Data Sheets for details of handling, mixing, application and first aid procedures. (2) • 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) • read promotional materials such as brochures, pamphlets and product catalogues from suppliers to understand their offers and make informed purchasing decisions. (2) • may review specifications written by contractors, architects and designers. For example, they may read tree planting specifications written by contractors to ensure that provisions have been made for tree protection in landscape architecture projects and landscape maintenance contracts. (2)
Most Complex	3 to 4	• 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) • 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) • may refer to building codes, zoning regulations, by-laws and other provincial and municipal regulations to ensure that landscape designs, procedures and practices are compliant with rules and regulations. For example, they may check on the requirements for the landscaping of sites bordering bodies of water. (3)

		• may read articles in scientific journals such as the Journal of Arboriculture, Journal de la Société internationale d'arboriculture, Compendium of Turfgrass Diseases and Turfgrass Science and Culture 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 Summary

The symbol √ is explained in the Use of Symbols section.

	Purpose for Reading			
Type of Text	**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

Document Use

Tasks	Complexity Level	Examples
Typical	1 to 4	Landscape and Horticultural Technicians and Specialists • read lists of names and addresses of horticultural product suppliers. (1) • scan labels on fertilizer, herbicide, insecticide and fungicide containers to find information on ingredients, concentrations, hazard warnings and expiry dates. (1) • identify and use a variety of icons to search websites for information on trees, shrubs, evergreens, roses, bulbs, herbs, perennials, bedding plants and other horticultural products. (2) • check coloured pictures of varied types of diseases to assess the health and conditions of trees, shrubs, plants and lawns. (2) • 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) • record details of herbicide, fungicide and pesticide use on reporting forms. For example, they may complete pesticide application forms to describe the problems diagnosed and the treatment solutions used. (3)
Most Complex	4 to 4	• 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. (3) • review landscape drawings submitted by employees , contractors, designers and property owners to ensure that design criteria have been satisfied and specifications have been met. They take measurements from scale drawings to check that all items have been appropriately represented. (4) • 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 fully understand the effectiveness of techniques. (4)

Examples

- may sketch portions of landscaped environments to explain jobs to maintenance and installation crews.
- 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.
- may prepare drawings of landscape designs. For example, they may draw gardens to scale on graph paper. They indicate varied types of plants by using differing shapes and letter abbreviations.
- may create schematic drawings of irrigation systems.

Document Use Summary

- Read signs, labels or lists.
- Complete forms by marking check boxes, recording numerical information or entering words, phrases, sentences or text of a paragraph or more. The list of specific tasks varies depending on what was reported.
- Read completed forms containing check boxes, numerical entries, phrases, addresses, sentences or text of a paragraph or more. The list of specific tasks varies depending on what was reported.
- Read tables, schedules or other table-like text (e.g., read work shift schedules).
- Create tables, schedules or other table-like text.
- Enter information on tables, schedules or other table-like text.
- Plot information on graphs (e.g. line, pie, bar).
- Obtain specific information from graphs or charts.
- Interpret information on graphs or charts.
- Construct or draw graphs or charts.
- Recognize common angles such as 15, 30, 45 and 90 degrees.
- 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 (e.g. those found in service and parts manuals).
- Read schematic drawings (e.g. electrical schematics).
- Create schematic drawings.
- Make sketches.
- Obtain information from sketches, pictures or icons (e.g., computer toolbars).

C. Writing

Writing

Tasks	Complexity Level	Examples
Typical	1 to 2	Landscape and Horticultural Technicians and Specialists • write comments on inspection forms noting observations, concerns or suggestions for treatment programs. (1) • write e-mail to co-workers, contractors and clients to request information, coordinate activities or respond to enquiries. (2) • 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 to create new invitations. (2) • write investigation reports following the discovery of damaged or diseased trees, shrubs, plants or 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)
Most Complex	3 to 4	• 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) • 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) • 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

The symbol √ is explained in the Use of Symbols section.

	Purpose for Writing						
Length	**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**
Text requiring less than one paragraph of new text	√	√					
Text rarely requiring more than one paragraph			√				
Longer text			√	√	√	√	

D. Numeracy

The symbol √ is explained in the Use of Symbols section.

Numeracy

Tasks	Complexity Level	Examples
√ Money Math	1 to 2	Landscape and Horticultural Technicians and Specialists • may accept payment for landscaping or horticultural services and make change. (Money Math), (1)
√ Scheduling, Budgeting & Accounting Math	1 to 4	• prepare or 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. (Money Math), (2)
√ Measurement and Calculation Math	1 to 3	• 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. (Money Math), (2)
√ Data Analysis Math	3	• compare prices on greenhouse ornamental and nursery crops, fertilizers, pesticides, seedlings, cuttings and hardscape to determine best buys. (Scheduling, Budgeting & Accounting Math), (1)
√ Numerical Estimation	1 to 3	• review tenders for subcontracted work. They perform comparative analyses of financial data submitted by contractors and determine which bids offer the best prices and most feasible work plans. (Scheduling, Budgeting & Accounting Math), (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. (Scheduling, Budgeting & Accounting Math), (4)

		• may prepare and monitor schedules which identify major activities and target completion dates for the design, construction or maintenance of landscaped environments. For example, horticulture specialists and technicians may prepare schedules for plant cultivating; tree planting, trimming and fertilizing; shrub 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. (Scheduling, Budgeting & Accounting Math), (4) • 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. (Measurement and Calculation Math), (2) • take measurements from landscape drawings to determine location to plant or place shrubs, trees and flowers. (Measurement and Calculation Math), (2) • may calculate weights and liquid volumes needed to prepare fertilizer, fungicide, herbicide and insecticide mixtures. They perform these calculations using ratios, rates and percentages. (Measurement and Calculation Math), (2) • take various precise measurements. For example, they may take precise site measurements using laser distance and height instruments. They may take a series of measurements of diameters of plant stems and tree trunks at precise intervals as specified in manuals of standards using callipers. (Measurement and Calculation Math), (3)

		• 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. (Data Analysis Math), (3) • 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. (Data Analysis Math), (3) • may estimate the time needed for the removals and relocations of large trees using past experience as a guide. (Numerical Estimation), (1) • estimate the number of hours which should be assigned for various landscape design, construction or maintenance tasks. They are guided by past requirements but they must allow time for unexpected difficulties. (Numerical Estimation), (2) • may estimate slope degree when determining drainage, erosion, retaining wall construction, mowing accessibility and planting strategies. (Numerical Estimation), (2) • 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 fairly accurate to minimize budget overruns. (Numerical Estimation), (3)

Math Skills Summary

a. Mathematical Foundations Used

The symbol √ is explained in the Use of Symbols section.

Mathematical Foundations Used

Code	Tasks	Examples
	Number Concepts	
√	Whole Numbers	Read and write, count, round off, add or subtract, multiply or divide whole numbers. For example, reading or writing the number of grounds keeping staff; counting trees in a given area; calculating distances travelled for expense claims.
√	Integers	Read and write, add or subtract, multiply or divide integers. For example, reading and writing temperatures; monitoring and reporting budget deviations.
√	Rational Numbers - Fractions	Read and write, add or subtract fractions, multiply or divide by a fraction, multiply or divide fractions. For example, 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	Read and write, round off, add or subtract decimals, multiply or divide by a decimal, multiply or divide decimals. For example, reading and writing site measurements in metres; totalling client bills; calculating labour costs for the construction of landscaped environments.
√	Rational Numbers - Percent	Read and write percents, calculate the percent one number is of another, calculate a percent of a number. For example, reading or writing percentage reductions in tree inventories; calculating mixture amounts when specified as percentages; calculating supplier discounts on shrubs and plants.
√	Equivalent Rational Numbers	Convert between fractions and decimals or percentages. Convert between decimals and percentages. For example, 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	Use powers and roots, scientific notation, significant digits. For example, using powers to express areas and volumes of decks, patios and other landscape structures; using Pi (3.1415) to calculate diameters and circumferences.

Code	Tasks	Examples
		Patterns and Relations
√	Equations and Formulae	Solve problems by constructing and solving equations with one unknown. Use formulae by inserting quantities for variables and solving. For example, 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	Use a rate showing comparison between two quantities with different units. Use a ratio showing comparison between two quantities with the same units. Use a proportion showing comparison between two ratios or rates in order to solve problems. For example, 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. Using scale drawings.
		Shape and Spatial Sense
√	Measurement Conversions	Perform measurement conversions. For example, converting site dimensions between Imperial and SI measuring units.
√	Areas, Perimeters, Volumes	Calculate areas. Calculate perimeters. Calculate 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	Use geometry. For example, 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	Use trigonometry. For example, using trigonometry to solve spatial triangulation problems in the analysis of structures in landscaped environments. Recognizing common angles. Drawing, sketching and forming common forms and figures.

Code	Tasks	Examples
		Statistics and Probability
√	Summary Calculations	Calculate averages. Calculate rates other than percentages. Calculate proportions or ratios. For example, 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 Probability	Use descriptive statistics (e.g. collecting, classifying, analyzing and interpreting data). Use inferential statistics (e.g. using mathematical theories of probability, making conclusions about a population or about how likely it is that some event will happen). For example, 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. Using tables, schedules or other table-like text. Using graphical presentations.

b. How Calculations are Performed

- In their heads.
- Using a pen and paper.
- Using a calculator.
- Using a computer.

c. Measurement Instruments Used

- Time. For example, using watches, clocks and timers.
- Weight or mass. For example, using weigh scales.
- Distance or dimension. For example, using tape measures, callipers and laser distance and height meters.
- Liquid volume. For example, using teaspoons, graduated cylinders and buckets.
- Temperature. For example, using thermometers.
- Pressure. For example, using pressure gauges.
- Angles. For example, using protractors.
- Acidity of soils. For example, using pH meters.
- Use the SI (metric) measurement system.
- Using the imperial measurement system.

E. Oral Communication

Oral Communication

Tasks	Complexity Level	Examples
Typical	1 to 3	Landscape and Horticultural Technicians and Specialists • talk to customers and staff at nurseries and greenhouses about plants and plant care. (1) • give directions to other employees and discuss job tasks with them. For example, they may discuss the condition of damaged and diseased trees, shrubs, plants and lawns and suggest treatment plans. (2) • 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 work which doesn't meet contract requirements. (2) • may coordinate landscaping design and development processes with experts such as architects and engineers. (2) • 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) • 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) • 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)
Most Complex	3	

		• 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)

Modes of Communication Used

- In person. For example, advising clients on issues related to horticulture and landscape design.
- Using a telephone. For example, exchanging voice messages with clients and co-workers.
- Using a two-way radio or other such means. For example, communicating with other crews and supervisors.

Environmental Factors Affecting Communication

Significant environmental factors affecting oral communication were not reported by job incumbents.

Oral Communication Summary

The symbol √ is explained in the Use of Symbols section.

	Purpose for Oral Communication (Part I)					
Type	**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 organization			√	√	√	
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			√			

The symbol √ is explained in the Use of Symbols section.

	Purpose for Oral Communication (Part II)					
Type	**To discuss (exchange information, opinions)**	**To persuade**	**To facilitate, animate**	**To instruct, instill 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 organization	√			√		
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				√		

Other Information
In bilingual communities, landscape and horticultural technicians and specialists may be required to communicate in both official languages.

F. Thinking Skills

1. Problem Solving

Problem Solving

Tasks	Complexity Level	Examples
Typical	1 to 2	Landscape and Horticultural Technicians and Specialists • encounter bad weather which prevents landscaping operations from proceeding. They advise supervisors or clients and make schedule changes for their crews. (1) • 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) • 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) • are often notified by their crews of 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) • 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)
Most Complex	3	

2. Decision Making

Decision Making

Tasks	Complexity Level	Examples
Typical	2 to 4	Landscape and Horticultural Technicians and Specialists • decide which tasks to assign to which employees. They consider each individual's skills, experience, attitude and ability to meet deadlines. (2) • choose trees, shrubs and plants to recommend to clients. They take into consideration factors such as the terrain, soil conditions, sun exposures and clients' preferences and budgets. (2) • 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) • 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) • may select fertilizers, fungicides, herbicides, insecticides and other chemicals to use. They consider factors such as the health and condition of trees, shrubs, plants and turf. They review information found in Material Safety Data Sheets relating to the ingredients, health hazards, handling, storage, disposal and other characteristics of chemical products. If they use the wrong product, they can cause significant environmental damage and waste money. (4)
Most Complex	4	

3. Critical Thinking

Critical Thinking

Tasks	Complexity Level	Examples
Typical	2	Landscape and Horticultural Technicians and Specialists • 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) • 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)
Most Complex	3	• assess the health and conditions of trees, shrubs, plants and lawns. They complete visual examinations, analyse foliages 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) • 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)

4. Job Task Planning and Organizing

Job Task Planning and Organizing

Complexity Level	Description
3	Own job planning and organizing • Landscape and horticultural technicians and specialists work in dynamic environments with many conflicting demands on their time. Planning is complicated by the need to coordinate 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. Planning and organizing for others • Senior landscape and horticultural technicians and specialists play a central role in organizing, planning, scheduling and monitoring the activities of employees and contractors who construct or maintain landscaped environments.

5. Significant Use of Memory

Examples

- remember preferences mentioned by clients during meetings.
- 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.
- remember procedures to deal with software errors and equipment idiosyncrasies.
- recall the names and duties of co-workers, contractors, colleagues and clients to facilitate communication and build rapport.

6. Finding Information

Finding Information

Tasks	Complexity Level	Examples
Typical	2 to 3	Landscape and Horticultural Technicians and Specialists • find information about past landscaping or horticultural activities by searching databases. (2) • find legislation applying to current landscaping projects in building codes, zoning regulations and by-laws. (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)
More Complex	3	

G. Working with Others

Working with Others

Complexity Level	Description
3	Landscape designers, landscape architectural technicians and other landscape specialists coordinate and integrate job tasks with teams of landscape architects, architects, surveyors, urban planners and structural, mechanical, electrical and civil engineers and engineering technologists. They also work independently to carry out research, prepare drawings, and develop specifications, cost estimates and schedules. Arborists, tree service technicians, golf course maintenance specialists, lawn care technicians, greenhouse, nursery and floriculture production specialists and other horticultural technicians and specialists work independently to inspect and treat lawns, plants, golf courses, trees and shrubs. They coordinate and sometimes integrate their activities with co-workers who cultivate plants in nurseries and greenhouses and those who maintain gardens, parks, golf courses and other landscaped environments.

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 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

Computer Use

Tasks	Complexity Level	Examples
Typical	2 to 4	Landscape and Horticultural Technicians and Specialists • use word processing. They write, edit and format documents such as 'requests for proposals', tenders and reports. (2) • 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) • use communication software. For example, they use communication software to exchange e-mail and attachments with contractors and co-workers. (2)
Most Complex	4	• 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) • 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 estimate cost. (3)

		• may use other computer and software applications. For example, they may use global positioning systems to verify the geographical coordinates 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. (3) • 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. (4) • may use computer-assisted design software. For example, they may use computer-assisted landscape design software to prepare scale drawings of proposed landscape designs. (4)

Computer Use Summary

- Use word processing.
- Use graphics software.
- Use a database.
- Use a spreadsheet.
- Use computer-assisted design, manufacture or machining.
- Use communications software.
- Use Internet
- Other

I. Continuous Learning

Continuous Learning

Complexity Level	Description
3	Continuous learning is an integral part of the work of landscape and horticultural technicians and specialists. They are expected to know where to get landscaping and horticultural information, stay abreast of changes in zoning, by-laws, 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 and reading information found in websites, trade publications, journals, building codes, regulations manuals and other textbooks. Horticultural technicians , landscape architectural technologists and certified arborists are 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.

How Learning Occurs

Learning may be acquired:

- As part of regular work activity.
- From co-workers.
- Through training offered in the workplace.
- Through reading or other forms of self-study
    - at work.
    - on worker's own time.
    - using materials available through work.
    - using materials obtained through a professional association or union.
    - using materials obtained on worker's own initiative.
- Through off-site training
    - during working hours at no cost to the worker.
    - partially subsidized.
    - with costs paid by the worker.

J. Other Information

In addition to collecting information for this Essential Skills Profile, our interviews with job incumbents also asked about the following topics.

Physical Aspects
Landscape and horticultural technicians and specialists 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 coordinate and inspect horticultural, landscaping and grounds maintenance activities. They crouch, stoop and bend when cultivating plants in gardens. Landscape and horticultural technicians and specialists use upper limb coordination and hand-eye coordination to measure, draw, operate computers and calibrate equipment. They need multiple limb coordination 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. Heavy strength is required to lift sod, fertilizer bags and evergreen trees and to push equipment such as spreaders and tanks of insecticide, fertilizer and herbicide. Landscape and horticultural technicians and specialists 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 and horticultural technicians and specialists 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. Horticulture technicians and specialists 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
These technicians and specialists 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, landscaping and horticultural technicians and specialists 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.

K. Notes

This profile is based on interviews with job incumbents across Canada and validated through consultation with industry experts across the country.
For information on research, definitions, and scaling processes of Essential Skills Profiles, please consult the Readers' Guide to Essential Skills Profiles (http://www.hrsdc.gc.ca/eng/jobs/les/profiles/readersguide.shtml).