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National Occupational Analysis

Landscape Horticulturist

2015

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National Occupational Analysis

Landscape Horticulturist

2015

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The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this National Occupational Analysis (NOA) as the national standard for the occupation of Landscape horticulturist.

Background

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to cooperate with provincial and territorial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. Employment and Social Development Canada (ESDC) sponsors a program, under the guidance of the CCDA, to develop a series of NOAs.

The NOAs have the following objectives:

- to describe and group the tasks performed by skilled workers;
- to identify which tasks are performed in every province and territory;
- to develop instruments for use in the preparation of Interprovincial Red Seal Examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility of apprentices and skilled workers in Canada; and,
- to supply employers, employees, associations, industries, training institutions and governments with analyses of occupations.

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This analysis was prepared by the Labour Market Integration Directorate of ESDC. The coordinating, facilitating and processing of this analysis were undertaken by employees of the NOA development team of the Trades and Apprenticeship Division. The host jurisdiction of Ontario also participated in the development of this NOA.

Comments or questions about National Occupational Analyses may be forwarded to:

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APPENDICES

STRUCTURE OF ANALYSIS

To facilitate understanding of the occupation, the work performed by tradespersons is divided into the following categories:

Blocks	the largest division within the analysis that is comprised of a distinct set of trade activities
Tasks	distinct actions that describe the activities within a block
Sub-Tasks	distinct actions that describe the activities within a task
Key Competencies	activities that a person should be able to do in order to be called 'competent' in the trade

The analysis also provides the following information:

Trends	changes identified that impact or will impact the trade including work practices, technological advances, and new materials and equipment
Related Components	a list of products, items, materials and other elements relevant to the block
Tools and Equipment	categories of tools and equipment used to perform all tasks in the block; these tools and equipment are listed in Appendix A
Context	information to clarify the intent and meaning of tasks
Required Knowledge	the elements of knowledge that an individual must acquire to adequately perform a task

The appendices located at the end of the analysis are described as follows:

Appendix A — Tools and Equipment	a non-exhaustive list of tools and equipment used in this trade
Appendix B — Plant List	a non-exhaustive list of plants in Canada
Appendix C — Glossary	definitions or explanations of selected technical terms used in the analysis
Appendix D — Acronyms	a list of acronyms used in the analysis with their full name
Appendix E — Block and Task Weighting	the block and task percentages submitted by each jurisdiction, and the national averages of these percentages; these national averages determine the number of questions for each block and task in the Interprovincial exam
Appendix F — Pie Chart	a graph which depicts the national percentages of exam questions assigned to blocks
Appendix G — Task Profile Chart	a chart which outlines graphically the blocks, tasks and sub-tasks of this analysis

DEVELOPMENT AND VALIDATION OF ANALYSIS

Development of Analysis

A draft analysis is developed by a committee of industry experts in the field led by a team of facilitators from ESDC. This draft analysis breaks down all the tasks performed in the occupation and describes the knowledge and abilities required for a tradesperson to demonstrate competence in the trade.

Draft Review

The NOA development team then forwards a copy of the analysis and its translation to provincial and territorial authorities for a review of its content and structure. Their recommendations are assessed and incorporated into the analysis.

Validation and Weighting

The analysis is sent to all provinces and territories for validation and weighting. Participating jurisdictions consult with industry to validate and weight the document, examining the blocks, tasks and sub-tasks of the analysis as follows:

BLOCKS	Each jurisdiction assigns a percentage of questions to each block for an examination that would cover the entire trade.
TASKS	Each jurisdiction assigns a percentage of exam questions to each task within a block.
SUB-TASKS	Each jurisdiction indicates, with a YES or NO, whether or not each sub-task is performed by skilled workers within the occupation in its jurisdiction.

The results of this exercise are submitted to the NOA development team who then analyzes the data and incorporates it into the document. The NOA provides the individual jurisdictional validation results as well as the national averages of all responses. The national averages for block and task weighting guide the Interprovincial Red Seal Examination plan for the trade.

This method for the validation of the NOA also identifies common core sub-tasks across Canada for the occupation. If at least 70% of the responding jurisdictions perform a sub-task, it shall be considered common core. Interprovincial Red Seal Examinations are based on the common core sub-tasks identified through this validation process.

Definitions for Validation and Weighting

YES	sub-task performed by qualified workers in the occupation in a specific jurisdiction
NO	sub-task not performed by qualified workers in the occupation in a specific jurisdiction
NV	analysis Not Validated by a province/territory
ND	trade Not Designated in a province/territory
NOT COMMON CORE (NCC)	sub-task, task or block performed by less than 70% of responding jurisdictions; these will not be tested by the Interprovincial Red Seal Examination for the trade
NATIONAL AVERAGE %	average percentage of questions assigned to each block and task in Interprovincial Red Seal Examination for the trade

Provincial/Territorial Abbreviations

NL	Newfoundland and Labrador
NS	Nova Scotia
PE	Prince Edward Island
NB	New Brunswick
QC	Quebec
ON	Ontario
MB	Manitoba
SK	Saskatchewan
AB	Alberta
BC	British Columbia
NT	Northwest Territories
YT	Yukon Territory
NU	Nunavut

ANALYSIS

Safe working procedures and conditions, accident prevention, and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers and employees. It is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and work environments can be created by controlling the variables and behaviours that may contribute to accidents or injury.

It is generally recognized that safety-conscious attitudes and work practices contribute to a healthy, safe and accident-free work environment.

It is imperative to apply and be familiar with the Occupational Health and Safety (OH&S) Acts and Workplace Hazardous Materials Information System (WHMIS) regulations. As well, it is essential to determine workplace hazards and take measures to protect oneself, co-workers, the public and the environment.

Safety education is an integral part of training in all jurisdictions. As safety is an imperative part of all trades, it is assumed and therefore it is not included as a qualifier of any activities. However, the technical safety tasks and sub-tasks specific to the trade are included in this analysis.

SCOPE OF THE LANDSCAPE HORTICULTURIST TRADE

"Landscape Horticulturist" is this trade's official Red Seal occupational title approved by the Canadian Council of Directors of Apprenticeship. This analysis covers tasks performed by landscape horticulturists whose occupational title has been identified by some provinces and territories of Canada under the following names:

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
Horticultural Technician						✓							
Horticulture Technician								✓					
Landscape Gardener									✓				
Landscape Worker					✓								
Landscape Horticulturist	✓	✓	✓				✓			✓			
Landscape-Horticulturist				✓									

Landscape horticulturists survey and assess landscape, draw sketches and interpret plans. They construct and maintain gardens, parks, golf courses and other landscape environments. In addition, they advise clients on issues related to horticulture and landscape construction. Landscape horticulturists also propagate, cultivate and study plants, and treat injured and diseased trees and plants. They are employed by landscape designers, architects and contractors, lawn service and tree care establishments, recreation facilities, golf courses, parks, nurseries, greenhouses, and municipal, provincial and federal governments. They may also be self-employed.

Landscape horticulturists work with machinery and equipment ranging from simple hand tools to heavy equipment. They may be responsible for the routine maintenance of tools and equipment. Landscape horticulturists may also work with a variety of products such as pesticides, fertilizers and fuels and must be aware of their safe use, environmental best practices and government regulations.

Some landscape horticulturists specialize in areas such as landscape design, construction and maintenance, and greenhouse, sod and nursery production. They may work independently or with other professionals such as architects, engineers, and municipal planners.

Landscape horticulturists require good communication skills to coordinate and facilitate work with clients, co-workers and other trades. They also require strong analytical, decision making and organizational abilities.

Employment in this trade is often seasonal with long hours. The majority of the work such as landscape construction and maintenance, and snow and ice management is performed outdoors in all types of weather. Indoor work may involve greenhouse production, interior landscaping, and the sale of plants, landscape materials and supplies. The work may be strenuous and may involve activities such as lifting, climbing, carrying and bending.

With experience and proven competence, landscape horticulturists may advance to supervisory positions or become business owners.

This analysis recognizes similarities or overlaps with the work of other tradespeople such as arborists, utility arborists, bricklayers/masons, heavy equipment operators, electricians, concrete finishers, roofers, plumbers, small engine mechanics and carpenters.

The landscape industry must continuously adapt to changing trends in education, certification, legislation and the labour market as they relate to safety, environmental stewardship and conservation. This market-driven industry will continue to evolve through the introduction of new products, implementation of new technology and green horticultural principles to meet the needs of its clients.

There is an increasing demand from the emerging workforce for year round work rather than seasonal employment. More employers are encouraging employees to improve their technical skills towards obtaining their credentials during the slower period. The demand for specialized skilled workers in the landscape industry is growing. Increasingly, consumers and employers are requesting certified landscape horticulturists who are aware of best practices to provide the best products and services.

As jurisdictional safety and prevention legislation changes, compliance requirements by industry are increasing. Safety awareness and implementation of safe work practices in the industry is evolving to better protect the workforce and the general public.

The industry plays a role in promoting environmental consciousness and sustainable development. Public awareness of conservation measures to protect our living spaces is empowering the landscape industry to reduce its environmental impact. There is increased collaboration across the industry and stakeholder groups in Canada resulting in better environmental awareness and application of best practices.

The work is becoming more intricate because of the complexity of the designs and expanding customer requests for items such as outdoor living spaces and, organic gardening and sustainable design. There is an increased focus on water conservation and protection. The use of native and natural materials and green infrastructure is becoming more prevalent.

A higher degree of attention is paid to plant health starting at the design phase and through installation and maintenance due to environmental and jurisdictional regulations. The industry is growing more pest and disease-resistant varieties of plants. There are changes to pest and disease control measures including legislation that has reduced dependence on chemical use. Tools and equipment that produce fewer emissions, less noise and less vibration are more in demand.

The landscape horticultural industry continues to apply technological advancements to improve its business and workforce skills. Digital devices, satellite technology and production innovation enable improved production, efficiency and quality.

Due to an increase in government regulations concerning the conservation, capture and recycling of water, industry is continuously seeking new technologies, techniques and plant varieties to reduce environmental impact and production costs.

Essential skills are needed for work, learning and life. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change.

Through extensive research, the Government of Canada and other national and international agencies have identified and validated nine essential skills. These skills are used in nearly every occupation and throughout daily life in different ways.

A series of CCDA-endorsed tools have been developed to support apprentices in their training and to be better prepared for a career in the trades. The tools can be used independently or with the assistance of a tradesperson, trainer, employer, teacher or mentor to:

- understand how essential skills are used in the trades;
- learn about individual essential skills strengths and areas for improvement; and
- improve essential skills and increase success in an apprenticeship program.

Tools are available online or for order at: http://www.hrsdc.gc.ca/eng/jobs/les/tools/index.shtml.

The application of these skills may be described throughout this document within the competency statements which support each subtask of the trade. The following are summaries of the requirements in each of the essential skills, taken from the essential skills profile. A link to the complete essential skills profile can be found at www.red-seal.ca.

Reading
Landscape horticulturists require reading skills to review work-related documents such as site plans, work orders, contracts, purchase orders, safety documents, product directions and specifications, promotional materials and manuals. They may also read trade publications, catalogues, scientific articles and papers, regulations and building codes.

Document Use
Landscape horticulturists refer to drawings, photographs, grade plans, graphs, tables and other technical information related to their trade. They may also interpret scale drawings of landscape designs and detail drawings, and refer to schematics for irrigation systems.

Writing
Writing skills are used by landscape horticulturists to compose letters or e-mails to clients, contractors and colleagues, and to accurately record information such as safety, maintenance and production information. Landscape horticulturists write investigative reports covering damaged or diseased trees, shrubs, plants, turfgrass and hardscape elements.

Oral Communication
Oral communication is a very important skill for landscape horticulturists. A substantial amount of communication is done in order to exchange information, instruct, convey

knowledge and to coordinate work with others. They talk to clients about horticultural and landscaping topics such as plant care, landscape design and landscape maintenance. They speak with other professionals including suppliers, architects and engineers to coordinate projects.

Numeracy
Landscape horticulturists use numeracy skills, particularly to calculate financial transactions such as purchasing and sales. They also perform calculations related to production such as labour rates, material quantity take-offs, and seeding rates and measurements such as weight, volume and site areas. They also calibrate equipment such as spreaders and sprayers. They perform numerical estimations of time requirements, slope and quantities of materials.

Thinking Skills
Landscape horticulturists need to be able to problem solve when unexpected situations arise in their work. For instance, inclement weather may impact the ability to proceed as planned. Decision making and critical thinking skills are required to determine how to distribute tasks associated with issues such as plant health care, environmental protection, and selection of plant species, products and practices. Planning and organizing skills are used to coordinate and organize tasks with those of many others involved in the process. Landscape horticulturalists need to comprehend, interpret and apply safety documentation and regulations.

Digital Technology
Landscape horticulturists use computers and other digital devices when researching horticultural information. They may also use applications for communication, word processing, labeling, spreadsheets, databases and global positioning systems (GPS). They may use design, estimating, accounting and inventory software.

Working with Others
Landscape horticulturists coordinate work with others, including other landscape horticulturists, supervisors, architects, clients, homeowners, surveyors, engineers, bylaw officers and other contractors. Landscape horticulturists mentor other employees and cooperate in team building.

Continuous Learning
Landscape horticulturists are required to stay abreast of landscaping and horticultural information and practices, and regulatory requirements such as environmental protection and conservation, zoning and bylaws. Landscape horticulturists are governed by the regulatory body in the jurisdiction in which they practice. They may be required to participate in developing their learning plans and complete continuous education to maintain their industry-related certification.

Trends

Safety concerns are leading to increased commitments to legislated safety programs and best practices.

The use of respirators in lieu of dust masks is becoming common practice.

Tools and equipment are more ergonomic and user-friendly.

Motorized equipment is becoming less noisy. More environmentally friendly options are available.

Information is increasingly being shared among landscape horticulturists as a result of more sophisticated digital devices and the internet.

There are increasing restrictions in the movement of plant material across jurisdictional borders.

Keeping accurate and up-to-date records is important.

Related Components

All components apply.

Tools and Equipment

See Appendix A.

Task 1 Performs safety-related functions.

Context

Proper use of personal protective equipment (PPE) is essential for personal safety. Awareness of safety considerations, completing assessments and the use of safety equipment such as pylons and barricades is important to maintaining a safe work environment.

Required Knowledge

K 1	safety regulations and company safety manual
K 2	types of PPE and their operation
K 3	types of safety equipment and their operation
K 4	storage procedures for tools and equipment
K 5	safety regulations that apply to the transporting of material and equipment
K 6	WHMIS procedures
K 7	health and safety procedures

K 8	site hazards such as public and private utilities
K 9	universal hand signals
K 10	first aid training

Sub-task

A-1.01 Uses personal protective equipment (PPE) and safety equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies:

A-1.01.01	select and use PPE such as ear, eye, hand and foot protection, and safety vests as required for task, tools, equipment, machinery and environment
A-1.01.02	select and use safety equipment such as ventilation fans, spill kits and fire extinguishers according to manufacturers' specification
A-1.01.03	store PPE and safety equipment in a dry, protected environment to maintain its integrity
A-1.01.04	check operation and condition of PPE and safety equipment regularly and prior to use
A-1.01.05	check PPE and safety equipment inventory to ensure that there is a ready supply
A-1.01.06	recognize damaged and expired PPE and safety equipment and remove from service
A-1.01.07	check and replace PPE components according to manufacturers' specifications and workplace requirements

Sub-task

A-1.02 **Maintains safe work environment.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-1.02.01	assess hazards such as high voltage, motorized equipment and working at heights according to OH&S and company safety policy
A-1.02.02	take action for overhead hazards such as power lines and tree branches to prevent damage and personal injuries
A-1.02.03	identify required PPE and safety equipment for task
A-1.02.04	follow specified safety procedures such as use of fall arrest, establishing fuelling zones, trenching and shoring, and confined space procedures
A-1.02.05	maintain a clean and tidy work area to avoid injuries to self and others
A-1.02.06	comply with lock-out/tag-out procedures when working on equipment
A-1.02.07	coordinate tasks with other workers to avoid injury to self, co-workers and others
A-1.02.08	place flagging, pylons and signage when working in high traffic areas according to jurisdictional regulations
A-1.02.09	handle hazardous materials in accordance with jurisdictional regulations and WHMIS procedures such as disposal, labelling and use of PPE
A-1.02.10	participate in safety meetings and discussions to ensure that information is recorded and distributed to all team members
A-1.02.11	recognize and report unsafe conditions
A-1.02.12	recognize safety and warning signals such as back-up signals, back-up alarms and warning lights
A-1.02.13	use universal hand signals when communicating with equipment operators and drivers
A-1.02.14	contain and dispose of spill contaminants according to regulations
A-1.02.15	coordinate with emergency response teams such as spill response and fire
A-1.02.16	administer first aid treatment

Task 2 Maintains tools, equipment and vehicles.

Context Landscape horticulturists must maintain various types of tools, equipment and vehicles to increase longevity and to ensure that work is done in a safe and productive manner.

Required Knowledge

K 1	tool, equipment and vehicle operation and function
K 2	safety regulations and safe work practices
K 3	types of PPE such as safety glasses and gloves
K 4	storage and sanitation procedures for tools, equipment and vehicles
K 5	maintenance practices for tools, equipment and vehicles
K 6	record keeping procedures for maintaining tools, equipment and vehicles
K 7	engine types and their requirements
K 8	types of hitches and ball sizes

Sub-task

A-2.01 Maintains hand tools.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-2.01.01	clean and disinfect hand tools to ensure proper operation and to prevent transfer of contaminants
A-2.01.02	lubricate hand tools such as secateurs and shears
A-2.01.03	check tools regularly for damage, excessive wear and proper operation and remove from service
A-2.01.04	store hand tools for organization, safety and security
A-2.01.05	sharpen hand tools such as secateurs, shears and shovels
A-2.01.06	replace components in tools such as secateurs and loppers due to damage and wear

Sub-task

A-2.02 Maintains power tools.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-2.02.01	lubricate power tools according to manufacturers' specifications
A-2.02.02	adjust power tools such as chain saws, mowers and power washers
A-2.02.03	check tools for wear, damage and malfunction such as a damaged power cord, and remove from service
A-2.02.04	follow recommended maintenance schedule according to manufacturers' specifications
A-2.02.05	check fluid levels, fuel mixture ratios and air pressure
A-2.02.06	grease nipples on motorized equipment
A-2.02.07	sharpen and balance mower blades
A-2.02.08	sharpen tools such as chainsaws and hedge shears according to manufacturers' specifications
A-2.02.09	check, charge or replace batteries on power tools
A-2.02.10	check components such as filters and mufflers
A-2.02.11	refuel equipment according to manufacturers' specifications
A-2.02.12	disinfect tools to prevent cross-contamination from site to site
A-2.02.13	store power tools for organization, safety and security

Sub-task

A-2.03 Maintains measuring equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-2.03.01	clean and disinfect measuring equipment to ensure proper operation and to prevent transfer of contaminants
A-2.03.02	calibrate measuring equipment such as pH meters, levels and electrical conductivity (EC) meters
A-2.03.03	check, charge and replace batteries on measuring equipment

A-2.03.04	check tools for damage, excessive wear and proper operation, and remove from service
A-2.03.05	store measuring equipment for organization, safety and security

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Sub-task

A-2.04 Maintains vehicles and motorized equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-2.04.01	perform and document a circle check of vehicles and motorized equipment to check for defects such as compromised lights, plates and brakes
A-2.04.02	clean motorized equipment for reasons such as maintaining optimal operation, detection of leaks and sanitation
A-2.04.03	inspect equipment visually for damage and wear, and lock-out and tag-out
A-2.04.04	inspect equipment to ensure efficient functioning
A-2.04.05	check condition of safety features such as lockout devices, chutes, trimmer and belt guards, rollover protection devices (ROP) and operator presence switches
A-2.04.06	check fluid levels such as oil, coolant and hydraulic fluids according to manufacturers' specifications
A-2.04.07	check and replace components such as spark plugs, belts, hoses and pull cords according to manufacturer’s specifications
A-2.04.08	check and adjust air pressure in components such as tires and air compressors for tools
A-2.04.09	check and tighten loose connections and fittings
A-2.04.10	check cutting height and adjust according to client expectations and turfgrass needs

Sub-task

A-2.05 Maintains equipment attachments and trailers.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-2.05.01	grease fittings on trailers and equipment such as aerators and cultivators
A-2.05.02	inspect attachments for damage and wear, and lock-out/tag-out
A-2.05.03	adjust attachments for parking, travel and operation
A-2.05.04	check hydraulic fluids and hose condition to ensure optimum and safe operation of equipment
A-2.05.05	clean and disinfect attachments such as drop spreaders, sprayers and mowers
A-2.05.06	replace damaged and worn components such as bushings, blades and tines
A-2.05.07	perform a circle check of equipment attachments to check for defective parts such as lights, chains, plates, safety guards and brakes
A-2.05.08	check operation of safety brake, latch pin and safety chain on trailers

Task 3 Organizes work.

Context Landscape horticulturists organize work for productivity and safety.

Required Knowledge

K 1	site assessment and determine logistics
K 2	site hazards
K 3	site access
K 4	types of growing media
K 5	features that require preservation and protection
K 6	interpretation of documentation
K 7	source and reliability of documentation
K 8	types of documents such as government publications, specifications, and instruction and assembly manuals
K 9	types of records such as vehicle maintenance logs and mileage records
K 10	jurisdictional regulations
K 11	plant identification and nomenclature

K 12	verbal and written communication methods
K 13	transportation effects on plants
K 14	acclimatization requirements of plant materials
K 15	WHMIS procedures
K 16	health and safety procedures
K 17	monitoring devices such as recording devices and thermometers
K 18	material handling techniques
K 19	safe loading/unloading and transportation of equipment and materials
K 20	load and weight distribution for transporting equipment
K 21	weight restrictions for transporting equipment
K 22	securing methods for transporting tools and equipment
K 23	regulations that apply to the transporting of material and equipment such as straps and chains
K 24	basic traffic control procedures and bylaws
K 25	licensing requirements for transporting materials and equipment such as load securement and weight loads

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Sub-task

A-3.01 Performs site assessments.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-3.01.01	assess access points to identify site restrictions and challenges for work
A-3.01.02	perform visual inspection of site and neighbouring properties for factors such as existing damage and extensional (surrounding) landscape
A-3.01.03	use jurisdictional 'call before you dig' service to identify utility locations
A-3.01.04	identify markings for private and public utilities such as cable, natural gas, power and telephone
A-3.01.05	identify and mark locations of private utilities such as irrigation lines, drainage systems and landscape lighting components
A-3.01.06	perform tests such as percolation, core sampling and texture tests to determine quality of existing soil
A-3.01.07	locate septic field components and wells
A-3.01.08	identify health and vigour of existing plants for cultural maintenance or removal

A-3.01.09 identify areas to be excavated and protected

A-3.01.10 identify existing and proposed grading and drainage patterns

A-3.01.11 identify security requirements

Sub-task

A-3.02 Uses documentation and reference material.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-3.02.01 locate and interpret documentation such as drawings and specifications, tenders, addendum and contracts, site locates, and product instructions

A-3.02.02 refer to WHMIS documentation for procedures such as usage of PPE, storage requirements, spill containment, and usage and cleanup of hazardous material

A-3.02.03 use catalogues for reasons such as plant identification, comparing products among suppliers, and ordering tools, equipment and plant materials

A-3.02.04 use resources such as text books, field books, operator equipment manual (OEM) and internet for in-depth information regarding plant materials, pests and diseases

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Sub-task

A-3.03 Maintains records.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-3.03.01 complete safety records such as accident reports, tag-outs and safety meeting records according to governmental, industry and company regulations

A-3.03.02 complete work records such as work orders, daily time sheets, change orders and site assessment records according to company policy

A-3.03.03 complete tool and equipment sign-out and training sign-off sheets according to company policy

A-3.03.04 maintain records related to integrated pest management (IPM) and plant health programs

A-3.03.05	record information such as fertilizer application, treatments, temperatures, cropping schedules and inventory management
A-3.03.06	record shipping information such as inventory adjustments, regulatory documentation and Phytosanitary Certificates
A-3.03.07	compare packing slips with original orders to ensure that shipments are complete
A-3.03.08	read test results and monitoring devices and record data

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Sub-task

A-3.04 Complies with policies and regulations.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-3.04.01	review and comply with current governmental and company policies and regulations such as labour, transportation, pest control, conservation of water, habitat preservation and control of spraying
A-3.04.02	enforce safety regulations such as PPE usage, usage of tools and equipment, and handling and storage of materials
A-3.04.03	comply with jurisdictional and company environmental protection agencies such as Health Canada, Department of Fisheries and Oceans (DFO), Canadian Food Inspection Agency (CFIA) and Environment Canada
A-3.04.04	contact appropriate authorities for information and to report accidents and incidents
A-3.04.05	verify that personal licensing and certification are current

Sub-task

A-3.05 Plans daily tasks.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-3.05.01	identify and prioritize tasks to assist in time management and efficient performance
A-3.05.02	organize labour, materials and equipment for tasks
A-3.05.03	delegate tasks to team members to utilize individual strengths
A-3.05.04	modify daily tasks according to challenges such as site hazards, weather, lack of materials and competing projects
A-3.05.05	refer to historical information and previous records to assist in the daily planning
A-3.05.06	uses design software applications and 3D modelling

Sub-task

A-3.06 Communicates with others.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-3.06.01	use effective verbal and written communication to relay information to persons such as co-workers, clients, suppliers and office staff
A-3.06.02	mentor apprentices
A-3.06.03	use universal hand signals to communicate with machine operators, truck drivers and crane operators
A-3.06.04	communicate visually to direct movement of machinery, equipment and people
A-3.06.05	use communication equipment such as two way radios, computers and cell phones
A-3.06.06	ensure that co-workers understand instructions using techniques such as on-the-job-training (OJT) method and repeating back
A-3.06.07	practice active listening
A-3.06.08	employ conflict resolution strategies

A-3.06.09	report discrepancies and seek direction from supervisor
A-3.06.10	provide input for employee evaluations

Sub-task

A-3.07 Orders plants and materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-3.07.01	identify size, quality, quantity and type of required materials
A-3.07.02	use botanical nomenclature when ordering plant material to ensure accuracy of orders
A-3.07.03	record order number, tracking number and name of supplier representative
A-3.07.04	compare prices for budget purposes
A-3.07.05	determine availability, time and date of delivery or pick up
A-3.07.06	ensure documents such as movement certificates and import permits are in place

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Sub-task

A-3.08 Transports materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-3.08.01	protect plant materials with items such as tarps and anti-desiccants
A-3.08.02	secure materials using appropriate load bearing tie downs according to jurisdictional regulations
A-3.08.03	load/unload materials using tools and equipment such as dollies and forklifts
A-3.08.04	load materials in sequence and direction to allow for optimal transport and unloading
A-3.08.05	ensure that loose materials such as branches, wood chips, soil and aggregates are secure and loaded in a manner to prevent spillage
A-3.08.06	cover materials according to company policy and jurisdictional regulations

A-3.08.07	load and transport material according to weight restriction regulations and load distribution requirements
A-3.08.08	perform and document circle check of vehicle and towed equipment

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Sub-task

A-3.09 Organizes plants, materials and equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-3.09.01	inspect and verify plants and materials for accuracy, quality, quantity and damage prior to unloading and according to purchase order
A-3.09.02	place imported plants in a separate location from local plants until inspected by CFIA and according to jurisdictional regulations
A-3.09.03	remove and inspect monitoring devices such as temperature recorders and environmental recorders
A-3.09.04	receive, unload and record plants and group/match plants by size and species
A-3.09.05	place plants in designated areas such as job site, hot house, shaded area or heeling-in-bed
A-3.09.06	unload, place and protect materials such as wood chips, soil and aggregates in an organized fashion in designated storage areas to avoid contamination and maintain product quality
A-3.09.07	allocate specified storage area for equipment and hazardous materials
A-3.09.08	receive and record materials such as soils, seed, plugs, roots, labels and containers
A-3.09.09	quarantine, reject and dispose of substandard materials according to regulations
A-3.09.10	perform final check of required plants, materials and equipment on site

Sub-task

A-3.10 Transports equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-3.10.01	select trailer type according to equipment and weight restrictions
A-3.10.02	secure loads according to jurisdictional requirements
A-3.10.03	determine route from shop to work site for heavy hauling
A-3.10.04	tie flags to back end of trailers to indicate extended load according to jurisdictional regulations
A-3.10.05	place traffic cones and wheel chocks when loading and unloading trailer
A-3.10.06	follow road closure procedures according to jurisdictional regulations
A-3.10.07	comply with licensing requirements for transporting equipment
A-3.10.08	transport equipment in a manner to avoid personal injury and damage to equipment and property.

Task 4 Participates in marketing and sales.

Context

Landscape horticulturists sell products and services that meet and exceed client expectations. Establishing and maintaining customer relations is a critical component of the marketing strategy.

Landscape horticulturists need to manage and control a broad range of inventory products. They also need to know about estimating, tendering and contracting processes.

Required Knowledge

K 1	purchase order and record keeping techniques
K 2	plant identification and nomenclature
K 3	inventory software
K 4	tracking methods
K 5	phytosanitary inspection and certification
K 6	softscape products such as plants, fertilizers, soils, chemicals and containers
K 7	merchandising and marketing techniques and tools such as business cards, brochures and website

K 8	professional conduct
K 9	customer retention skills and relationship building
K 10	selling skills
K 11	basic estimating of materials
K 12	regulations, permits, specifications, bylaws and restrictions
K 13	installation techniques
K 14	hardscaping products such as paving stones, natural stone, weed barriers and edging
K 15	site access requirements
K 16	site restriction and security requirements
K 17	environmental constraints
K 18	tendering systems and requirements such as bonding, payment schedules, deficiencies and extras
K 19	time allocation to perform tasks required in contract
K 20	equipment and tools required to perform job
K 21	scheduling and critical path analyses

Sub-task

A-4.01 Controls inventory.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-4.01.01	identify and count inventory using manual or electronic systems
A-4.01.02	maintain inventory records
A-4.01.03	identify and sort materials
A-4.01.04	identify restock orders

Sub-task

A-4.02 Sells products and services.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-4.02.01	advise and educate clients on plants, products and services
A-4.02.02	direct customer to seasonal purchases such as Christmas trees and seasonal lighting
A-4.02.03	up-sell additional products and services to clients and advise of special offers
A-4.02.04	merchandize products and services in an attractive and visible way
A-4.02.05	apply marketing principles such as creating internet presence and advertising
A-4.02.06	handle payments for products and services
A-4.02.07	write invoices, calculate taxes and issue receipts for payment
A-4.02.08	maintain professional image and appearance
A-4.02.09	prepare and administer contracts

Sub-task

A-4.03 Maintains customer relations.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-4.03.01	address client's concerns with tact, politeness and in a timely manner according to company policy
A-4.03.02	practice customer service by acknowledging clients and potential clients
A-4.03.03	maintain customer record information such as address, phone number, email and product preferences
A-4.03.04	provide after-service follow-up
A-4.03.05	practice active listening

Sub-task

A-4.04 Prepares estimates.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

A-4.04.01	interpret tendering document when provided to understand requirements for estimate
A-4.04.02	estimate basic material requirements
A-4.04.03	perform take-off from drawings to determine parameters such as quantity, size, type and volume of materials and products
A-4.04.04	identify and apply additional costs such as sub-trades, transportation, safety program, contingencies, change orders, surcharges, accommodations and overhead
A-4.04.05	co-ordinate project logistics with other contractors, suppliers and employees, to establish direct costs by discussing items such as skill requirements, machinery and products
A-4.04.06	calculate price and labour requirements to supply and install products and materials
A-4.04.07	provide estimates for contract preparation

Trends

As horticultural stewards of the environment, there is an increased awareness of the benefits and applications of blue and green infrastructure.

There is an increase in the use and benefits of native, non-invasive, edible and organically-grown plant materials and a more targeted use of pest management best practices by using IPM principles.

Due to environmental awareness and jurisdictional regulations, landscape horticulturists use materials and operate vehicles, tools and equipment that have a reduced carbon foot print.

Consumers are more conscious of their purchasing choices and impact on the environment which transforms landscape horticultural practices.

Related Components

All components apply.

Tools and Equipment

See Appendix A.

Task 5 Applies horticultural principles.

Context

Landscape horticulturists must identify plants and plant requirements to manage plant health, growing conditions, pests, diseases and invasive species. They apply horticultural principles to sustain and promote plant life and growing environment.

Required Knowledge

K 1	growing media conditions
K 2	signs and symptoms of plant stress
K 3	mature plant structure, size and life expectancy
K 4	tests such as pH, air quality and nutrient tests
K 5	treatment methods
K 6	plant requirements such as light, hardiness and moisture
K 7	life cycle of pests and diseases and disease triangle

K 8	pest and disease introduction and spread
K 9	beneficial organisms such as fungi, insects and bacteria
K 10	companion planting procedures
K 11	basic plant science such as botany and physiology
K 12	action and disease thresholds
K 13	Canadian Standards for Nursery Stock (CSNS)
K 14	IPM principles
K 15	regional landscape standards
K 16	jurisdictional regulations
K 17	plant characteristics such as form, foliage and foliage pattern, stems and bark, bud, fruit, flower, size and colour
K 18	plant classification such as coniferous trees, coniferous shrubs, deciduous trees, deciduous shrubs, herbaceous, woody, broad leaf evergreen, turfgrass, vines, weeds, annual, perennial, biennial, edible, native, non-native and invasive species
K 19	plant key and application
K 20	Plant Hardiness Zone Map
K 21	plant nomenclature
K 22	reasons for pruning such as size reduction, thinning for air circulation, removal of dead, diseased, damaged or interfering material, unwanted growth, shape and design intent
K 23	factors that affect pruning times such as dormancy, flower period, growth response, wind and frost damage, and scorch
K 24	pruning methods according to plant classification
K 25	1/3 pruning rule
K 26	pests such as plant feeding animals, weeds and insects
K 27	diseases such as blight, leaf spot, scab, gall, rust, canker, bacterial wilts, fungi, rot and mildew, and bacterial and fungal turfgrass diseases
K 28	causes of diseases such as pathogens, nematodes and nutrient deficiencies
K 29	pathogens such as viruses, bacteria and fungi
K 30	biotic factors such as diseases and insects
K 31	abiotic factors such as temperature, light, mechanical damages and nutrition

Sub-task

B-5.01 Identifies plants and plant requirements.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

B-5.01.01	inspect plants visually by examining plant classification and characteristics, and use reference material
B-5.01.02	examine plant by touching to determine texture and unique characteristics
B-5.01.03	determine growth habits and cultural requirements of plants such as light, moisture, soil type and nutrients to identify suitable plant location
B-5.01.04	determine health and vigour of plants based on observed plant characteristics to establish next steps such as growing, designing, placing, installing and maintaining of plants

Sub-task

B-5.02 Manages plant health and growing conditions.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

B-5.02.01	determine exposure to conditions such as light, wind, and heating, ventilation and air conditioning (HVAC) systems, moisture and reflective heat load based on location
B-5.02.02	identify signs and symptoms of plant health
B-5.02.03	collect growing media samples to determine growing media conditions
B-5.02.04	test growing media samples and irrigation water manually or by lab analysis to identify texture, drainage capacity, pH, nutrients and contaminants
B-5.02.05	collect foliar sample to identify plant health and determine nutrient deficiencies, diseases and pests, using reference materials and resources
B-5.02.06	interpret lab results to determine plan of action
B-5.02.07	determine air quality that might affect interior and exterior plants

B-5.02.08	adjust plant selection and placement according to microclimate, topography, natural habitat, pH level, soil type, growing environment and plant hardiness zone
B-5.02.09	develop corrective measure plan according to findings and plant requirements
B-5.02.10	implement measures to optimize plant health and microclimates such as growing media, nutrition, temperature, light, exposure, moisture and humidity
B-5.02.11	take corrective measures such as fertilization, liming, adding organics, neutralizing water and correcting drainage
B-5.02.12	measure and apply fertilizer and amendments according to plant requirements such as foliar feed, injection, and liquid and granular applications
B-5.02.13	remove and dispose of pest ridden and fallen foliage to prevent spreading of pests and diseases, according to jurisdictional regulations and horticultural best practices
B-5.02.14	divide and space plants to ensure adequate air circulation

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Sub-task

B-5.03 Prunes plant material.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

B-5.03.01	assess plant structure, species and environment to establish pruning plan
B-5.03.02	select pruning methods such as shearing, heading, thinning, cleaning, canopy raising, crown balancing, reducing and restoring, according to plant morphology, anatomy, physiology, maturity, time of year, and type of plant material
B-5.03.03	determine pruning process to maximize efficiency according to pruning plan
B-5.03.04	select cutting technique such as 3-cut method, flush cut, according to size of limb and required equipment
B-5.03.05	select and use tools and equipment such as hedge trimmers, shears, saws, secateurs, pruners and loppers according to task

B-5.03.06	cut plant material to remove dead, disease, damage, interfering (DDDI) material to improve plant health, structure and to reduce size
B-5.03.07	cut, pinch and deadhead plant material according to requirements
B-5.03.08	dispose of pruning debris according to sanitation and jurisdictional regulations

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Sub-task

B-5.04 Manages pests, diseases and invasive species.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

B-5.04.01	determine conditions that lead to plant stress by inspecting plants visually for signs and symptoms of plant diseases, deficiencies and environmental impacts such as discoloration, wilting, defoliation and foliar burn
B-5.04.02	inspect plants visually for pest population and damage such as leaf disfiguration, notching and stippling
B-5.04.03	identify pests, diseases, invasive species and beneficial insects by visually inspecting plant
B-5.04.04	recognize and comply with jurisdictional guidelines for native plants and invasive species to determine course of action
B-5.04.05	monitor pest populations, spread of disease and damage characteristics
B-5.04.06	monitor biological control populations to determine efficacy and course of action
B-5.04.07	establish injury and action thresholds according to economics, aesthetics and plant health
B-5.04.08	select treatment and control method according to types of pests, diseases and environment and that will not negatively impact native or existing ecosystem
B-5.04.09	identify and calibrate pesticide application equipment
B-5.04.10	prevent pest and disease by rotating crops, selecting pest-resistant varieties and managing plant health
B-5.04.11	prevent invasion or reinvasion of pest, diseases and invasive species by maintaining healthy growing environment, and supporting and encouraging native ecosystem

B-5.04.12	apply treatment methods such as cultural, mechanical, biological and chemical in compliance with jurisdictional requirements
B-5.04.13	evaluate results of treatment and review on an on-going basis
B-5.04.14	identify quarantine protocols based on host plants, host media and predatory organisms, according to jurisdictional regulations
B-5.04.15	store, handle and dispose of pest and disease management related products and materials
B-5.04.16	dispose of pest and diseased plant material and invasive species, according to jurisdictional regulations

Task 6 Applies environmental practices

Context Landscape horticulturists, as environmental stewards, identify and apply environmental best practices to conserve, preserve, protect and reclaim natural habitats and ecosystems to sustain a healthy environment.

Required Knowledge

K 1	environmental practices for physical elements such as water, air quality and soil
K 2	ecosystems such as meadows, ponds, parks and urban landscape
K 3	types of green infrastructure such as living walls, green roofs, rain gardens, rainwater harvesting, storm water management, green parking, permeable pavement, bioswales, urban tree canopy and land conservation
K 4	types of blue and grey infrastructures
K 5	benefits of green infrastructures such as biodiversity, water conservation, erosion control, flood mitigation, climate control and air purification
K 6	green infrastructure purpose
K 7	jurisdictional regulations
K 8	green field and brown field reclamation
K 9	benefits of plants such as climate control, carbon capturing, symbiotic relationships
K 10	xeriscape principles

K 11	smart water technology
K 12	value of environmental, economic and social impact of tree canopy
K 13	fire smart practices
K 14	natural ecosystems function, purpose and structure
K 15	site sustainability
K 16	landscape design and development process
K 17	aesthetics
K 18	due diligence
K 19	preservation, conservation and regeneration principles and applications related to plant life, habitat and water table
K 20	water retention and weed prevention materials such as soil, mulch, compost and plants
K 21	water retention practices
K 22	pest and disease introduction and spread
K 23	life cycle of pest and diseases
K 24	mechanical control practices such as aeration, mulching mowers and sanitizing and sharpening mowing blades
K 25	cultural control practices such as mulching of grass, by-products of pruning and fall leaves, and adjusting mowing height
K 26	jurisdictional regulations of disposal vehicle, equipment parts and by-products
K 27	environmental waste management best practices such as reduce, reuse and recycle
K 28	surface and subsurface drainage systems and practices such as roof-top gardens, catch basins, bioswales, french drains, retention ponds and wicking beds
K 29	filtration systems
K 30	local sourcing of material and equipment
K 31	site protection such as silt fencing and erosion control

Sub-task

B-6.01 Practices environmental stewardship.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

B-6.01.01	select and use material such as plants, paving stones and irrigation components, to reduce negative impact on environment and ecosystems
B-6.01.02	select and use vehicles and equipment to minimize negative environmental impact such as compaction, fuel emission and noise pollution, according to jurisdictional regulations
B-6.01.03	select native species and plant varieties that are pest resistant and suited to the environment such as soil type, light and pH, and according to jurisdictional regulations
B-6.01.04	select conservation and preservation strategies such as plant selection, storm water management, smart water systems, water retention methods and water harvesting, according to jurisdictional regulations
B-6.01.05	minimize introduction of diseases through plant selection
B-6.01.06	minimize spread of disease by practicing methods such as reducing the movement and transportation of infected plant material and growing media, by sanitizing material, tools and equipment and by disposing of plant material, according to jurisdictional regulations
B-6.01.07	select fertilizers and amendments that support plant health and minimize environmental impacts
B-6.01.08	reduce unnecessary idling of vehicles and equipment, according to jurisdictional regulations and environmental best practices

Sub-task

B-6.02 Selects green infrastructure.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

B-6.02.01	determine green infrastructure needs by inspecting site-specific environmental conditions such as topography, water flow, drainage patterns, humidity, air flow, existing vegetation and growing media
B-6.02.02	confirm factors such as drainage systems, water proofing, equipment access and other requirements
B-6.02.03	identify benefits and applications of green infrastructure technologies that mimic nature for selection according to site requirements
B-6.02.04	select green infrastructure technologies, methods and products taking into consideration the client's needs, site restrictions, product availability and jurisdictional regulations

Trends	The use of technologies such as light emitting diode (LED) landscape fixtures and GPS is becoming more prevalent. This increases the training necessary for landscape horticulturists to perform their tasks. Safety concerns on the construction site are leading to increased commitments to legislated safety programs and best practices. Increased awareness of the environmental benefits of sustainable landscape is changing the training, certification and practices of the industry. The use of new turf seed cultivars, pest-resistance plants and IPM practices is becoming more popular. Implementing water management, infiltration and erosion control measures is becoming more important. Structural soils which support load and plant growth are being created and used more frequently. Outdoor living space features such as fireplaces, outdoor kitchens and entertainment units are becoming more popular. Indoor plants are becoming more popular due to increased awareness of health benefits.
Related Components (including, but not limited to)	**Softscape material:** growing media, mulch, turf, aquatic plants, tropical plants, bulbs, exterior plants, fertilizers, amendments, structural soils. **Hardscape materials:** drainage components, irrigation components, pre-cast concrete, aggregates, manufactured stone, natural stone, lumber, mortar, geogrids, rebar, geotextiles, filter cloths, erosion mats, river rock, boulders, edging materials, recycled materials. **Structures and features:** wood, metals, rails, posts, concrete, , fasteners, decorative details, composite boards, pumps, hoses, electrical conduits and wiring for low voltage lighting, water feature components, low voltage lighting components.
Tools and Equipment	See Appendix A.

Task 7 Performs pre-construction activities.

Context Landscape horticulturists participate in the planning of construction. They also perform pre-construction activities prior to installation. They prepare the site according to landscape drawings and specifications.

Required Knowledge

K 1	tool use and application
K 2	equipment use and application
K 3	growing media structure and quality
K 4	codes and standards
K 5	hardscape and construction materials
K 6	softscape materials
K 7	surveying and measurement principles
K 8	design principles
K 9	site assessment principles
K 10	jurisdictional regulations
K 11	types of landscape drawings and specifications
K 12	horticulture
K 13	plant identification and nomenclature
K 14	scope of landscape horticulturist and other trades
K 15	productivity management
K 16	safe work practices
K 17	site preservation best practices such as compaction and erosion prevention and reduction
K 18	habitat recognition and preservation
K 19	excavation practices such as cut and fill, and trench slope
K 20	drainage techniques
K 21	site access requirements
K 22	site restriction and security requirements
K 23	environmental constraints
K 24	equipment and tools required to perform job
K 25	scheduling and critical path analyses

Sub-task

C-7.01 Participates in basic landscape design activities.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-7.01.01	select and use tools such as levels, GPS and measuring devices
C-7.01.02	measure and inventory existing site conditions to provide information for the design
C-7.01.03	apply design principles such as texture, color, form and scale
C-7.01.04	create basic landscape drawings according to client consultation and jurisdictional regulations

Sub-task

C-7.02 Interprets landscape drawings.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-7.02.01	identify scale to guide site layout and job planning activities
C-7.02.02	identify symbols such as property lines, grades and elevations, and hardscape and softscape elements to determine the scope of work
C-7.02.03	identify project specifications such as planting plan, and softscape and hardscape details
C-7.02.04	identify infrastructure and utilities such as gaslines, catchbasins, and water valves
C-7.02.05	identify stakeholders on the plan such as property owners, designers and engineers for future reference

Sub-task

C-7.03 Participates in job planning activities.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-7.03.01	identify labour expertise and allocate production hours according to specifications and in consultation with project manager (designer/estimator)
C-7.03.02	review safety requirements to ensure safe completion of the project
C-7.03.03	locate private and public utilities to ensure safe completion of project
C-7.03.04	verify term of project and determine sequence of job to ensure project is completed according to plan and budget
C-7.03.05	verify materials and procedures to meet project specifications
C-7.03.06	plan on-site staging such as environmental protection, vehicle parking, storage, portable office and toilets
C-7.03.07	identify and schedule sub-contractors to fulfill the scope of work
C-7.03.08	identify and schedule materials, tools, equipment and attachments to ensure availability
C-7.03.09	identify and schedule daily and end of project clean-up

Sub-task

C-7.04 Prepares construction site.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-7.04.01	select and use hand and measuring tools such as shovels, engineer levels and transits
C-7.04.02	select and use motorized equipment such as loaders, skid-steers and excavators
C-7.04.03	identify and communicate discrepancies between plans and site conditions
C-7.04.04	preserve and protect existing hardscape and softscape elements such as trees and decks according to plans and specifications
C-7.04.05	remove hazards, debris and other unwanted materials
C-7.04.06	create access to ensure site efficiency and security

C-7.04.07	identify markings of underground and overhead utility hazards to avoid personal injury and damage to utilities
C-7.04.08	interpret privately-owned and public utilities such as fibre-optics, gas lines and septic locate documents
C-7.04.09	locate and cordon off areas to minimize environmental impact
C-7.04.10	install environmental mitigation mechanisms such as filters, silt fencing and storm sewer guards
C-7.04.11	lay out site by marking and staking location of hardscape and softscape elements to be installed
C-7.04.12	excavate and place service conduits to support activities such as installing irrigation systems and low voltage wiring
C-7.04.13	verify that site is prepared according to specifications

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Sub-task

C-7.05 Performs grading

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-7.05.01	select and use tools such as shovels, rakes and levels
C-7.05.02	select and use equipment such as excavators, loaders, skid-steers and tractors
C-7.05.03	lay out drainage elements by marking and staking grades
C-7.05.04	strip and stockpile topsoil
C-7.05.05	cut and fill material to establish rough grade according to drawings and specifications
C-7.05.06	verify that site is prepared according to specifications

Task 8 Installs hardscape.

Context Landscape horticulturists install hardscape features that comply with drawings, specifications, regulations and codes to ensure the integrity of the installation.

Required Knowledge

K 1	tool use and application
K 2	equipment use and application
K 3	sub-base structure and quality
K 4	codes and standards
K 5	hardscape and construction materials
K 6	softscape materials
K 7	design principles
K 8	jurisdictional regulations
K 9	types of landscape drawings
K 10	horticulture
K 11	plant identification and nomenclature
K 12	scope of landscape horticulturist and other trades
K 13	productivity management
K 14	safe work practices
K 15	site preservation best practices such as compaction, and prevention and reduction of erosion
K 16	excavation practices
K 17	drainage techniques
K 18	water quality management
K 19	sub-irrigation and irrigation
K 20	landscape structures such as pergolas, fences and decks
K 21	low-voltage lighting systems
K 22	habitat recognition and preservation
K 23	water features such as ponds, fountains, waterfalls and streams
K 24	green infrastructure such as green roofs, living walls, retention ponds, permeable pavers, bio-swales, storm water retention and wet land reserves
K 25	precast concrete products such as pavers, slabs, and segmental retaining wall units (SRWs).

Sub-task

C-8.01 Installs drainage systems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-8.01.01	ensure drainage system complies with jurisdictional regulations
C-8.01.02	select and use tools such as shovels, picks and wheelbarrows
C-8.01.03	select and use equipment such as excavators, trenchers, loaders and skid-steers
C-8.01.04	excavate subsoil to required grade and depth
C-8.01.05	store or remove excavated materials
C-8.01.06	move specified drainage system materials into desired location
C-8.01.07	lay out and assemble drainage components
C-8.01.08	backfill drainage system with specified materials to finished grade
C-8.01.09	verify that installation meets specifications according to jurisdictional requirements

Sub-task

C-8.02 Installs landscape structures.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-8.02.01	select and use hand and power tools such as mitre saws, power drills and hammers
C-8.02.02	select and use equipment such as excavators, loaders, skid-steers and attachments
C-8.02.03	lay out and mark construction area
C-8.02.04	excavate as required
C-8.02.05	prepare foundation suitable for structure installation
C-8.02.06	construct specified structure such as decks, pergolas, outdoor kitchens and gazebos
C-8.02.07	verify that installation meets specifications
C-8.02.08	clean structures using tools such as brooms, water and power blowers

C-8.02.09	repair damage that has occurred as a result of construction
C-8.02.10	dispose of and recycle waste materials according to jurisdictional regulations
C-8.02.11	apply preservatives, stains and sealants to provide ease of cleaning, longevity and aesthetics according to product specifications and jurisdictional regulations

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Sub-task

C-8.03 Installs walkway, patio, driveway and parking lot materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-8.03.01	select and use tools such as shovels, picks, chisels and wheelbarrows
C-8.03.02	select and use equipment such as excavators, plate compactors and concrete saws
C-8.03.03	lay out and mark construction area
C-8.03.04	excavate as specified and stabilize by compaction
C-8.03.05	store or remove excavated materials
C-8.03.06	place geotextiles for base stability
C-8.03.07	add aggregate base and compact in lifts according to specifications
C-8.03.08	create or maintain adequate grade to ensure positive drainage
C-8.03.09	secure edge restraints for finished material
C-8.03.10	place bedding materials such as sand, limestone screening, high performance bedding materials and concrete bases
C-8.03.11	screed bedding materials
C-8.03.12	install materials such as flagstones, concrete, aggregates and paving stones
C-8.03.13	measure, cut and fit materials
C-8.03.14	clean surfaces using tools such as brooms and power blowers
C-8.03.15	apply joint materials such as mortars, sand and polymeric sand according to product specifications
C-8.03.16	compact surfaces
C-8.03.17	clean and seal, according to manufacturers' specifications
C-8.03.18	verify that installation meets specifications
C-8.03.19	clean and repair damage that has occurred as a result of construction
C-8.03.20	dispose of and recycle waste materials according to jurisdictional regulations

Sub-task

C-8.04 Installs steps and retaining walls.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-8.04.01	select and use tools such as shovels, picks, stone chisels and wheelbarrows
C-8.04.02	select and use equipment such as excavators, plate compactors, concrete saws and concrete mixers
C-8.04.03	lay out and mark construction area
C-8.04.04	excavate as specified and stabilize by compaction
C-8.04.05	store or remove excavated materials
C-8.04.06	place geotextile materials for stability
C-8.04.07	install aggregate base and compact in lifts according to specifications
C-8.04.08	place bedding materials such as sand, limestone screening and concrete footing
C-8.04.09	screed bedding materials
C-8.04.10	build wall and steps by performing actions such as stacking and assembling courses, installing geogrid and using materials such as timber, natural stone, and manufactured stones according to drawings, specifications and jurisdictional regulations
C-8.04.11	place drainage systems and backfill while maintaining the grade, according to specifications
C-8.04.12	install adhesives or mortar to secure capstones and treads
C-8.04.13	clean surfaces using tools such as brooms, power blowers and power washers
C-8.04.14	seal steps and retaining walls according to product specifications
C-8.04.15	verify that installation meets specifications and is ready for next phase
C-8.04.16	repair damage that has occurred as a result of construction
C-8.04.17	dispose of and recycle waste materials according to jurisdictional regulations

Sub-task

C-8.05 Installs irrigation systems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-8.05.01	select and use tools such as pipe cutters, crimping tools, trenching shovels and wheelbarrows
C-8.05.02	select and use equipment such as excavators, trenchers, loaders, skid steers and attachments
C-8.05.03	excavate or trench to required grade and depth according to specifications and jurisdictional regulations
C-8.05.04	store or remove excavated materials
C-8.05.05	lay out and assemble irrigation components according to manufacturers' specifications and irrigation plan
C-8.05.06	backfill irrigation systems with specified materials to finished grade
C-8.05.07	set head heights and nozzles of irrigation system to ensure coverage
C-8.05.08	install and program control system according to the landscape and environmental requirements
C-8.05.09	verify that installation is not leaking and meets specifications
C-8.05.10	clean and repair damage that has occurred as a result of construction
C-8.05.11	dispose of and recycle waste material according to jurisdictional regulations

Sub-task

C-8.06 Installs water features.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-8.06.01	select and use tools such as shovels, picks, chisels and wheelbarrows
C-8.06.02	select and use equipment such as excavators, loaders and skid-steers
C-8.06.03	lay out and mark construction area
C-8.06.04	excavate and store or remove excavated materials

C-8.06.05	place geotextile materials, membranes and components such as pumps, drains, valves, filtration systems and electrical conduits according to specifications
C-8.06.06	apply adhesives, foams and mortar to secure and seal assembly
C-8.06.07	complete assembly of water supply components, filtration systems and lighting
C-8.06.08	add water, run water systems and check for leaks
C-8.06.09	add aggregates and decorative features such as rocks, garden art and foot bridges according to specifications
C-8.06.10	verify and adjust water flow for optimal performance, sound and aesthetics
C-8.06.11	drain water and clean all components
C-8.06.12	refill water features and add ecosystem enhancement products such as beneficial bacteria and pH amendments
C-8.06.13	place aquatic plants
C-8.06.14	verify that installation meets specifications
C-8.06.15	repair damage that has occurred as a result of construction
C-8.06.16	dispose of and recycle waste materials according to jurisdictional regulations

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Sub-task

C-8.07 Installs low voltage landscape lighting.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-8.07.01	select and use tools such as wire strippers, voltmeters, ladders and trenching shovels
C-8.07.02	dig trenches to required depth
C-8.07.03	store or remove excavated materials
C-8.07.04	lay out and assemble lighting components according to manufacturers' specifications and lighting plan
C-8.07.05	verify operation of the lighting system and check voltage
C-8.07.06	position and secure lighting components into final location
C-8.07.07	program lighting controller
C-8.07.08	adjust fixtures for desired effects

C-8.07.09	clean and repair damage that has occurred as a result of construction
C-8.07.10	dispose of and recycle waste materials according to jurisdictional regulations

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Sub-task

C-8.08 Installs green infrastructure.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-8.08.01	select and use tools such as shovels, picks and wheelbarrows
C-8.08.02	select and use equipment such as excavators, trenchers, lifts, loaders and skid-steers
C-8.08.03	excavate subsoil to required grade and depth
C-8.08.04	store or remove excavated materials
C-8.08.05	move specified drainage system materials into desired location
C-8.08.06	lay out and assemble green infrastructure components such as geo-membranes, green roof and living wall systems, water management systems and landscape on slab
C-8.08.07	place materials such as soil, structural and filter media to support softscape and hardscape applications
C-8.08.08	install plants and surface materials such as permeable pavers and organic mulch
C-8.08.09	verify that installation meets specifications
C-8.08.10	verify structural integrity of components
C-8.08.11	dispose of and recycle waste materials according to jurisdictional regulations

Task 9 Installs softscape.

Context Landscape horticulturists install softscape features that comply with plans, specifications, regulations and codes to ensure the integrity of the installation.

Required Knowledge

K 1	tool use and application
K 2	equipment use and application
K 3	growing media structure and quality
K 4	codes and standards
K 5	hardscape and construction materials
K 6	softscape materials
K 7	design principles
K 8	jurisdictional regulations
K 9	types of landscape drawings
K 10	horticulture
K 11	plant identification and nomenclature
K 12	scope of landscape horticulturist and other trades
K 13	productivity management
K 14	safe work practices
K 15	site preservation best practices such as compaction and prevention and reduction of erosion
K 16	excavation practices
K 17	drainage techniques
K 18	plant growing requirements
K 19	water quality management
K 20	interior landscape planting guidelines
K 21	exterior landscape planting guidelines
K 22	sub-irrigation and irrigation
K 23	IPM
K 24	erosion control methods and materials such as live staking, fibre blanket and coco fibre
K 25	seed and fertilizer application rates
K 26	seed species, variety, blends and purpose
K 27	equipment calibration
K 28	habitat preservation and conservation

K 29	transplanting methods such as manual and mechanical
K 30	plant growing requirements such as nutrients, light and water
K 31	sampling and testing methods
K 32	standards and quality of products
K 33	effective product storage and requirements

Sub-task

C-9.01 Installs growing media.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-9.01.01	select and use tools such as shovels, picks, rakes and wheelbarrows
C-9.01.02	select and use equipment such as skid-steers, loaders and excavators
C-9.01.03	verify that drainage systems are effective and functioning
C-9.01.04	scarify subsoil with mechanical and manual tools and equipment
C-9.01.05	move growing media into desired location
C-9.01.06	add growing media in lifts, and compact and irrigate as specified
C-9.01.07	add and incorporate amendments such as fertilizers, composts and peat moss
C-9.01.08	grade growing media by mechanical and manual raking to elevation
C-9.01.09	verify that growing media depth and elevation meet specifications

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Sub-task

C-9.02 Installs exterior landscape plants.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-9.02.01	select and use tools such as tree dollies, shovels and rakes
C-9.02.02	select and use equipment such as excavators, and loaders and attachments
C-9.02.03	prepare plant materials by performing activities such as removal of containers, scarifying root ball and managing nutrient balance
C-9.02.04	monitor and maintain plant health throughout installation process
C-9.02.05	move plant materials to desired location

C-9.02.06	lay out plant materials as per plan
C-9.02.07	plant, stake and guy plant materials as specified
C-9.02.08	prune plant material that may have been damaged during the process of installation
C-9.02.09	verify moisture content of growing media to ensure adequate irrigation
C-9.02.10	verify that plant installation meets specifications
C-9.02.11	dispose of and recycle waste materials according to jurisdictional regulations

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Sub-task

C-9.03 Transplants plants.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-9.03.01	select and use tools and equipment such as shovels, tree gantry, tree spades and axes
C-9.03.02	verify plant is viable for transplant considering factors such as species, health and time of year
C-9.03.03	remove plant with as large a root ball as possible considering factors such as root structure, soil condition and size
C-9.03.04	plant according to specifications
C-9.03.05	prune plant material that may have been damaged during the process of transplanting
C-9.03.06	verify moisture and nutrient content of growing media to ensure plant health
C-9.03.07	dispose of and recycle waste materials according to jurisdictional regulations

Sub-task

C-9.04 Installs mulch.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-9.04.01	select and use tools such as wheelbarrows, landscape rakes and pitch forks
C-9.04.02	select and use equipment such as loaders, skid-steers and blower trucks
C-9.04.03	verify that area to be mulched is prepared according to specifications
C-9.04.04	verify that mulch materials such as wood, aggregates and composts meet specifications
C-9.04.05	apply mulch according to specifications avoiding contact with plant material
C-9.04.06	verify that mulch installation meets specifications

Sub-task

C-9.05 Installs turf from seed.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-9.05.01	select and use tools such as rollers, landscape rakes and seed spreaders
C-9.05.02	select and use equipment such as hydro-seeders, seed drills, and tractors and attachments
C-9.05.03	verify seedbed is prepared according to specifications including amendments and fertilizers
C-9.05.04	verify that seed variety selected meets specifications and jurisdictional regulations
C-9.05.05	apply seed to prepared area according to specifications and weather conditions
C-9.05.06	use landscape rollers to ensure seed is in direct contact with growing media
C-9.05.07	verify that seed distribution will result in uniform turf by visual inspection and correct
C-9.05.08	apply organic matter such as hydro mulch and straw to retain moisture and minimize seed movement as specified
C-9.05.09	monitor turf regularly to ensure irrigation meets germination requirements

Sub-task

C-9.06 Installs sod.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-9.06.01	select and use tools such as landscape rakes and sod knives
C-9.06.02	select and use equipment such as and tractors and attachments
C-9.06.03	verify that area to be sodded is prepared according to specifications
C-9.06.04	verify selected sod meets specifications
C-9.06.05	apply fertilizers and amendments as specified
C-9.06.06	lay sod to prepared area according to specifications
C-9.06.07	secure sod according to slope
C-9.06.08	use landscape rollers to ensure sod is in direct contact with growing media
C-9.06.09	monitor sod regularly to ensure irrigation meets established requirements
C-9.06.10	verify that sod installation meets specifications
C-9.06.11	dispose of and recycle waste materials according to jurisdictional regulations

Sub-task

C-9.07 Installs erosion control materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-9.07.01	select and use tools such as shovels, post pounders and knives
C-9.07.02	select and use equipment such as augers, trenchers and loaders
C-9.07.03	move specified erosion control material into desired location
C-9.07.04	lay out and apply erosion control material
C-9.07.05	secure placement of erosion control material to ensure performance
C-9.07.06	verify that erosion control installation meets specifications
C-9.07.07	dispose of and recycle waste materials according to jurisdictional regulations

Sub-task

C-9.08 Installs interior landscape plants.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

C-9.08.01	select and use tools such as tree dollies, shovels and rakes
C-9.08.02	select and use equipment such as skid-steers and tree gantrys
C-9.08.03	prepare plant materials by performing activities such as foliar washing, scarifying root ball and managing nutrient balance
C-9.08.04	monitor and maintain plant health throughout installation process
C-9.08.05	protect interior furnishings and surfaces
C-9.08.06	move plant materials to desired location
C-9.08.07	lay out plant materials according to drawing
C-9.08.08	plant interior landscape plants according to specifications
C-9.08.09	prune plant material that may have been damaged during the process of installation and acclimatization
C-9.08.10	verify moisture content of growing media to ensure adequate irrigation
C-9.08.11	verify that plant installation meets specifications

Trends

A higher degree of attention is paid to plant health due to more effective maintenance practices and environmental awareness.

Due to increased regulations, IPM processes for the managing of plant health have become more prevalent.

There is an increase in the use of technology to track maintenance activities and to assist in inventory.

There is an increased awareness and a demand for sustainable maintenance practices. Maintenance contractors are more engaged in maintaining green infrastructures and their associated technologies.

Related Components (include, but not limited to)

Softscape material: growing media, mulch, turf, bulbs, plants and plant materials, fertilizers, amendments.

Hardscape materials: drainage components, irrigation and lighting components, pre-cast concrete, aggregates, manufacturers' stones, natural stone, wood, stone, mortar, joint materials, rebar, geotextiles, filter cloths, erosion mats, river rock, boulders, edging materials, recycled materials.

Structures and features: wood, metals, rails, posts, concrete, metal hangers, steel sheets, nails, screws, composite boards, pumps, hoses, electrical conduits and wiring, water feature components.

Tools and Equipment

See Appendix A.

Task 10 Maintains softscape and green infrastructure.

Context

Landscape horticulturists are responsible for maintaining all interior and exterior plant materials to sustain plant health, maintain the integrity of the design and to provide a functioning and aesthetically pleasing environment.

Required Knowledge

K 1	plant identification and an understanding of nomenclature
K 2	growing media conditions such as moisture, pH and nutrient levels
K 3	drainage systems and components and drain locations
K 4	fertilizer requirements and schedules

K 5	soil amendment requirements and schedules
K 6	irrigation components
K 7	edging, cultivation and pruning techniques
K 8	industry standards
K 9	nutrient requirements for interior and exterior softscape
K 10	watering requirements and scheduling
K 11	climate conditions
K 12	methods of weed control
K 13	customer/client expectations
K 14	IPM
K 15	maintaining the design concept
K 16	maintenance practices
K 17	light requirements of interior and exterior softscape
K 18	cleaning materials and techniques for interior and exterior softscape
K 19	turfgrass varieties such as Kentucky blue grass, red fescue, perennial rye grass, bentgrass and annual blue grass
K 20	types of PPE required for tasks and equipment, environmental safety and product safety
K 21	specialized propagation methods such as air layering, cuttings and layering
K 22	root division methods
K 23	growing media such as custom formulations, composts and non-soil products
K 24	sampling and testing methods
K 25	jurisdictional regulations
K 26	species and cultivars and their growing regime
K 27	basic plant botany and physiology
K 28	storage and sanitation of tools
K 29	monitoring devices such as rain gauges, moisture probes and insect traps
K 30	staking and guying as per industry standards

Sub-task

D-10.01 Maintains growing media.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-10.01.01	assess growing media composition for conditions such as texture, moisture levels and porosity using ribbon tests and tools such as probes
D-10.01.02	collect and label growing media and water samples, and send to lab to determine pH, nutrient and deficiency levels
D-10.01.03	interpret lab results to determine nutrient requirements for growing media, irrigation water and implement amendments required
D-10.01.04	cultivate growing media with tools such as garden fork, cultivator, hoe and mechanical rototillers for reasons such as aeration, weed control and maintenance of growing media structure

Sub-task

D-10.02 Maintains turfgrass.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-10.02.01	perform visual inspection of turfgrass area to determine conditions and irregularities with colour, thinning, grades and drainage
D-10.02.02	irrigate turfgrass according to species, environmental conditions and usage
D-10.02.03	mow and trim turfgrass using tools and equipment according to varieties, usage of site and climate conditions
D-10.02.04	aerate turfgrass using tools and equipment according to growing media analysis, turfgrass conditions, time of year, usage of site and climate conditions
D-10.02.05	fertilize and adjust pH according to growing media analysis, usage of site and climate conditions
D-10.02.06	overseed turfgrass for reasons such as repairs, rejuvenation and introduction of new cultivars

D-10.02.07	topdress turfgrass using tools and equipment for reasons such as enhancement of substrate profile, and promotion of growth of existing and newly-introduced turfgrass
D-10.02.08	dethatch turfgrass to promote optimum growth conditions

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Sub-task

D-10.03 Maintains interior softscape.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-10.03.01	perform visual inspection to determine plant health
D-10.03.02	test and amend irrigation water
D-10.03.03	irrigate and fertilize plants according to plant needs using manual or automated methods
D-10.03.04	cultivate growing media with tools such as garden fork, cultivator and core aerator for reasons such as aeration and maintenance of growing media structures
D-10.03.05	clean foliage and containers for aesthetics and plant health
D-10.03.06	replace damaged or broken containers
D-10.03.07	perform seasonal plant rotation for health and aesthetic reasons
D-10.03.08	protect furnishings and surfaces from the effects of caustic materials such as salts, fertilizers and sprays

Sub-task

D-10.04 Maintains exterior softscape.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-10.04.01	perform visual inspection to determine plant health
D-10.04.02	irrigate and fertilize plants according to plant needs using manual or automated methods
D-10.04.03	cultivate growing media with tools such as garden fork, cultivator, mechanical rototiller and hoe for reasons such as aeration, weed control and maintenance of growing media structures
D-10.04.04	perform seasonal planting and removal of plants such as annuals, biennials and bulbs
D-10.04.05	apply or install seasonal protection such as anti-desiccants, burlap wrapping and binding with twine to ensure plant survival through winter
D-10.04.06	perform hardening-off practices such as mulching activities to ensure plant survival through winter
D-10.04.07	protect plants from snow load by constructing and installing seasonal structures
D-10.04.08	remove weeds for plant health and aesthetics
D-10.04.09	mulch beds and containers for reasons such as moisture retention, weed suppression, growing media temperature moderation and aesthetics
D-10.04.10	edge beds for reasons such as bed definition and aesthetics
D-10.04.11	inspect and maintain natural and manufactured edge such as, brick, poly edging or aluminum edging
D-10.04.12	perform site cleanup such as litter pickup, removing excess clippings and cleaning sidewalks
D-10.04.13	remove staking and guying materials to prevent plant damage

Sub-task

D-10.05 Propagates plant materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-10.05.01	select and use clean hand tools such as knives, spades, digging forks and secateurs
D-10.05.02	sow seeds using mechanical methods such as broadcast spreaders and motorized slit seeders
D-10.05.03	harvest and divide roots, tubers, bulbs and corms according to plant species
D-10.05.04	select and perform specialized propagation methods such as layering, grafting, and cutting according to time of year and species

Sub-task

D-10.06 Repairs softscape.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-10.06.01	repair living components damaged as a result of activities such as snow and ice, vehicular traffic and animal damage
D-10.06.02	replace interior and exterior plants due to death, damage and disease
D-10.06.03	repair natural and manufactured edge such as brick, poly edging or aluminum edging
D-10.06.04	repair staking and guying materials to prevent plant damage
D-10.06.05	repair soil irregularities such as grading and drainage

Task 11 Maintains hardscape and green infrastructure.

Context Landscape horticulturists are responsible for maintaining all hardscape systems and features. Other tradespersons may be required to complete tasks in the maintenance of hardscape lighting and irrigation.

Required Knowledge

K 1	drainage requirements
K 2	site layout
K 3	operation of mechanical systems such as pumps, irrigation system and lighting
K 4	water quality and pressure requirements for irrigation and water features
K 5	low voltage electrical lighting systems and their components
K 6	basic electrical practices and principles
K 7	types of hard surface materials such as wood, concrete, natural stone and asphalt
K 8	types of irrigation systems and their components
K 9	installation practices for hardscape systems
K 10	types of drains
K 11	effects of frost heaving on hard surfaces and footings
K 12	causes and results of efflorescence and spalling
K 13	hardscape components
K 14	IPM
K 15	environmental stewardship practices
K 16	types of green infrastructures such as green roofs, living walls, retention ponds, permeable pavers, bio-swales, storm water retention, wetland reserves an silva cells
K 17	snow and ice best management practices that meet industry standards
K 18	industry standards for segmental concrete installation and associated products
K 19	basic carpentry skills for repair

Sub-task

D-11.01 Maintains green infrastructure.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-11.01.01	inspect green infrastructures for deficiencies such as blocked drains, and excessive and invasive plant growth to ensure plant and systems viability
D-11.01.02	assess site to determine health and well-being of plants
D-11.01.03	inspect drainage systems, permeable surfaces and drainage swales for debris and blockages
D-11.01.04	protect existing trees by installing snow fence
D-11.01.05	protect critical root zones, native woodland areas and waterways to ensure the integrity of the area

Sub-task

D-11.02 Maintains drainage systems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-11.02.01	check drains, catch basins and retention ponds to ensure proper operation
D-11.02.02	inspect and replace screens to avoid blockage
D-11.02.03	remove debris from drainage systems to ensure optimal flow
D-11.02.04	maintain grades according to original design to allow for adequate flow
D-11.02.05	inspect performance of drains, catch basins and retention ponds by flushing drainage systems with water
D-11.02.06	ensure drain covers are secure for safety and proper operation
D-11.02.07	winterize drainage systems by performing activities such as cleaning, flushing and installing heating cables to prevent damage and ensure proper operation

Sub-task

D-11.03 Maintains walkways, patios, driveways and parking lots.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-11.03.01	remove debris and undesirable growth manually or by using tools and equipment such as blowers, brooms, high pressure sprayers and torches
D-11.03.02	top up jointing sand on interlock surfaces according to manufacturers' specifications
D-11.03.03	fix or replace interlock paver surfaces with improper slope or elevation that has occurred as a result of construction or weather

Sub-task

D-11.04 Maintains irrigation systems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-11.04.01	start-up systems by charging and running systems through a test cycle
D-11.04.02	visually inspect site to determine functioning of systems
D-11.04.03	identify problems with irrigation systems, and troubleshoot and repair
D-11.04.04	visually inspect system components such as screens, heads and pipes for damage such as clogging, cracks and corroded wiring and repair or adjust
D-11.04.05	check functioning of zone valves according to manufacturers' specifications
D-11.04.06	adjust irrigation controllers according to environmental conditions
D-11.04.07	clean and clear sensors to ensure optimum operation
D-11.04.08	winterize systems by blowing out irrigation systems

Sub-task

D-11.05 Maintains landscape lighting.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-11.05.01	turn on systems to detect defects
D-11.05.02	visually check light fixtures, fuses and transformers for function and damage, and repair and replace
D-11.05.03	repair low voltage wiring
D-11.05.04	check and adjust lighting coverage and positioning
D-11.05.05	clean and clear sensor to ensure optimum operation
D-11.05.06	check light timing and adjust program according to seasonal requirements

Sub-task

D-11.06 Maintains water features.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-11.06.01	inspect water features for defects such as cracks, leaks, plugged filters, and faulty gaskets and seals
D-11.06.02	charge systems to prime pumps and start-up operation for the season and replace pumps
D-11.06.03	set and reset timers according to manufacturers' specifications
D-11.06.04	drain and refill features for seasonal maintenance
D-11.06.05	clean components such as filters, screens, nozzles, pumps and skimmers
D-11.06.06	run systems to ensure functioning according to manufacturers' specifications
D-11.06.07	inspect water for conditions such as clarity, algae and debris
D-11.06.08	test water for conditions such as pH levels and presence of bacteria
D-11.06.09	test ground fault circuit interrupter (GFCI)
D-11.06.10	clean basins manually and amend the water with aquatic products
D-11.06.11	remove and protect plants and fish during winter or when cleaning the features according to conditions and species requirements

D-11.06.12	winterize features by disassembling, insulating, covering and draining to avoid damage
D-11.06.13	disconnect feature components and store according to manufacturers' specifications
D-11.06.14	clean fountains by draining water and washing features

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Sub-task

D-11.07 Maintains steps and retaining walls.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-11.07.01	inspect steps and walls to detect defects that require remediation
D-11.07.02	recognize hazards of structures, flag area and report to supervisor
D-11.07.03	clean steps and walls using tools and equipment such as pressure washers and brooms

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Sub-task

D-11.08 Maintains landscape structures.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-11.08.01	inspect structures for defects such as compromised hardware, rotting wood, heaving and settling
D-11.08.02	recognize hazards of structures, flag area and report to supervisor

Sub-task

D-11.09 Practices snow and ice management.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	no	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-11.09.01	select and use tools and equipment such as vehicles with blades, walk-behind and tractor mounted blowers, spreaders and skid-steers
D-11.09.02	determine snow storage locations and removal requirements
D-11.09.03	remove snow according to contractual requirements
D-11.09.04	apply ice control products according to industry standards and jurisdictional regulations

Sub-task

D-11.10 Repairs hardscape.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	yes	yes	yes	yes	yes	yes	ND	ND	ND

Key Competencies

D-11.10.01	perform minor repairs to drainage systems such as damaged pipes, plugged catch basins and french drains
D-11.10.02	apply preservatives, stains and sealants on hard surfaces to provide ease of cleaning, longevity and aesthetics
D-11.10.03	repair damage to aggregate-based hard surfaces such as structural planters, paving stones, gravel, asphalt and concrete
D-11.10.04	visually inspect structural integrity of hard surfaces for cracks, frost heave, efflorescence, spalling and settling
D-11.10.05	repair faulty and broken irrigation heads, valves, pipes and solenoid switches
D-11.10.06	seal steps and retaining walls
D-11.10.07	apply adhesive to loose caps on steps and retaining walls
D-11.10.08	perform lift and re-lay of all hard surface materials
D-11.10.09	repair low-voltage wires, fixtures and replace bulbs
D-11.10.10	perform minor repairs such as replacing cracked stones, rotting, splintering and cracked timber, levelling structures, and staining or painting wood structures

D-11.10.11 repair cracks, leaks and holes in water features

D-11.10.12 reinstate all damaged hardscape components due to all snow clearing activities such as replacing broken concrete, damaged fences and exterior utilities

D-11.10.13 reinstate utilities by calling in the professional services that handle those utilities

BLOCK E PRODUCTION OF PLANT MATERIALS (NOT COMMON CORE)

Trends

There is an increase of mechanisation of production facilities reducing labour inputs.

Due to customer demand, landscape horticulturalists are producing new plant varieties, dwarf plants, native plants, edible plants and more mature plants.

Biodegradable and recyclable containers are increasingly being sought out due to environmental concerns.

Producers are becoming environmentally conscious with the goal of reducing their carbon footprint. Alternative energy systems are being considered to reduce cost and environmental impact.

Related Components (include, but not limited to)

Water, fertilizers, growing media, media and amendments, containers, irrigation system components, heating, venting and cooling system components, chemicals, fuels, labels, packing and shipping materials, files and records, plant coverings, ground covers, barriers, alarm and security system components, stakes, signage, conveyors.

Tools and Equipment

See Appendix A.

Task 12 Constructs growing facilities (NOT COMMON CORE)

Context

Landscape horticulturists are involved in the planning and building of greenhouse structures and nursery facilities. Greenhouse structures may include glass and poly growing houses. Nursery structures and facilities may include shade houses, climate control storage sheds and header houses.

Required Knowledge

K 1	manufacturers' construction standards
K 2	codes and jurisdictional regulations
K 3	basic carpentry skills
K 4	tools and equipment used to construct systems and equipment
K 5	irrigation systems such as flood, ebb and flow, and drip line
K 6	water conservation and recapture systems such as tanks and ponds

K 7	drainage systems to alleviate excess water
K 8	site preparation and construction of growing structures
K 9	types of growing structures such as gutter-connected greenhouses, free standing greenhouses, cold frames, and shelter and shade houses
K 10	types of monitoring systems such as climatic control alarms and security
K 11	generator systems
K 12	irrigation and fertigation systems for field and greenhouse applications
K 13	facility contents such as benches, carts and wagons
K 14	interpreting constructions drawings and specifications
K 15	installation of greenhouse covers such as polyethylene, poly carbonate and glass

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Sub-task

E-12.01 Builds growing facilities. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	no	no	no	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-12.01.01	assist in building greenhouses and growing structures
E-12.01.02	excavate base and prepare grade according to drawings and specifications
E-12.01.03	install footings according to specifications
E-12.01.04	install in-ground drainage, services and granular base material according to drawings and specifications
E-12.01.05	construct frame, install greenhouse covers according to drawings, specifications and jurisdictional regulations
E-12.01.06	assemble premade structures and components according to manufacturers' specifications and jurisdictional regulations
E-12.01.07	construct walkways for accessibility throughout the facility

Sub-task

E-12.02 Installs growing facility components (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	no	no	no	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-12.02.01	install operational components such as ventilation, heat distribution, lighting, generators for emergency backup systems, irrigation and fertigation, according to building codes, jurisdictional regulations and manufacturers' specifications
E-12.02.02	assemble and install components such as benches, nursery carts and conveyors according to manufacturers' specifications
E-12.02.03	install or assist in installation of utilities such as fuelling system, heating, plumbing, electrical and water according to drawings, specifications and jurisdictional regulations

Task 13 Operates and maintains components of growing facilities. (NOT COMMON CORE)

Context Landscape horticulturists are involved in operating and maintaining growing facilities. These may include glass and poly growing houses, shade houses, climate control storage sheds and header houses. These structures, facilities and systems need to be maintained to operate efficiently, to grow and store plant materials

Required Knowledge

K 1	control systems for heating, cooling and ventilation, misting and injecting CO_2 and their alarms
K 2	monitoring devices such as thermometers, relative humidity meters and light meters
K 3	light and heat regulating materials such as shade cloths, thermal blankets and liquid shade
K 4	winterizing procedures such as blowing-out and draining-down lines, pumps and filters, installing anti-freeze and insulating pipes
K 5	tools and equipment used to maintain and winterize systems and equipment
K 6	irrigation and fertigation systems such as flood, ebb and flow, and drip line
K 7	fertilizer in-line injectors

K 8	irrigation and fertigation systems for field and greenhouse applications
K 9	water conservation and recapture systems such as tanks and ponds
K 10	sanitation practices such as bleaching, barriers to entry, and staff and customer notices
K 11	installation of greenhouse covers such as polyethylene, poly carbonate and glass
K 12	monitoring systems such as climatic control alarms and security
K 13	generator systems
K 14	facility contents such as benches, carts and wagons
K 15	IPM protocols

Sub-task

E-13.01 Operates growing facility structures and components. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-13.01.01	maintain and test emergency alarm system to ensure proper function
E-13.01.02	calibrate instruments and equipment to establish standard settings and accuracy according to crop requirements
E-13.01.03	inspect and maintain greenhouses and growing structures using methods such as replacing greenhouse covers, weed barriers and shade cloths
E-13.01.04	use generators for emergency back-up systems
E-13.01.05	inspect, maintain and repair contents using methods such as replacing bolts and bearings, and oiling and greasing components

Sub-task

E-13.02 Maintains sanitary environment. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-13.02.01	conduct regular inspections and follow check lists to ensure sanitation practices such as hand washing, plant quarantine and the use of foot baths
E-13.02.02	select cultural, physical or chemical methods to maintain continuous sanitation and pest control
E-13.02.03	sanitize equipment, tools, benches and containers to minimize pests and diseases
E-13.02.04	select and use sanitized tools and equipment such as hoes, sprayers and weed barriers to control pests and diseases
E-13.02.05	perform regular maintenance activities on adjacent buildings and properties to manage sanitation and promote plant health

Sub-task

E-13.03 Operates climate control and components. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-13.03.01	interpret results of environmental climate monitoring devices such as automated and computerized control systems, thermometers, relative humidity meters and light meters to determine inside and outside climate conditions
E-13.03.02	perform basic repairs on heating, cooling and ventilation systems such as replacing fan belts, thermocouples and vent tubes to limit downtime
E-13.03.03	maintain heating, cooling, and ventilation systems to ensure efficient operation
E-13.03.04	conduct regular inspections and follow check lists to ensure integrity of heating, cooling and ventilation systems
E-13.03.05	winterize heating and cooling systems when shutting greenhouse for winter to protect from frozen lines, and ice and water damage of equipment
E-13.03.06	regulate humidity levels by using systems such as misting and venting

E-13.03.07	maintain gas levels by using CO_2 injection systems according to crop requirements
E-13.03.08	calibrate instruments and equipment such as controllers and zone valves to establish standard settings and accuracy depending on crop and seasonal requirements
E-13.03.09	select and use hand tools appropriate to specific task to perform maintenance
E-13.03.10	use shading materials and thermal blankets to regulate light and heat levels
E-13.03.11	select and use artificial lights to ensure adequate light levels according to crop requirements

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Sub-task

E-13.04 Operate irrigation and fertigation systems. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-13.04.01	interpret test results and meter readings from monitoring equipment such as thermometers, and flow, pH and EC meters to determine water quality
E-13.04.02	calibrate instruments and equipment such as controllers and zone valves to establish standard settings and accuracy
E-13.04.03	perform basic repairs such as replacing distribution and drip lines, nozzles and injector systems on irrigation and fertigation systems
E-13.04.04	maintain irrigation and fertigation systems to ensure efficient operation
E-13.04.05	perform regular inspections and follow check lists to ensure integrity of irrigation and fertigation systems
E-13.04.06	winterize irrigation and fertigation systems to protect equipment from frozen lines, and ice and water damage
E-13.04.07	inspect water retention, capture and recycling systems to ensure that the systems are functioning according to design parameters, and meeting industry standards and jurisdictional regulations
E-13.04.08	maintain water retention, capture and recycling systems using methods such as filter replacement, ultraviolet (UV) bulb replacement and chemical treatment to preserve water quality

Task 14 Maintains greenhouse crops. (NOT COMMON CORE)

Context Landscape horticulturists are involved in the planning and production of greenhouse plant materials. These products are distributed in retail and wholesale facilities, and in the horticultural industry.

Required Knowledge

K 1	chemical application equipment
K 2	fertigation systems
K 3	propagation methods such as seeding, cutting, division and grafting
K 4	specialized propagation methods such as air layering, layering and micro-propagation
K 5	propagation materials such as rooting hormones and growing media
K 6	manual and mechanical transplanting methods
K 7	storage facilities such as cold rooms, refrigerators and freezers
K 8	containers such as flats, pots and decorative
K 9	growing media such as custom formulations, composts and non-soil products
K 10	plant growing requirements such as nutrients, light, CO_2 levels, growth regulators and water
K 11	pest and disease identification and treatment methods such as biological and low-impact chemical controls
K 12	other plant growth limiting factors such as over-watering, lack of nutrients and physical damage
K 13	sampling and testing methods
K 14	plant identification and nomenclature
K 15	plant maturity for market
K 16	jurisdictional regulations
K 17	PPE, environmental safety and product safety
K 18	species and cultivars and their growing regime
K 19	hardening-off procedures such as reduction of temperature, changing fertility programs and reduction of light
K 20	standards and quality of products
K 21	product storage and requirements
K 22	handling techniques when packaging plant materials
K 23	use of fork lifts, pallet jacks and conveyors
K 24	packing materials such as boxes, nursery carts, pallets and trays
K 25	monitoring devices

K 26	basic plant botany and physiology
K 27	storage and sanitation of tools
K 28	IPM

Sub-task

E-14.01 Propagates greenhouse plant materials. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-14.01.01	select and use tools and equipment such as mechanical seeders, dibble sticks, watering cans and misters
E-14.01.02	sow seeds in flats and containers using methods such as hand seeding and mechanical seeding
E-14.01.03	take leaf, root and stem cuttings, plugs and tissue cultures to grow additional plants
E-14.01.04	treat cuttings according to species requirements using methods such as callusing, hormone treatment and leaf incisions to promote root growth
E-14.01.05	harvest and divide roots, tubers, bulbs and corms to produce additional plants
E-14.01.06	graft scion wood and buds to selected rootstocks and stems to create additional plant material
E-14.01.07	maintain propagated materials until viable for transplanting, harvesting and growing-on
E-14.01.08	label plants to identify species and date of seeding

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Sub-task

E-14.02 Transplants greenhouse plants. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-14.02.01	select most viable and true-to-type stock for transplanting
E-14.02.02	select containers according to intended use
E-14.02.03	select growing media according to species requirements and containers

E-14.02.04	plant according to container, species requirements and presentation
E-14.02.05	water to species requirements to promote optimum growth and development
E-14.02.06	place plants in optimum growing environment
E-14.02.07	label plants for species and date of transplanting

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Sub-task

E-14.03 Grows greenhouse crops. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-14.03.01	maintain and monitor water requirements to optimize plant health and development, and apply interventions such as pH and nutrient adjustments, and watering levels
E-14.03.02	maintain and monitor crop for pests to ensure threshold levels are not exceeded
E-14.03.03	maintain and monitor crop growth to ensure proper health and development rate
E-14.03.04	transplant in bigger pot to grow
E-14.03.05	segregate for quarantine purposes
E-14.03.06	apply interventions such as pinching, hormone growth application, temperature, fertility, lighting and water adjustments to manage crop growth
E-14.03.07	monitor growing media fertility levels using methods such as soil and tissue sampling, testing and analyzing to determine corrective action
E-14.03.08	harden-off crops to prepare for sale

Sub-task

E-14.04 Harvests greenhouse crops. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-14.04.01	select crop according to maturity to fill sales orders
E-14.04.02	inspect plant material before shipping to ensure it is free of diseases and free of insects, according to standards
E-14.04.03	label plants for marketing, species, cultural practices and retail price
E-14.04.04	prepare harvested plants for staging area ensuring they are groomed, clean and pruned

Sub-task

E-14.05 Ships greenhouse crops. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-14.05.01	package orders for transport using identified packing materials such as boxes, nursery carts, pallets and trays
E-14.05.02	assemble products in staging or marshalling area
E-14.05.03	arrange orders and load on appropriate transportation
E-14.05.04	install monitoring devices such as recording thermometers to ensure optimum climate during shipping
E-14.05.05	advise management on status of orders

Task 15 Maintains nursery plants. (NOT COMMON CORE)

Context Landscape horticulturists are involved in the planning and production of field and container-grown plant materials. These products are distributed in retail and wholesale facilities, and in the horticultural industry.

Required Knowledge

K 1	chemical application equipment and products specific to target pests
K 2	propagation methods such as seeding, cutting, division and grafting
K 3	specialized propagation methods such as layering and air layering
K 4	propagating tools and equipment such as grafting knives, potting machines and secateurs
K 5	field management practices such as cultivating, harrowing and discing
K 6	operation of field equipment such as u-blades, tree spades, root pruners, cultivators, harrows, land discs and spray equipment
K 7	storage facilities such as cold rooms, refrigerators and freezers
K 8	pruning techniques
K 9	methods for shaping plant materials
K 10	growing media characteristics such as porosity, water holding capacity, uniformity and weight
K 11	plant culture specific to container grown plant materials to avoid issues such as spiralling and pot-bound roots
K 12	jurisdictional regulations pertaining to the movement and quarantine of identified species
K 13	production scheduling for inventory management
K 14	propagation materials such as rooting hormones, fungicide and growing media
K 15	manual and mechanical transplanting methods
K 16	containers such as wire baskets, fibre and plastic pots
K 17	growing media and soil amendment practices
K 18	plant growing requirements such as nutrients, light and water
K 19	pest identification and treatment methods such as biological and low-impact chemical controls
K 20	plant growth limiting factors such as over-watering, and physical and environmental damage
K 21	sampling and testing methods
K 22	plant identification and nomenclature

K 23	jurisdictional regulations
K 24	species and cultivars and their growing regime
K 25	timing of harvest related to plant physiology
K 26	standards and quality of products
K 27	product storage requirements
K 28	packing materials such as boxes, nursery carts, pallets and trays
K 29	monitoring devices
K 30	field tools and equipment
K 31	storage and sanitation of tools
K 32	IPM

Sub-task

E-15.01 Propagates field and container crops. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-15.01.01	harvest and divide roots, tubers, bulbs and corms to produce additional plants
E-15.01.02	take cuttings, graft scion wood and buds to selected rootstocks and stems
E-15.01.03	maintain propagated material until viable for transplanting, harvesting and growing-on to marketable size
E-15.01.04	label plants with propagation information such as row marking and tagging
E-15.01.05	prepare fields and beds for activities such as lining-out, pot-in-pot and seeding
E-15.01.06	plant out field materials such as liners, whips, roots and bulbs
E-15.01.07	direct-seed using mechanical field seeding equipment for crops such as nursery sod, herbaceous and woody plants
E-15.01.08	select suitable growing media for container-grown plant materials based on variety of plant
E-15.01.09	transplant container crops from plant formats such as liners, rooted cuttings, plugs and roots

Sub-task

E-15.02 Transplants field and container crops. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-15.02.01	select most viable and true-to-type stock for transplanting
E-15.02.02	select containers according to intended use
E-15.02.03	select growing media according to species requirements and containers
E-15.02.04	plant according to container, species requirements and presentation
E-15.02.05	irrigate to species requirements to promote optimum growth and development
E-15.02.06	place plants in optimum growing environment
E-15.02.07	prune selectively to compensate for transplanting shock
E-15.02.08	label plants for species and date of transplanting

Sub-task

E-15.03 Grows field and container crops. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-15.03.01	collect field data such as fertilizer applications, treatments, temperatures, cropping schedules and inventory management to transmit to record keeping
E-15.03.02	maintain and monitor irrigation requirements to optimize plant health and development
E-15.03.03	apply interventions such as pH adjustments, nutrient adjustments and watering levels to optimize plant health and development
E-15.03.04	apply interventions such as pruning, mowing, hormone growth application and temperature, fertility and water adjustments to ensure proper health and development rate
E-15.03.05	monitor crops to identify signs of nutritional and physiological disorders, and apply corrective actions

E-15.03.06	monitor growing media fertility levels using methods such as soil and tissue samplings, testing and analyzing to determine corrective actions
E-15.03.07	winterize and protect field and container crops using procedures such as installing snow fences, heeling in nursery stock, utilizing shelter houses and applying animal repellents
E-15.03.08	perform spring maintenance activities such as removal of protective materials, spacing out containers, pruning, plant culling and checking labels
E-15.03.09	stake plant materials
E-15.03.10	mulch fields

Sub-task

E-15.04 Harvests field and container crops. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-15.04.01	identify and dig harvest-ready plant materials using tools and equipment such as tree spades and mechanical diggers
E-15.04.02	select suitable root containment products for trees and shrubs such as containers, baskets, and balled and burlap (B&B)
E-15.04.03	select container grown plant materials for potting-on, potting-up and filling orders
E-15.04.04	select appropriate growing medium
E-15.04.05	transplant plants for growing-on or sale
E-15.04.06	wash and divide bare root plant materials including perennials, vines, shrubs and trees for activities such as cold storage, potting-up, replanting and filling orders
E-15.04.07	lift, cut, roll sod crop using mechanical sod cutters and palletize
E-15.04.08	collect seeds, roots, corms, bulbs, and cuttings for propagation
E-15.04.09	grade plant materials according to size, conditions and industry standards
E-15.04.10	protect roots from desiccation and frost damage
E-15.04.11	inspect plant material before shipping to ensure it is free of diseases and insects
E-15.04.12	label plants for marketing, species, cultural practices and retail price
E-15.04.13	prepare harvested plants for staging area ensuring they are groomed, clean and pruned

Sub-task

E-15.05 Ships field and container crops. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	NV	yes	no	yes	yes	yes	yes	no	ND	ND	ND

Key Competencies

E-15.05.01	assemble products in staging or marshalling area according to order specifications
E-15.05.02	select plants and label orders using recognized handling techniques
E-15.05.03	protect and package orders for transport using identified packing materials such as boxes, nursery carts, pallets and trays
E-15.05.04	install monitoring devices such as recording thermometers to ensure optimum climate during shipping
E-15.05.05	advise management on status of orders
E-15.05.06	select and use equipment such as forklifts, loaders and tractors to load plant materials onto transportation
E-15.05.07	secure and cover loads using materials such as tarps, security straps and nets
E-15.05.08	select and use equipment such as flat deck trucks and spider lifts to load and ship sod to customer

APPENDICES

APPENDIX A TOOLS AND EQUIPMENT

Hand Tools

allen keys
axes
backpack sprayer
blocks
box cutters
brick carriers
brick splitter
brooms
bypass pruners
calculator
cart
chains
chisels
clay pick
clearing axes
core samplers (probe)
crimpers
crowbars
cultivator (manual)
dethatching rake
dibblers
dolly
drop spreaders
edgers
files
flags
garden forks
grease guns
hammers (hand, sledge)
hand plane
hand tamper
handheld watering equipment
handsaws (crosscut, back cut, pruning, hack)
hedge shears
hoes
knives (budding and grafting, sod)
ladders (step, extension, orchard)
landscape rakes
laser level
loppers
mallet
microscope
nursery carts
paving stone cart
paving stone cutter
paving stone extractor
pick axes
picks
pipe cutters
pitch forks
pliers (various types)
plumb line
pole pruners
pole saw
post hole auger
post maul
post pounder
pruning shears
pry bar
rakes
rakes (various types)
roller
scaffolding
screeding bars
screwdrivers (various types)
scythe
secateurs
seed/fertilizer spreader
sharpening tools
shears
shoring equipment
shovels (coal, clam, scoop/barn, spade, garden)
side cutters
sod knives
sod lifter
soil screener
spades (various types)
spanfix

Hand Tools (continued)

sprinklers
stone chisels
string line
tape measure
tarps
tie downs (straps, chains)
transit level
transplant table
tree cart
trenching shovels
trowels
water hose
water key
watering cans
weed digger
weed torch
wheelbarrow, trolley
wire strippers
wrenches (various types)

Power Tools

air seeder
attachments
chainsaw (pole)
circular saw
compressor
concrete saw (dry, wet)
core aerator
demolition hammer (electric)
demolition hammer (pneumatic)
electric drill
fertilizer injector
grinder
hammer drill
heat gun
hydro-seeders
lathe
mechanical diggers
misters
mitre/chop saw
mortar/cement mixer
mower/mulcher
powder-actuated tools
power auger
power cultivator (rototiller)
power seeder/ power spreader
power soil screener
power sprayer
power washers
powered wheelbarrow
reciprocating saw
sabre saw
saws
spider lifts
table saw
torch
tree spade
trencher
vacuum (wet/dry, leaf)
walk-behind aerator
wet saw

Measuring Equipment

anemometer
automated plan scaler
barometer
catch can reader
compaction measuring device
ec meter
engineer levels
flow meter
gas meter
gauges

Measuring Equipment (continued)

gps
hygrometer
laser distance measure
levels (line, hand, zip, laser, transit)
light meter
measuring cups (metric/imperial)
measuring devices
measuring wheel
moisture metre/sensor
monitoring devices
ph meter
scale ruler
scales
soil tester
tape measure
thermometer
timers & controllers
tire pressure meter
volt metre/multi metre
water meter

Motorized Equipment

air compressor
all-terrain vehicles
backhoe
baggers
bale breaker
bed edger
blender (power)
blower trucks
blowers (backpack, hand held, push, earth auger)
brush cutter
chipper
circulation/exhaust Fans
clearing saw
conveyor belt
dollies
edgers
elevated work platforms
excavator
fertilizer injector
flat filler
fork lift
front end loader
generators
golf carts
guillotine under hand tools
hedge trimmer (extension, long reach)
hydro-seeding equipment
lawn/weed string/line trimmers (gas & electric)
lifts
loaders(front end, pay)
mechanical rototillers
mortar mixer
mower (push, intermediate, riding)
mulcher
paddle broom
pallet jacks
peat shredder
plate compactor
plate tamper
post hole auger
post pounders
pot filler
potting machines
power dethatcher
power rake
powered rollers
powered wheelbarrow
pressure washer
pumps
ram compactor (jumping jack)
riding mowers/mulchers
roto tiller

Motorized Equipment (continued)

shredder
skid-steer (loader, back hoe, walk behind)
skid-steers
slit seeder
sod cutter
soil screener
spider lifts
steam cleaners jenny
sterilizers
tractors
tractors
tree gantry
tree spades
trencher
trucks
vehicles with blades
walk behind
walk-behind aerator
walk-behind snowblower

Equipment Attachments

aerator
auger/post hole digger
back hoe
blade
bucket
cultivator
disc harrow
discer
fertilizer spreader
flat deck trucks
forks
harrow
ladders
landscape leveller
leaf vacuum
loaders
mower baggers
mowers
overseeder
plough
power sweeper
rollers
rototiller
seeders
snow blower
soil profiler
spray equipment
spreader
tiller
top dresser
tow behind dethatcher
tow behind trencher
trailer
tree dollies
tree spade
u-blade
vacuum
water tanker

PPE and Safety Equipment

chaps/ballistic pants
chemical suit
cones
ear protection
eye protection (glasses, shields)
eye wash kit
face shields
fall protection equipment (harness)
fire extinguisher
first aid kits
flares
gloves
hard hat
hearing protection
high visibility clothing
lanyard
particle masks
reflective shirts, jackets

PPE and Safety Equipment (continued)

respirators
safety boots or shoes
safety vests
scabbard/Protective Sheath
skin protection
spill kit
sun hat
sunblock
traffic cones
ventilation fans

Office Equipment

camera
cold rooms (refrigerators and freezers)
communication devices
computers
drafting scale 1-100
laminator
printers
thermal printer

Deciduous Trees

Botanical Name	Common Name	Family	Category
Acer griseum	Paperbark Maple	Sapindaceae (Aceraceae)	Deciduous Tree
Acer negundo	Manitoba Maple	Sapindaceae (Aceraceae)	Deciduous Tree
Acer palmatum	Japanese Maple	Sapindaceae (Aceraceae)	Deciduous Tree*
Acer rubrum	Red Maple	Sapindaceae (Aceraceae)	Deciduous Tree
Acer saccharinum	Silver Maple	Sapindaceae (Aceraceae)	Deciduous Tree
Acer saccharum	Sugar Maple	Sapindaceae (Aceraceae)	Deciduous Tree
Aesculus hippocastanum	Horse Chestnut	Sapindaceae (Hippocastanaceae)	Deciduous Tree
Betula papyrifera	Paper Birch	Betulaceae	Deciduous Tree
* Can be grown as a shrub			
Cercis canadensis	Canada Redbud	Fabaceae	Deciduous Tree*
Cornus kousa var. chinensis	Chinese Kousa Dogwood	Cornaceae	Deciduous Tree*
Cotinus coggygria	Smoke Tree	Anacardiaceae	Deciduous Tree*
Fagus sylvatica	European beech Beech	Fagaceae	Deciduous Tree
Fraxinus americana	White Ash and/or cultivars	Oleaceae	Deciduous Tree
Ginkgo biloba	Ginkgo	Ginkgoaceae	Deciduous Tree
Gleditsia triacanthos var. inermis and cultivars	Thornless Honeylocust	Fabaceae	Deciduous Tree
Juglans nigra	Black walnutWalnut	Juglandaceae	Deciduous Tree
Magnolia ×soulangeana	Saucer Magnolia	Magnoliaceae	Deciduous Tree
Malus and cultivars	Crabapple	Rosaceae	Deciduous Tree
Morus alba 'Pendula'	Weeping Mulberry	Moraceae	Deciduous Tree
Platanus x acerifolia	London Plane Tree	Platanaceae	Deciduous Tree
Prunus serrulata 'Kwanzan'	Kwanzan Cherry	Rosaceae	Deciduous Tree
Pyrus calleryana	Ornamental Pear	Rosaceae	Deciduous Tree
Quercus alba	White Oak	Fagaceae	Deciduous Tree
Quercus rubra	Red Oak	Fagaceae	Deciduous Tree
Robinia pseudoacacia	Black Locust	Fabaceae	Deciduous Tree
Syringa reticulata 'Ivory Silk'	Ivory Silk Tree Lilac	Oleaceae	Deciduous Tree
Tilia cordata	Greenspire Linden	Tiliaceae	Deciduous Tree
Ulmus americana	American Elm	Ulmaceae	Deciduous Tree

Coniferous Trees

Botanical Name	Common Name	Family	Category
Abies concolor	Silver Fir	Pinaceae	Coniferous Tree
Callitropsis nootkatensis 'Pendula'	Weeping Nootka False Cypress	Cupressaceae	Coniferous Tree
Larix laricina	Eastern or American Larch	Pinaceae	Coniferous Tree
Metasequoia glyptostroboides	Dawn Redwood	Taxodiaceae	Coniferous Tree
Picea abies	Norway Spruce	Pinaceae	Coniferous Tree
Picea glauca	White Spruce	Pinaceae	Coniferous Tree
Picea pungens f. glauca	Colorado Blue Spruce	Pinaceae	Coniferous Tree
Pinus nigra	Austrian Pine	Pinaceae	Coniferous Tree
Pseudotsuga menziesii	Douglas Fir	Pinaceae	Coniferous Tree
Thuja occidentalis 'Smargd' *Emerald*®	Emerald or Smaragd Cedar	Cupressaceae	Evergreen Shrub/Tree
Tsuga canadensis	Canada Hemlock	Pinaceae	Coniferous Tree

Deciduous Shrubs

Botanical Name	Common Name	Family	Category
Amelanchier canadensis	Serviceberry	Rosaceae	Deciduous Shrub
Berberis thunbergii	Japanese Barberry	Berberidaceae	Deciduous Shrub
Buddleia davidii	Butterfly Bush	Buddlejaceae	Deciduous Shrub
Caryopteris × *clandonensis*	Bluebeard or Blue-spirea	Verbeneaceae	Deciduous Shrub
Chaenomeles japonica	Flowering Quince	Rosaceae	Deciduous Shrub
Clethra alnifolia	Summersweet	Clethraceae	Deciduous Shrub
Cornus alba 'Elegantissima'	Silverleaf Dogwood	Cornaceae	Deciduous Shrub
Cotoneaster apiculatus	Cranberry Cotoneaster	Rosaceae	Deciduous Shrub
Deutzia gracilis	Slender Deutzia	Saxifragaceae	Deciduous Shrub
Euonymus alatus 'Compactus'	Dwarf Burning Bush	Celastraceae	Deciduous Shrub
Forsythia × *Intermedia*	Showy Forsythia	Oleaceae	Deciduous Shrub
Hibiscus syriacus	Rose-of -Ssharon	Malvaceae	Deciduous Shrub
Hydrangea arborescens 'Anabelle'	Anabelle Hydrangea	Hydrangeaceae	Deciduous Shrub
Hydrangea paniculata	Peegee Hydrangea	Hydrangeaceae	Deciduous Shrub
Hydrangea quercifolia	Oakleaf Hydrangea	Hydrangeaceae	Deciduous Shrub
Kerria japonica	Japanese Kerria	Rosaceae	Deciduous Shrub
Kolkwitzia amabilis	Beautybush	Caprifoliaceae	Deciduous Shrub
Ligustrum amurense	Amur Privet	Oleaceae	Deciduous Shrub
Magnolia stellata	Star Magnolia	Magnoliaceae	Deciduous Shrub
Philadelphus coronarius	Mockorange	Hydrangeaceae	Deciduous Shrub
Physocarpus oppulifolius	Ninebark	Rosaceae	Deciduous Shrub
Potentilla fruticosa	Cinquefoil	Rosaceae	Deciduous Shrub
Rhus typhina	Sumac	Anacardiaceae	Deciduous Shrub

Deciduous Shrubs (continued)

Botanical Name	Common Name	Family	Category
Ribes alpinum	Alpine Currant	Saxifragaceae	Deciduous Shrub
Rosa rugosa	Rugosa Rose	Rosaceae	Deciduous Shrub
Sambucus nigra	Elderberry	Adoxaceae	Deciduous Shrub
Spiraea bumalda 'Goldflame'	Goldflame Spirea	Rosaceae	Deciduous Shrub
Syringa vulgaris	Common Lilac	Oleaceae	Deciduous Shrub
Viburnum opulus	European Snowball	Caprifoliaceae	Deciduous Shrub
Viburnum trilobum	Highbush Cranberry	Caprifoliaceae	Deciduous Shrub
Weigela florida	Weigela	Caprifoliaceae	Deciduous Shrub

Evergreen Shrubs

Botanical Name	Common Name	Family	Category
Ajuga reptans	Carpet Bugleweed	Lamiaceae	Semi - Evergreen Groundcover
Arenaria verna	Irish Moss	Caryophyllaceae	Evergreen Groundcover
Buxus sinica var. insularis 'Green Velvet' or other cultivar	Green Velvet Boxwood	Buxaceae	Broadleaf Evergreen Shrub
Chamaecyparis pisifera 'Filifera Aurea'	Golden Threadleaf False Cypress	Cupressaceae	Evergreen Shrub
Daphne cneorum	Garland Daphne	Thymelaeaceae	Evergreen Shrub
Euonymus fortunei	Euonymus	Celastraceae	Broadleaf Evergreen Shrub
Junieprus horizontalis and/or cultivars	Horizontal Juniper	Cupressaceae	Evergreen Shrub/Groundcover
Juniperus communis 'Green Carpet'	Green Carpet Juniper	Cupressaceae	Evergreen Shrub/Groundcover
Juniperus sabina 'Tamariscifolia'	Tamarix Juniper	Cupressaceae	Evergreen Shrub/Groundcover
Juniperus squamata 'Blue Star'	Blue Star Juniper	Cupressaceae	Evergreen Shrub/Groundcover
Juniperus virginiana	Eastern Red Cedar	Cupressaceae	Evergreen Shrub
Mahonia aquifolium	Oregon Grape Holly	Berberidaceae	Broadleaf Evergreen Shrub
Picea abies ' Pendula'	Weeping Norway Spruce	Pinaceae	Conifer
Picea abies 'Nidiformis'	Nest Spruce	Pinaceae	Coniferous Shrub
Picea glauca 'Conica'	Dwarf Alberta Spruce	Pinaceae	Conifer
Pieris japonica	Japanese Pieris	Ericaceae	Broadleaf Evergreen
Rhododendron	Rhododendron	Ericaceae	Broadleaf Evergreen Shrub
Taxus ×media 'Densiformis'	Dense Yew	Taxaceae	Coniferous Shrub
Taxus cuspidata 'Capitata'	Upright Japanese Yew	Taxaceae	Coniferous Shrub

Evergreen Shrubs (continued)

Botanical Name	Common Name	Family	Category
Thuja occidentalis	White Cedar	Cupressaceae	Coniferous Shrub
Yucca filamentosa	Adam's Needle	Agavaceae	Broadleaf Evergreen

Vines

Botanical Name	Common Name	Family	Category
Campsis radicans	Trumpet Vine	Bignoniaceae	Deciduous Vine
Clematis	Clematis	Ranunculaceae	Deciduous Vine
Cucumis sativus	Cucumber	Cucurbitaceae	Annual Vine
Hedera helix and/or cultivars	English Ivy and/or cultivars	Araliaceae	Evergreen Vine/Groundcover
Hydrangea anomala subsp. petiolaris	Climbing Hydrangea	Saxifragaceae	Deciduous Vine
Lonicera xbrownii 'Dropmore'	Honeysuckle	Caprifoliaceae	Deciduous Vine
Parthenocissus quinquefolia	Virginia Creeper	Vitaceae	Deciduous Vine/Groundcover
Parthenocissus tricuspidata 'Veitchi'	Boston Ivy	Vitaceae	Deciduous Vine/Groundcover
Wisteria sinensis	Chinese Wisteria	Fabaceae	Deciduous Vine

Perennials

Botanical Name	Common Name	Family	Category
Astilbe hybrids	Astilbe	Saxifragaceae	Perennial
Bergenia cordifolia	Heartleaf Bergenia	Saxifragaceae	Perennial (Evergreen)
Crocus	Crocus	Iridaceae	Bulb (Corm)
Dicentra spectabilis	Bleeding Heart	Fumariaceae	Perennial
Echinacea purpurea	Purple Coneflower	Asteracea	Perennial
Gallardia	Blanketflower	Asteraceae	Perennial
Geranium species	Geranium	Geraniaceae	Perennial
Hemerocallis hybrids	Daylilies	Liliaceae	Perennial
Heuchera	Coralbells/Alumroot	Saxifragacea	Perennial
Hosta and/or cultivars	Hosta	Liliaceae	Perennial
Hyacinthus	Hyacinth	Asparagaceae	Bulb
Hylotelephium spectabile	Stonecrop or Sedum	Crassulaceae	Perennial
Iris sibirica	Siberian Iris	Iridaceae	Perennial
Lavandula angustifolia	English Lavender	Lamiaceae	Perennial
Matteuccia struthiopteris	Ostrich Fern	Dryopteridaceae	Perennial
Narcissus	Daffodils	Amaryilidaceae	Perennial (Spring Bulb)
Paeonia lactiflora	Garden Peony	Paeoniaceae	Perennial

Perennials (continued)

Botanical Name	Common Name	Family	Category
Phlox subulata	Creeping Phlox	Polemoniaceae	Perennial (Semi-Evergreen Groundcover)
Rheum palmatum	Rhubarb	Polygonaceae	Perennial
Rosmarinus officinalis	Rosemary	Lamiaceae	Perennial
Rudbeckia fulgida var. *sullivantii* 'Goldstrum'	Goldstrum Black Eyed Susan	Asteraceae	Perennial
Salvia ×superba 'May Night' and/or other cultivars	May Night Salvia and/or other cultivars	Lamiaceae	Perennial
Sedum	Sedum	Crassulaceae	Perennial
Solanum tuberosum	Potato	Solanacea	Perennial
Thymus serpyllum	Mother of Thyme	Lamiaceae	Groundcover
Tulipa	Tulip	Liliaceae	Bulb
Vinca minor	Periwinkle	Apocynaceae	Evergreen Groundcover

Ornamental Grasses

Botanical Name	Common Name	Family	Category
Andropogon gerardii	Big Bluestem	Poaceae	Perennial Grass
Festuca ovina glauca	Blue Sheep Fescue	Poaceae	Perennial Grass
Helictotrichon sempervirens	Blue Oat Grass	Poaceae	Perennial Grass
Imperata cylindrica 'Red Baron'	Japanese Blood Grass	Poaceae	Perennial Grass
Miscanthus sinensis and cultivars	Maiden Grass	Poaceae	Perennial Grass
Molinia arundinacea ′Skyracer′	Tall Moor Grass	Poaceae	Perennial Grass
Pennisetum alopecuroides	Fountain Grass	Poaceae	Perennial Grass
Pennisetum setaceum 'Rubrum'	Red Fountain Grass	Poaceae	Annual Grass
Phalaris arundinacea ′Picta′	Ribbon Grass	Poaceae	Perennial Grass
Saccharum ravennae	Hardy Pampas Grass	Poaceae	Perennial Grass

Annuals

Botanical Name	Common Name	Family	Category
Ageratum houstonianum	Floss Flower		Annual
Antirrhinum majus	Snapdragons	Scrophulariaceae	Annual
Begonia ×semperflorens-cultorum	Fibrous Begonia	Begoniaceae	Annual
Canna generalis	Garden Cannas	Cannaceae	Annual Summer Rhizome
Celosia cristata	Cockscomb	Amaranthaceae	Annual
Cleome hasslerana	Spider Flower	Cleomaceae	Annual
Dahlia	Dahlia	Asteraceae	Annual Summer Tuber
Daucus carota ssp. Sativus	Carrot	Apiaceae	Annual

Annuals (continued)

Botanical Name	Common Name	Family	Category
Impatiens New Guinea	New Guinea Impatiens	Balsaminaceae	Annual
Impatiens wallerana	Impatiens	Balsaminaceae	Annual
Lantana camara	Lantana	Verbeneaceae	Annual
Lycopersicon esculentum	Tomato	Solanacea	Annual
Pelargonium ×hortorum	Zonal Geranium	Geraniaceae	Annual
Petunia ×hybrida	Petunia	Solanacea	Annual
Pisum sativum	Pea	Fabacea	Annual
Solenostemon (Formerly Coleus) xhybridus	Coleus	Lamiaceae	Annual

Turfgrass

Botanical Name	Common Name	Family	Category
Bothriochloa insculpta	Creeping bluegrassBluegrass	Poaceae	turfgrass
Festuca rubra ssp commutata	Chewings fescueFescue	Poaceae	turfgrass
Festuca rubra ssp rubra	Strong Creeping RedfescueFescue		turfgrass
Festuca rubra subsp. *litoralis*	Slender Creeping Red Fescue	Poaceae	turfgrass
Festuca trackyphylla	Hard fescueFescue	Poaceae	turfgrass
Lolium multiflorum	Annual ryegrassRyegrass	Poaceae	turfgrass
Lolium perenne	Perennial ryegrassRyegrass	Poaceae	turfgrass
Poa pratensis	Kentucky bluegrassBluegrass	Poaceae	turfgrass
Poa trivialis	Rough bluegrassBluegrass	Poaceae	turfgrass

Invasive species

Botanical Name	Common Name	Family	Category
Butomus umbellatus	Flowering Rush	Butomaceae	Invasive species
Centaurea cyanus	Bachelor's Buttons	Asteraceae	Invasive species
Echium vulgare	Blueweed	Boraginaceae	Invasive species
Euphorbia cyparissias	Spurge, Cypress	Euphorbiaceae	Invasive species

Invasive species (continued)

Botanical Name	Common Name	Family	Category
Euphorbia esula	Green Spurge, Leafy spurge	Euphorbiaceae	Invasive species
Fallopia japonica, F. sachalinensis	Japanese Knotweed, Knotweeds	Polygonaceae	Invasive species
Gypsophila paniculata	Baby's breathBreath	Caryophyllaceae	Invasive species
Hedera Helixhelix	English Ivy	Araliaceae	Invasive species
Heracleum mantegazzianum	Giant Hogweed	Umbelliferae	Invasive species
Hieracium aurantiacum	Orange Hawkweed	Asteraceae	Invasive species
Impatiens glandulifera	Himalayan Balsam	Balsaminaceae	Invasive species
Iris pseudacorus	Yellow Flag Iris, Flad Iris	Iridaceae	Invasive species
Knautia arvensis	Field Scabiosaus	Dipsacaceae	Invasive species
Lamiastrum galeobdolon	Yellow Archangel	Lamiaceae	Invasive species
Leucanthemum vulgare	Oxeye Daisy	Asteraceae	Invasive species
Linaria vulgaris, L. genistifolia subsp. dalmatica	Toadflax	Scrophulariaceae	Invasive species
Lythrum salicaria	Purple Loosestrife	Lythraceae	Invasive species
Rubus armeniacus	Himalayan Blackberry	Rosaceae	Invasive species
Tamarix ramosissima	Tamarisk, five-stamen-tamarix	Pinaceae	Invasive species
Tanacetum vulgare	Common Tansy	Asteraceae	Invasive species

APPENDIX C GLOSSARY

1/3 pruning rule	a general guideline used to determine amount of wood that should be removed during a major pruning session.
3-cut method	pruning steps to reduce the possibility of tearing the bark when a large limb is to be removed from a tree.
abiotic factors	non-living condition or thing, such as climate or habitat, that influences or affects an ecosystem and the organisms in it
accident reports	forms completed to record details following an accident
acclimatization	physiological adaptation of a plant to changes in climate or environment, such as light or temperature
action threshold	before taking any pest control action, IPM first sets an action threshold, a point at which pest populations or environmental conditions indicate that pest control action must be taken. Sighting a single pest does not always mean control is needed. The level at which pests will either become an economic threat is critical to guide future pest control decisions.
aeration	in soil, the process by which air from the atmosphere is brought into the soil. Usually to reverse loss of macropores resulting from compaction
aerator	mechanized equipment that either punctures the soil with spikes (spike aeration) or remove cores of soil from the ground (core aeration)
aggregates	broad category of coarse particulate material used in landscape construction, including sand, gravel, crushed stone, slag, recycled concrete etc.
air layering	propagation method for woody plants that roots branches while still attached to the parent plant
air purification	removal of contaminants from air
algae	simple non-flowering plants that contain chlorophyll but lack true stems, roots, leaves, and vascular tissue. Includes seaweeds and many single-celled forms.
alternative energy systems	renewable, "free" energy sources with lower carbon emissions, compared to conventional energy sources and includes: Biomass Energy, Wind Energy, Solar Energy, Geothermal Energy, Hydro-electric Energy sources
anatomy	science of the shape and structure of organisms and their parts
anti-desiccants	compounds applied to plants to reduce dehydration and prevent drying

aquatic plants	plants that have adapted to living in saltwater or freshwater environments
bacteria	single-celled microorganisms that can exist either as independent organisms or as parasites
bacterial wilts	disease caused by bacteria that proliferate within the water-conducting xylem vessels, causing a water blockage resulting in wilting and death of leaves or the plant.
balled and burlap (B&B)	relating to a tree, shrub or other plant prepared for transplanting by allowing the roots to remain covered by a ball of soil around which burlap is tied and sometimes reinforced with a rope or a wire basket
barriers	fence or other obstacle that prevents movement or access
bedding materials	thin layer of material placed over a compacted base on which interlocking /segmental pavers will be installed
benches	mobile or fixed tables in a greenhouse or nursery
beneficial organisms	any pollinating insect, or any pest predator, parasite, pathogen or other biological control agent which functions naturally or as part of an integrated pest management program to control another pest.
beneficial insects	insects that perform valued services like pollination and pest control; a component of an Integrated Pest Management Program
biennial	flowering plant that takes two years to complete its biological lifecycle
bills of lading	serves as a receipt of shipment when goods are delivered to the predetermined destination and must be signed by an authorized representative
blight	plant diseases resulting in sudden conspicuous wilting and dying of affected parts, especially young, growing tissue and caused by bacterium, fungus, or a virus.
bio swales	landscape elements designed to remove silt and pollution from surface runoff water. They consist of a swaled drainage course with gently sloped sides and filled with vegetation, compost and/or riprap.
biodiversity	the variability among living organisms on the earth, including the variability within and between species and within and between ecosystems. Short for biological diversity.
biological	of, relating to, caused by, or affecting life or living organisms
biotic factors	living thing that influences or affects an ecosystem

blue infrastructure	an approach to water management using technology that delivers, protects, restores, or mimics the natural water cycle to support a healthy water supply
botanical nomenclature	the formal, scientific naming of plants conforming to the International Code of Nomenclature. It is related to, but distinct from taxonomy.
botany	scientific study of plants, including their physiology, structure, genetics, ecology, distribution, classification, and economic importance
broadcast spreaders	lawn care tool or implement commonly used for spreading seed, lime, fertilizer, sand, ice melt, etc.
broadleaf evergreen	broad leafed plant that keeps its leaves throughout the year.
brown field reclamation	redevelopment of abandoned, vacant, derelict or underutilized commercial and industrial properties where past actions have resulted in actual or perceived contamination
calibrate	the process of measuring products and adjusting components in order to deliver the desired volume. (Used for sprayers and fertilizer spreaders)
callusing	the tissue that forms over the wounds of plants, protecting the inner tissues and causing healing.
Canadian Food Inspection Agency (CFIA)	regulatory agency dedicated to the safeguarding of food, animals, and plants, which enhance the health and well-being of Canada's people, environment and economy.
Canadian Standards for Nursery Stock (CSNS)	a minimum standard of quality for the production of woody ornamentals and herbaceous perennials. Nursery stock specifiers, including landscape architects and designers, developers and municipalities and other government agencies, make reference to these standards in the development of tenders and contract specifications.
canker	localized diseased or necrotic area on a trunk, branch, or twig of a woody plant, usually caused by fungi or bacteria.
canopy raising	removal of lower branches from the tree crown to provide understory clearance
capstones	one of a set of slabs on the top of a wall or structure
carbon capturing	trapping the carbon emissions and storing them away from the atmosphere to prevent global warming
carbon footprint	total amount of greenhouse gases produced and emitted during the creation of products or services.
catch basins	receptacle or reservoir that receives surface water runoff or drainage.

change orders	written order approved by a project owner directing the contractor to change contract amount, requirements, or time
chemical	any basic substance that is used in or produced by a reaction involving changes to atoms or molecules
circle check	a visual, and sometimes physical, inspection of a piece of equipment (e.g., truck, trailer, forklift, etc.). It involves walking all the way around the equipment to ensure there are no safety concerns.
climate control	is the process of producing particular environmental conditions to regulate the growing environment such as temperature, ventilation and humidity
climate control systems	adjustable systems installed to grow crops with optimum efficiency. They control the indoor climate including; light, temperature, air exchange, humidity and CO2 concentration in greenhouses, cold storage facilities etc.
coco fibre/coir	the husk of a *coconut* used as a growing medium for plants
codes	construction technologies and techniques must meet safety standards and comply with municipal, provincial and federal codes such as: electrical, building, plumbing and fire codes etc.
compaction - aggregate	elimination of voids in construction materials, as in concrete, plaster, or soil, by vibration, tamping, rolling, or some other method or combination of methods.
compaction - soil/media	breaking down soil/media particles by mechanical means, resulting in loss of soil/media macropores and leading to lack of oxygen and water in soils/media. A major cause of death of tree roots
companion planting	close planting of different plants that enhance each other's growth or protect each other from pests
composite boards	range of derivative wood products which are manufactured by binding the strands, particles, fibers, or veneers of wood, together with adhesives to form composite materials
compost	decayed organic material used as a soil conditioner, amendment or plant fertilizer.
concrete	mixture of gravel, sand, cement, and water that can be spread or formed and forms a stone-like mass upon hardening.
confined space	a space that has not been designed or constructed for continuous human occupancy, has limited access and may cause atmospheric and ventilation hazards for workers

coniferous shrubs	small to medium sized plants that bear seeds in cones and do not lose their leaves/needles at the end of their growing season. The leaves/needles stay the same color throughout the year.
coniferous trees	mostly needle-leaved or scale-leaved, chiefly evergreen, cone-bearing gymnospermous trees or shrubs of the order Coniferales, such as pines, spruces, and firs.
conservation	preservation, protection, or restoration of the natural environment, natural ecosystems, vegetation, and wildlife
conserve	protecting an environmentally important place from harm or destruction
contaminants	biological, chemical, physical, or radiological substance (normally absent in the environment) which, in sufficient concentration, can adversely affect living organisms through air, water, soil, and/or food.
contracts	an agreement between two parties to perform work or provide goods, including an agreement or order for the procurement of supplies or services.
control method	once monitoring, identification, and action thresholds indicate that pest control is required, and preventive methods are no longer effective or available, IPM programs then evaluate the proper control method both for effectiveness and risk. Effective, less risky pest controls are chosen first, including highly targeted chemicals, such as pheromones to disrupt pest mating, or mechanical control, such as trapping or weeding. If further monitoring, identifications and action thresholds indicate that less risky controls are not working, then additional pest control methods would be employed, such as targeted spraying of pesticides. Broadcast spraying of non-specific pesticides is a last resort.
conveyors	frame-mounted continuous belts that move aggregate, earth, concrete and plants.
corms	rounded underground storage organ present in plants such as crocuses, gladioli, and cyclamens, consisting of a swollen fleshy stem base covered with thin external scale leaves; corms differ from bulbs in having much more stem tissue and fewer scale leaves

critical path	a project management or planning tool that • lists all activities required to complete the project (typically categorized within a work breakdown structure), • identifies the time (duration) that each activity will take to complete, • displays the dependencies between the activities and, • sets logical end points such as milestones or deliverable items.
cropping schedules	schedule to grow plants to marketable size at the right time of year
crown balancing	primary consideration is given to the visual form and/or structural balance of the tree's crown by removing eccentric growth
cultivars	a plant variety that has been produced in cultivation by selective breeding
cultivating	preparing and using land for crops or gardening
cultivation	the planting, tending, improving, or harvesting of crops or plants; or the preparation of ground to promote plant growth
cultivator	mechanical tool/implement for loosening the soil and uprooting weeds
cut and fill excavation practices	the process of constructing a railway, road or canal whereby the amount of material from cuts roughly matches the amount of fill needed to make nearby embankments, so minimizing the amount of construction labour.
cuttings	plant cutting, also known as striking or cloning, is a technique for vegetatively (asexually) propagating plants in which a piece of the stem or root of the source plant is placed in a suitable medium to grow
daily time sheets	a mechanism used to record the hours that are worked daily
deadhead	remove spent flower heads from a plant to encourage further blooming
deciduous	trees, shrubs, and herbaceous perennials that shed their leaves for part of the year due to climate changes not conducive to growth.
defoliation	to strip (a tree, bush, etc.) of leaves
desiccation	drying out of a living organism, such as when plants are exposed to sunlight or drought
design principles	include the component principles of repetition, variety, balance, emphasis, sequence (rhythm) and scale as they are applied to the quality of a design.

dethatch	mechanical removal from a lawn of the layer of dead turfgrass tissue known as "thatch."
discing	implement that is dragged across ploughed land to smooth or break up the soil, to remove weeds or cover seeds;
disease triangle	conceptual model that shows the interactions between the host, pathogen and the environment
diseases	abnormal growth or dysfunction of a plant, caused by an interruption in the normal life cycles of a plant. Disease can be caused by biotic or abiotic factors.
dormancy	period in an organism's life cycle when growth and development are temporarily stopped in part, to low temperatures that slow chemical activity
drainage	movement of water through soil/media. After a normal amount of irrigation, water should percolate through the soil within a few hours. If pools of water remain or the soil appears excessively wet to the touch, the area may be poorly drained
drainage components	the parts of a drainage system that provides an outlet for runoff and groundwater flow via gravel, pipe, geotextile, catch basins, man holes, etc.
drainage patterns	the pattern formed by streams, rivers, and lakes in a particular drainage basin
drainage swales	graded and engineered landscape feature appearing as a linear, shallow, open channel to promote the conveyance of storm water at a slower, controlled rate and acts as a filter medium removing pollutants and allowing storm water infiltration
drawings	graphic illustrations depicting the dimensions, design, and location of a project. Generally including plans, elevations, details, diagrams, schedules, and sections.
ecosystem	biological community of interacting organisms and their physical environment
edge restraints	outside perimeter that holds interlocking/segmental pavers together and is responsible to with-stand horizontal loads created by inherent pavement energy and traffic
edging	blocks, bricks, pavers or materials used at the edge of a pavement
edible plants	any plant that can be safely consumed, specifically by humans
efficacy	the ability for a product to produce a desired or intended result. (Pest Control products are judged by their efficacy or their level of control and achieving the intended result.)

efflorescence	white powdery substance on the surfaces of unsealed concrete caused by migrating vapour bringing soluble salts to the surface
electrical conductivity (EC)	common measure of soil salinity and is indicative of the ability of an aqueous solution to carry an electric current. Indirect measurement that correlates very well with several soil physical and chemical properties.
electrical conduits	tubing system used for protection and routing of electrical wiring
electrical wiring	material consisting either of a single filament or of several filaments woven or twisted together and usually insulated with a dielectric material used as a conductor of electricity
elevation	vertical distance relative to a reference point
emergency response plans	mitigate the impact of an incident that threatens the safety, health and welfare of the public and the environment
environmental mitigation mechanisms	are steps taken to avoid or minimize negative environmental impacts. Mitigation can include: avoiding the impact by not taking a certain action; minimizing impacts by limiting the degree or magnitude of the action; rectifying the impact by repairing or restoring the affected environment; reducing the impact by protective steps required with the action; and compensating for the impact by replacing or providing substitute resources
environmental stewards	individuals who responsibly use and protect the natural environment through conservation and sustainable practices
ergonomic	intended to provide optimum comfort and to avoid stress or injury
erosion	natural process by which rock and soil is relocated by water or wind
erosion control	practice of preventing or controlling wind or water erosion in agriculture, land development, coastal areas, riverbanks and construction
erosion control measures	physical barrier, such as vegetation or rock, to absorb some of the energy of the wind or water that is causing the erosion
erosion mats	roll-type materials designed to reduce seed and soil loss
estimates	to give or form a general idea about the value, size, or cost of something
fertigation	application of fertilizers, soil amendments, or other water soluble products through an irrigation system
fertilizer	a chemical or natural substance added to soil or land to increase its fertility

filtration systems	process of filtering liquids or gases, such as air, through a filter in order to remove solid particles
fire Smart practices	https://www.firesmartcanada.ca the website provides a best practice guideline that supports enhancement of safety and stewardship aimed at prevention and mitigation of wildfires.
flood mitigation	involves the managing and control of flood water movement, such as redirecting flood run-off through the use of floodwalls and flood gates, rather than trying to prevent floods altogether
flower	seed-bearing part of a plant, consisting of reproductive organs that are typically surrounded by a brightly colored corolla and a green calyx.
flower period	time when a tree, shrub, perennial or annual plant will normally produce flowers
flush cut	pruning technique in which both branch and stem tissue are removed; generally considered poor practice.
foliage	leaves of a plant
foliar burn	browning of plant tissues, including leaf margins and tips, and yellowing or darkening of veins which may lead to eventual wilting and abscission of the leaf.
foliar discolouration	is often an indication of physiological stress, pest, or infectious disease problems.
foliar feed	feeding plants by applying liquid fertilizer directly to their leaves
foliar sample	a collection of leaves sent to a laboratory to determine deficiencies, toxicities, response to applications and changes in maintenance practices.
foliar washing	physical removal of dust, dirt or spray residue from plants using various manual and mechanical sprayers
foot baths/boot sprays	a tub or mat containing disinfectants to provide sanitation protection of the footwear of all workers/visitors entering greenhouses to prevent the introduction of soil borne pests and diseases from contaminating crops.
form	temporary structure or mold for the support of concrete while it is setting and gaining sufficient strength to be self-supporting
french drains	trench filled with gravel or rock or containing a perforated pipe that redirects surface water and groundwater away from an area
frost damage	plant tissue damage caused by cold / freezing temperatures; ground frost and air and wind frost

frost heave	the uplift of water-saturated soil or other surface deposits due to expansion caused by freezing temperatures that have penetrated into the soil.
fruit	is a part of a flowering plant that derives from specific tissues of the flower and provide the mechanism by which plants disseminate seeds.
fuels	any material, as coal, oil, gas, wood, etc., burned to supply heat or power
fungi	any of a diverse group of eukaryotic single-celled or multinucleate organisms that live by decomposing and absorbing the organic material in which they grow, comprising the mushrooms, molds, mildews, smuts, rusts, and yeasts, and classified in the kingdom Fungi
fungicide	is a specific type of pesticide that controls fungal disease by specifically inhibiting or killing the fungus causing the disease.
gall	abnormal outgrowths of plant tissues caused by many living organisms living on plants including insects, mites, fungi, parasites, and bacteria.
generator	a device used for converting mechanical energy into electrical energy
geogrids	geosynthetic material used to reinforce soils on slopes and commonly used to reinforce retaining walls, as well as sub-bases or subsoils below roads or structures
geo-membranes	synthetic membrane liner or barrier with very low permeability used with any geotechnical engineering related material to control fluid (or gas) migration in a human-made project, structure, or system
geotextile	permeable synthetic fabrics which, when used in association with soil, have the ability to separate, modify drainage, filter, reinforce, protect, or drain and serves as a weed barrier.
germination	the process by which a plant grows from a seed. Examples include the sprouting of seedlings from a seed of an angiosperm or gymnosperm and the growth of hyphae from fungal spores
global positioning system (GPS)	a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.
grades	reshaping of land to meet specified elevations
grading	the work of altering existing terrain, base or an elevation or slope to meet specifications for work such as a foundation, base, landscape feature or surface drainage

green field	an undeveloped or agricultural tract of land that is a potential site for industrial or urban development.
green infrastructure	are planned and managed vegetation and semi-vegetative technologies that reduce pollution and provide ecosystems that support healthy living. Green infrastructure takes many forms including but is not limited to the following: urban forests, natural areas, greenways, streams and riparian zones, meadows and agricultural lands; green roofs and green walls; parks, gardens and landscaped areas, community gardens, and other green open spaces; rain gardens, bio-swales, engineered wetlands and storm water ponds.
green parking	designed to do environmental work including reducing energy use, improving environmental quality and ensuring healthy conditions for people by incorporating permeable pavement, drainage features including rain gardens and bio-swales, and native plantings.
greenhouse structures	a structure, primarily of glass or sheets of clear plastic, in which temperature and humidity can be controlled for the cultivation or protection of plants.
green roof	an extension of an existing roof which includes a water proofing and root repellent system, a drainage system, filter cloth, a lightweight growing medium and plants that can provide building owners and municipalities with a return on investment.
grey infrastructure	traditional practices for storm water management and wastewater treatment including pipes and sewers, utilities and buildings.
ground covers	any plant that grows over an area of ground, used to provide protection from erosion and drought, and to improve its aesthetic appearance
ground fault circuit interrupter (GFCI)	a device that shuts off an electric circuit when it detects that current is flowing along an unintended path, possibly through water or through a person. It is used to reduce the risk of electric shock.
growing conditions	temperature, light, water, humidity, oxygen, and mineral nutrients
growing facilities/structures	structures and systems used for the production of plant materials
growing media	the material that plants grow in and has three main functions: to supply roots with nutrients, air, and water, to support maximum root growth, and to physically support the plant.
growth habits	general appearance, form (shape) and manner of growth of a plant
guy	tensioned cable designed to add stability to a tree or free-standing structure

habitat	the natural environment in which a species or group of species lives
habitat preservation	land management practice that strives to conserve, protect and restore habitat areas for wild plants and animals to prevent extinction, fragmentation or reduction in population.
hardening-off	process of adapting a plant that has been grown under protective shelter - indoors or in a greenhouse - to full outdoor exposure
hardening-off procedures	over time, the plant is exposed to increasing intervals of time outdoors so that when it is planted in the garden it can make the transition with a minimum of transplant shock
hardiness	describes a plant's ability to tolerate and survive adverse growing conditions such as cold, heat, drought, flooding, or wind
hardscape	components of the design and construction of any landscape project that deals with a range of materials that include brick, stone, wood, metals or other natural or fabricated materials used in construction of the built landscape including streets, walkways structures, walls, street amenities, pools and fountains, and fireplaces and fire pits etc.
hardscape materials	brick, stone, wood, metals or other natural or fabricated materials used in construction of the built landscape
hardscaping	the placement of non-plant elements such as fences, walkways, paving, and lighting in a planned outdoor area.
harrowing	to break up clods (lumps of soil) and to provide a finer finish, a good tilth or soil structure that is suitable for seedbed use. Coarser harrowing may also be used to remove weeds and to cover seed after sowing.
harvest	selecting plant materials from greenhouses, nursery fields and standing yards that are ready for sale, storage and for further grow-on activities
hazardous materials	is defined as any substance or material that could adversely affect the safety of the public, handlers or carriers during transportation.
hazards	a hazard is any source of potential damage, harm or adverse health effects to individuals, equipment, property etc. under certain conditions at work.
heading	cutting back the terminal portion of a branch to a bud. A term whose subcategories include "topping" and "pollarding."
heeling in	process taken to cover the roots of dormant plants with soil or mulch for short periods.

herbaceous	plants or plant parts that are fleshy as opposed to woody and that dies back to the ground each year
hormone treatment	chemical application by a horticulturist to regulate plant growth processes. In plant propagation, cuttings are dipped in a rooting hormone to stimulate root development. In greenhouse production, many potted flowering plants (like poinsettias and Easter lilies) may be treated with plant growth regulators to keep them short. Seedless grapes are treated with plant growth regulators to increase the size of the fruit. In special situations, turf may be treated to slow growth and mitigate the need for mowing.
ice control products	chemical (sodium chloride /rock salt) and abrasives (sand) materials used for snow and ice control that have friction or melting characteristics
insect traps	devices used to monitor or directly reduce pest populations by attracting and capturing insects using food, visual lures, chemical attractants and pheromones as bait.
insects	any animal of the class Insecta, comprising small, air-breathing arthropods having the body divided into three parts (head, thorax, and abdomen), and having three pairs of legs and usually two pairs of wings.
integrated pest management (IPM)	an approach to planning and managing pests that uses a combination of cultural, biological, mechanical and chemical methods to reduce pest populations to acceptable levels and with the least disruption to the environment starting with the least toxic control first.
integrity	a term applied to the engineering disciplines associated with the design, assurance, and verification functions that ensure a product, process, or system meets its appropriate and intended requirements for as long as the designed life of the structure.
invasive species	nonindigenous plants that have the potential to invade agricultural and natural areas causing serious damage to Canada's economy and environment and sometimes harm to human health.
inventory management	activities employed to maintain the optimum number or amount of each inventory item.
irrigation controllers	device to operate automatic irrigation systems such as lawn sprinklers and drip irrigation systems and that have a means of setting the frequency of irrigation, the start time, and the duration of watering.

irrigation systems Automated systems that deliver and distribute water to lawns, gardens, landscapes and horticultural crops (greenhouse and nursery), for the purpose of growing and maintaining healthy plants.. Components of these systems include sprinklers, nozzles, controllers, bubblers, drip emitters, valves, backflow prevention, pipe etc.

joint materials compounds used to fill the space between adjacent paving units and wall stone. May be bound or unbound. Including: sand, polymeric sand, cement mortars, resin mortars, etc.

jurisdictional regulations municipal, provincial or federal law or rule, or other order prescribed by authority such as building by-laws, labour laws and environmental protection laws.

landscape drawings graphic illustrations depicting the dimensions, design, and location of a project. Generally including plans, elevations, details, diagrams, schedules, and sections.

layering propagation method by which a branch/shoot takes root while still attached to the parent plant.

leaf flattened structure of a higher plant, typically green and bladelike, that is attached to a stem directly or via a stalk. Leaves are the main organs of photosynthesis and transpiration.

leaf spot round blemishes found on the leaves of many species of plants, mostly caused by parasitic fungi or bacteria and can cause defoliation.

life cycle of pests incomplete Insects: Insects with incomplete life cycles have two distinct stages, the adult and nymph stage and include grasshoppers and true bugs (stink bug and squash bugs). Adults have fully developed wings and can fly great distances. Nymphs either do not have wings or have wings that cannot be used for flight.Many insects in this category have piercing, sucking mouthparts and suck juice from plants. Some, such as the grasshopper, chew on leaves and stems. Adult stage is most damaging.

complete Life Cycle Insects: Insects in the complete life cycle group have four distinct stages, the egg, larvae, pupae and adult. Eggs, larva (wormlike or grub-like creature that may feed on various plant parts), pupa (relatively inactive, often enclosed in some form of cocoon), and adult insect completely different in appearance. The larval stage with chewing and rasping feeding is most damaging. Examples of these insects are beetles and moths.

lifts layers of soil or aggregate fill.

light emitting diode (LED) semiconductor device that emits visible light when an electric current passes through it. LEDs are very energy efficient and have a long lifespan.

lighting components	the various types of landscape lighting systems, controls and switching, wiring connections, fixture types, functions-purposes-styles, and light sources.
liming	treatment of soil or water with lime to reduce acidity (increasing pH) and improve fertility or oxygen levels.
liners	young, immature plants intended for 'growing-on' to mature sizes in nurseries, either by lining-out in the field or in containers. Typically 1 or 2 years old and often sold bare-root or in small containers.
lining out	all nursery stock suitable for planting out in nursery rows, beds, containers, or into natural areas.
living wall systems	self -sufficient vertical gardens that are attached to the exterior or interior of a building. They differ from green façades (e.g. ivy walls) in that the plants root in a structural support which is fastened to the wall itself. The plants receive water and nutrients from within the vertical support instead of from the ground.
load distribution requirements	a load distributed evenly over the entire length of a structural member or the surface of a vehicle, trailer, floor, or roof expressed in weight per length or weight per area.
load securement	all loads carried on a motor vehicle or trailer must be bound, covered or otherwise securely fastened or loaded such that no portion of the load can fall off the vehicle or trailer. Includes vehicle structure, blocking and bracing equipment, and securing devices that meet capability requirements, are in good working order, and have no obvious signs of damage or weakness.
lock-out/tag-out	is a safety procedure used in workplaces to protect workers by tagging dangerous tools, equipment and machines and ensuring that the energy source is locked out to prevent accidental use or start up prior to the completion of maintenance or servicing work.
low voltage lighting systems	permanently installed outdoor lighting fixtures operating at 12 volts or less, which illuminate landscape environments and exterior structures. Components of these systems typically include transformers, switching devices, multi-strand wiring, wire connectors, fixtures and lamps and other accessories
metal hangers	metal angle or strap used to support and fix the ends of wood joists or rafters to beams or girders
microclimate	local climate conditions of a specific area that include temperature, light, wind and moisture and influenced by walls, fences, slope, elevation, exposure and orientation.
micro-propagation	propagation of plants from very small plant parts, tissues or cells grown in a test tube or container where the environment and nutrition are rigidly controlled.

morphology	the study of organism structures, including reproductive structures, and also addresses the pattern of development and relationships of these structures as they mature
mortar	a product composed of cement and sand. When water is mixed in with this product, the cement is activated. Mortar is used to hold together bricks, stones and hardscape components once hardened.
mulch	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 primarily to modify the effects of climate. During the growing season, mulch can help reduce evaporation, inhibit weeds, moderate soil temperature and add nutrients. Fresh layers of mulch are also spread to enhance aesthetics. In the winter, mulch of evergreen boughs, coarse hay or leaves is used to protect plants from freezing.
native ecosystem	biological community of interacting organisms and their physical environment that have not been affected directly or indirectly by human actions.
native plants	a term used to describe plants indigenous to a specific region in geologic time. This includes plants that have developed, occur naturally, or existed for many years in an area (e.g. trees, flowers, grasses, and other plants).
native woodland	area of woodland largely consisting of site specific native trees and shrubs, where an associated woodland flora is present or may develop over time.
natural habitat	area or natural environment in which a specific animal or plant species lives.
natural stone	stone shaped and sized by nature as opposed to stone that has been quarried and cut.
nematodes	microscopic roundworms with a tubular digestive system that live in soil or water and can be parasitic or beneficial.
nomenclature	the naming of things; often restricted to the correct use of scientific names in taxonomy; a system that sets out provisions for the formation and use of names. an international system of standardized New Latin names used in biology for kinds and groups of kinds of animals and plants
non-native	species living outside its native distributional range, which has arrived there by human activity, either deliberate or accidentally.
nursery	place where plants are grown for transplanting, for use as stocks for budding and grafting, or for sale. Nurseries produce and distribute woody and herbaceous plants, including ornamental trees, shrubs, and bulb crops.

nutrient deficiencies	inadequate supply of essential nutrients or present but not in the form the plant can use causing plant health problems
nutrient tests	laboratory analysis of soil or foliage to determine if deficiencies exist.
nutrients	elements needed by growing plants and supplied by minerals and organic matter in soil and by fertilizers. Includes: nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron and micro-nutrients.
on-the-job-training (OJT)	employee training at the place of work while he or she is doing the actual job
organic matter	matter composed of organic compounds that has come from the remains of organisms such as plants and animals and their waste products in the environment.
organically-grown plants	plants grown without the use of synthetic fertilizers, pesticides or fungicides.
organics	an organic substance such as a fertilizer of plant or animal origin; a pesticide whose active component is an organic compound or a mixture of organic compounds; or a plant produced by organic farming.
overseed	to spread grass seed on turf or an established lawn to fill in thin or bare spots.
pathogens	biological agent that causes disease or illness to its host by disrupting the normal physiology. Can be a fungus, virus, bacteria or parasite.
paving stones	large, flat pieces of stone, brick, tile, concrete or similar material, used in paving and usually used in groups to cover a path or an area of ground
peat moss	spongy organic soil amendment used to increase acidity, organic matter, aeration and water retention of soil. Sphagnum peat moss is generally considered to be highest in quality. Most soilless mix features peat as its main ingredient.
percolation	the movement, under hydrostatic pressure, of water through the interstices of a rock or soil. Also, the movement of water within a porous medium such as soil without a definite channel.
perennial	a non-woody plant which grows and lives for more than two years.
permeable pavement	paved surfaces made of sustainable materials such as pervious concrete, porous asphalt, permeable interlocking pavers, and other materials, that include a base and sub-base that allow the movement of storm water through the surface. In addition to reducing runoff, they trap suspended solids and filters pollutants from the water.

permeable pavers	paving materials that allow rainwater to pass through into the ground to replenish the water table.
personal protective equipment (PPE)	special protective clothing, other garments, devices and equipment designed and worn by workers to protect the wearer from injury. Examples include respirators, goggles, ear plugs, face shields and CSA approved foot wear.
pest	any species of plant, animal, or pathogenic agent which reduces the productivity or health of plants, either directly by eating them or indirectly by spreading diseases among them.
pest control	regulation or management of a species defined as a pest, usually because it is perceived to be detrimental to the ecology or the economy.
pest resistance plants	plants that grow despite the presence of pests and diseases due to naturally occurring resistance or plants that contain chemicals that make them inedible to pests, and stop the spread of disease.
pH	the measure of a soil's acidity or alkalinity. and is measured in pH units. The pH scale goes from 0 to 14 with pH 7 as the neutral point. As the amount of hydrogen ions in the soil increases, the soil pH decreases, thus becoming more acidic. From pH 7 to 0, the soil is increasingly more acidic, and from pH 7 to 14, the soil is increasingly more alkaline or basic.
physiology	the study of vital processes and functional activity occurring in plants in relation to its survival, metabolic activities, water relations, mineral nutrition, development, movement, irritability, organization, growth and transport processes.
phyto-inspection	official visual examination of plants, plant products or other regulated articles to determine if pests are present and/or to determine compliance with phytosanitary regulations
phytosanitary certificates	a document, issued by an inspector, that attests to the phytosanitary status of anything exported to and from Canada and that contains the information required by the Model Phytosanitary Certificate of the International Plant Protection Convention is signed by an inspector / official and sealed with an official Phytosanitary Certificate seal .
pinching	a form of pruning that encourages branching on the plant.
plant classification	assignment and identification of organisms to groups within a system of categories distinguished by structure, origin, ecological adaptation, use, cultural or climatic requirements, growth habit and life span etc. Plants are grouped by various common characteristics to help us communicate similar ecological adaptations and cultural requirements.

plant hardiness zone map	outlines the different zones in Canada where various types of trees, shrubs and flowers will most likely survive. It is based on the average climatic conditions of each area and based on a wide range of climatic variables, including minimum winter temperatures, length of the frost-free period, summer rainfall, maximum temperatures, snow cover, January rainfall and maximum wind speed. In Canada, the map is divided into nine major zones: the harshest is 0 and the mildest is 8. Subzones (e.g., 4a or 4b, 5a or 5b) are also noted in the map legend.
plant health care	a process of scheduled preventative maintenance based on monitoring and use of cultural and chemical tactics, to enhance plant vitality. The plant and its requirements become the central focus of the activities, rather than responding to symptoms caused by pest presence, physical agents, or nutritional deficiencies. A plant health care practice addresses the basic causes of the reduction in plant health and provides corrective measures to promote plant health.
plant key	analytical guide to the identification of plants, based on the use of contrasting characters to subdivide a group under study into branches.
planting guidelines	provide jurisdictional / site specific specifications and details for tree planting.
planting plan	a 'to scale' plan that identifies plant name, location and spacing information.
plant texture	relationship between the foliage and twigs of plants. Appearance of plants in terms of coarseness or fineness, roughness or smoothness, heaviness or lightness, denseness or thinness.
plugs	a cylinder of medium in which a plant is grown. The term is generally used for seedlings and rooted cuttings.
pollarding	process taken to remove upper branches of a tree to promote a dense head of foliage and branches and is practiced today to maintain and control tree height.
positive drainage	grade that ensures that surface water drains away from all structures on a property so as not to damage to structures and buildings on a site nor negative impact on human health.
posts	a piece of timber or metal set upright in the ground and used to support something or as a marker
potting-on	transplanting a plant from a smaller container up to a bigger container in the growing-on process.
potting-up	moving young plants or rooted cuttings individually into containers and /or the process of filling containers with soil and plant material.

pre-cast concrete	concrete structural components, such as steps, blocks, etc., produced by casting concrete in a reusable mold or "form" which is then cured in a controlled environment, transported to the construction site and lifted into place.
propagate	production of more plants from a parent plant to preserve essential characteristics. Propagation may be achieved sexually by use of seeds or asexually by use of techniques such as cuttings, dividing, grafting and tissue culture.
pruning	the selective cutting and removing of parts of a tree or shrub. It covers a number of horticultural techniques that control growth, shape, remove dead or diseased wood, and stimulate the formation of flowers and fruit buds. Pruning often means cutting branches back, sometimes removing smaller limbs entirely to preserve or improve plant health and structure.
public utilities	service for the public such as water, sewers, telephone, cable, fibre optics, electricity, or gas
purchase order	formal written authorization provided by a buyer to a vendor to provide certain goods or services (types, quantities, qualities, and prices) and to bill the buyer for them at the specified price. The purchase order becomes a contract when it is accepted by the vendor.
quarantine	confinement or isolation of plants or plant products suspected of carrying an infectious agent for observation and research or for farther inspection, testing and/or treatment for a period of time, in an effort to prevent disease from spreading.
rails	a bar or series of bars, typically fixed on upright supports, serving as part of a fence or barrier or used to hang things on
rain gauges	device for collecting and measuring the amount of rain that falls.
rain water harvesting	collection and storage of rainwater often from rooftops in storage units for reuse on-site, rather than allowing it to runoff. Uses include water for garden, irrigation, domestic use with proper treatment, etc.
rebar	steel bar, usually with manufactured deformations, used in concrete and masonry construction to provide additional strength. Short for reinforcing bar.
regeneration	processes designed to build soil health or to regenerate soil, including maintaining a high percentage of organic matter in soils, minimum tillage, biodiversity, composting, mulching, and crop rotation to support a sustainable growing environment.
respirators	apparatus worn over the mouth and nose or the entire face to prevent the inhalation of dust, smoke, or other noxious substances.

retaining wall	wall built to stabilize a slope and keep soil from sliding or eroding downhill.
retention ponds	basins that are designed to temporarily hold a set amount of water and to catch runoff from higher elevation areas while slowly draining to another location. They are more or less around for flood control when large amounts of rain could cause flash flooding.
ribbon tests	simple method used to estimate the percentage of sand, silt and clay in a soil sample.
river rock	natural aggregate smoothed by forces of water. Can come in all sizes and colors depending upon the source.
rollover protection devices (ROP)	operator compartment structures (usually cabs or frames) intended to protect equipment operators and motorists from injuries caused by vehicle overturns or rollovers.
roof-top gardens	any garden on the roof of a building. Roof plantings provide food, temperature control, hydrological benefits, architectural enhancement, habitats or corridors for wildlife, and recreational opportunities.
root division methods	process of reproducing plants by a division of roots or crowns.
rooted cuttings	a vegetative portion removed from a parent plant that has been induced to form roots and eventually new leaves and shoots.
rooting hormones	growth substances that stimulate root formation when applied to the base of a cutting.
roots	part of the plant, usually underground, that absorbs water and nutrients from the soil and anchors the plant in the soil. However, roots can also be aerial (growing up above the ground or above water)
rootstocks	the root or part of a root used for plant propagation. In grafting the rootstock is that part of a grafted plant that supplies the roots
mildew	a fungi that forms fine webs on the surfaces of leaves on live plants. Mildews thrive in warm, humid conditions and mainly affect plants not adapted to those conditions. Also referred to as powdery mildew.
rot	also called decay, any of several plant diseases, caused by any of hundreds of species of soil-borne bacteria and fungi. They are characterized by plant decomposition and putrefaction. The decay may be hard, dry, spongy, watery, and mushy.

rotating crops	a system in which crops are grown on different sections of a plot on a three- or four-year cycle to build soil fertility, boost yields and economic returns, and minimize the negative impact of soil borne pests and diseases.
rust	disease caused by a rust fungus, characterized by reddish or brownish spots on leaves, stems, and other parts.
scab	fungal disease common in areas with summer rainfall - most commonly troubling apples and crab apples. It causes disfiguring lesions, and can infect other plants as well.
scarify	to break up and loosen (soil) to a shallow depth. Roughing up the surface of a root ball that has circling roots
scion wood	short length of stem, taken from one plant which is then grafted onto the rootstock of another plant.
soil texture	is a qualitative classification tool used in both the field and laboratory to determine classes for soils based on their physical texture.
scorch	injury caused to a plant's leaves due to a pathogen heat or lack of water or excessive transpiration .
screed	a straight board used to even off the surface of sand or freshly poured concrete. The screed is usually slid across the tops of the form boards holding the aggregate or concrete. In this process, aggregate or concrete remaining above the level of the forms is moved to areas in which the level is too low, or else simply removed as excess.
sealants	material usually applied as a liquid to waterproof, enhance color, and in some cases reduce abrasion. Applied to wood, and interlocking concrete pavements.
shearing	removal of a shrub's surface by clipping in order to achieve a specific shape and / or resulting in a very formal growth habit
shoring	props or posts of timber or other material in compression; used for the temporary support of excavations, formwork, walls or unsafe structures.
shrubs	a woody plant that is never tree-like in habit and produces or shoots from or near the base. A multi-stemmed, woody plant that does not exceed 20 feet in height.
silt fencing	is a temporary sediment control device used on construction sites to protect water quality in nearby streams, rivers, lakes and seas from sediment (loose soil) in storm water runoff

site assessment	identifying the existing inventory of elements and features including roads, neighbouring properties, soil type, drainage, microclimate, compaction, slopes, water ways, existing plants, wildlife, utilities and hazards, access and security requirements etc.
site locates	depicts the location of underground site utilities existing on a piece of property including lines for telecommunication, electricity distribution, natural gas, cable television, fiber optics, traffic lights, street lights, storm drains, water mains, and wastewater pipes. In some locations, major oil and gas pipelines, national defense communication lines, mass transit, rail and road tunnels also compete for space underground.[1]
site preservation	steps taken to preserve site and minimize environmental impact (erosion, runoff, flooding, compaction etc.) on the site and neighbouring properties due to the construction activity. (Traffic, ground disturbance etc.)
smart water technology	irrigation best management practices and components that address landscape needs without over watering.
softscape	parts of a landscape that comprise and support living material. For example flowers, plants, grass, trees, soil, mulch, etc
softscape material	living, animated part of a landscape including plants, flowers, color scheme and pattern of plantation.
soil	porous material at the surface of the earth and consists of minerals, organic matter, water, gases, and living organisms.
soil amendments	any material added to a soil/media to improve its physical properties to enhance production, such as water retention, permeability, water infiltration, drainage, aeration and structure.
solenoid switches	electromagnet which is connected to a controller and facilitates the opening and closing of automatic control valves within irrigation systems.
spalling	loss of a fragment/chip or splinter, usually in the shape of a flake, or pitted appearance detached from the edge or surface of a paver or concrete due to a blow or sudden force, or the action of weather, or pressure. Typically caused by poor installation and / or weather factors.
species	is one of the basic units of biological classification and a taxonomic rank. A species is often defined as the largest group of organisms capable of interbreeding and producing fertile offspring. A class of individuals having some common characteristics or qualities; distinct sort or kind; a plant that is a representative member of a species, one that is not a hybrid or variety.

specifications	precise statement of legal particulars or documents that define the detailed qualitative requirements for products, materials, and workmanship upon which the contract for construction is based.
spill containment	where spills of chemicals, oils, sewage etc. are contained within a barrier or drainage system rather than being absorbed at the surface.
spill kits	consist of absorbents that are sprinkled on top of the spill or sponge-like fabrics that are placed around the spill in order to contain it. The kit may also include protective equipment, such as goggles and gloves
standards	a document developed to establish recognized and accepted minimum levels of quality that may be recognized by the Owner, User, Consultant for material, product, plant, design, system or installation procedure and; to standardize, or simplify such variables as dimensions, varieties or other characteristics of specific products or plants in order to minimize variation in manufacture, production and/or use.
stem cuttings	is a technique for vegetatively (asexually) propagating plants in which a piece of the stem or root of the source plant is placed in a suitable medium such as moist soil, potting mix, coir or rock wool. Also known as striking or cloning.
stems	the main body or stalk of a plant or shrub, typically rising above ground but occasionally subterranean. Slender stalk supporting or connecting another plant part, such as a leaf or flower.
stippling	leaf injury from insects resulting in leaf spotting as a result of localized destruction of the chlorophyll by the injected enzymes at the feeding site. Aphids, leafhoppers, and mites are commonly associated with this type of injury.
storm water management	practices that are developed to reduce, control, and prevent storm water runoff through a variety of strategies. These strategies vary in nature and effectiveness and strive to improve water quality and either reduce or control flooding and erosion.
structural integrity	ability of an item to hold together under a load, including its own weight, resisting breakage or bending. It assures that the construction will perform its designed function, during reasonable use, for as long as the designed life of the structure.
structural soil	a designed medium which can meet or exceed pavement design and installation requirements while remaining root penetrable and supportive of tree growth even when surrounded by pavement. It is a mixture of gap-graded gravels, clay loam, and a hydrogel stabilizing agent to keep the mixture from separating.

subsoil	the stratum of earth or earthy material immediately under surface of topsoil. It contains little or no humus.
subsurface drainage systems	the process of directing excess water away from the root zones of plants by natural or artificial means, such as by using a system of pipes and drains placed below ground surface level.
take-off or quantity take-off	process in which detailed lists are compiled, based on drawings and specifications, of all the material and equipment necessary to construct a project. Estimators use construction blueprints, either manually or electronically, and start "taking off" quantities of items they will need from those blueprints in order to prepare part of the estimate. Examples of possible take offs include the number of plants, linear measurement of pavers, volumes of aggregate etc. needed to complete the work.
tenders	refers to projects or procurement and is the process whereby organizations, clients, governments and institutions invite bids for large projects that must be submitted within a finite deadline.
thinning	selective removal of plants/trees to allow sufficient room for the remaining plants to grow a form of pruning, that removes an entire shoot, limb, or branch at its point of origin to revitalize a plant by removing over-mature, weak, problematic, and excessive growths. When performed correctly, thinning encourages the formation of new growth that will more readily bear fruit and flowers. This is a common technique in pruning roses and "opening-up" the branching of neglected trees, or for renewing shrubs with multiple branches. A thinned plant becomes more open and is more likely to retain its natural form. More light penetrates a plant that has been thinned, and interior branches and foliage will be retained nearer the center of a tree.
top-dress	application of soluble fertilizers, fresh soil, or compost to the soil surface around a plant or to lawns to replenish nutrients and to improve plant health.
topography	shape, height and elevations of natural and man-made features of a particular landscape, such as mountains, rivers, valleys, and human settlements, railway lines, and roads.
topping	cutting back of the vertical stem (leader) and upper primary limbs (scaffold branches) on mature trees to achieve a uniform height. Topping is also referred to as heading, stubbing, or dehorning.
traffic control	directing the movement of vehicles, equipment, people or goods in a controlled manner to ensure efficiency and safety for all

transformers	a device used to transfer electrical energy from one circuit to another at a different voltage.
trench slope	involves cutting back the trench wall at an angle inclined away from the excavation.
tropical plants	all vegetation growing in a wide band around the equator between the Tropic of Cancer and the Tropic of Capricorn. Most interior plants are tropical plants.
true-to-type	a plant that, when self-fertilized, only produces offspring with the same traits. The alleles for these type of plants are homozygous.
tubers	fat underground stem which stores food and plant energy and from which a plant grows. (e.g. Dahlias)
turf/ turf grass	the upper stratum of soil bound by grass and plant roots into a thick mat. Any of various grasses (as Kentucky bluegrass or perennial ryegrass) grown to form turf
universal hand signals	established code of signals used by a signaler to communicate with an equipment /vehicle operator.
urban tree canopy	the layer of leaves, branches, and stems of trees that cover the ground when viewed from above.
utilities	gas, water, electrical and sewer services beyond 5 feet from a building.
ventilation	natural or mechanical process by which air is introduced to, circulated or removed from a space, with or without heating, cooling, or purification treatment. The main purposes of ventilation are to regulate the temperature and humidity to the optimal level, and to ensure movement of air and thus prevent build-up of plant pathogens (such as Botrytis cinerea) that prefer still air conditions. Ventilation also ensures a supply of fresh air for photosynthesis and plant respiration, and may enable important pollinators to access the greenhouse crop. Ventilation can be achieved via use of vents - often controlled automatically via a computer - and recirculation fans.
vines	plant whose stem requires support and which climbs by tendrils or twining or creeps along the ground.
water conservation	water management practices that improve the use of water resources to benefit people or the environment by beneficial reduction in water use, loss or waste.

water harvesting	accumulation and deposition of rainwater for reuse on-site, rather than allowing it to runoff. Uses include water for garden, water for livestock, water for irrigation, water for domestic use with proper treatment, and indoor heating for houses etc.
water holding capacity	is the ability of a soil to hold water and is used for irrigation scheduling, crop selection, groundwater contamination considerations, estimating runoff and determining when plants will become stressed. Water holding capacity varies by soil texture.
water management	activity of planning, developing, distributing and optimum use of water resources under defined water policies and regulations. It includes: management of water treatment of drinking water, industrial water, sewage or wastewater.
water proofing	any of a number of materials applied to various surfaces, e.g., a building foundation, to prevent the infiltration of water.
water table	the level below which the ground is saturated with water.
weed barriers	materials such as polypropylene blanket, fabric, mulches, composts that stabilizes soil, controls erosion, separates soil profiles and hinders weed growth.
weed control	use of manual, mechanical or chemical means to discourage the growth of unwanted, (usually) fast growing and/or invasive plants.
weeds	plants that grow where they are not wanted and if not kept under control will compete with the ornamental plants or vegetables for nutrients and water in the soil.
weight loads	recommended maximum weight load for a line, rope, crane or any other lifting device or component of a lifting device.
wetland reserves	wetlands generally include swamps, marshes, bogs and similar areas that are protected and managed in order to preserve a particular type of habitat and its flora and fauna which are often rare or endangered.
whip	a slender, un-branched shoot or plant.
wicking beds	self-contained raised beds with built-in reservoirs that supply water from the bottom up.
wire baskets	baskets made from heavy gauge wire that are often used to hold a B&B root ball intact during shipping and handling. Wire also allows for the tree to be picked up by the root ball instead of the trunk.

wood chips	medium-sized solid material made by cutting, or chipping, larger pieces of wood. Woodchips may be used as a biomass solid fuel and are raw material for producing wood pulp. They may also be used as organic mulch in gardening, landscaping, restoration ecology and mushroom cultivation.
woody	stems or trunks that are hard and thickened rather than soft and pliable and which increase in diameter each year.
work orders	written notice from the project owner to the contractor in which the contractor is authorized to proceed with the work on a specified date.
xeriscape principles	is a landscape design and maintenance concept that conserves water and protects the environment. The 7 principles include: Planning and design; Soil analysis; Practical turf areas; Appropriate plant selection; Efficient irrigation; Use of mulches; and Appropriate maintenance
zone	section of an irrigation system served by a single control valve. Zones are comprised of similar sprinkler types and plant material types with similar water requirements and types.

APPENDIX D ACRONYMS

B&B	balled and burlap
CFIA	Canadian Food Inspection Agency
CSNS	Canadian Standards for Nursery Stock
DDDI	dead, disease, damage, interfering
DFO	Department of Fisheries and Oceans
EC	electrical conductivity
GFCI	ground fault circuit interrupter
GPS	global positioning systems
HVAC	heating, ventilation and air conditioning
IPM	integrated pest management
LED	light emitting diode
OEM	operator equipment manual
OH&S	Occupational Health and Safety
OJT	on-the-job-training
PPE	personal protective equipment
ROP	rollover protection
UV	ultraviolet
WHMIS	Workplace Hazardous Materials Information System

APPENDIX E BLOCK AND TASK WEIGHTING

BLOCK A COMMON OCCUPATIONAL SKILLS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	20	25	NV	18	5	20	20	17	15	20	ND	ND	ND	20%

Task 1 Performs safety-related functions.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	25	22	NV	26	25	30	25	28	35	15	ND	ND	ND	26%

Task 2 Maintains tools, equipment and vehicles.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	25	19	NV	25	25	30	35	28	35	25	ND	ND	ND	27%

Task 3 Organizes work.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	25	40	NV	33	50	25	20	23	20	40	ND	ND	ND	31%

Task 4 Participates in marketing and sales.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	25	19	NV	16	0	15	20	21	10	20	ND	ND	ND	16%

BLOCK B HORTICULTURAL PRINCIPLES

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	25	25	NV	18	10	23	25	20	24	30	ND	ND	ND	24%

Task 5 Applies horticultural principles.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	77	NV	58	100	55	75	50	60	80	ND	ND	ND	67%

Task 6 Applies environmental practices.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	23	NV	42	0	45	25	50	40	20	ND	ND	ND	33%

BLOCK C LANDSCAPE CONSTRUCTION

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	25	25	NV	30	60	23	25	25	22	25	ND	ND	ND	32%

Task 7 Performs pre-construction activities.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	30	27	NV	29	10	34	20	22	50	20	ND	ND	ND	27%

Task 8 Installs hardscape.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	35	44	NV	39	60	33	40	40	25	40	ND	ND	ND	39%

Task 9 Installs softscape.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	35	29	NV	32	30	33	40	38	25	40	ND	ND	ND	34%

BLOCK D LANDSCAPE MAINTENANCE

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	25	25	NV	26	25	17	15	18	23	25	ND	ND	ND	24%

Task 10 Maintains softscape and green infrastructure.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	70	53	NV	55	80	65	80	45	65	40	ND	ND	ND	61%

Task 11 Maintains hardscape and green infrastructure.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	30	47	NV	45	20	35	20	55	35	60	ND	ND	ND	39%

BLOCK E PRODUCTION OF PLANT MATERIALS (NOT COMMON CORE)

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	5	0	NV	8	0	17	15	20	16	0	ND	ND	ND	0%

Task 12 Constructs growing facilities (NOT COMMON CORE)

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	25	0	NV	0	0	0	10	23	7	0	ND	ND	ND	11%

Task 13 Operates and maintains components of growing facilities (NOT COMMON CORE)

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	25	0	NV	27	0	20	15	17	17	0	ND	ND	ND	20%

Task 14 Maintains greenhouse crops. (NOT COMMON CORE)

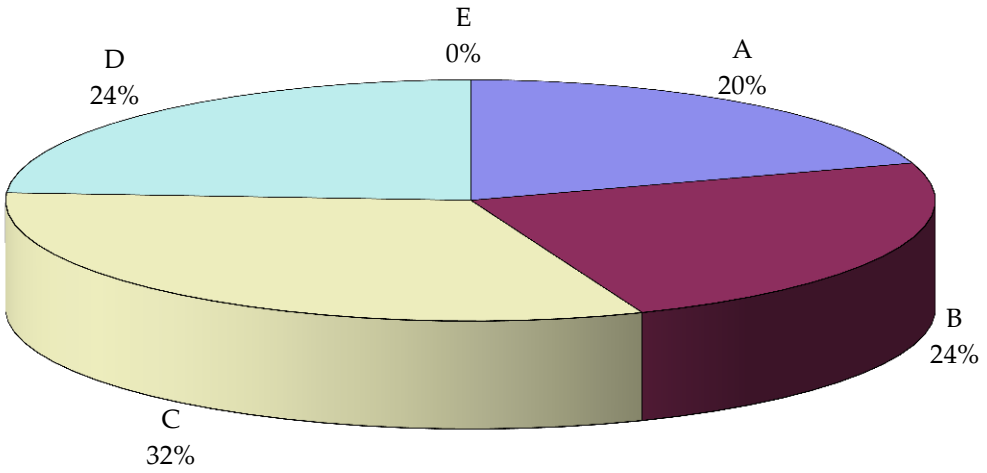
	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	25	0	NV	31	0	40	35	30	38	0	ND	ND	ND	33%

Task 15 Maintains nursery plants. (NOT COMMON CORE)

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	25	0	NV	42	0	40	40	30	38	0	ND	ND	ND	36%

APPENDIX F

PIE CHART*



TITLES OF BLOCKS

BLOCK A	COMMON OCCUPATIONAL SKILLS	BLOCK D	LANDSCAPE MAINTENANCE
BLOCK B	HORTICULTURAL PRINCIPLES	BLOCK E	PRODUCTION OF PLANT MATERIALS **(NOT COMMON CORE)**
BLOCK C	LANDSCAPE CONSTRUCTION		

*Average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input from workers within the occupation from all areas of Canada. Interprovincial examinations typically have from 100 to 150 multiple-choice questions.

APPENDIX G

TASK PROFILE CHART — Landscape Horticulturist

BLOCKS	TASKS	SUB-TASKS				
A – COMMON OCCUPATIONAL SKILLS	1. Performs safety-related functions.	1.01 Uses personal protective equipment (PPE) and safety equipment.	1.02 Maintains safe work environment.			
	2. Maintains tools, equipment and vehicles.	2.01 Maintains hand tools.	2.02 Maintains power tools.	2.03 Maintains measuring equipment.	2.04 Maintains vehicles and motorized equipment.	2.05 Maintains equipment attachments and trailers.
	3. Organizes work.	3.01 Performs site assessments.	3.02 Uses documentation and reference material.	3.03 Maintains records.	3.04 Complies with policies and regulations.	3.05 Plans daily tasks.
		3.06 Communicates with others.	3.07 Orders plants and materials.	3.08 Transports materials.	3.09 Organizes plants, materials and equipment	3.10 Transports equipment.
	4. Participates in marketing and sales.	4.01 Controls inventory.	4.02 Sells products and services.	4.03 Maintains customer relations.	4.04 Prepares estimates.	
B - HORTICULTURAL PRINCIPLES	5. Applies horticultural principles.	5.01 Identifies plants and plant requirements.	5.02 Manages plant health and growing conditions.	5.03 Prunes plant material.	5.04 Manages pests, diseases and invasive species.	
	6. Applies environmental practices.	6.01 Practices environmental stewardship.	6.02. Selects green infrastructure.			

BLOCKS	TASKS	SUB-TASKS				
C – LANDSCAPE CONSTRUCTION	7. Performs pre-construction activities.	7.01 Participates in basic landscape design activities.	7.02 Interprets landscape drawings.	7.03 Participates in job planning activities.	7.04 Prepares construction site.	7.05 Performs grading.
	8. Installs hardscape.	8.01 Installs drainage systems.	8.02 Installs landscape structures.	8.03 Installs walkway, patio, driveway and parking lot materials.	8.04 Installs steps and retaining walls.	8.05 Installs irrigation systems.
		8.06 Installs water features.	8.07 Installs low voltage landscape lighting.	8.08 Installs green infrastructure.		
	9. Installs softscape.	9.01 Installs growing media.	9.02 Installs exterior landscape plants.	9.03 Transplants plants.	9.04 Installs mulch.	9.05 Installs turf from seed.
		9.06 Installs sod.	9.07 Installs erosion control materials.	9.08 Installs interior landscape plants.		
D - LANDSCAPE MAINTENANCE	10. Maintains softscape and green infrastructure.	10.01 Maintains growing media.	10.02 Maintains turfgrass.	10.03 Maintains interior softscape.	10.04 Maintains exterior softscape.	10.05 Propagates plant materials.
		10.06 Repairs softscape.				
	11. Maintains hardscape and green infrastructure.	11.01 Maintains green infrastructure.	11.02 Maintains drainage systems.	11.03 Maintains walkways, patios, driveways and parking lots.	11.04 Maintains irrigation systems.	11.05 Maintains landscape lighting.

BLOCKS	TASKS	SUB-TASKS				
		11.06 Maintains water features.	11.07 Maintains steps and retaining walls.	11.08 Maintains landscape structures.	11.09 Practices snow and ice management.	11.10 Repairs hardscape.
E - PRODUCTION OF PLANT MATERIALS (NOT COMMON CORE)	12. Constructs growing facilities **(NOT COMMON CORE)**	12.01 Builds growing facilities. **(NOT COMMON CORE)**	12.02 Installs growing facility components. **(NOT COMMON CORE)**			
	13. Operates and maintains components of growing facilities **(NOT COMMON CORE)**	13.01 Operates growing facility structures and components. **(NOT COMMON CORE)**	13.02 Maintains sanitary environment. **(NOT COMMON CORE)**	13.03 Operates climate control and components. **(NOT COMMON CORE)**	13.04 Operate irrigation and fertigation systems. **(NOT COMMON CORE)**	
	14. Maintains greenhouse crops. **(NOT COMMON CORE)**	14.01 Propagates greenhouse plant materials. **(NOT COMMON CORE)**	14.02 Transplants greenhouse plants. **(NOT COMMON CORE)**	14.03 Grows greenhouse crops. **(NOT COMMON CORE)**	14.04 Harvests greenhouse crops. **(NOT COMMON CORE)**	14.05 Ships greenhouse crops. **(NOT COMMON CORE)**
	15. Maintains nursery plants. **(NOT COMMON CORE)**	15.01 Propagates field and container crops. **(NOT COMMON CORE)**	15.02 Transplants field and container crops. **(NOT COMMON CORE)**	15.03 Grows field and container crops. **(NOT COMMON CORE)**	15.04 Harvests field and container crops. **(NOT COMMON CORE)**	15.05 Ships field and container crops. **(NOT COMMON CORE)**