PROGRAM PROGRAMME
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Red Seal Occupational Standard

Landscape Horticulturist

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Canada

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EXCELLENCE
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RED SEAL OCCUPATIONAL STANDARD

LANDSCAPE HORTICULTURIST

Title: Landscape Horticulturist

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FOREWORD

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this Red Seal Occupational Standard (RSOS) as the Red Seal standard for the Landscape Horticulturist trade.

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 the Red Seal Program, which, under the guidance of the CCDA, develops a national occupational standard for each of the Red Seal trades.

Standards 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 assessment tools for apprenticeship and certification authorities;
- to develop common tools for apprenticeship on-the-job and technical training in Canada;
- to facilitate the mobility of apprentices and skilled workers in Canada;
- to supply employers, employees, associations, industries, training institutions and governments with analyses of occupations.

Any questions, comments, or suggestions for changes, corrections, or revisions to this standard or any of its related products may be forwarded to:

Trades and Apprenticeship Division
Apprenticeship and Regulated Occupations Directorate
Employment and Social Development Canada
140 Promenade du Portage, Phase IV, 6th Floor
Gatineau, Quebec K1A 0J9
Email: redseal-sceaurouge@hrsdc-rhdcc.gc.ca

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This standard was prepared by the Apprenticeship and Regulated Occupations Directorate of ESDC. The coordinating, facilitating and processing of this analysis were undertaken by employees of the standards development team of the Trades and Apprenticeship Division and of Ontario, the host jurisdiction for this trade.

STRUCTURE OF THE OCCUPATIONAL STANDARD

To facilitate understanding of the occupation, this standard contains the following sections:

Description of the Landscape Horticulturist trade: an overview of the trade's duties, work environment, job requirements, similar occupations and career progression

Trends in the Landscape Horticulturist trade: some of the trends identified by industry as being the most important for workers in this trade

Essential Skills Summary: an overview of how each of the 9 essential skills is applied in this trade

Roles and Opportunities for Skilled Trades in a Sustainable Future: an overarching description of how in the context of climate change, skilled trades play a large role in implementing solutions and adjusting to changes in the world. In addition to highlighting the importance of this awareness, the standard may also contain more details on activities, skills and knowledge elements that are specific to the trade

Industry Expected Performance: description of the expectations regarding the level of performance of the tasks, including information related to specific codes, regulations and standards that must be observed

Language Requirements: description of the language requirements for working and studying in this trade in Canada

Pie Chart: a graph which depicts the national percentages of exam questions assigned to the major work

Task Matrix and Examination Weightings: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard and their respective exam weightings

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities

Task: distinct actions that describe the activities within a major work activity

Task Descriptor: a general description of the task

Sub-task: distinct actions that describe the activities within a task

Essential Skills: the most relevant essential skills for this sub-task

Skills

Performance Criteria: description of the activities that are done as the sub-task is performed

Evidence of Attainment: proof that the activities of the sub-task meet the expected performance of a tradesperson who has reached journeyperson level

Knowledge

Learning Outcomes: describes what should be learned relating to a sub-task while participating in technical or in-school training

Learning Objectives: topics to be covered during technical or in-school training in order to meet the learning outcomes for the sub-task

Range Variables: elements that provide a more in-depth description of a term used in the performance criteria, evidence of attainment, learning outcomes, or learning objectives

Appendix A – Acronyms: a list of acronyms used in the standard with their full name

Appendix B – Tools and Equipment: a non-exhaustive list of tools and equipment used in this trade

Appendix C – Glossary: definitions or explanations of selected technical terms used in the standard

DESCRIPTION OF THE LANDSCAPE HORTICULTURIST TRADE

"Landscape Horticulturist" is this trade's official Red Seal occupational title approved by the CCDA. This standard 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
Landscape Horticulturist	■	■	■	■			■	■	■	■			
Horticultural Technician						■							

Landscape horticulturists survey and assess landscapes, draw sketches and interpret plans. They construct and maintain gardens, parks, golf courses and other landscape environments. In addition, landscape horticulturists construct and maintain hard landscape elements, such as patios, walkways and walls. They also prepare estimates, provide products and services, and advise clients on issues related to horticulture and landscape projects. Landscape horticulturists also propagate, cultivate and study plants, and treat injured and diseased 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 routine maintenance of tools and equipment. Landscape horticulturists may also work with a variety of products such as soils, 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 landscape architects, 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.

The majority of the work such as landscape construction and maintenance, and snow and ice control 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. Employment in this trade may be seasonal with long hours.

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

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

TRENDS IN THE LANDSCAPE HORTICULTURIST TRADE

The landscape horticulture 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 trade will continue to evolve through the introduction of new products, new technology and horticultural principles to meet the needs of the environment and its clients.

The landscape horticulture 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.

The demand for specialized skilled workers in the trade is growing. Increasingly, consumers and employers are requesting certified landscape horticulturists who are aware of best practices to provide quality products and services. More employers are encouraging the professional development of their employees. The industry is trending from seasonal work to full-time employment opportunities and attracting a more diverse workforce.

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. Tools and equipment that produce fewer emissions and reduce noise and vibration are in greater demand.

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

Through continuous improvement to technologies, techniques and plant varieties that reduce environmental impact and production costs, the industry is working towards the optimization, conservation, capture and recycling of water. The industry plays a significant role through its products and services in climate change mitigation and adaptation. Issues around stormwater management are significant and benefit from the use of bioswales, retention ponds and other water management systems.

A higher degree of attention is paid to plant health starting at the design phase and through construction and maintenance due to jurisdictional environmental regulations. Growers are 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.

The trade promotes and practices environmental consciousness and sustainable development. With an increased global awareness of environmental change, the public is seeking the leadership of the trade to conserve, protect, and enhance ecosystems and living spaces. The result of this environmental awareness is increased collaboration across the industry and stakeholder groups in Canada, to promote the application of environmental best practices.

ESSENTIAL SKILLS SUMMARY

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: https://www.canada.ca/en/employment-social-development/programs/essential-skills/tools.html.

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 technical manuals. They may also read trade publications, catalogues, scientific articles and papers, regulations and building codes.

DOCUMENT USE

Landscape horticulturists refer to drawings, photographs, contracts, plans (grading, lighting, irrigation, planting and drainage), tables, regulations and other technical information related to their trade. They may also interpret scaled drawings of landscape designs and detail drawings, and refer to schematics and specifications for various systems. Formats of these documents may be digital or paper.

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 reports and articles covering topics such as 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 plant care, landscape design, maintenance and practices. They speak with other professionals including suppliers, landscape architects, architects and engineers to coordinate projects.

NUMERACY

Landscape horticulturists use numeracy skills to perform calculations and measurements such as site areas, distance, volumes, product application rates and slope. They also perform calculations related to estimating production schedules, material quantity take-offs, and labour rates. They also calibrate equipment such as spreaders and sprayers. They may calculate financial transactions such as purchasing and sales.

THINKING

Decision-making and critical thinking skills are required to determine how to allocate tasks associated with activities such as plant care, environmental protection, and selection of plant species, products and practices. Planning and organizing skills are used to coordinate and organize tasks with others involved in the process. Landscape horticulturists need to comprehend, interpret and apply safety documentation and regulations. Landscape horticulturists need to be able to problem-solve when performing their work.

DIGITAL TECHNOLOGY

Landscape horticulturists use computers and other digital devices when researching and documenting 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. They may use management software that incorporates electronic time sheets, real-time job data and inventory control. Digital controls may be used for irrigation and lighting systems.

WORKING WITH OTHERS

Landscape horticulturists coordinate work with others, including supervisors, architects, clients, homeowners, surveyors, engineers, bylaw officers, contractors, landscape architects and other landscape horticulturists. Landscape horticulturists mentor other employees and work collaboratively.

CONTINUOUS LEARNING

Landscape horticulturists are required to stay up-to-date on landscaping and horticultural information and practices. They must be aware of regulatory requirements such as environmental protection and conservation, zoning and bylaws. Landscape horticulturists are governed by the regulatory bodies in the jurisdiction in which they practice. They may be required to participate in professional development through continuous education and maintain their industry-related certifications.

Roles and Opportunities for Skilled Trades in a Sustainable Future

Climate change affects all of us. Trades play a large role in implementing solutions and adjusting to changes in the world.

Throughout this standard, there may be specific references to tasks, skills and knowledge that clearly show this trade's role in a more sustainable future. Each trade has different roles to play and contributions to make in their own way.

For example:

- Construction tradespeople need to consider the materials they are using, building methods, and improvements to mechanical and electrical installations. There are important changes to codes and standards to help meet the climate change goals and commitments set for 2030 and 2050. Retrofits and new construction of low-energy buildings provide enormous opportunities for workers in this sector. Concepts, such as energy efficiency and regarding buildings as systems are foundational.

- Automotive and mechanical trades are seeing a shift towards the electrification of vehicles and equipment. As a result, new skills and knowledge will be required for tradespeople working in this sector. There are mandates for sales of new light-duty zero-emission vehicles (ZEV) in Canada, with the goal of achieving 100% ZEV sales by 2035. Due to this mandate, the demand for these vehicles is growing quickly among consumers and fleets. With this escalating demand, the need for skilled workers to maintain and repair these vehicles is also increasing.

- In industrial and resource sectors, there is pressure to move towards increased electrification of industrial processes. Many industrial and commercial facilities are also being upgraded to improve energy efficiency in areas such as lighting systems, and new production processes and technologies. There are also opportunities in carbon capture, utilization and storage (CCUS), as well as the production and export of low-carbon hydrogen.

- Trades in the service sector may also need to be aware of responsible sourcing, as well as efficient use of products and materials. New ways of working better are always a part of the job.

There are fast-moving changes in guidelines, codes, regulations and specifications. Many are being implemented for the purpose of energy efficiency and climate change. Those that affect specific trades may be mentioned within the standard. Examples of these guidelines and legislation include:

- The National Energy Code of Canada for Buildings (NECB).

- The Canadian Net-Zero Emissions Accountability Act (CNZEAA).

- programs that encourage sustainable building design and construction such as Leadership in Energy and Environmental Design (LEED) and the Zero Carbon Building (ZCB) standards.

- the Montreal Protocol for phasing out R22 refrigerants.

- energy efficiency programs such as ENERGY STAR.

- principles of the United Nations Declaration for the Rights of Indigenous Peoples pertaining to energy sector development.

Apprentices and tradespeople need to increase their climate literacy and reinforce their own understanding of energy issues and environmental practices. It is important for them to understand why these changes are happening and their effect on trades' work. While individual tradespeople and apprentices may not be able to choose certain elements like; the architectural design of buildings, building material selection, regulatory requirements, use of electric vehicles and technologies, they must understand the impact of using these elements in their work. Impacts include using environmentally friendly products and following requirements related to the disposal and recycling of materials.

In apprenticeship, as well as in ongoing professional development, employers and instructors should encourage learning about these concepts, why they are important, how they are implemented, and the overarching targets they are aiming to achieve.

All in all, it's about doing the work better and building a better world.

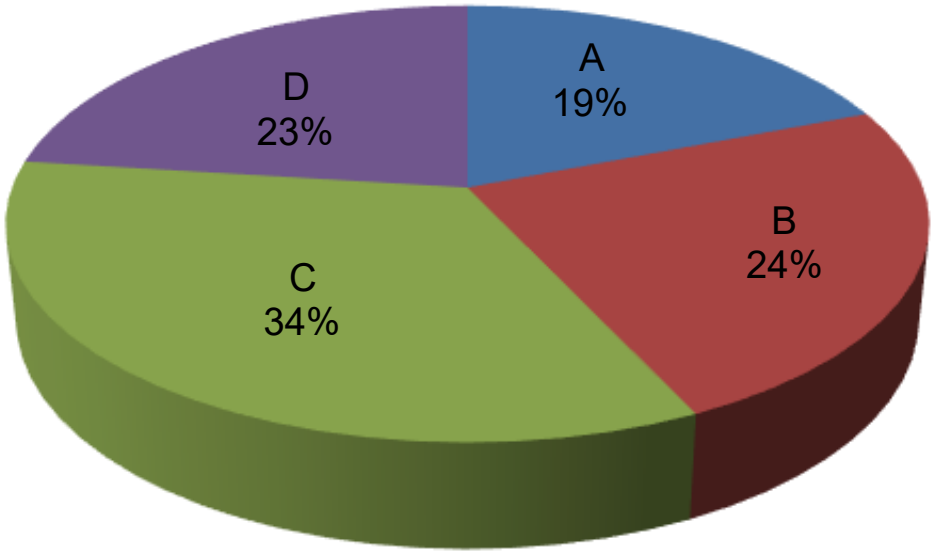
INDUSTRY EXPECTED PERFORMANCE

All tasks must be performed according to the applicable jurisdictional regulations and standards. All health and safety standards must be respected and observed. Work should be done efficiently and at a high quality, minimizing material waste or environmental damage. At a journeyperson level of performance, all tasks must be done with minimal direction and supervision. Landscape horticulturists should be able to meet the physical demands of the trade. As a journeyperson progresses in their career there is an expectation they will mentor apprentices, continue to upgrade their skills and knowledge and promote continuous learning in their trade.

LANGUAGE REQUIREMENTS

It is expected that journeypersons are able to understand and communicate in either English or French, which are Canada's official languages. English or French are the common languages of business as well as languages of instruction in apprenticeship programs.

PIE CHART
OF RED SEAL EXAMINATION WEIGHTINGS



MWA A	Performs common occupational skills	19%
MWA B	Applies horticultural principles	24%
MWA C	Performs landscape construction	34%
MWA D	Performs landscape maintenance	23%
MWA E	Works in production of plant material	NCC

This pie chart represents a breakdown of the interprovincial Red Seal examination. Percentages are based on the collective input from workers from the trade from across Canada. The Task Matrix on the next pages indicates the breakdown of tasks and sub-tasks within each Major Work Activity and the breakdown of questions assigned to the Tasks. Interprovincial examinations for this trade have 120 questions.

LANDSCAPE HORTICULTURIST

TASK MATRIX

A – Performs common occupational skills — 19%

Task A-1 **Performs safety-related functions** **19%**	**A-1.01 Uses personal protective equipment (PPE) and safety equipment**	**A-1.02 Maintains safe work environment**	
Task A-2 **Uses tools, equipment and vehicles** **27%**	**A-2.01 Uses hand tools**	**A-2.02 Uses power tools**	**A-2.03 Uses measuring equipment**
	A-2.04 Uses vehicles and motorized equipment, trailers and attachments		
Task A-3 **Organizes work** **27%**	**A-3.01 Performs site assessments**	**A-3.02 Uses documentation and reference material**	**A-3.03 Maintains records**
	A-3.04 Participates in job planning activities	**A-3.05 Orders materials**	**A-3.06 Organizes materials and equipment**
	A-3.07 Transports materials	**A-3.08 Transports equipment**	

Task A-4 **Participates in marketing and sales** **15%**	**A-4.01 Controls inventory**	**A-4.02 Sells products and services**	**A-4.03 Maintains customer relations**
	A-4.04 Prepares estimates		
Task A-5 **Uses communication and mentoring techniques** **12%**	**A-5.01 Uses communication techniques**	**A-5.02 Uses mentoring techniques**	

B – Applies horticultural principles

24%

Task B-6 **Applies horticultural practices** **62%**	**B-6.01 Identifies plants and plant requirements**	**B-6.02 Manages plant health and growing conditions**	**B-6.03 Prunes plant material**
	B-6.04 Manages pests, diseases and invasive species		
Task B-7 **Applies environmental practices** **38%**	**B-7.01 Practices environmental stewardship**	**B-7.02 Practices biodiversity enhancement**	**B-7.03 Practices soil stewardship**
	B-7.04 Practices water stewardship		

C – Performs landscape construction

34%

Task C-8 **Performs pre-construction activities** **24%**	**C-8.01 Participates in landscape design activities**	**C-8.02 Prepares construction site**	**C-8.03 Performs grading**
	C-8.04 Installs drainage systems		
Task C-9 **Installs hardscape** **32%**	**C-9.01 Installs landscape structures**	**C-9.02 Installs surface materials**	**C-9.03 Installs steps and retaining walls**
	C-9.04 Installs irrigation systems	**C-9.05 Installs water features**	**C-9.06 Installs low voltage landscape lighting**
Task C-10 **Installs softscape** **28%**	**C-10.01 Installs growing media**	**C-10.02 Installs exterior landscape plants**	**C-10.03 Transplants plants**
	C-10.04 Installs mulch	**C-10.05 Installs turf from seed**	**C-10.06 Installs sod**
	C-10.07 Installs interior landscape plants		
Task C-11 **Installs green infrastructure systems** **16%**	**C-11.01 Selects green infrastructure**	**C-11.02 Installs green roofs and walls**	**C-11.03 Installs rainwater and stormwater management systems**
	C-11.04 Installs erosion control	**C-11.05 Installs biodiverse plantings and natural areas**	

D – Performs landscape maintenance

23%

Task D-12 **Maintains hardscape** **32%**	**D-12.01 Maintains drainage systems**	**D-12.02 Maintains landscape structures**	**D-12.03 Maintains surface materials**
	D-12.04 Maintains steps and retaining walls	**D-12.05 Maintains irrigation systems**	**D-12.06 Maintains water features**
	D-12.07 Maintains landscape lighting	**D-12.08 Practices snow and ice control**	**D-12.09 Repairs hardscape**
Task D-13 **Maintains softscape** **47%**	**D-13.01 Maintains exterior softscape**	**D-13.02 Maintains interior softscape**	**D-13.03 Maintains turfgrass**
	D-13.04 Propagates plant material	**D-13.05 Repairs softscape**	
Task D-14 **Maintains green infrastructure** **21%**	**D-14.01 Maintains green roofs and walls**	**D-14.02 Maintains rainwater and stormwater management systems**	**D-14.03 Maintains erosion control**
	D-14.04 Maintains biodiverse plantings and natural areas		

E – Works in production of plant material (NOT COMMON CORE) 0%

Task E-15 **Constructs growing facilities** **(Not Common Core)**	**E-15.01 Builds growing facilities** **(Not Common Core)**	**E-15.02 Installs growing facility components** **(Not Common Core)**	
Task E-16 **Operates and maintains growing facilities** **(Not Common Core)**	**E-16.01 Operates growing facility structures and amenities** **(Not Common Core)**	**E-16.02 Maintains sanitary environments** **(Not Common Core)**	**E-16.03 Operates climate control systems** **(Not Common Core)**
	E-16.04 Operates irrigation and fertigation systems **(Not Common Core)**		
Task E-17 **Manages greenhouse crops** **(Not Common Core)**	**E-17.01 Develops greenhouse crop production plan** **(Not Common Core)**	**E-17.02 Propagates greenhouse crops** **(Not Common Core)**	**E-17.03 Transplants greenhouse crops** **(Not Common Core)**
	E-17.04 Grows greenhouse crops **(Not Common Core)**	**E-17.05 Harvests greenhouse crops** **(Not Common Core)**	**E-17.06 Ships greenhouse crops** **(Not Common Core)**
Task E-18 **Manages nursery crops** **(Not Common Core)**	**E-18.01 Develops nursery crop production plan** **(Not Common Core)**	**E-18.02 Propagates field and container crops** **(Not Common Core)**	**E-18.03 Transplants field and container crops** **(Not Common Core)**
	E-18.04 Grows field and container crops **(Not Common Core)**	**E-18.05 Harvests field and container crops** **(Not Common Core)**	**E-18.06 Ships field and container crops** **(Not Common Core)**
	E-18.07 Winterizes field and container crops **(Not Common Core)**		

1. Trade name

The official Red Seal name for this trade is Landscape Horticulturist.

2. Number of Levels of Apprenticeship

The number of levels of technical training recommended for this trade is 4 (four).

3. Total Training Hours During Apprenticeship Training

The total hours of training, including both on-the-job and in-school training for this trade is 6000.

4. Sequencing Topics and Related Sub-tasks

The topic titles in the table below are placed in a column for each apprenticeship level for technical training. Each topic is accompanied by the sub-tasks and their reference number. The topics in the grey shaded cells represent those that are covered "in context" with other training in the subsequent years.

Level 1	Level 2	Level 3	Level 4
	Safety Related Functions	Safety Related Functions	Safety Related Functions
			Tools, Equipment and Vehicles
	Communication		
Safety Related Functions 1.01 Uses personal protective equipment (PPE) and safety equipment 1.02 Maintains safe work environment			
Tools, Equipment and Vehicles 2.01 Uses hand tools 2.02 Uses power tools 2.03 Uses measuring equipment 2.04 Uses vehicles, motorized equipment, trailers and attachments	**Tools, Equipment and Vehicles** 2.01 Uses hand tools 2.02 Uses power tools 2.03 Uses measuring equipment 2.04 Uses vehicles, motorized equipment, trailers and attachments	**Tools, Equipment and Vehicles** 2.01 Uses hand tools 2.02 Uses power tools 2.03 Uses measuring equipment 2.04 Uses vehicles, motorized equipment, trailers and attachments	
Organizes Work 3.01 Performs site assessments 3.02 Uses documentation and reference material 3.03 Maintains records 3.07 Transports materials 3.08 Transports equipment	**Organizes Work** 3.01 Performs site assessments 3.02 Uses documentation and reference material 3.03 Maintains records 3.06 Organizes materials and equipment 3.07 Transports materials 3.08 Transports equipment	**Organizes Work** 3.01 Performs site assessments 3.02 Uses documentation and reference material 3.03 Maintains records 3.04 Participates in job planning activities 3.05 Orders materials 3.06 Organizes materials and equipment	**Organizes Work** 3.01 Performs site assessments 3.02 Uses documentation and reference material 3.03 Maintains records 3.04 Participates in job planning activities
		Marketing and Sales 4.01 Controls inventory 4.02 Sells products and services 4.03 Maintains customer relations	**Marketing and Sales** 4.04 Prepares estimates

Communication 5.01 Uses communication techniques			**Mentoring** 5.02 Uses mentoring techniques
Horticultural Practices 6.01 Identifies plants and plant requirements 6.02 Manages plant health and growing conditions	**Horticultural Practices** 6.01 Identifies plants and plant requirements 6.02 Manages plant health and growing conditions 6.03 Prunes plant material	**Horticultural Practices** 6.01 Identifies plants and plant requirements 6.03 Prunes plant material 6.04 Manages pests, diseases and invasive species	**Horticultural Practices** 6.01 Identifies plants and plant requirements 6.04 Manages pests, diseases and invasive species
Environmental Practices 7.01 Practices environmental stewardship	**Environmental Practices** 7.01 Practices environmental stewardship 7.03 Practices soil stewardship 7.04 Practices water stewardship	**Environmental Practices** 7.01 Practices environmental stewardship 7.04 Practices water stewardship	**Environmental Practices** 7.01 Practices environmental stewardship 7.02 Practices biodiversity enhancement
Pre-Construction Activities 8.03 Performs grading.* 8.04 Installs drainage systems.*	**Pre-Construction Activities** 8.02 Prepares construction site		**Pre-Construction Activities** 8.01 Participates in landscape design activities
	Hardscape Installation 9.02 Installs surface materials 9.03 Installs steps and retaining walls	**Hardscape Installation** 9.01 Installs landscape structures 9.04 Installs irrigation systems 9.05 Installs water features 9.06 Installs low voltage landscape lighting	
Softscape Installation 10.01 Installs growing media 10.05 Installs turf from seed 10.06 Installs sod	**Softscape Installation** 10.02 Installs exterior landscape plants 10.03 Transplants plants 10.04 Installs mulch	**Softscape Installation** 10.07 Installs interior landscape plants	
	Hardscape Maintenance 12.01 Maintains drainage systems 12.03 Maintains surface materials 12.04 Maintains steps and retaining walls	**Hardscape Maintenance** 12.02 Maintains landscape structures 12.05 Maintains irrigation systems 12.06 Maintains water features 12.07 Maintains landscape lighting 12.08 Practices snow and ice control 12.09 Repairs hardscape	
Softscape Maintenance 13.01 Maintains exterior softscape 13.03 Maintains turfgrass	**Softscape Maintenance** 13.01 Maintains exterior softscape 13.04 Propagates plant materials	**Softscape Maintenance** 13.02 Maintains interior softscape 13.05 Repairs softscape	

Green Infrastructure Installation
11.01 Selects green infrastructure
11.02 Installs green roofs and walls
11.03 Installs rainwater and stormwater management systems
11.04 Installs erosion control
11.05 Installs biodiverse plantings and natural areas

Green Infrastructure Maintenance
14.01 Maintains green roofs and walls
14.02 Maintains rainwater and stormwater management systems
14.03 Maintains erosion control
14.04 Maintains biodiverse plantings and natural areas

Growing Facilities Construction (NCC)
15.01 Builds growing facilities
15.02 Installs growing facility components

Growing Facilities Operation/ Maintenance (NCC)
16.01 Operates growing facility structures and amenities
16.02 Maintains sanitary environments
16.03 Operates climate control systems
16.04 Operates irrigation and fertigation systems

Greenhouse Crops (NCC)
17.01 Develops greenhouse crop production plan
17.02 Propagates greenhouse crops
17.03 Transplants greenhouse crops
17.04 Grows greenhouse crops
17.05 Harvests greenhouse crops
17.06 Ships greenhouse crops

Nursery Crops (NCC)
18.01 Develops nursery crop production plan
18.02 Propagates field and container crops
18.03 Transplants field and container crops
18.04 Grows field and container crops
18.05 Harvests field and container crops
18.06 Winterizes field and container crops

*Grading and drainage in pre-construction activities are concepts that are reinforced throughout all levels of training

MAJOR WORK ACTIVITY A

Performs common occupational skills

TASK A-1 Performs safety-related functions

TASK DESCRIPTOR

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 signage, pylons and barricades is important to maintaining a safe work environment.

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

Essential Skills Reading, Document Use, Thinking

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

SKILLS

	Performance Criteria	Evidence of Attainment
A-1.01.01P	select and use ***PPE***	***PPE*** required for task, tools, equipment, machinery and environment is selected according to company policy and used according to manufacturers' specifications
A-1.01.02P	select and use ***safety equipment***	***safety equipment*** is selected and used according to manufacturers' specifications
A-1.01.03P	store ***PPE*** and ***safety equipment***	***PPE*** and ***safety equipment*** are stored in a dry, protected environment to maintain its integrity and according to manufacturers' specifications
A-1.01.04P	inspect operation and condition of ***PPE*** and ***safety equipment***	***PPE*** and ***safety equipment*** are checked regularly and prior to use according to jurisdictional regulations and manufacturers' specifications
A-1.01.05P	inspect ***PPE*** and ***safety equipment*** inventory	***PPE*** and ***safety equipment*** inventory is complete with a ready supply

A-1.01.06P	recognize damaged and expired ***PPE*** and ***safety equipment*** and remove from service	damaged and expired ***PPE*** and ***safety equipment*** is removed from service
A-1.01.07P	check and replace ***PPE*** components	***PPE*** components are replaced according to manufacturers' specifications, workplace requirements and jurisdictional regulations

RANGE OF VARIABLES

PPE includes: ear, eye, hand, foot and head protection, high-visibility clothing, breathing protection (mask)
safety equipment includes: ventilation fans, spill kits, fire extinguishers, barriers, signage, first-aid kit

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-1.01.01L	demonstrate knowledge of ***PPE***, their applications, maintenance and procedures for use	identify types of ***PPE*** and clothing and describe their applications
		describe the procedures for care and maintenance of ***PPE***
A-1.01.02L	demonstrate knowledge of ***safety equipment***, their applications, maintenance and procedures for use	identify types of ***safety equipment*** and describe their applications
		describe the procedures for care and maintenance of ***safety equipment***
A-1.01.03L	demonstrate knowledge of regulatory requirements pertaining to ***PPE*** and ***safety equipment***	identify ***jurisdictional workplace safety and health regulations***

RANGE OF VARIABLES

PPE includes: ear, eye, hand, foot and head protection, high-visibility clothing, breathing protection (mask)
safety equipment includes: ventilation fans, spill kits, fire extinguishers, barriers, signage, first-aid kit
jurisdictional workplace safety and health regulations include: Workplace Hazardous Material Information System (WHMIS), Transportation Of Dangerous Goods (TDG), Pest Management Regulatory Agency (PMRA), federal, provincial/territorial, municipal, Occupational Health And Safety (OH&S)

A-1.02 Maintains safe work environment

Essential Skills Document Use, Thinking, Oral Communication

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

SKILLS

	Performance Criteria	Evidence of Attainment
A-1.02.01P	identify and assess ***hazards***	***hazards*** are identified and assessed according to OH&S and company safety policy
A-1.02.02P	identify ***overhead hazards*** to prevent damage and personal injuries	preventative actions are taken to minimize damage and personal injuries due to ***overhead hazards***
A-1.02.03P	follow ***safety procedures***	***safety procedures*** specified by OH&S, jurisdictional regulations and company policies are followed
A-1.02.04P	maintain a clear and tidy work area	clear and tidy work area is maintained to reduce the risk of injury to self and others
A-1.02.05P	comply with lock-out/tag-out procedures	lock-out/tag-out procedures are used when working with/on equipment according to jurisdictional regulations and manufacturers' specifications
A-1.02.06P	coordinate tasks with other workers	tasks with other workers are coordinated to avoid injury to self and co-workers
A-1.02.07P	place ***safety barriers*** in work areas	***safety barriers*** are used according to jurisdictional regulations and company policies
A-1.02.08P	handle hazardous material	hazardous material handling is done in accordance with jurisdictional regulations and ***WHMIS procedures***
A-1.02.09P	participate in safety meetings and discussions	safety meetings and discussions are held to ensure that information is recorded and communicated to all team members
A-1.02.10P	recognize and report unsafe conditions	unsafe conditions are reported according to OH&S and company policies
A-1.02.11P	recognize ***safety symbols*** and ***warning signals***	***safety symbols*** and ***warning signals*** are recognized to ensure a safe work site and environment
A-1.02.12P	use universal hand signals	universal hand signals are used when communicating with equipment operators and drivers

A-1.02.13P	contain and dispose of spill contaminants	spill contaminants are contained and disposed of according to jurisdictional regulations
A-1.02.14P	coordinate with ***emergency response teams***	***emergency response teams*** are coordinated with according to work site requirements and company policies

RANGE OF VARIABLES

hazards include: high voltage, motorized equipment, working at heights, environmental, ergonomic, underground services (electricity, natural gas, communications cabling)

overhead hazards include: power lines, tree branches, equipment, construction materials

safety procedures include: use of fall arrest, establishing fuelling zones, trenching and shoring, confined space procedures, traffic management

safety barriers include: flagging, pylons, barricades, signage

WHMIS procedures include: disposal, labelling, use of PPE

safety symbols include: workplace and job-site safety signage, truck signage, product labels

warning signals include: back-up signals, back-up alarms, warning lights

emergency response teams include: ambulance, spill response, fire, utilities, poison control

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-1.02.01L	demonstrate knowledge of regulatory requirements pertaining to safety	identify pertinent ***jurisdictional workplace safety and health regulations***
A-1.02.02L	demonstrate knowledge of situational hazards, risks and mitigation measures	identify situational hazards, assess risk and recommend mitigation measures

RANGE OF VARIABLES

jurisdictional workplace safety and health regulations include: WHMIS, TDG, PMRA, federal, provincial/territorial, municipal, OH&S

TASK A-2 Uses tools, equipment and vehicles

TASK DESCRIPTOR

Landscape horticulturists use a variety of tools, equipment, vehicles and attachments. They must use and maintain this equipment to ensure that work is done in a safe and productive manner and to increase longevity.

A-2.01 Uses hand tools

Essential Skills Thinking, Document Use, Reading

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-2.01.01P	select hand tools	hand tools are selected according to the task
A-2.01.02P	clean and disinfect hand tools	hand tools are cleaned and disinfected to ensure safe and effective operation and to prevent cross-contamination
A-2.01.03P	***lubricate hand tools***	hand tools are lubricated to ensure safe and effective operation
A-2.01.04P	inspect hand tools regularly	hand tools are inspected for damage, excessive wear and safe and effective operation according to manufacturers' specifications, and removed from service if required
A-2.01.05P	store hand tools	hand tools are stored for organization, safety, security and longevity
A-2.01.06P	***sharpen hand tools***	hand tools are sharpened according to manufacturers' specifications to ensure safe and effective operation
A-2.01.07P	***replace components in tools***	components are replaced due to damage and wear

RANGE OF VARIABLES

hand tools that require lubrication include: secateurs, shears, loppers
hand tools that require sharpening include: secateurs, shears, shovels, loppers, edgers
hand tools whose components require replacement include: secateurs, loppers, shovels, rakes, axes

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-2.01.01L	demonstrate knowledge of hand tools, their applications, maintenance and procedures for use	identify hazards and describe safe work practices pertaining to hand tools
		describe the implications of hand tool selection and use on the practice of environmental stewardship
		identify types of hand tools and describe their applications and procedures for use
		describe the procedures used to inspect, maintain, sharpen, clean and store hand tools

A-2.02 Uses power tools

Essential Skills Reading, Document Use, Thinking

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-2.02.01P	select power tools	power tools are selected according to the task
A-2.02.02P	lubricate power tools	power tools are lubricated according to manufacturers' specifications
A-2.02.03P	***adjust power tools***	power tools are adjusted according to manufacturers' specifications
A-2.02.04P	check power tools and ***power tool components***	power tools and ***power tool components*** are checked for damage, excessive wear and safe and effective operation according to manufacturers' specifications, and removed from service if required
A-2.02.05P	maintain power tools	power tools are maintained according to recommended maintenance schedule and manufacturers' specifications
A-2.02.06P	check fluid levels, fuel mixture ratios and air pressure	fluid levels, fuel mixture ratios and air pressure are checked according to manufacturers' specifications
A-2.02.07P	grease motorized equipment	motorized equipment is greased according to manufacturers' specifications

A-2.02.08P	sharpen and balance mower blades	mower blades are sharpened and balanced according to manufacturers' specifications
A-2.02.09P	***sharpen power tool*** components	power tool components are sharpened according to manufacturers' specifications
A-2.02.10P	check, charge or replace batteries on power tools	power tool batteries are operational and charged
A-2.02.11P	refuel equipment	equipment is refueled according to manufacturers' specifications to ensure personal safety and minimize environmental impact
A-2.02.12P	clean and disinfect power tools	power tools are cleaned and disinfected to prevent cross-contamination from site to site
A-2.02.13P	store power tools	power tools are stored for organization, safety and security and according to manufacturers' specifications

RANGE OF VARIABLES

power tools that can be adjusted include: chainsaws, mowers, power washers
power tool components include: filters, mufflers, blades, power cords, attachments
power tools that need sharpening include: chainsaws, hedge shears

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-2.02.01L	demonstrate knowledge of power tools and equipment, their applications, maintenance and procedures for use	identify types of ***power tools and equipment*** and describe their applications, limitations and procedures for use
		identify hazards and describe safe work practices pertaining to power tools and equipment
		describe the implications of power tool selection and use on the practice of environmental stewardship
		describe the daily and seasonal operating procedures used to inspect, maintain, sharpen, clean, and store power tools

RANGE OF VARIABLES

power tools and equipment include: electric, gas (two-cycle engine, four-cycle engine)

A-2.03 Uses measuring equipment

Essential Skills Numeracy, Thinking, Document Use

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

SKILLS

	Performance Criteria	Evidence of Attainment
A-2.03.01P	select ***measuring equipment***	***measuring equipment*** is selected according to task
A-2.03.02P	clean and disinfect ***measuring equipment***	***measuring equipment*** is cleaned and disinfected to ensure proper operation and to prevent cross-contamination
A-2.03.03P	calibrate ***measuring equipment***	***measuring equipment*** is calibrated according to manufacturers' specifications
A-2.03.04P	check, charge and replace batteries on ***measuring equipment***	batteries in ***measuring equipment*** are checked, charged and replaced if required
A-2.03.05P	check ***measuring equipment***	***measuring equipment*** is checked for damage, excessive wear and proper operation, and removed from service if required
A-2.03.06P	store ***measuring equipment***	***measuring equipment*** is stored for organization, safety and security according to manufacturers' specifications

RANGE OF VARIABLES

measuring equipment includes: pH meters, builders' levels, laser levels, electrical conductivity (EC) meters, Global Positioning System (GPS), tape measure, calibrated cylinders, calipers

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-2.03.01L	demonstrate knowledge of ***measuring equipment***, their applications, maintenance and procedures for use	identify types of ***measuring equipment*** and describe their applications and procedures for use
		identify hazards and describe safe work practices pertaining to ***measuring equipment***
		describe the procedures used to inspect, clean, maintain and store ***measuring equipment***

RANGE OF VARIABLES

measuring equipment includes: pH meters, builders' levels, laser levels, electrical conductivity (EC) meters, Global Positioning System (GPS), tape measure, calibrated cylinders, calipers

A-2.04 Uses vehicles, motorized equipment, trailers and attachments

Essential Skills Document Use, Thinking, Reading

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-2.04.01P	select ***vehicles, motorized equipment***, ***attachments and trailers***	***vehicles, motorized equipment***, ***attachments and trailers*** are selected according to task
A-2.04.02P	operate and transport vehicles and motorized equipment	vehicles are operated and transported according to jurisdictional regulations, manufacturers' specifications and company policy
A-2.04.03P	inspect ***vehicles, motorized equipment***, ***attachments and trailers*** for ***defects***, damage and wear	***vehicles, motorized equipment***, ***attachments and trailers*** are inspected to ensure efficient functioning, identify damage and wear, and document findings according to jurisdictional regulations and company policies
A-2.04.04P	clean ***vehicles, motorized equipment***, ***attachments and trailers***	***vehicles, motorized equipment***, ***attachments and trailers*** are cleaned to maintain optimal operation and appearance, detect leaks, and maintain sanitation

A-2.04.05P	check condition of ***safety features***	***safety features*** are checked for safe operating condition according to manufacturers' specifications and jurisdictional regulations
A-2.04.06P	check ***fluid*** levels	***fluid*** levels are checked to ensure that they meet manufacturers' specifications
A-2.04.07P	check and replace ***components***	***components*** are replaced according to manufacturers' specifications
A-2.04.08P	check and adjust air pressure in tires	air pressure levels meet manufacturers' specifications
A-2.04.09P	check and tighten loose connections and fittings	loose connections and fittings are tightened according to manufacturers' specifications
A-2.04.10P	grease ***vehicles, motorized equipment***, ***attachments and trailers***	***vehicles, motorized equipment***, ***attachments and trailers*** are greased according to manufacturers' specifications
A-2.04.11P	adjust and secure ***attachments*** for parking, travel and operation	***attachments*** are adjusted and secured for parking, travel and operation
A-2.04.12P	check hydraulic hose condition	hydraulic hose condition is checked to ensure safe and effective operation of equipment
A-2.04.13P	disinfect ***vehicles, motorized equipment***, ***attachments and trailers***	***vehicles, motorized equipment***, ***attachments and trailers*** are disinfected to prevent transfer of invasive species and contaminants according to jurisdictional regulations and site specifications
A-2.04.14P	replace damaged and worn ***components***	damaged and worn ***components*** are replaced according to manufacturers' specifications
A-2.04.15P	reduce unnecessary idling of vehicles and equipment	idling is kept to a minimum according to jurisdictional regulations and company policies
A-2.04.16P	check operation of safety brake, latch pin and safety chain on trailers	safety brake, latch pin and safety chain on trailers are checked for safe and effective operation, and removed from service if necessary, according to manufacturers' specifications and jurisdictional regulations

RANGE OF VARIABLES

vehicles and motorized equipment include: trucks, turfgrass maintenance machines, skid steers, excavators, all-terrain vehicles (ATV), tractors, hydro seeders

attachments and trailers include: drop spreaders, sprayers, buckets, mowers, aerators, cultivators, hydro seeders, flatbed trailers, dump trailers

defects include: compromised lights, chains, plates, brakes, safety guards, tires, belts, hoses (pneumatic/hydraulic), metal fatigue

safety features include: lock-out devices, chutes, guards, rollover protection devices (ROP), operator presence switches

fluid includes: oil, coolant, hydraulic, fuel types

components include: spark plugs, belts, hoses, pull cords, bushings, blades, tines

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-2.04.01L	demonstrate knowledge of ***vehicles, motorized equipment***, ***attachments and trailers***, and their applications, operation and procedures for use	identify types of ***vehicles, motorized equipment***, ***attachments and trailers*** and describe their characteristics, applications and operation
		identify ***basic vehicle systems and components*** and describe their characteristics and operation
		identify ***engine systems*** and describe their characteristics and operation
		identify hazards and describe safe work practices pertaining to ***vehicles, motorized equipment***, ***attachments and trailers***
		describe the implications of ***vehicles, motorized equipment***, ***attachments and trailers*** and trailer selection and use on the practice of environmental stewardship
		identify codes and jurisdictional regulations pertaining to ***vehicles, motorized equipment***, ***attachments and trailers***
		identify type of license required to operate ***vehicles, motorized equipment***, ***attachments and trailers***
		describe the ***daily and seasonal operating procedures*** used to inspect, clean and maintain and store engines, ***vehicles, motorized equipment***, ***attachments and trailers***

RANGE OF VARIABLES

vehicles and motorized equipment include: trucks, turfgrass maintenance machines, skid steers, excavators, all-terrain vehicles (ATV), tractors, hydro seeders

attachments and trailers include: drop spreaders, sprayers, buckets, mowers, aerators, cultivators, hydro seeders, flatbed trailers, dump trailers

basic vehicle systems and components include: drive systems, brakes, control/safety systems

engine systems include: diesel, electric, two-cycle, four-cycle

daily/seasonal operating procedures include: maintenance checks, circle checks, cold starts, changing seasonal tires, changing seasonal fluids, cleaning vehicles

TASK A-3 Organizes work

TASK DESCRIPTOR

Landscape horticulturists organize work for productivity and safety. They use documents, reference materials and maintain records in order to effectively plan future work. Landscape horticulturists order and transport materials and equipment.

A-3.01 Performs site assessments

Essential Skills Thinking, Document Use, Oral Communication

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-3.01.01P	assess access points	access points are assessed to identify site restrictions and challenges for work
A-3.01.02P	perform visual inspection of site and neighbouring properties	visual inspection identifies existing damage and extensional (surrounding) landscape
A-3.01.03P	arrange for jurisdictional underground utility locate service	utility locations are marked prior to commencing any digging work to identify markings for ***private and public utilities***
A-3.01.04P	perform ***soil tests***	***soil tests*** are completed to determine quality of existing soil
A-3.01.05P	locate septic system and wells	septic systems and wells are located according to drawings and/or verbal and physical confirmation
A-3.01.06P	assess health and vigour of existing plants	existing plants' health and vigour is assessed for cultural maintenance or removal

A-3.01.07P	identify areas to be excavated and protected	areas to be excavated and protected are identified according to drawings and specifications
A-3.01.08P	identify and verify existing and proposed grading and drainage patterns	existing and proposed grading and drainage patterns are identified and verified according to drawings and specifications
A-3.01.09P	identify security requirements	security requirements are identified according to site conditions
A-3.01.10P	protect site elements	site elements are protected

RANGE OF VARIABLES

private and public utilities include: cable, power, telephone, water and sewer, irrigation lines, drainage systems, landscape lighting components, gas lines, electrical cables
soil tests include: percolation, core sampling, texture tests, fertility values, pH

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-3.01.01L	demonstrate knowledge of the procedures used to perform site assessment	define terminology associated with site assessment
		identify hazards and describe safe work practices pertaining to site assessment
		describe the implications of site assessment on the practice of environmental stewardship
		interpret and verify ***documentation*** pertaining to site assessment
		identify specific tools and equipment relating to site assessment, and describe their applications and procedures for use
		identify the methods and procedures used to perform site assessment

RANGE OF VARIABLES

documentation includes: plans, specifications, contracts, surveys

A-3.02 Uses documentation and reference material

Essential Skills Reading, Document Use, Thinking

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-3.02.01P	locate and interpret ***documentation***	***documentation*** is located and interpreted in order to plan a job effectively
A-3.02.02P	refer to ***WHMIS*** documentation for ***procedures***	***WHMIS*** documentation for ***procedures*** is used to work with hazardous materials safely
A-3.02.03P	use ***information resources***	***information resources*** are referred to for a variety of uses

RANGE OF VARIABLES

documentation includes: drawings, specifications, guidelines, codes and standards, tenders and contracts, site locates, product instructions

WHMIS procedures include: usage of PPE, storage requirements, spill containment, usage and cleanup of hazardous materials

information resources include: plant identification, comparing products among suppliers, ordering tools, equipment and materials, pest management, text books, field books, operator equipment manual (OEM), Internet

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-3.02.01L	demonstrate knowledge of trade related ***documentation*** and their use	identify types of trade related ***documentation*** and describe their applications
A-3.02.02L	demonstrate knowledge of landscape drawings and associated ***documentation***	identify types of landscape drawings and ***documentation*** and describe their characteristics and applications
		interpret ***information on landscape drawings*** and ***design principles***
		interpret ***information on specifications***

RANGE OF VARIABLES

documentation includes: drawings, specifications, guidelines, codes and standards, tenders and contracts, site locates, product instructions

information on landscape drawings include: title block, legend, scale, symbols, elements, hazards, details, plant list

design principles include: colour, texture, scale, form

information on specifications includes: general conditions, supplementary conditions, contract personnel

A-3.03 Maintains records

Essential Skills Reading, Writing, Document Use

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-3.03.01P	complete ***safety records*** and ***work records***	***safety records*** and ***work records*** are completed according to jurisdictional regulations and company policies
A-3.03.02P	complete tool and equipment sign-out and training sign-off sheets	tool and equipment sign-out and training sign-off sheets are completed according to company policies
A-3.03.03P	maintain records related to integrated pest management (IPM) and plant health programs	records related to IPM and plant health programs are maintained according to jurisdictional regulations
A-3.03.04P	record ***shipping and receiving information***	***shipping and receiving information*** is recorded according to company policies
A-3.03.05P	compare packing slips with original orders	packing slips are compared with original orders to ensure that shipments are complete

RANGE OF VARIABLES

safety records include: accident reports, tag-outs, safety meeting records

work records include: training records, work orders, daily time sheets, change orders, site assessment records, vehicle and equipment maintenance records

shipping and receiving information includes: inventory adjustments, regulatory documentation, Phytosanitary Certificates, way bills

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-3.03.01L	demonstrate knowledge of the procedures used to prepare and maintain ***safety records*** and ***work records***	identify types of ***safety records*** and ***work records***
		describe the procedures used to prepare ***safety records*** and ***work records***
		explain the importance of accurate record keeping and describe the associated procedures

RANGE OF VARIABLES

safety records include: accident reports, tag-outs, safety meeting records
work records include: training records, work orders, daily time sheets, change orders, site assessment records, vehicle and equipment maintenance records

A-3.04 Participates in job planning activities

Essential Skills Thinking, Document Use, Writing

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-3.04.01P	identify and prioritize tasks	tasks are prioritized to assist in time management and efficient performance
A-3.04.02P	identify labour expertise and allocate production hours	labour expertise is identified according to specifications and in consultation with project manager
A-3.04.03P	organize labour, materials, ***tools and equipment***	production hours are allocated and materials, ***tools and equipment*** are organized according to ***project requirements***
A-3.04.04P	identify and schedule sub-contractors	sub-contractors are identified and scheduled according to scope of work
A-3.04.05P	refer to historical information and previous records	historical information and previous records are checked to assist in the daily planning
A-3.04.06P	review safety requirements	safe completion of the project is ensured according to safety requirements

A-3.04.07P	locate private and public utilities	safe completion of project is ensured according to private and public utility locates
A-3.04.08P	verify scope of project and determine sequence of job	scope of project is verified and job sequence is determined to ensure project is completed according to plans and budget
A-3.04.09P	verify materials and ***practices***	materials and ***practices*** are verified according to project specifications and schedule
A-3.04.10P	plan ***site-specific staging***	***site-specific staging*** is planned to ensure a safe and efficient work site
A-3.04.11P	identify and schedule daily and end of project clean-up	daily and end of project clean-up is identified and scheduled

RANGE OF VARIABLES

tools and equipment include: hand tools, power tools, skid steers, excavators, compactors

project requirements include: site assessments, weather, materials and equipment, competing projects, designated timelines, personnel, sequence of work, on-site staging, clean-up/debris removal, jurisdictional regulations, scheduling

practices include: safe-work, horticultural, construction

site-specific staging includes: environmental protection, vehicle parking, storage, portable offices, toilets, space availability

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-3.04.01L	demonstrate knowledge of the procedures used to plan job tasks	define terminology associated with job planning
		identify hazards and describe safe work practices pertaining to job planning
		identify the ***project requirements*** when planning jobs and job tasks

RANGE OF VARIABLES

project requirements include: site assessments, weather, materials and equipment, competing projects, designated timelines, personnel, sequence of work, on-site staging, clean-up/debris removal, jurisdictional regulations, scheduling

A-3.05 Orders materials

Essential Skills Reading, Thinking, Numeracy

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

SKILLS

	Performance Criteria	Evidence of Attainment
A-3.05.01P	identify size, quality, quantity and type of required materials	size, quality, quantity and type of materials are identified as required and according to Canadian Landscape Standard (CLS), jurisdictional regulations and contract documents
A-3.05.02P	use botanical nomenclature when ordering plant material	botanical nomenclature is used to ensure accuracy of orders
A-3.05.03P	record order number, tracking number and name of supplier representative	order number, tracking number and name of supplier representative is recorded
A-3.05.04P	determine and record ***material information***	***material information*** is determined and recorded according to plans
A-3.05.05P	ensure ***documents*** are in place	***documents*** are in place to prevent delays in receiving plants and materials and according to company policies and jurisdictional regulations

RANGE OF VARIABLES

material information includes: order number, tracking number, time and date of delivery or pick up
documents include: movement certificates, import permits, plans, specifications, jurisdictional regulations, purchase orders

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-3.05.01L	demonstrate knowledge of the procedures for ordering plants and materials	define terminology associated with ordering plants and materials
		interpret documentation relevant to ordering plants and materials
		describe the procedures for ordering plants and materials
		identify the standard relevant to ordering plants and materials

A-3.06 Organizes materials and equipment

Essential Skills Thinking, Reading, Document Use

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-3.06.01P	inspect and verify ***materials***, plants and equipment	***materials***, plants and equipment are inspected for accuracy, quality, quantity and damage prior to unloading and according to purchase order
A-3.06.02P	receive, unload, record, group/match and store plants	plants are received, unloaded, recorded, grouped/matched and stored in ***designated areas*** according to CLS
A-3.06.03P	unload, place and protect ***materials*** and equipment	***materials*** and equipment are placed and protected in an organized fashion in designated storage areas to avoid contamination and maintain product quality and work efficiency
A-3.06.04P	allocate storage area for ***hazardous materials***	storage area for ***hazardous materials*** is allocated according to jurisdictional regulations and company policies
A-3.06.05P	quarantine, reject and dispose of ***substandard plants***	***substandard plants*** are quarantined, rejected and disposed of according to jurisdictional regulations and CLS
A-3.06.06P	reject ***substandard materials*** and equipment	***substandard materials*** and equipment are rejected according to company policies and site specifications
A-3.06.07P	perform final check of ***materials*** and equipment on site	***materials*** and equipment on site are checked and recorded

RANGE OF VARIABLES

materials include: wood chips, soil, aggregates, lumber, pavers, fertilizers, pond and irrigation materials, electrical supplies

designated areas include: job site, hot house, shaded area, heeling-in bed

hazardous materials include: fertilizers, contaminated soils, pesticides, fuels

substandard plants include: damaged/diseased and undersized plants

substandard materials include: damaged/defective, contaminated, wrong size, quantity

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-3.06.01L	demonstrate knowledge of the procedures for receiving, organizing and storing ***materials***, plants and equipment	define terminology associated with receiving, organizing and storing ***materials***, plants and equipment
		identify hazards and describe safe work practices pertaining to receiving, organizing and storing ***materials***, plants and equipment
		interpret documentation relevant to receiving, organizing and storing ***materials***, plants and equipment
		explain the process for verifying and accepting ***materials***, plants and equipment shipments
		describe the procedures used for receiving, organizing and storing ***materials***, plants and equipment

RANGE OF VARIABLES

materials include: wood chips, soil, aggregates, lumber, pavers, fertilizers, pond and irrigation materials, electrical supplies

A-3.07 Transports materials

Essential Skills Document Use, Thinking, Reading

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-3.07.01P	identify types of transportation	types of transportation are identified
A-3.07.02P	protect plant material	***protective items*** and procedures are used to ensure plant health according to CLS
A-3.07.03P	secure ***materials***	***materials*** are secured using appropriate load bearing tie downs according to jurisdictional regulations, and ***loose materials*** are loaded and secured in a manner to prevent spillage and damage
A-3.07.04P	load/unload ***materials***	***materials*** are loaded and unloaded using ***tools and equipment*** in sequence and direction to allow for optimal transport

A-3.07.05P	cover ***materials***	***materials*** are covered according to company policies and jurisdictional regulations
A-3.07.06P	load and transport ***material***	***material*** is loaded and transported according to weight restrictions, manufacturers' specifications, load distribution requirements, and according to jurisdictional regulations
A-3.07.07P	perform and document circle check of loaded vehicle and towed equipment	circle check of loaded vehicle and towed equipment is documented according to jurisdictional regulations and company policies

RANGE OF VARIABLES

protective items include: tarps, anti-desiccants, enclosed trailers

materials include: plants, wood chips, soil, aggregates, lumber, pavers, fertilizers, pond and irrigation materials, electrical supplies, hazardous materials (fertilizers, contaminated soils, pesticides, fuels)

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-3.07.01L	demonstrate knowledge of the procedures for transporting ***materials***	define terminology associated with transporting ***materials***
		identify hazards and describe safe work practices pertaining to transporting ***materials***
		interpret documentation relevant to transporting ***materials***
		describe the ***procedures used for transporting materials***
		identify documentation relevant to ***material*** weights

RANGE OF VARIABLES

materials include: plants, wood chips, soil, aggregates, lumber, pavers, fertilizers, pond and irrigation materials, electrical supplies, hazardous materials (fertilizers, contaminated soils, pesticides, fuels)

procedures used for transporting include: loading, securing, protecting, unloading

A-3.08 Transports equipment

Essential Skills Document Use, Thinking, Reading

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

SKILLS

	Performance Criteria	Evidence of Attainment
A-3.08.01P	select vehicle/trailer type	vehicle/trailer type is selected according to equipment, weight restrictions and required use
A-3.08.02P	secure equipment	equipment is secured according to jurisdictional regulations
A-3.08.03P	determine route from shop to work site for heavy hauling	route from shop to work site for heavy hauling is planned for efficiency and according to jurisdictional regulations
A-3.08.04P	attach signage to vehicle/trailer for oversized loads	signage is attached to vehicle/trailer to indicate oversized loads according to jurisdictional regulations
A-3.08.05P	place traffic cones and wheel chocks	traffic cones and wheel chocks are in place when loading and unloading trailer according to jurisdictional regulations
A-3.08.06P	follow road closure procedures	road closure procedures are followed according to jurisdictional regulations
A-3.08.07P	load and transport equipment	equipment is loaded and transported according to weight restrictions, manufacturers' specifications, load distribution requirements, and according to jurisdictional regulations

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-3.08.01L	demonstrate knowledge of the procedures for transporting equipment	define terminology associated with transporting equipment
		identify jurisdictional regulations used for transporting equipment
		identify hazards and describe safe work practices pertaining to transporting equipment
		interpret documentation relevant to transporting equipment
		describe the procedures used for transporting equipment

TASK A-4 Participates in marketing and sales

TASK DESCRIPTOR

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

A-4.01 Controls inventory

Essential Skills Numeracy, Digital Technology, Reading

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

SKILLS

	Performance Criteria	Evidence of Attainment
A-4.01.01P	identify and count inventory	inventory is counted using manual or electronic systems to ensure accuracy and according to company policies
A-4.01.02P	sort inventory	inventory is sorted according to type, age and quality to ensure safety, efficiency and cost effectiveness
A-4.01.03P	maintain inventory records	inventory records are maintained according to company policies
A-4.01.04P	identify restock orders	orders that need to be restocked are identified according to quantities, expiration dates and seasonal needs

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.01.01L	demonstrate knowledge of the procedures for controlling inventory	define terminology associated with controlling inventory
		identify hazards and describe safe work practices pertaining to inventory control
		interpret documentation relevant to inventory control
		describe the procedures for controlling inventory

A-4.02 Sells products and services

Essential Skills Digital Technology, Oral Communication, Working with Others

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

SKILLS

	Performance Criteria	Evidence of Attainment
A-4.02.01P	advise and educate clients on plants, products and services	clients are provided advice and information on plants, products and services
A-4.02.02P	up-sell additional products and services to clients and advise of special offers	clients are provided information on additional products and services, and special offers
A-4.02.03P	merchandise products and services	products and services are merchandised in an attractive and visible way
A-4.02.04P	handle payments for products and services	payments are handled according to company policies
A-4.02.05P	maintain professional image and appearance	image and appearance is maintained to promote professionalism
A-4.02.06P	prepare and administer contracts	contracts are prepared and administered to identify scope of work, materials, timelines and cost

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.02.01L	demonstrate knowledge of sales techniques	describe the ***procedures*** associated with sales
		identify ***marketing principles***
		identify components of contracts
A-4.02.02L	demonstrate knowledge of products and services	explain the importance of advising clients about products and services

RANGE OF VARIABLES

procedures include: merchandising, invoicing, receiving payments, advertising
marketing principles include: creating internet presence, advertising

A-4.03 Maintains customer relations

Essential Skills	Oral Communication, Working with Others, Thinking

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

SKILLS

	Performance Criteria	Evidence of Attainment
A-4.03.01P	address clients' concerns	clients' concerns are addressed with tact, politeness and in a timely manner according to company policies
A-4.03.02P	practice customer service	customers are served by providing knowledge, acknowledging clients' needs and to promote positive customer relations
A-4.03.03P	maintain ***customer record information***	***customer record information*** is up-to-date and accurate, and maintained according to company policies and ***jurisdictional regulations***
A-4.03.04P	provide follow-up services	follow-up services are provided to ensure customer satisfaction

RANGE OF VARIABLES

customer record information includes: address, phone number, email address, product preferences
jurisdictional regulations include: privacy legislation, trade regulations

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.03.01L	demonstrate knowledge of customer relations	describe the ***processes*** associated with maintaining customer relations
A-4.03.02L	demonstrate knowledge of ***jurisdictional regulations***	identify ***jurisdictional regulations*** pertaining to ***customer record information***

RANGE OF VARIABLES

processes include: qualifying customers, customer education, up-selling products and services, conflict resolution, after service follow-up
jurisdictional regulations include: privacy legislation, trade regulations
customer record information includes: address, phone number, email address, product preferences

A-4.04 Prepares estimates

Essential Skills Numeracy, Thinking, Continuous Learning

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

SKILLS

	Performance Criteria	Evidence of Attainment
A-4.04.01P	interpret ***site information/document*** to identify ***requirements for estimate***	***requirements for estimate*** are identified by interpreting ***site information/document***
A-4.04.02P	estimate material requirements	estimates for material requirements are prepared according to measurements and calculations
A-4.04.03P	estimate labour requirements	estimates for labour requirements are calculated according to job requirements, historical data and safe work procedures
A-4.04.04P	estimate equipment requirements	estimates for equipment requirements are calculated according to job requirements, historical data and safe work procedures
A-4.04.05P	identify and apply ***additional costs***	***additional costs*** are applied to estimate
A-4.04.06P	coordinate project logistics	project logistics are coordinated with other contractors, suppliers and employees to establish direct costs by discussing ***logistical issues***
A-4.04.07P	provide estimates	estimates are provided for contract preparation

RANGE OF VARIABLES

site information/document include: drawings, specifications, tendering documents, client instructions, digital mapping

requirements for estimate include: labour (individual tasks, production rates, person-hours), materials (lengths, surface areas, volumes, rates of application, expansion/compaction factors, shipping quantities), equipment (equipment types/costing, production rates, transportation), factoring spoilage

additional costs include: transportation, safety program, contingencies, change orders, surcharges, accommodations, overhead, permits, waste disposal, sub-contractors

logistical issues include: skill requirements, scheduling, equipment availability

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-4.04.01L	demonstrate knowledge of the procedures used to calculate and estimate ***job requirements***	define terminology associated with estimating
		identify sources of information pertaining to estimating
		describe the procedures used to calculate ***requirements for estimate***
		identify ***job requirements***
		calculate and estimate ***job requirements***

RANGE OF VARIABLES

job requirements include: overhead costs, general conditions, profit margins

requirements for estimate include: labour (individual tasks, production rates, person-hours), materials (lengths, surface areas, volumes, rates of application, expansion/compaction factors, shipping quantities), equipment (equipment types/costing, production rates, transportation), factoring spoilage

TASK A-5 Uses communication and mentoring techniques

TASK DESCRIPTOR

Learning in the trades is done primarily in the workplace with tradespeople passing on their skills and knowledge to apprentices, as well as sharing knowledge among themselves. Apprenticeship is, and always has been about mentoring – learning workplace skills and passing them on. Because of the importance of this to the trade, this task covers the activities related to communication in the workplace and mentoring skills.

A-5.01 Uses communication techniques

Essential Skills Oral Communication, Working with Others, Continuous Learning

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-5.01.01P	demonstrate communication practices with individuals or in a group	instructions and messages are understood by all parties involved in communication
A-5.01.02P	listen using ***active listening*** practices	steps of ***active listening*** are used
A-5.01.03P	receive and respond to feedback	response to feedback indicates understanding and corrective measures are taken if required
A-5.01.04P	explain and provide feedback	explanation and feedback is provided and task is carried out as directed
A-5.01.05P	use questioning to improve communication	questions enhance understanding and on-the-job training
A-5.01.06P	participate in safety and information meetings	meetings are attended, information is relayed to the workforce, and is understood and applied

RANGE OF VARIABLES

active listening includes: hearing, interpreting, reflecting, responding, paraphrasing

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-5.01.01L	demonstrate knowledge of trade terminology	define terminology used in the trade
A-5.01.02L	demonstrate knowledge of effective communication practices	describe the importance of using effective verbal and non-verbal communication with people in the workplace

	identify ***sources of information*** to effectively communicate
	identify communication and ***learning styles***
	describe effective listening and speaking skills
	identify ***personal responsibilities and attitudes*** that contribute to on-the-job success
	identify the value of diversity in the workplace
	identify communication that constitutes ***harassment*** and ***discrimination***

RANGE OF VARIABLES

sources of information include: regulations, codes, standards, occupational health and safety requirements, plans, drawings, specifications, company and client documentation, mentors

learning styles include: seeing, hearing, doing

personal responsibilities and attitudes include: asking questions, working safely, accepting constructive feedback, time management and punctuality, respect for others, good stewardship of materials, tools and property, efficient work practices

harassment includes: objectionable conduct, comment or display made either on a one-time or continuous basis that demeans, belittles, or causes personal humiliation or embarrassment to the recipient

discrimination includes: actions that are prohibited based on race, national or ethnic origin, colour, religion, age, sex, sexual orientation, marital status, family status, disability or conviction for which a pardon has been granted

A-5.02 Uses mentoring techniques

Essential Skills Oral Communication, Working with Others, Continuous Learning

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

SKILLS

	Performance Criteria	Evidence of Attainment
A-5.02.01P	identify and communicate learning objective	apprentice or colleague can explain the objective
A-5.02.02P	link lesson to other lessons and the job	the relation of the lessons to each other and to the job or job segment is demonstrated
A-5.02.03P	demonstrate performance of a skill to an apprentice or colleague	***steps required to demonstrate a skill*** are performed

A-5.02.04P	set up conditions required for an apprentice to practice a skill	***practice conditions*** are set up so that the skill can be practiced safely by the apprentice
A-5.02.05P	assess apprentice or colleague's ability to perform tasks with increasing independence	performance improves with practice to a point where skill can be done with little supervision
A-5.02.06P	give supportive and corrective feedback	apprentice adopts best practice after having been given supportive or corrective feedback
A-5.02.07P	support apprentices in pursuing technical training opportunities	technical training is completed within timeframe prescribed by apprenticeship authority
A-5.02.08P	support equity group apprentices	workplace is harassment and discrimination-free
A-5.02.09P	implement probationary period to assess suitability to the trade	commitment is demonstrated and more suitable career options are provided if required

RANGE OF VARIABLES

steps required to demonstrate a skill include: understanding the who, what, where, when and why, explaining, showing, giving encouragement, following up to ensure skill is performed correctly

practice conditions means: guided, limited independence, full independence

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-5.02.01L	demonstrate knowledge of strategies for learning skills in the workplace	describe the importance of individual experience
		describe the shared responsibilities for workplace learning
		determine one's own learning preferences and explain how these relate to learning new skills
		describe the importance of different types of skills in the workplace
		describe the importance of ***essential skills*** in the workplace
		identify different ***learning styles***
		identify different ***learning needs*** and strategies to meet ***learning needs***
		identify ***strategies to assist in learning a skill***
A-5.02.02L	demonstrate knowledge of strategies for ***teaching skills*** in the workplace	identify different roles played by a workplace mentor
		describe ***teaching skills***
		explain the importance of identifying the lesson objective

	identify teachable moments
	explain the importance of linking the lessons
	identify the components of the skill (the context)
	describe considerations in setting up opportunities for skill practice
	explain the importance of providing feedback
	identify techniques for giving effective feedback
	describe a skills assessment
	identify methods of assessing progress
	explain how to adjust a lesson to different situations

RANGE OF VARIABLES

essential skills are: reading, writing, document use, oral communication, numeracy, thinking, working with others, digital technology, continuous learning

learning styles include: seeing it, hearing it, trying it

learning needs include: learning disabilities, learning preferences, language proficiency

strategies to assist in learning a skill include: understanding the basic principles of instruction, developing coaching skills, being mature and patient, providing feedback

teaching skills include: identifying the lesson objective, linking the lesson, demonstrating the skill, providing practice, giving feedback, assessing skills and progress

MAJOR WORK ACTIVITY B

Uses horticultural principles

TASK B-6 Applies horticultural practices

TASK DESCRIPTOR

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

B-6.01 Identifies plants and plant requirements

Essential Skills Reading, Document Use, Thinking

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
B-6.01.01P	examine plant characteristics through visual, touch and other senses	plant characteristics are described
B-6.01.02P	compare plant characteristics with reference material to determine classification, identification and growing requirements	plant classification, identification and growing requirements are determined using reference material
B-6.01.03P	assess health and vigour of plant to determine requirements	health and vigour is identified based on observed plant characteristics and requirements are determined
B-6.01.04P	assess location for suitability based on growth habits, function and ***cultural requirements of plants***	plant location is determined based on growth habits, function and ***cultural requirements of plants***

RANGE OF VARIABLES

cultural requirements of plants include: light, moisture, soil type, hardiness, nutrients, tolerance (salt, wind, drought)

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
B-6.01.01L	demonstrate knowledge of the ***International Code of Nomenclature for algae, fungi, and plants*** used for plant identification	explain the ***International Code of Nomenclature for algae, fungi, and plants*** and its use in plant identification
		interpret the use of dichotomous keys to classify plants
		use ***plant morphology*** to categorize plants to the family level
		use ***plant morphology*** to categorize the plants on the list to the genus and species level
B-6.01.02L	demonstrate knowledge of plants, their characteristics and cultural requirements	apply principles *of* ***basic plant science***
		define terminology associated with plant science
		identify ***plant characteristics***
		describe the cultural requirements of plants
		identify considerations for the selection of plants based on ***specific uses***
		identify ***plant categories***
		explain the purpose of the Plant Hardiness Zone Map
B-6.01.03L	demonstrate knowledge of plant growth and development	identify the ***factors*** which impact plant growth and development
		identify ***plant anatomy*** and differences in ***morphology***
		explain the ***biological processes*** of a plant
B-6.01.04L	demonstrate knowledge of plant nutrient requirements	identify plant nutrients and describe the impact of nutrient deficiencies/excess on plants and plant growth

RANGE OF VARIABLES

International Code of Nomenclature for algae, fungi, and plants includes: family, genus, species, variety/cultivar

plant morphology includes: leaves/needles, flowers/fruits/seeds, buds, bark, growth habits

basic plant science includes: botany, physiology

plant characteristics include: form, foliage and foliage pattern, stems and bark, bud, fruit, flower, size, colour

specific uses include: residential applications, commercial applications, reclamation/restoration, location, environment

plant categories include: coniferous trees, coniferous shrubs, deciduous trees, deciduous shrubs, herbaceous, woody, broad leaf evergreen, turfgrass, vines, weeds, annuals, perennials, biennials, edibles, native, non-native, invasive species

factors include: temperature, hardiness, growing medium, air quality (carbon dioxide, oxygen, humidity), light, water, pests and disease, environmental stresses, plant life cycle

plant anatomy includes: cell types, tissues, organs

biological processes include: reproduction, photosynthesis, respiration, transpiration, hormonal communication, dormancy

B-6.02 Manages plant health and growing conditions

Essential Skills Reading, Thinking, Continuous Learning

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

SKILLS

	Performance Criteria	Evidence of Attainment
B-6.02.01P	determine plants' exposure to ***environmental conditions***	plants' exposure to ***environmental conditions*** is identified
B-6.02.02P	determine factors that lead to ***plant stress***	factors that lead to ***plant stress*** are determined by inspecting plants for ***signs and symptoms of plant diseases, deficiencies and environmental impacts***
B-6.02.03P	identify signs and symptoms of ***plant stress***	signs and symptoms of ***plant stress*** are identified
B-6.02.04P	collect ***growing media*** samples	representative media samples are collected by using various techniques according to industry practices
B-6.02.05P	collect water samples	representative water samples are collected using various techniques according to industry practices
B-6.02.06P	test ***growing media*** and irrigation water samples manually or by lab analysis	***growing media*** and irrigation water sample ***properties*** are identified through sample testing

B-6.02.07P	examine foliar samples to identify nutrient deficiencies, diseases and pests	plant health and nutrient deficiencies, diseases and pests are identified based on foliar samples using reference materials, resources and test results
B-6.02.08P	interpret test results	plan of action is determined based on test results
B-6.02.09P	identify air quality conditions that affect interior and exterior plants	air quality conditions that affect interior and exterior plants are determined
B-6.02.10P	adjust plant selection and placement	plant selection and placement are adjusted according to ***growing conditions***
B-6.02.11P	develop plan for implementing ***corrective measures***	plan for ***corrective measures*** is put in place according to findings and plant requirements
B-6.02.12P	amend ***growing conditions*** to meet plant requirements	***growing conditions*** are amended according to plant requirements
B-6.02.13P	measure and apply ***fertilizer and amendments***	***fertilizer and amendments*** are used according to plant requirements and test results
B-6.02.14P	remove and dispose of pest and disease-ridden plant parts	pest and disease-ridden plant parts are removed and disposed of to prevent spreading of pests and diseases according to jurisdictional regulations and horticultural practices

RANGE OF VARIABLES

environmental conditions include: light, wind, heating, ventilation and air conditioning (HVAC) systems, moisture, reflective heat load

plant stress includes: biotic and abiotic factors

signs and symptoms of plant diseases, deficiencies and environmental impacts include: discolouration, wilting, defoliation, foliar burn, mould

growing media includes: native soil, soilless medium, manufactured soil, compost

properties include: texture, drainage capacity, pH, nutrients, organic matter, pore space, bulk density, electrical conductivity (EC), contaminants

growing conditions include: microclimate, topography, natural habitat, pH level, soil type and depth, growing environment, water availability, available space, humidity, shelter, light, plant hardiness zone

corrective measures include: fertilization, liming, adding organics, neutralizing water, correcting drainage

fertilizer and amendments include: foliar feed, injection, liquid and granular applications

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
B-6.02.01L	demonstrate knowledge of ***growing media*** conditions and ***properties***	identify ***growing media*** conditions and ***properties***
		apply tests such as pH, air quality and nutrient tests
		identify treatment methods
B-6.02.02L	demonstrate knowledge of soil types and ***soil amendments***	identify ***physical soil characteristics*** to consider when determining the suitability for plant growth
		describe the implications of soil management on the practice of environmental stewardship
		identify types of ***growing media*** and describe their characteristics and applications
		identify the ***soil characteristics that impact soil chemical and biological properties***
		explain the procedures used for taking soil samples
		identify types of soil tests and describe their characteristics and applications
		identify types of ***soil amendments*** and describe their characteristics and applications
		identify the considerations when selecting ***soil amendments***
		describe the procedures used to apply and incorporate ***soil amendments***
		describe the procedures for storing, transporting and disposing of soil, soil amendment products and packaging according to jurisdictional regulations
		interpret soil test results
B-6.02.03L	demonstrate knowledge of plant health	define characteristics of normal plant growth
		identify signs and symptoms of ***plant stress***
		describe companion planting procedures
		identify IPM principles
		identify Canadian and regional landscape standards and jurisdictional regulations
B-6.02.04L	demonstrate knowledge of the characteristics of fertilizers	identify types of fertilizers and describe their characteristics and applications

		define terminology associated with fertilizers
		describe the analysis and formulation of fertilizers
		identify hazards and describe safe work practices pertaining to fertilizers and their use
		describe the implications of fertilizer management on the practice of environmental stewardship
B-6.02.05L	demonstrate knowledge of jurisdictional regulations pertaining to fertilizers	describe jurisdictional regulations pertaining to fertilizers
B-6.02.06L	demonstrate knowledge of the procedures and equipment used for the application, handling, transport, storage and disposal of fertilizers	describe the procedures and equipment used and calibration for the application of fertilizers
		describe the procedures and equipment used to store, dispose and transport fertilizers

RANGE OF VARIABLES

growing media includes: native soil, soilless medium, manufactured soil, compost

properties include: texture, drainage capacity, pH, nutrients, organic matter, pore space, bulk density, electrical conductivity (EC), contaminants

soil amendments include: organic, inorganic

physical soil characteristics include: soil formation, drainage, aeration/porosity, water retention, compaction, soil texture/structure

soil characteristics that impact soil chemical and biological properties include: nutrient availability, chemical composition (soil acidity/alkalinity, soil salinity, cation exchange capacity), organic matter, biological activity, texture

plant stress includes: biotic and abiotic factors

B-6.03 Prunes plant material

Essential Skills Reading, Document Use, Thinking

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

SKILLS

	Performance Criteria	Evidence of Attainment
B-6.03.01P	establish pruning objectives	pruning objectives are established by assessing plant species, structure, health and environment
B-6.03.02P	select ***pruning types***	***pruning types*** are selected according to plant morphology, anatomy, physiology, maturity, time of year and type of plant material
B-6.03.03P	sanitize tools	tools are sanitized according to industry practices
B-6.03.04P	select ***pruning methods*** and required ***tools and equipment***	***pruning methods*** and required ***tools and equipment*** are selected according to size of limb and task
B-6.03.05P	organize and dispose of pruned material	pruned material is piled with cut stems facing the same direction for efficient removal and disposed of according to sanitation and jurisdictional regulations
B-6.03.06P	cut, pinch and deadhead plant material	plant material is cut, pinched and deadheaded according to industry practices and pruning objectives

RANGE OF VARIABLES

pruning types include: shearing, heading, thinning, cleaning, canopy raising, crown balancing, reducing, restoring

pruning methods include: 3-cut method, flush cut, heading, reduction, removal

tools and equipment include: hedge trimmers, shears, saws, secateurs, pruners, loppers

KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-6.03.01L	demonstrate knowledge of the procedures used to inspect, use, maintain, store and transport pruning ***tools and equipment***	describe the procedures used to inspect, use, maintain, store and transport pruning ***tools and equipment***
		describe procedures for cleaning and sanitizing pruning ***tools and equipment***
B-6.03.02L	demonstrate knowledge of the procedures for pruning	define terminology associated with pruning

		identify hazards and describe safe work practices pertaining to pruning
		describe the ***purpose of pruning***
		describe ***pruning methods*** and techniques
		identify ***factors*** that affect pruning times
		describe methods to organize debris for efficient handling
B-6.03.03L	demonstrate knowledge of the procedures for the disposal of diseased and infested plant parts	describe the procedures for removing plant parts and disposal of diseased and infested plant parts

RANGE OF VARIABLES

tools and equipment include: hedge trimmers, shears, saws, secateurs, pruners, loppers
purpose of pruning includes: plant appearance, structure, plant growth requirements, unwanted growth, plant health, prevention of winter damage
pruning methods include: 3-cut method, flush cut, heading, reduction, removal
factors include: dormancy, flower period, growth response, wind and frost damage, scorch

B-6.04 Manages pests, diseases and invasive species

Essential Skills Reading, Document Use, Thinking

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

SKILLS

	Performance Criteria	Evidence of Attainment
B-6.04.01P	determine environmental and site conditions that lead to plant stress	conditions that lead to plant stress are determined by inspecting site
B-6.04.02P	inspect plants visually	pest population and ***damage*** is inspected and identified
B-6.04.03P	identify pests, diseases, invasive species and beneficial insects	pests, diseases, invasive species and beneficial insects are identified by visually inspecting plants and using resources
B-6.04.04P	determine course of action for managing pests and invasive species	course of action is determined and complies with jurisdictional regulations
B-6.04.05P	monitor pest populations, spread of disease and damage characteristics	pest populations, spread of disease and damage characteristics are documented
B-6.04.06P	monitor biological control populations	biological control populations are documented

B-6.04.07P	establish injury and action thresholds	injury and action thresholds are established according to economics, aesthetics and plant health
B-6.04.08P	select treatment and control methods	treatment and control methods are selected according to types of pests, diseases and environment that minimizes negative impact on native or existing ecosystem, and jurisdictional regulations
B-6.04.09P	identify and calibrate pesticide application equipment	pesticide application equipment is selected and calibrated according to required application and manufacturers' specifications
B-6.04.10P	prevent infestation of pests, diseases and invasive species	infestation of pests, diseases and invasive species is prevented by using ***prevention strategies***
B-6.04.11P	apply ***treatment methods***	***treatment methods*** are applied in compliance with jurisdictional regulations
B-6.04.12P	document the use of pest control products	use of pest control products is documented according to jurisdictional regulations
B-6.04.13P	monitor results of treatment	results of treatment are monitored to evaluate efficacy
B-6.04.14P	identify ***quarantine protocols***	***quarantine protocols*** are identified, according to jurisdictional regulations and industry practices
B-6.04.15P	dispose of pest and disease-ridden plant material and invasive species	pest and disease-ridden plant material and invasive species are disposed of according to jurisdictional regulations

RANGE OF VARIABLES

damage includes: leaf disfiguration, notching, stippling, discoloration

prevention strategies include: rotating crops, selecting pest-resistant varieties and cultural methods, supporting and encouraging native ecosystem, physical observation

treatment methods include: cultural, mechanical, biological, chemical

quarantine protocols include: early detection and eradication; restricting movement of plant parts or soil; sanitation practices for vehicles, attachments and tools; import/export restrictions; containment or destruction of contaminated materials

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
B-6.04.01L	demonstrate knowledge of types of pests and diseases and the procedures used to manage them	define terminology associated with pest and disease management
		identify the ***considerations*** for selecting and applying pest and disease management measures
		define the components of an integrated pest management (IPM) program

		describe the implications of IPM on the practice of environmental stewardship
		identify ***methods*** used for pest and disease management and treatment
		identify ***common types of pests*** and describe their characteristics and life cycles
		identify ***common types of diseases and disorders*** and describe their characteristics and life cycles
		identify ***causes of diseases***
		identify ***pathogens***
		identify ***biotic factors***
		identify ***abiotic factors***
		identify the ***factors for selecting and applying pest and disease management measures***
		describe the ***procedures*** used to implement pest and disease management measures
B-6.04.02L	demonstrate knowledge of jurisdictional regulations and ***documentation*** pertaining to pest and disease management	identify jurisdictional regulations pertaining to pest and disease management
		describe ***documentation*** pertaining to pest and disease management
B-6.04.03L	demonstrate knowledge of pest control products, formulations and application equipment	identify specific tools, equipment and products relating to pest and disease management and describe their applications and procedures for use
B-6.04.04L	demonstrate knowledge of the ***procedures*** used to handle, transport, apply, store and dispose of pest and disease management products and tools	identify hazards and describe safe work practices pertaining to pest and disease management
		describe the ***procedures*** associated with the handling, transportation, storage and disposal of pest and disease management related products and materials
		describe how to select, apply and record pest and disease management measures

RANGE OF VARIABLES

considerations include: pest/disease populations, injury levels, action thresholds, beneficial insect pest populations

methods include: regulatory, physical/mechanical, cultural, biological, chemical

common types of pests include: arthropods, nematodes, birds and mammals, weeds

common types of diseases and disorders include: blight, leaf spot, scab, gall, rust, canker, bacterial wilts, fungi, rot and mildew, bacterial and fungal turfgrass diseases

causes of diseases include: pathogens, nematodes, nutrient deficiencies

pathogens include: viruses, bacteria, fungi

biotic factors include: diseases, insects, animals

abiotic factors include: temperature, light, mechanical damage, nutrition

factors for selecting and applying pest and disease management measures include: site analysis, pest/disease populations, injury levels, action thresholds, monitoring techniques

procedures include: management techniques, preparation, equipment selection, equipment calibration, application techniques

documentation includes: pest and disease monitoring, treatment and management records, evaluation of pest and disease management methods, pesticide application records

TASK B-7 Applies environmental practices

TASK DESCRIPTOR

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

B-7.01 Practices environmental stewardship

Essential Skills Thinking, Working with Others, Continuous Learning

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
B-7.01.01P	select and use sustainable ***horticultural and landscaping materials***	***horticultural and landscaping materials*** that minimize ***negative impact on environment*** and ecosystems are used
B-7.01.02P	select and use recycled and recyclable materials	recycled and recyclable materials are used for operations when possible
B-7.01.03P	select and maintain ***tools and equipment*** that minimize ***negative impact on environment*** and ***ecosystems***	***tools and equipment*** that minimize ***negative impact on environment*** and ***ecosystems*** are used and maintained

B-7.01.04P	source local materials and equipment	materials and equipment from local sources are used when possible
B-7.01.05P	select permeable surfaces and maximize green space	landscape projects are implemented to reduce impermeable surfaces and maximize green space
B-7.01.06P	perform on-site recycling/composting	soil and plant parts are recycled/composted on site using ***eco-methods*** based on environmental stewardship principles
B-7.01.07P	organize work flow	work flow is organized in a manner that minimizes ***negative impact on environment***
B-7.01.08P	incorporate on-site ***elements*** into naturalized green spaces	naturalized green spaces include on-site ***elements***

RANGE OF VARIABLES

horticultural and landscaping materials include: plants, paving and natural stones, wood, mulch, soil, lighting and irrigation components

negative impacts on environment include: compaction, fuel emission, noise pollution

tools and equipment include: mulching mowers, aerators, equipment that uses rechargeable batteries, hybrid and energy-efficient engines, sharp mowing blades

ecosystems include: meadows, ponds, parks, urban landscape

eco-methods include: mulch mowing, composting, chipping, recycling leaves

elements include: native plants, natural materials found on site, locally sourced materials, bioswales, raingardens, natural stormwater management, wildlife habitat structures

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
B-7.01.01L	demonstrate knowledge of environmental stewardship principles	define ***ecosystems***
		describe the function, purpose and structure of natural ***ecosystems***
		describe preservation, conservation and regeneration principles and applications related to plant life, habitat, water table and water quality
		describe the impact of the environment and landscapes on psychosocial health
B-7.01.02L	demonstrate knowledge of landscaping practices that support environmental stewardship	describe methods of increasing biodiversity and stormwater mitigation
		identify ***environmental waste management best practices***
		identify ***site protection***

	identify products and practices for reducing harm and positively impacting the environment
	describe practices for maximizing green space and permeable surfaces

RANGE OF VARIABLES

ecosystems include: meadows, ponds, parks, urban landscape
environmental waste management best practices include: reduce, reuse, recycle
site protection includes: silt fencing, erosion control, amending native soil, let-it-lay, adjusting mowing height

B-7.02 Practices biodiversity enhancement

Essential Skills Thinking, Working with Others, Continuous Learning

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
B-7.02.01P	select plants that ensure diversity within landscapes	plants are selected based on their attractiveness to a variety of macro- and micro-organisms, pest-resistance and are suited to the ***environment conditions*** and according to jurisdictional regulations
B-7.02.02P	select ***bio-diverse enhancement strategies***	***bio-diverse enhancement strategies*** are selected according to jurisdictional regulations
B-7.02.03P	select edible plants to be included in landscapes	edible plants are used in landscape to enhance biodiversity and engage the public
B-7.02.04P	create a variety of habitats to support a range of species	a variety of habitats to support a range of species are created to enhance biodiversity
B-7.02.05P	select pest and disease control methods that are compatible with a variety of organisms	control methods that are compatible with a variety of organisms are selected

RANGE OF VARIABLES

environment conditions include: soil type, light, pH, humidity and moisture availability, wind, exposure, native habitat
bio-diverse enhancement strategies include: selecting plants that attract pollinators and wildlife; ensuring inter-relationships in nature; creating or maintaining wetlands; changing maintenance practices to preserve habitat by cleaning up in the spring; creating habitat and structures; encouraging moss growth

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
B-7.02.01L	demonstrate knowledge of biodiversity	define biodiversity
		describe the value and purpose of biodiversity
		identify the jurisdictional regulations related to biodiversity
		list the ***benefits of plants***
		describe the value of environmental, economic and social impact of the tree canopy
		explain the inter-relationships between species
B-7.02.02L	demonstrate knowledge of the practice of biodiversity	identify native species, plant varieties and organisms that ensure diversity within landscapes
		identify the differences between invasive and native species
		describe ***bio-diverse enhancement strategies***
		describe the purpose and procedure for including edible plants in landscapes
		define a variety of habitats to support a range of species
		describe pest and disease control methods that are compatible with a variety of organisms
B-7.02.03L	demonstrate knowledge of including biodiversity within a landscape design and the development process	explain the benefit of and risks of not including biodiversity within a landscape design and the development process

RANGE OF VARIABLES

benefits of plants include: climate change mitigation, carbon capturing, symbiotic relationships

bio-diverse enhancement strategies include: selecting plants that attract pollinators and wildlife; ensuring inter-relationships in nature; creating or maintaining wetlands; changing maintenance practices to preserve habitat by cleaning up in the spring; creating habitat and structures; encouraging moss growth

B-7.03 Practices soil stewardship

Essential Skills Continuous Learning, Numeracy, Thinking

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

SKILLS

	Performance Criteria	Evidence of Attainment
B-7.03.01P	select soil stewardship methods	soil stewardship methods that minimize impact on native soils are selected
B-7.03.02P	assess ***growing media*** composition based on ***conditions***	***growing media*** composition is assessed for ***conditions*** using various ***test methods***
B-7.03.03P	collect and label ***growing media*** samples, determine requirements for ***soil testing*** and send to lab	requirements for ***soil testing*** are determined, ***growing media*** samples are collected, labelled and sent to lab
B-7.03.04P	interpret test results	test results are interpreted to determine requirements for ***growing media*** according to environmental practices
B-7.03.05P	select and apply fertilizers and amendments	fertilizers and amendments that support plant health and minimize environmental impacts are selected and applied
B-7.03.06P	cultivate soil based on situation	soil is cultivated while minimizing ***environmental impact on soils***

RANGE OF VARIABLES

growing media include: native soil, soilless media, manufactured soil, compost
conditions include: texture, moisture levels, porosity, soil microbiome
test methods include: visual, ribbon tests, probes
soil testing includes: pH, nutrient, deficiency levels, micro-activity levels, organic content
environmental impact on soils includes: compaction, depletion of organic matter, destruction of soil structure, damage to soil microbiome, hardpan, erosion, introduction of invasive species, diseases and pests, damage to root systems

KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-7.03.01L	demonstrate knowledge of ***growing media***	identify types of ***growing media*** and describe their characteristics and applications
B-7.03.02L	demonstrate knowledge of soil types and ***soil amendments***	identify types of soil

		identify types of ***soil amendments*** and describe their characteristics, and procedures used to apply and/or incorporate them
		identify types of soil tests and describe their characteristics and applications
		explain the procedures used for taking soil samples
B-7.03.03L	demonstrate knowledge of interpreting test results	interpret test results
		explain how to develop recommendations based on test results
B-7.03.04L	demonstrate knowledge of selecting and applying fertilizers and amendments	describe the procedures used to apply and/or incorporate fertilizers and amendments
B-7.03.05L	demonstrate knowledge of minimizing harm to soil structure, health and microbiome	describe the difference between good soil structure and poor soil structure
		describe the impact of cultivation on the soil structure, health and microbiome
		identify situations in which cultivating is required
		describe how minimum tillage and other methods of cultivation minimize harm to soil structure, health and ***soil organisms***
B-7.03.06L	demonstrate knowledge of conserving soil and preserving soil health	explain the economic and ***environmental reasons*** for conserving soil and preserving soil health
		describe site protection measures that minimize environmental impact
		explain bulk soil storage procedures that minimize environmental impact
		describe methods to prevent soil erosion and siltation
		explain the reasons for using the cut and fill method

RANGE OF VARIABLES

growing media include: native soil, soilless media, manufactured soil, compost

soil amendments include: organic, inorganic

soil organisms include: bacteria, beneficial fungi (mycorrhizae), worms, centipedes, viruses, nematodes, planaria, protozoa, mites, ground beetles, rove beetles, pill bugs

environmental reasons include: sequestering carbon, minimizing spread of pests, diseases and invasive species, minimizing damage to soil structure, reducing inputs and outputs

B-7.04 Practices water stewardship

Essential Skills	Thinking, Continuous Learning, Document Use

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

SKILLS

	Performance Criteria	Evidence of Attainment
B-7.04.01P	assess site features and determine ***low impact development (LID) practices***	***LID practices*** are identified
B-7.04.02P	collect and label water samples, and send to lab	water samples are collected, labelled and sent to lab for ***testing***
B-7.04.03P	interpret test results	test results are interpreted to determine water quality

RANGE OF VARIABLES

low impact development (LID) practices include: rain barrels, infiltration trenches, bioswales, bioretention cells, rain gardens, green roofing, smart irrigation, xeriscaping, permeable surfacing, water harvesting systems, downspout disconnect, stormwater ponds

testing includes: determine pH, contaminants, nutrient and deficiency levels

KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-7.04.01L	demonstrate knowledge of landscaping practices that support water stewardship	identify water retention and weed prevention materials
		identify water retention practices
		identify ***LID practices***
		describe the benefits and application of efficient irrigation systems
		identify xeriscape principles
		describe ***erosion control methods***
		explain methods for protecting endangered species in waterways
		explain methods for preventing the spread of invasive species in waterways
		explain methods to prevent pesticides, fertilizers and pollutants from reaching waterways
		describe the benefits of preserving urban forest tree canopy to maintain leaf surface and promote water infiltration

	describe riparian restoration
	describe the benefits and use of reclaimed water systems
	identify jurisdictional regulations relating to water stewardship

RANGE OF VARIABLES

low impact development (LID) practices include: rain barrels, infiltration trenches, bioswales, bioretention cells, rain gardens, green roofing, smart irrigation, xeriscaping, permeable surfacing, water harvesting systems, downspout disconnect, stormwater ponds

erosion control methods include: cover cropping, silt fencing, mulching, groundcovers, bales, erosion control mats, gabion baskets

MAJOR WORK ACTIVITY C
Performs landscape construction

TASK C-8 Performs pre-construction activities

TASK DESCRIPTOR
Landscape horticulturists participate in the planning of construction. They also perform pre-construction activities such as grading and drainage prior to installation. They prepare the site according to landscape drawings and specifications.

C-8.01 Participates in landscape design activities

Essential Skills	Document Use, Thinking, Oral Communication

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-8.01.01P	select and use ***tools***	***tools*** are selected according to industry practices and manufacturers' specifications
C-8.01.02P	measure and inventory existing site conditions	information for the design is provided according to measurements and inventory of existing site plan and site analysis
C-8.01.03P	apply ***design principles***	***design principles*** are applied according to industry practices
C-8.01.04P	create landscape drawings	landscape drawings are created according to client consultation, jurisdictional regulations and ***standards***

RANGE OF VARIABLES
tools include: levels, GPS, measuring devices
design principles include: texture, colour, form, scale, balance, rhythm, unity
standards include: American National Standards Institute (ANSI), CLS, OH&S

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-8.01.01L	demonstrate knowledge of ***landscape drawings*** and associated ***documentation***	identify types of ***landscape drawings*** and associated ***documentation*** and describe their characteristics and applications
		interpret landscape drawings
		interpret ***information*** on specifications
C-8.01.02L	demonstrate knowledge of the procedures used to perform ***site measurements***	define terminology associated with ***site measurements***
		identify hazards and describe safe work practices pertaining to ***site measurements***
		interpret ***documentation*** pertaining to ***site measurements***
		identify the methods and procedures used to stake out points when performing ***site measurements***
C-8.01.03L	demonstrate knowledge of landscape design	describe the applications of ***design principles*** in ***landscape drawings***

RANGE OF VARIABLES

landscape drawings include: drainage, elevation, grading, lighting, irrigation, planting
documentation includes: specifications, codes, standards
site measurements include: grade levels and stake interpretation, grid system, triangulation
design principles include: texture, colour, form, scale, balance, rhythm, unity

C-8.02 Prepares construction site

Essential Skills Document Use, Thinking, Oral Communication

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-8.02.01P	select and use ***hand and measuring tools***	***hand and measuring tools*** are selected and used according to task requirements and manufacturers' specifications
C-8.02.02P	select and use ***motorized equipment***	***motorized equipment*** is selected and used according to task requirements, site access and manufacturers' specifications

C-8.02.03P	identify and communicate discrepancies between plans and site conditions	plan and site conditions are identified and discrepancies are communicated to employer and ***stakeholders***
C-8.02.04P	preserve and protect ***existing hardscape and softscape elements*** and soil	***existing hardscape and softscape elements*** and soil are preserved and protected according to drawings, specifications, CLS and jurisdictional regulations
C-8.02.05P	remove hazards, debris and other unwanted materials	hazards, debris and other unwanted materials are removed according to drawings and specifications
C-8.02.06P	create site access	site access is created according to drawings, specifications and site conditions
C-8.02.07P	identify markings of underground and overhead utility hazards	underground and overhead utility hazard markings are identified according to locate information
C-8.02.08P	interpret and extract locate information for ***privately-owned and public utilities***	locate information for ***privately-owned and public utilities*** is interpreted and extracted
C-8.02.09P	locate and cordon off areas	areas are located and cordoned off using barriers to minimize access and environmental impact
C-8.02.10P	install ***environmental mitigation mechanisms***	***environmental mitigation mechanisms*** are installed according to manufacturers' specifications, drawings, specifications, jurisdictional regulations and CLS
C-8.02.11P	lay out site by marking and staking location of hardscape and softscape elements to be installed	location of hardscape and softscape elements to be installed is marked and staked out according to drawings and specifications
C-8.02.12P	excavate and place service conduits	service conduits are excavated and placed to support ***activities*** according to drawings and specifications, jurisdictional regulations and CLS
C-8.02.13P	verify site preparation	site preparation meets drawings and specifications

RANGE OF VARIABLES

hand and measuring tools include: shovels, builders' levels, transits
motorized equipment includes: loaders, skid-steers, excavators
stakeholders include: property owners, designers, engineers
existing hardscape and softscape elements include: trees, decks
privately-owned and public utilities include: fibre-optics, gas lines, septic, hydro, water, sewer
environmental mitigation mechanisms include: filters, silt fencing, storm sewer guards
activities include: installing irrigation systems and low voltage wiring

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-8.02.01L	demonstrate knowledge of the procedures used to prepare construction site	identify the considerations and requirements when preparing construction sites
		describe the procedures used to prepare construction sites
C-8.02.02L	demonstrate knowledge of landscape drawings and associated documentation	interpret and extract ***information*** from landscape drawings and documentation related to construction site preparation
C-8.02.03L	demonstrate knowledge of the procedures used to perform site layout	identify the ***methods and procedures*** used to stake out points when performing site layout as it pertains to construction site preparation

RANGE OF VARIABLES

information includes: general conditions, supplementary conditions, contract personnel
methods and procedures include: grade levels and stake interpretation, grid system, triangulation

C-8.03 Performs grading

Essential Skills Document Use, Thinking, Numeracy

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-8.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-8.03.02P	strip and stockpile topsoil	topsoil is stripped and stockpiled according to drawings, specifications, jurisdictional regulations and CLS
C-8.03.03P	cut and fill material to establish rough grade	material is cut and filled to establish rough grade according to drawings, specifications and industry standards
C-8.03.04P	prepare site for positive drainage	site is prepared for positive drainage according to drawings, specifications, jurisdictional regulations and CLS
C-8.03.05P	verify that site is prepared	site preparation meets drawings and specifications

RANGE OF VARIABLES

tools and equipment include: shovels, rakes, excavators, loaders, skid-steers, tractors, attachments

KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-8.03.01L	demonstrate knowledge of the procedures used to perform grading	define terminology associated with grading
		identify hazards and describe safe work practices pertaining to grading
		describe the implications of grading on the practice of environmental stewardship
		interpret codes and regulations pertaining to grading
		interpret documentation pertaining to drainage plans
		identify specific ***tools and equipment*** relating to grading and describe their applications and procedures for use

	identify types of ***grading plans***
	describe the procedures used to perform ***site grading***

RANGE OF VARIABLES

tools and equipment include: shovels, rakes, excavators, loaders, skid-steers, tractors, attachments
grading plans include: existing grades, proposed grades (finished), contour plans
site grading includes: rough grading, grading for drainage, finish grading

C-8.04 Installs drainage systems

Essential Skills Document Use, Thinking, Numeracy

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-8.04.01P	identify ***drainage system*** requirements	***drainage system*** requirements are identified according to drawings, specifications and jurisdictional regulations
C-8.04.02P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-8.04.03P	calculate elevation and slope	elevation and slope are calculated to verify drainage according to drawings and specifications
C-8.04.04P	excavate subsoil to grade and depth	subsoil is excavated according to specifications and CLS
C-8.04.05P	store or remove excavated materials	excavated materials are stored or removed according to industry practices and jurisdictional regulations
C-8.04.06P	lay out, assemble and place ***drainage components***	***drainage components*** are laid out, assembled and placed according to drawings and specifications
C-8.04.07P	backfill ***drainage system*** to finished grade	***drainage system*** is backfilled to finished grade according to specifications
C-8.04.08P	verify installation	installation meets drawings and specifications

RANGE OF VARIABLES

drainage systems include: sub-surface drain, surface drainage

tools and equipment include: shovels, picks, wheelbarrows, excavators, trenchers, loaders, skid-steers, builder's levels, transits

drainage components include: drainage pipes, aggregates, drains, catch basins

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-8.04.01L	demonstrate knowledge of the procedures used to perform grading and installation of ***drainage systems***	identify types of ***drainage systems***
		interpret ***documentation*** pertaining to site protection, grading and drainage
		interpret codes and regulations pertaining to site protection, grading and drainage
		identify hazards and describe safe work practices pertaining to site layout, grading and drainage
		describe the implications of site protection, grading and drainage on the practice of environmental stewardship
		identify types of ***grading***
		identify calculations required to determine slope
		describe the procedures used to perform site grading
		describe the procedures used to install ***drainage systems***

RANGE OF VARIABLES

drainage systems include: sub-surface drain, surface drainage

documentation includes: grading plans (existing grades, proposed grades, rough grades, finished grades), drainage plans, specifications

grading includes: rough grading, grading for drainage, finish grading

TASK C-9 Installs hardscape

TASK DESCRIPTOR

Landscape horticulturists install hardscape features such as fences, decks, pergolas, gazebos, walkways, patios, driveways, retaining walls, and water features. Enhancements such as lighting and irrigation are also key hardscape features. These features all comply with drawings, specifications, regulations and codes to ensure the integrity of the installation.

C-9.01 Installs landscape structures

Essential Skills Numeracy, Document Use, Working with Others

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-9.01.01P	select and use ***hand and power tools***	***hand and power tools*** are selected and used according to task requirements and manufacturers' specifications
C-9.01.02P	select and use ***equipment***	***equipment*** is selected and used according to task requirements and manufacturers' specifications
C-9.01.03P	lay out and mark construction area	construction area is laid out and marked according to drawings, specifications and permits
C-9.01.04P	excavate construction area	construction area is excavated according to drawings and specifications
C-9.01.05P	prepare foundation	foundation is prepared according to drawings and specifications, building code and manufacturers' specifications
C-9.01.06P	construct ***landscape structures***	***landscape structures*** are constructed according to drawings, specifications, manufacturers' specifications, building codes and jurisdictional regulations
C-9.01.07P	verify installation	installation meets drawings and specifications
C-9.01.08P	clean structures	structures are cleaned according to industry standards

C-9.01.09P	repair construction access	access area is restored to original state
C-9.01.10P	dispose of, or recycle, excess materials	excess materials are disposed of, or recycled, according to jurisdictional regulations
C-9.01.11P	apply preservatives, stains and sealants	preservatives, stains and sealants are applied to provide ease of cleaning, longevity and aesthetics according to product specifications and jurisdictional regulations

RANGE OF VARIABLES

hand and power tools include: hammers, mitre saws, power drills
equipment includes: excavators, loaders, skid-steers, attachments
landscape structures include: decks, pergolas, outdoor kitchens, gazebos, fences

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-9.01.01L	demonstrate knowledge of ***landscape structures*** and their application	define terminology associated with various ***landscape structures***
		identify hazards and describe safe work practices pertaining to installing ***landscape structures***
		interpret codes and regulations pertaining to various ***landscape structures***
C-9.01.02L	demonstrate knowledge of the procedures, products and materials used to construct ***landscape structures***	identify products and materials used in ***landscape structure*** construction and describe their applications and procedures for use
		describe the preparation procedures used to install ***landscape structures***
		describe the procedures used to estimate quantities of materials required to construct ***landscape structures***
C-9.01.03L	demonstrate knowledge of the procedures used to perform site layout	interpret documentation pertaining to site layout
		identify the ***methods and procedures*** used to perform site layout
C-9.01.04L	demonstrate knowledge of the procedures used to install poured concrete foundation	describe the preparation and installation procedures used to install poured concrete foundation

RANGE OF VARIABLES

landscape structures include: decks, pergolas, outdoor kitchens, gazebos, fences
methods and procedures include: grade levels and stake interpretation, grid system, triangulation

C-9.02 Installs surface materials

Essential Skills Document Use, Working with Others, Numeracy

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-9.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements, manufacturers' specifications and CLS
C-9.02.02P	lay out and mark construction area	construction area is laid out and marked according to drawings and specifications
C-9.02.03P	excavate area and compact sub-grade	area is excavated and sub-grade is compacted according to specifications and CLS
C-9.02.04P	store or remove excavated materials	excavated materials are stored or removed according to industry practices and jurisdictional regulations
C-9.02.05P	place geotextiles	geotextiles are placed for base stability according to drawings and specifications
C-9.02.06P	add aggregate base and compact in lifts	aggregate base is added and lifts are compacted according to drawings and specifications and jurisdictional regulations
C-9.02.07P	create or maintain adequate grade	adequate grade is created or maintained to ensure positive drainage according to drawings and specifications
C-9.02.08P	secure edge restraints for finished material	edge restraints for finished material are secured according to industry standards, drawings and specifications
C-9.02.09P	select ***surface materials***	***surface materials*** are selected according to intended use, drawings and specifications
C-9.02.10P	place ***bedding materials***	***bedding materials*** are placed according to drawings and specifications and industry standards
C-9.02.11P	screed ***bedding materials***	***bedding materials*** are screeded according to industry standards
C-9.02.12P	install ***surface materials***	***surface materials*** are installed according to industry standards and manufacturers' specifications
C-9.02.13P	measure, cut and fit ***surface materials***	***surface materials*** are measured, cut and fit according to drawings, specifications and task requirements

C-9.02.14P	clean surfaces	surfaces are cleaned according to industry standards
C-9.02.15P	apply ***joint materials***	***joint materials*** are applied according to product specifications
C-9.02.16P	compact surfaces	surfaces are compacted according to manufacturers' specifications and industry standards
C-9.02.17P	clean and seal ***surface materials***	***surface materials*** are cleaned and sealed according to manufacturers' specifications
C-9.02.18P	verify installation	installation meets specifications
C-9.02.19P	clean and repair construction access	construction access is cleaned and repaired according to task requirements
C-9.02.20P	dispose of, or recycle, excess materials	excess materials are disposed of, or recycled, according to jurisdictional regulations

RANGE OF VARIABLES

tools and equipment include: shovels, picks, chisels, wheelbarrows, brooms, power blowers, excavators, plate compactors, concrete saws

surface materials include: natural stones, concrete, paving stones (segmental pavement), aggregate, permeable pavement, synthetic materials (artificial turf)

bedding materials include: sand, aggregates, high performance bedding materials, concrete bases

joint materials include: mortars, sand, polymeric sand

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-9.02.01L	demonstrate knowledge of the procedures used to install ***surface materials***	define terminology associated with hardscape installation and maintenance
		identify types of ***surface materials***, their applications and use
		identify ***bedding materials*** and base used with various ***surface materials***
		identify hazards and describe safe work practices pertaining to hardscape installation
		interpret codes, regulations and manufacturers' specifications pertaining to hardscape installation
		interpret ***documentation*** pertaining to hardscape installation
		identify specific ***tools and equipment*** relating to hardscape installation and describe their applications and procedures for use
		describe the procedures used to prepare for installation of ***surface materials***

	describe the procedures used to install ***surface materials***
	describe the procedures used to estimate quantities of materials required to install ***surface materials***

RANGE OF VARIABLES

surface materials include: natural stones, concrete, paving stones (segmental pavement), aggregate, permeable pavement, synthetic materials (artificial turf)

bedding materials include: sand, aggregates, high performance bedding materials, concrete bases

documentation includes: drawings, contract specifications, shipping documents, manufacturers' specifications

tools and equipment include: shovels, picks, chisels, wheelbarrows, brooms, power blowers, excavators, plate compactors, concrete saws

C-9.03 Installs steps and retaining walls

Essential Skills Document Use, Working with Others, Numeracy

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-9.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-9.03.02P	lay out and mark construction area	construction area is laid out and marked according to drawings and specifications
C-9.03.03P	excavate area and compact sub-grade	area is excavated and sub-grade is compacted according to specifications and CLS
C-9.03.04P	store or remove excavated materials	excavated materials are stored or removed according to industry practices and jurisdictional regulations
C-9.03.05P	place geotextile materials	geotextiles are placed for base stability according to drawings and specifications
C-9.03.06P	install aggregate base and compact in lifts	aggregate base is installed and lifts are compacted according to industry standards and manufacturers' specifications
C-9.03.07P	install concrete foundation for mortared natural stone wall	concrete foundation for mortared natural stone wall is installed according to drawings and specifications

C-9.03.08P	place ***bedding materials***	***bedding materials*** are placed according to drawings, specifications and industry standards
C-9.03.09P	screed ***bedding materials***	***bedding materials*** are screeded according to industry standards
C-9.03.10P	build walls and steps	walls and steps are built following ***procedures*** and using ***materials*** according to drawings, specifications, jurisdictional regulations, manufacturers' specifications and industry standards
C-9.03.11P	place drainage systems and backfill	drainage systems are placed and backfilled according to drawings, specifications and manufacturers' specifications
C-9.03.12P	install adhesives or mortars	adhesives or mortars are installed to secure capstones and treads according to manufacturers' specifications
C-9.03.13P	clean surfaces	surfaces are cleaned according to industry standards
C-9.03.14P	seal steps and retaining walls	steps and retaining walls are sealed according to product specifications
C-9.03.15P	verify installation	installation meets specifications
C-9.03.16P	clean and repair construction access	construction access is cleaned and repaired according to task requirements
C-9.03.17P	dispose of, or recycle, excess materials	excess materials are disposed of, or recycled, according to jurisdictional regulations

RANGE OF VARIABLES

tools and equipment include: shovels, picks, stone chisels, wheelbarrows, brooms, power washers, excavators, plate compactors, concrete saws, concrete mixers

bedding materials include: sand, limestone screening, concrete footing

procedures include: stacking and assembling courses, installing geogrid, staggering seams and batter

materials include: timber, natural stone, manufactured stones

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-9.03.01L	demonstrate knowledge of the procedures used to install wall units and steps	define terminology associated with hardscape installation
		identify hazards and describe safe work practices pertaining to hardscape installation
		interpret codes, regulations and manufacturers' specifications pertaining to hardscape installation

	identify types of ***materials*** used in wall and step construction and describe their characteristics and applications
	describe the procedures used to prepare for installation of walls and steps
	describe the procedures used to install walls and steps
	describe the procedures used to estimate quantities of materials required to install wall units and steps

RANGE OF VARIABLES

materials include: timber, natural stone, manufactured stones

C-9.04 Installs irrigation systems

Essential Skills Document Use, Numeracy, Digital Technology

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-9.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-9.04.02P	mark proposed irrigation plan	proposed irrigation plan is marked according to drawings and specifications
C-9.04.03P	excavate or trench area and install pipe	area is excavated or trenched to grade and depth, and pipe is installed according to drawings and specifications, and CLS
C-9.04.04P	store or remove excavated materials	excavated materials are stored or removed according to industry standards and jurisdictional regulations
C-9.04.05P	lay out and assemble irrigation components	irrigation components are laid out and assembled according to manufacturers' specifications, irrigation plan and jurisdictional regulations
C-9.04.06P	backfill trenches with materials to finished grade	trenches are backfilled with materials to finished grade according to drawings and specifications
C-9.04.07P	set head heights and nozzles of irrigation system	head heights and nozzles of irrigation system are set to ensure coverage

C-9.04.08P	install and program control system	control system is installed and programmed according to landscape and ***environmental requirements***
C-9.04.09P	verify installation and operation	installation meets specifications and site conditions
C-9.04.10P	clean and restore area	area is restored and cleaned to original state
C-9.04.11P	dispose of, or recycle, excess materials	excess materials are disposed of, or recycled, according to jurisdictional regulations

RANGE OF VARIABLES

tools and equipment include: pipe cutters, crimping tools, trenching shovels, pipe puller, wheelbarrows, excavators, trenchers, loaders, skid steers, attachments
environmental requirements include: soil type, evapo-transpiration rates, plant needs

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-9.04.01L	demonstrate knowledge of irrigation equipment and systems, their applications and operation	define terminology associated with irrigation
		identify hazards and describe safe work practices pertaining to irrigation
		describe the implications of irrigation on the practice of environmental stewardship
		identify ***tools and equipment*** related to irrigation and describe their applications and procedures for use
		identify the ***factors*** that determine irrigation rates and methods
		identify water sources for irrigation and describe the ***considerations and procedures for determining water quality and availability***
		identify the types of ***irrigation systems***
		identify ***system components*** and describe their applications and procedures for use
C-9.04.02L	demonstrate knowledge of the procedures used to install irrigation equipment and systems	describe the procedures used to install irrigation equipment and systems

RANGE OF VARIABLES

tools and equipment include: pipe cutters, crimping tools, trenching shovels, pipe puller, wheelbarrows, excavators, trenchers, loaders, skid steers, attachments

factors include: plant material (growth stage, mature size, water use rate), root zone assessment, soil/water relationship, site conditions, application (time, rate, duration), climate

considerations and procedures for determining water quality and availability include: sample preparation, water testing, water pressure, flow rate, results interpretation

irrigation systems include: drip/low water volume, sprinkler

system components include: screens, heads, pipes, wires, filters, valves

C-9.05 Installs water features

Essential Skills Working with Others, Thinking, Numeracy

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-9.05.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-9.05.02P	lay out and mark construction area	construction area is laid out and marked according to drawings and specifications
C-9.05.03P	excavate and store or remove excavated materials	materials are excavated and stored or removed according to site requirements, industry standards and jurisdictional regulations
C-9.05.04P	place sand and geotextile materials	sand and geotextile materials are placed according to design and manufacturers' specifications
C-9.05.05P	install liners and aggregates	liners and aggregates are installed according to design
C-9.05.06P	complete assembly of ***water supply components*** and filtration systems	***water supply components*** and filtration systems are assembled according to manufacturers' specifications
C-9.05.07P	apply adhesives, foams and mortar	adhesives, foams and mortar are applied to secure and seal assembly according to manufacturers' specifications
C-9.05.08P	add water, operate water systems and check for leaks	water is added, water systems are operated and checked for leaks
C-9.05.09P	repair leaks	leaks are repaired according to requirements
C-9.05.10P	add ***aggregates and decorative features***	***aggregates and decorative features*** are added according to design

C-9.05.11P	verify and adjust water flow	water flow is verified and adjusted to optimize performance, sound and aesthetics
C-9.05.12P	drain water and clean all components	components are drained of water and cleaned according to industry standards
C-9.05.13P	refill water features and add ***ecosystem enhancement products***	water features are refilled and ***ecosystem enhancement products*** are added according to manufacturers' specifications
C-9.05.14P	place aquatic plants and fish	aquatic plants and fish are placed according to design
C-9.05.15P	verify installation	installation meets specifications
C-9.05.16P	clean and repair construction access	construction access is cleaned and repaired according to task requirements
C-9.05.17P	dispose of, or recycle, excess materials	excess materials are disposed of, or recycled, according to jurisdictional regulations

RANGE OF VARIABLES

tools and equipment include: shovels, picks, chisels, wheelbarrows, excavators, loaders, skid-steers
water supply components include: pumps, drains, valves, filtration systems, electrical conduits
aggregates and decorative features include: rocks, garden art, foot bridges
ecosystem enhancement products include: beneficial bacteria, pH amendments

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-9.05.01L	demonstrate knowledge of the design, installation of landscape water features	define terminology associated with water features
		identify types of water features and describe their characteristics and applications
		identify hazards and describe safe work practices pertaining to water features
		describe the implications of water features on the practice of environmental stewardship
		interpret codes and regulations pertaining to water features
		interpret ***documentation*** pertaining to water features
		describe the procedures used to prepare site for installation of landscape water features
		describe the procedures used to install landscape water features

RANGE OF VARIABLES

documentation includes: flow rates, pipe and pump sizing charts

C-9.06 Installs low voltage landscape lighting

Essential Skills Document Use, Working with Others, Numeracy

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-9.06.01P	select and use ***tools***	***tools*** are selected and used according to task requirements and manufacturers' specifications
C-9.06.02P	perform voltage drop calculation	voltage drop calculation is performed to confirm operation and desired effects
C-9.06.03P	dig or tunnel trenches to depth	trenches are dug or tunnelled to depth according to specifications
C-9.06.04P	store or remove excavated materials	excavated materials are stored or removed according to industry practices
C-9.06.05P	lay out and assemble ***lighting components***	***lighting components*** are laid out and assembled according to manufacturers' specifications, lighting plan and industry standards
C-9.06.06P	test operation of the lighting system and check voltage	lighting system is tested for operation and voltage is checked
C-9.06.07P	position and secure lighting components into final location	lighting components are positioned and secured into final location according to lighting plan
C-9.06.08P	program lighting controller	lighting controller is programmed to site and customer requirements
C-9.06.09P	adjust fixtures	fixtures are adjusted for desired effects
C-9.06.10P	clean and repair construction access	construction access is cleaned and repaired according to industry practices
C-9.06.11P	backfill trenches with material to finished grade	trenches are backfilled with material to finished grade according to drawings and specifications
C-9.06.12P	dispose of, or recycle, excess materials	excess materials are disposed of, or recycled, according to jurisdictional regulations

RANGE OF VARIABLES

tools include: wire strippers, voltmeters, ladders, trenching shovels

lighting components include: connectors, conduits, transformers, wires, fixtures, bulbs, solar components

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-9.06.01L	demonstrate knowledge of the design and installation of low voltage landscape lighting	define terminology associated with low voltage landscape lighting
		identify types of low voltage landscape lighting and describe their characteristics and applications
		identify components of low voltage landscape lighting
		identify hazards and describe safe work practices pertaining to low voltage landscape lighting
		interpret codes and regulations pertaining to low voltage landscape lighting
		interpret documentation pertaining to low voltage landscape lighting
		describe voltage drop calculation, its application and procedure for use
		describe the procedures used to prepare site for installation of low voltage landscape lighting
		describe the ***tools*** and procedures used to install low voltage landscape lighting
		describe the procedures used to estimate quantities of materials required to install low voltage landscape lighting

RANGE OF VARIABLES

tools include: wire strippers, voltmeters, ladders, trenching shovels

TASK C-10 Installs softscape

TASK DESCRIPTOR

Landscape horticulturists install softscape features such as growing media, exterior and interior plants as well as seed or sod. All features comply with plans, specifications, regulations and codes to ensure the integrity of the installation.

C-10.01 Installs growing media

Essential Skills	Working with Others, Thinking, Document Use

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-10.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-10.01.02P	verify functioning of drainage systems	drainage systems are verified to be effective and functioning
C-10.01.03P	scarify subsoil	subsoil is scarified with mechanical and manual ***tools and equipment*** according to industry practices
C-10.01.04P	move growing media	growing media is moved to desired location according to drawings and specifications
C-10.01.05P	add growing media in lifts and compact	growing media is added in lifts and compacted according to specifications and CLS
C-10.01.06P	add and incorporate ***amendments***	***amendments*** are added and incorporated according to industry practices and results of soil tests
C-10.01.07P	shape and grade growing media	growing media is shaped and graded to finished grade by mechanical and manual raking according to drawings and specifications
C-10.01.08P	verify growing media depth	growing media depth meets drawings and specifications according to CLS
C-10.01.09P	select growing media	growing media is selected according to project requirements, specifications, landscape requirements, and jurisdictional regulations

RANGE OF VARIABLES

tools and equipment include: shovels, picks, rakes, wheelbarrows, skid-steers, loaders, excavators, rollers

amendments include: fertilizers, composts, peat moss, mycorrhizae

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-10.01.01L	demonstrate knowledge of the procedures used to install growing media	identify specific ***tools and equipment*** relating to growing media installation and describe their applications and procedures for use
		describe the procedures used for installing growing media
		identify ***amendments*** used in the installation of growing media
		describe the procedures used to estimate quantities of materials required to install growing media

RANGE OF VARIABLES

tools and equipment include: shovels, picks, rakes, wheelbarrows, skid-steers, loaders, excavators, rollers

amendments include: fertilizers, composts, peat moss, mycorrhizae

C-10.02 Installs exterior landscape plants

Essential Skills Working with Others, Thinking, Document Use

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-10.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-10.02.02P	prepare ***plant material***	***plant material*** is prepared by performing ***activities***
C-10.02.03P	monitor and maintain plant health	plant health is monitored and maintained throughout installation process according to industry practices
C-10.02.04P	lay out ***plant material***	***plant material*** is laid out according to drawings and specifications

C-10.02.05P	plant, stake and guy ***plant material***	***plant material*** is planted, staked and guyed according to drawings and specifications, and CLS
C-10.02.06P	prune ***plant material***	***plant material*** is pruned according to industry practices
C-10.02.07P	verify moisture content of growing media	moisture content of growing media is verified
C-10.02.08P	verify ***plant material*** installation	***plant material*** installation meets specifications
C-10.02.09P	dispose of, or recycle, excess materials	excess materials are disposed of, or recycled, according to jurisdictional regulations
C-10.02.10P	select ***plant material***	***plant material*** is selected according to project requirements, specifications, landscape requirements, and jurisdictional regulations

RANGE OF VARIABLES

tools and equipment include: tree dollies, shovels, rakes, excavators, loaders, attachments

plant material includes: perennials, shrubs, trees

activities include: removing containers, scarifying root ball, managing nutrient balance, irrigating plant material

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-10.02.01L	demonstrate knowledge of the procedures used to install exterior landscape ***plant material***	identify the ***considerations*** for determining suitability of planting site for ***plant material***
		describe the installation procedures for a variety of root preparations and ***stock types***
		describe the ***procedures used to prepare planting site*** for tree installation
		describe the ***procedures used to install trees***
		describe the ***procedures used for post-planting care of trees***
		describe the ***procedures used to prepare planting beds*** for herbaceous and woody plant material installation
		describe the ***procedures used to install herbaceous and woody plant material***
		describe the procedures used to estimate quantities of ***plant material*** required
C-10.02.02L	demonstrate knowledge of pruning exterior ***plant material***, the application and procedures for use	describe the application and procedures used to prune exterior ***plant material***

C-10.02.03L	demonstrate knowledge of fertilizers, their application, and procedures for use	identify types of fertilizers and describe their characteristics and applications
		describe the procedures and equipment used for the application of fertilizers
C-10.02.04L	demonstrate knowledge of irrigation equipment and systems, their applications and operation to achieve adequate irrigation	identify the ***factors*** that determine irrigation rates and methods

RANGE OF VARIABLES

plant material includes: perennials, shrubs, trees

considerations include: sun and wind exposure, water availability, quality of growing medium, site accessibility, proximity to buildings and utility services, air quality and pollutants

stock types include: bare root, ball-and-burlap (B&B), wire basket, containerized, caliper stock

procedures used to prepare planting site include: excavation, determining planting pit dimensions, amending soil, site drainage

procedures used to install trees include: placement, loosening of root containment, root placement, backfilling, mulching, machine-planting, stabilizing, fertilizing, protecting tree

procedures used for post-planting care of trees include: irrigation, pruning, fertilizing, protecting, stabilizing, mulching

procedures used to prepare planting beds include: bed cultivation, incorporating soil amendment, removal of weeds/debris, bed edging, grading, drainage

procedures used to install herbaceous and woody plant material includes: bed layout, plant placement, loosening of root containment, root placement, backfilling, irrigation, fertilizing, mulching

factors include: plant material (growth stage, mature size, water use rate), root zone assessment, soil/water relationship, site conditions, application (time, rate, duration), climate

C-10.03 Transplants plants

Essential Skills	Working with Others, Thinking, Oral Communication

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-10.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-10.03.02P	verify plant is viable for transplant	viability of plant for transplant is verified according to ***factors***
C-10.03.03P	dig ***plant material***	***plant material*** is dug according to CLS and industry practices
C-10.03.04P	install ***plant material***	***plant material*** is installed according to drawings, specifications and CLS

C-10.03.05P	prune ***plant material***	***plant material*** is pruned according to industry practices
C-10.03.06P	apply fertilizer	fertilizer is applied according to industry practices
C-10.03.07P	verify moisture content of growing media	moisture content of growing media is verified to ensure establishment and plant health according to jurisdictional regulations and CLS
C-10.03.08P	irrigate ***plant material***	***plant material*** is irrigated according to plant requirements
C-10.03.09P	dispose of, or recycle, excess materials	excess materials are disposed of, or recycled, according to jurisdictional regulations
C-10.03.10P	prepare ***plant material*** for transplanting	***plant material*** is prepared for transplanting according to industry practices and CLS

RANGE OF VARIABLES

tools and equipment include: shovels, tree dollies, tree spades, axes
factors include: species, health, time of year
plant material includes: perennials, shrubs, trees

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-10.03.01L	demonstrate knowledge of transplanting plants	identify ***tools and equipment*** related to transplanting and describe their applications and procedures for use
		identify the ***factors*** for determining viability of plant for transplanting
		describe the application and procedures for transplanting plants
		describe irrigation rates and methods and fertilization requirements for transplanted plants
		describe the application and procedures used to prune transplanted plants

RANGE OF VARIABLES

tools and equipment include: shovels, tree dollies, tree spades, axes
factors include: species, health, time of year

C-10.04 Installs mulch

Essential Skills	Numeracy, Working with Others, Document Use

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-10.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-10.04.02P	verify that area to be mulched is prepared	area to be mulched is prepared according to drawings and specifications
C-10.04.03P	install landscape fabric for aggregate	landscape fabric is installed according to industry practices and CLS
C-10.04.04P	verify ***mulch materials***	***mulch materials*** meet specifications, CLS and jurisdictional regulations
C-10.04.05P	apply mulch	mulch is applied according to industry practices, CLS and jurisdictional regulations
C-10.04.06P	verify mulch installation	mulch installation meets specifications, CLS and jurisdictional regulations

RANGE OF VARIABLES

tools and equipment include: wheelbarrows, bow rakes, pitch forks, loaders, skid-steers, blower trucks
mulch materials include: shredded bark, aggregates, composts

KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-10.04.01L	demonstrate knowledge of ***mulch materials***, the application and procedures for use	identify types of ***mulch materials*** and their application
		describe the procedures used to apply ***mulch materials***
		describe the procedures used to estimate quantities of ***mulch materials*** required

RANGE OF VARIABLES

mulch materials include: shredded bark, aggregates, composts

C-10.05 Installs turf from seed

Essential Skills Numeracy, Working with Others, Document Use

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-10.05.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-10.05.02P	verify seedbed is prepared and add ***amendments***	seedbed is prepared and ***amendments*** are added according to specifications
C-10.05.03P	select seed variety and seeding rate	seed variety and seeding rate are selected to meet project requirements
C-10.05.04P	apply seed to prepared area	seed is applied according to specifications and weather conditions
C-10.05.05P	use landscape rollers	landscape rollers are used to ensure seed is in direct contact with growing media according to specifications and industry practices
C-10.05.06P	verify seed distribution	seed distribution is verified to result in uniform turf according to visual inspection, seed count and cross-directional seeding
C-10.05.07P	apply ***organic matter***	***organic matter*** is applied according to specifications to retain moisture and minimize seed movement
C-10.05.08P	irrigate and monitor turf regularly	turf is monitored and irrigation meets germination requirements according to jurisdictional regulations

RANGE OF VARIABLES

tools and equipment include: landscape rollers, landscape rakes, seed spreaders, hydro-seeders, seed drills, tractors and attachments

amendments include: fertilizers, composts, peat moss, coir, lime, sulphur, mycorrhizae

organic matter includes: hydro mulch, straw, compost

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-10.05.01L	demonstrate knowledge of turf establishment from seed and installation procedures	identify the ***considerations*** when selecting turf seed types
		identify calculations required for determining seed quantities
		describe the procedures used to establish turf from seed
		identify the methods used for post-establishment care of seeded turf

RANGE OF VARIABLES

considerations include: environmental conditions, site use, cultural requirements

C-10.06 Installs sod

Essential Skills Working with Others, Oral Communication, Numeracy

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-10.06.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-10.06.02P	verify that area to be sodded is prepared	area to be sodded is prepared according to drawings and specifications
C-10.06.03P	verify selected sod	selected sod meets specifications and CLS
C-10.06.04P	apply ***amendments***	***amendments*** are applied according to specifications and industry practices
C-10.06.05P	lay sod	sod is laid according to drawings and specifications and industry practices
C-10.06.06P	secure sod	sod is secured to slope according to drawings, specifications and industry practices
C-10.06.07P	use landscape rollers	landscape rollers are used to ensure roots are in direct contact with growing media according to industry practices

C-10.06.08P	irrigate and monitor sod regularly	sod is irrigated and monitored according to requirements and jurisdictional regulations
C-10.06.09P	verify sod installation	sod installation meets drawings and specifications
C-10.06.10P	dispose of, or recycle, excess materials	excess materials are disposed of, or recycled, according to jurisdictional regulations

RANGE OF VARIABLES

tools and equipment include: landscape rakes, sod knives, tractors and attachments, landscape rollers
amendments include: fertilizers, composts, peat moss, lime, sulphur, coir, mycorrhizae

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-10.06.01L	demonstrate knowledge of turf establishment from sod methods and the installation procedures	identify the ***considerations*** when selecting sod types
		identify calculations required for determining sod quantities
		describe the procedures used to install sod
		describe the procedures used to establish turf by sodding
		identify the methods used for post-establishment care of sod

RANGE OF VARIABLES

considerations include: environmental conditions, site use, cultural requirements

C-10.07 Installs interior landscape plants

Essential Skills	Document Use, Working with Others, Oral Communication

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-10.07.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-10.07.02P	prepare plant material	plant material is prepared by performing ***activities*** according to industry practices
C-10.07.03P	monitor and maintain plant health	plant health is monitored and maintained throughout installation process according to industry practices
C-10.07.04P	protect interior furnishings and surfaces	interior furnishings and surfaces are protected according to industry practices and contract documents
C-10.07.05P	lay out plant material	plant material is laid out according to drawings and specifications
C-10.07.06P	plant interior landscape plants	interior landscape plants are planted according to drawings and specifications
C-10.07.07P	prune plant material	plant material is pruned according to plant and site requirements
C-10.07.08P	irrigate plant material	plant material is irrigated according to plant requirements
C-10.07.09P	verify moisture content of growing media	moisture content of growing media meets specifications
C-10.07.10P	verify plant installation	plant installation meets specifications

RANGE OF VARIABLES

tools and equipment include: tree dollies, shovels, rakes, skid-steers, tree gantries
activities include: foliar washing, scarifying root ball, managing nutrient balance

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-10.07.01L	demonstrate knowledge of the procedures used to install interior landscape plants	identify ***tools and equipment*** relating to plant material installation
		identify the ***considerations*** for determining suitability of planting site for plant material

		describe the installation procedures for a variety of root preparations and ***stock types***
		describe the ***procedures used to prepare planting beds*** for herbaceous and woody plant material installation
		describe the ***procedures used to install herbaceous and woody plant material***
C-10.07.02L	demonstrate knowledge of pruning interior landscape plants	describe the application and procedures used to prune interior landscape plants
C-10.07.03L	demonstrate knowledge of fertilizers, their application and procedures for use	identify types of fertilizers and describe their characteristics and applications
		describe the procedures and equipment used for the application of fertilizers
C-10.07.04L	demonstrate knowledge of irrigation equipment and systems, their applications and operation	identify the ***factors*** that determine irrigation rates and methods

RANGE OF VARIABLES

tools and equipment include: tree dollies, shovels, rakes, skid-steers, tree gantries

considerations include: sun and light exposure, water availability, quality of growing medium, site accessibility, air quality and pollutants

procedures used to prepare planting beds include: bed cultivation, amending soil, removal of weeds/debris, bed edging, grading and drainage

procedures used to install herbaceous and woody plant material include: transporting plants, bed layout, plant placement, loosening of root containment, root placement, backfilling, irrigation, fertilizing, mulching

factors include: plant material (growth stage, mature size, water use rate), root zone assessment, soil/water relationship, site conditions, application (time, rate, duration), climate

TASK C-11 Installs green infrastructure systems

TASK DESCRIPTOR

Landscape horticulturists install green infrastructure features. These features comply with drawings, specifications, regulations and codes to ensure the integrity of the systems.

C-11.01 Selects green infrastructure

Essential Skills Continuous Learning, Working with Others, Thinking

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-11.01.01P	determine green infrastructure needs by inspecting ***site-specific environmental conditions***	green infrastructure needs are identified
C-11.01.02P	consider ***factors affecting the selection of green infrastructure***	***factors affecting the selection of green infrastructure*** are considered
C-11.01.03P	identify benefits and applications of green infrastructure technologies	benefits and applications of green infrastructure technologies mimic nature for selection according to site requirements
C-11.01.04P	select green infrastructure technologies, methods and products	green infrastructure technologies, methods and products are selected taking into consideration the client's needs, site conditions, product availability and jurisdictional regulations

RANGE OF VARIABLES

site-specific environmental conditions include: topography, water flow, drainage patterns, humidity, air flow, existing vegetation, growing media, precipitation rates, existing waterways

factors affecting the selection of green infrastructure include: budget, community plan, jurisdictional regulations, equipment access

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-11.01.01L	demonstrate knowledge of green infrastructure principles	describe types of ***green infrastructure***
		describe types of blue and grey infrastructures

		identify purpose and ***benefits of green infrastructures***
		identify ***benefits of plants***
		identify xeriscape principles
		identify value of environmental, economic and social impact of urban forests
		define natural ecosystems' functions, purpose and structure
		define ecosystem service benefits
C-11.01.02L	demonstrate knowledge of green infrastructure practices	identify jurisdictional regulations related to green infrastructure
		describe green field and brown field reclamation
		describe smart water technology
		define site sustainability
		explain landscape design, development process and aesthetics
		identify ***surface and subsurface drainage systems and practices***
		describe filtration systems
		explain low impact development

RANGE OF VARIABLES

green infrastructure includes: living walls, green roofs, rain gardens, rainwater management, stormwater management, green parking, permeable pavement, bioswales, urban forests

benefits of green infrastructures include: biodiversity, water conservation, rain/stormwater management, climate change mitigation, air purification, reduced heat island effect, protecting natural resources

benefits of plants include: carbon sequestration, symbiotic relationships, pollution mitigation, cost savings

surface and subsurface drainage systems and practices include: roof-top gardens, catch basins, bioswales, bioretention ponds

C-11.02 Installs green roofs and walls

Essential Skills Document Use, Thinking, Working with Others

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-11.02.01P	select ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-11.02.02P	prepare work area	work area is prepared in accordance with contract documents, industry standards, manufacturers' specifications and jurisdictional regulations
C-11.02.03P	install roofing and wall ***non-organic components***	roofing and wall ***non-organic components*** are installed according to manufacturers' specifications, industry standards and contract documents
C-11.02.04P	install growing media	growing media is installed according to manufacturers' specifications, industry standards and contract documents
C-11.02.05P	install plant material	plant material is installed according to manufacturers' specifications, industry standards, contract documents and CLS
C-11.02.06P	comply with safe working procedures	safe working conditions are applied in accordance with jurisdictional regulations and company policies

RANGE OF VARIABLES

tools and equipment include: lifts, booms, cranes, fall protection equipment
non-organic components include: membranes, root barriers, drainage, irrigation, pumps

KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-11.02.01L	demonstrate knowledge of process and procedures of the installation of green roofs and walls	describe the process and procedures when installing green roofs and walls
		identify the ***non-organic components*** of green roofs and walls
		describe the characteristics of growing media used in green roofs and walls
		describe the characteristics of plant material used in green roofs and walls

C-11.02.02L	demonstrate knowledge of types and functions of plants used on green roofs and walls	identify plants used on green roofs and walls and describe their functions
C-11.02.03L	demonstrate knowledge of growing media and walls used on green roofs	describe characteristics of growing media used on green roofs and walls
C-11.02.04L	demonstrate knowledge of ***components*** of green roofs and walls	describe the ***components*** of green roofs and walls
C-11.02.05L	demonstrate knowledge of site safety	describe fall protection procedures with regulations

RANGE OF VARIABLES

non-organic components include: membranes, root barriers, drainage, irrigation, pumps
components include: vegetation, growing media, water retention mats, membrane, drainage, structural support, irrigation systems

C-11.03 Installs rainwater and stormwater management systems

Essential Skills Thinking, Document Use, Continuous Learning

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

SKILLS

	Performance Criteria	Evidence of Attainment
C-11.03.01P	select tools and equipment	tools and equipment are selected and used according to task requirements and manufacturers' specifications
C-11.03.02P	prepare work area	work area is prepared in accordance with contract documents, industry standards and manufacturers' specifications
C-11.03.03P	install ***rainwater and stormwater harvesting components***	***rainwater and stormwater harvesting components*** are installed according to manufacturers' specifications, industry standards and contract documents
C-11.03.04P	install ***stormwater management systems***	***stormwater management systems*** are installed according to contract documents and industry standards
C-11.03.05P	install ***rainwater and stormwater retention systems***	***rainwater and stormwater retention systems*** are installed according to contract documents and industry standards

C-11.03.06P	install growing media	growing media is installed according to manufacturers' specifications, industry standards and contract documents
C-11.03.07P	install plant material	plant material is installed according to industry standards and contract documents

RANGE OF VARIABLES

rainwater and stormwater harvesting components include: cisterns, pumps, hoses, valves, pipes, aggregates, rain barrels, tanks, irrigation systems

stormwater management systems include: bioswales, bioretention ponds, engineered wetlands, rain gardens, permeable pavement

rainwater and stormwater retention systems include: retention ponds, green roof, permeable pavement

KNOWLEDGE		
	Learning Outcomes	**Learning Objectives**
C-11.03.01L	demonstrate knowledge of rainwater harvesting systems	describe functions of rainwater harvesting systems
C-11.03.02L	demonstrate knowledge of ***rainwater and stormwater harvesting components*** and ***stormwater management systems***	identify the ***rainwater and stormwater harvesting components***
		describe ***stormwater management systems***
		identify codes and regulations pertaining to rainwater and ***stormwater management systems***
C-11.03.03L	demonstrate knowledge of retention systems	identify the components of retention systems
C-11.03.04L	demonstrate knowledge of the process and procedures for the installation of rainwater and ***stormwater management systems***	describe the process and procedures when installing rainwater and ***stormwater management systems***
C-11.03.05L	demonstrate knowledge of the benefits of rainwater and ***stormwater management systems***	describe the benefits of rainwater and ***stormwater management systems***

RANGE OF VARIABLES

rainwater and stormwater harvesting components include: cisterns, pumps, hoses, valves, pipes, aggregates, rain barrels, tanks, irrigation systems

stormwater management systems include: bioswales, bioretention ponds, engineered wetlands, rain gardens, permeable pavement

C-11.04 Installs erosion control material

Essential Skills	Document Use, Working with Others, Oral Communication

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-11.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications
C-11.04.02P	move specified ***erosion control material***	specified ***erosion control material*** is moved into desired location according to drawings, specifications and industry practices
C-11.04.03P	place ***erosion control material***	***erosion control material*** is placed according to drawings, specifications and industry practices
C-11.04.04P	secure placement of ***erosion control material***	***erosion control material*** is secured to ensure stability according to drawings, specifications and industry practices
C-11.04.05P	verify ***erosion control material*** installation	***erosion control material*** installation meets specifications
C-11.04.06P	dispose of, or recycle, excess materials	excess materials are disposed of, or recycled, according to jurisdictional regulations

RANGE OF VARIABLES

tools and equipment include: shovels, post pounders, knives, augers, trenchers, loaders
erosion control material includes: roll-type materials (tarps, mats, blankets), aggregates, plant material, silt fences, boulders, wattles

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-11.04.01L	demonstrate knowledge of ***erosion control material*** and procedures for installation	identify ***erosion control material*** and their application
		describe the methods of erosion control
		describe installation methods
		describe the procedures used to estimate quantities of ***erosion control material*** required

RANGE OF VARIABLES

erosion control material includes: roll-type materials (tarps, mats, blankets), aggregates, plant material, silt fences, boulders, wattles

C-11.05 Installs biodiverse plantings and natural areas

Essential Skills Document Use, Working with Others, Thinking

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-11.05.01P	select tools and equipment	tools and equipment are selected according to task requirements and manufacturers' specifications
C-11.05.02P	prepare planting area	planting area is prepared according to contract documents and industry standards
C-11.05.03P	lay out plant material	plant material is laid out according to contract documents
C-11.05.04P	install plant material	plant material is installed according to contract documents and CLS
C-11.05.05P	install organic mulch	organic mulch is installed according to contract documents and CLS

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-11.05.01L	demonstrate knowledge of biodiverse plantings and natural areas	describe the function of biodiverse plantings and natural areas
		describe the ***benefits*** of biodiverse plantings and natural areas
		identify regulations pertaining to biodiverse plantings and natural areas
C-11.05.02L	demonstrate knowledge of the quality standard of plant material used for biodiverse plantings and natural areas	identify characteristics of plant material used for biodiverse plantings and natural areas

RANGE OF VARIABLES

benefits include: animal habitat, refugia for organisms, biodiversity, psychosocial health, preservation of natural resources

MAJOR WORK ACTIVITY D

Performs landscape maintenance

TASK D-12 Maintains hardscape

TASK DESCRIPTOR

Landscape horticulturists are responsible for maintaining hardscapes and features for safety and preservation. Other tradespersons may be required to complete tasks in the maintenance of hardscape such as lighting, drainage and irrigation.

D-12.01 Maintains drainage systems

Essential Skills Numeracy, Document Use, Thinking

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
D-12.01.01P	check drains, catch basins and retention ponds	operation of drains, catch basins and retention ponds is checked
D-12.01.02P	inspect, clean and replace screens	screens are inspected, cleaned and replaced to avoid blockage
D-12.01.03P	remove debris from drainage system	debris is removed from drainage system to ensure optimal flow
D-12.01.04P	maintain grades	grades are maintained according to original design to allow for adequate flow
D-12.01.05P	flush drainage systems with water	drainage systems are flushed with water to ensure performance of drains, catch basins and retention ponds
D-12.01.06P	secure drain covers	drain covers are secured according to jurisdictional regulations and manufacturers' specifications
D-12.01.07P	winterize drainage system	drainage systems are winterized by performing ***winterization procedures***

RANGE OF VARIABLES

winterization procedures include: cleaning, flushing and installing heating cables

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-12.01.01L	demonstrate knowledge of the procedures used to protect features on the site	define terminology associated with site protection, ***grading*** and ***drainage systems***
		interpret ***documentation*** pertaining to site protection, ***grading*** and drainage
		describe how drainage system maintenance protects the site features
		describe ***winterization procedures*** for ***drainage systems***
D-12.01.02L	demonstrate knowledge of the procedures used to maintain ***grading*** and ***drainage systems***	identify types of ***grading*** and ***drainage systems***
		identify hazards and describe safe work practices pertaining to site layout, surveying, ***grading*** and drainage
		interpret codes, CLS and regulations pertaining to site protection, ***grading*** and drainage
		describe the procedures used to maintain site ***grading***
D-12.01.03L	demonstrate knowledge of the maintenance of erosion and sediment control materials	identify erosion and sediment control materials and describe their characteristics and applications
		describe the procedures used to maintain materials used to control erosion and sedimentation

RANGE OF VARIABLES

grading includes: rough grading, grading for drainage, finish grading
drainage systems include: sub-surface drainage, surface drainage
winterization procedures include: cleaning, flushing and installing heating cables

D-12.02 Maintains landscape structures

Essential Skills	Thinking, Document Use, Working with Others

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-12.02.01P	inspect structures for ***damage and defects***	***damage and defects*** in the structures are identified
D-12.02.02P	identify hazards of structures	hazards of structures are identified, flagged and reported to supervisor
D-12.02.03P	clean surface areas	surface areas are cleaned according to CLS and manufacturers' specifications

RANGE OF VARIABLES

damage and defects include: compromised hardware, rotting wood, heaving, settling

KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-12.02.01L	demonstrate knowledge of the procedures and products used to maintain landscape structures	identify hazards and describe safe work practices pertaining to hardscape maintenance
		describe the procedures and products used to maintain natural stone and modular precast concrete wall units
		describe the procedures and products used to maintain natural stone paver and modular precast concrete landscape pavers and slabs
		describe the procedures and products used to maintain poured concrete features
		describe the procedures and products used to maintain wood structures

D-12.03 Maintains surface materials

Essential Skills	Working with Others, Oral Communication, Thinking

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-12.03.01P	remove debris and undesirable growth	debris and undesirable growth is removed using tools, equipment and products
D-12.03.02P	top up jointing sand on interlock surfaces	jointing sand on interlock surfaces is topped up according to manufacturers' specifications
D-12.03.03P	apply preservatives, stains and sealants on hard surfaces	preservatives, stains and sealants are applied to hard surfaces to provide ease of cleaning, longevity and aesthetics according to manufacturers' specifications
D-12.03.04P	visually inspect structural integrity of hard surfaces	structural integrity of hard surfaces is inspected for ***damage***
D-12.03.05P	clean walkways, patios, artificial turf, driveways and parking lots to remove or remediate ***undesirable conditions***	walkways, patios, artificial turf, driveways and parking lots are cleaned according to Interlocking Concrete Pavement Institute (ICPI), jurisdictional regulations, manufacturers' specifications and CLS

RANGE OF VARIABLES

damage includes: cracks, frost heave, efflorescence, spalling, settling
undesirable conditions include: algae, efflorescence, weeds, debris

KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-12.03.01L	demonstrate knowledge of the procedures used to maintain natural stone pavers and modular precast concrete landscape pavers and slabs	identify types of natural stone pavers, and modular precast concrete landscape pavers and slabs used in hardscape maintenance and describe their characteristics and applications
		describe the procedures used to maintain natural stone pavers and modular precast concrete landscape pavers and slabs

D-12.03.02L	demonstrate knowledge of the procedures used to maintain poured concrete features	identify concrete products and materials used in hardscape maintenance and describe their characteristics and applications
		describe the procedures used to maintain poured concrete features
D-12.03.03L	demonstrate knowledge of the procedures used to maintain landscape wood features	identify products and materials used in wood feature maintenance and describe their applications and procedures for use
		describe the procedures used to maintain landscape wood features
D-12.03.04L	demonstrate knowledge of the procedures and products used to maintain artificial turf	describe the procedures and products used to maintain artificial turf

D-12.04 Maintains steps and retaining walls

Essential Skills Document Use, Thinking, Oral Communication

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-12.04.01P	inspect steps and walls	steps and walls are inspected to identify defects that require remediation
D-12.04.02P	identify hazards of structures	hazards of structures are identified, flagged and reported to supervisor
D-12.04.03P	clean steps and walls to remove or remediate ***undesirable conditions***	steps and walls are cleaned according to ICPI, jurisdictional regulations, manufacturers' specifications and CLS
D-12.04.04P	top up jointing sand on interlock surfaces	jointing sand on interlock surfaces is topped up according to manufacturers' specifications
D-12.04.05P	apply sealants or stains to prevent deterioration in structures	sealants or stains are applied to prevent deterioration in structures according to manufacturers' specifications

RANGE OF VARIABLES

undesirable conditions include: algae, efflorescence, weeds, debris

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-12.04.01L	demonstrate knowledge of the procedures and products used to maintain steps and retaining walls	identify types of natural stone and modular precast concrete landscape wall units and describe their characteristics and applications
		identify hazards and describe safe work practices pertaining to hardscape maintenance
		describe the procedures and products used to maintain natural stone and modular precast concrete wall units
		describe the procedures and products used to maintain natural stone pavers and modular precast concrete landscape pavers and slabs
		describe the procedures and products used to maintain poured concrete features
		describe the procedures and products used to maintain landscape wood features

D-12.05 Maintains irrigation systems

Essential Skills Document Use, Thinking, Digital Technology

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
D-12.05.01P	start up system	system start-up is performed by charging and running system through a test cycle
D-12.05.02P	determine functioning of system	functioning of system is determined by visual site inspection
D-12.05.03P	identify, troubleshoot and repair problems	problems with irrigation system are identified and repaired
D-12.05.04P	visually inspect and adjust ***system components***	***system components*** are adjusted according to manufacturers' specifications, industry standards and site requirements
D-12.05.05P	check functioning of zone valves	functioning of zone valves is checked according to manufacturers' specifications and industry standards

D-12.05.06P	adjust irrigation controllers	irrigation controllers are adjusted according to environmental and site conditions, and jurisdictional regulations
D-12.05.07P	clean and clear sensors	sensors are cleaned and cleared to ensure optimum operation according to manufacturers' specifications
D-12.05.08P	winterize system	system is winterized according to manufacturers' specifications and industry standards
D-12.05.09P	identify ***damage***	***damage*** is identified
D-12.05.10P	repair and replace faulty and broken ***system components***	faulty and broken ***system components*** are repaired and replaced according to manufacturers' specifications

RANGE OF VARIABLES

system components include: screens, heads, pipes, wires, filters, valves
damage includes: clogging, cracks, corroded wiring

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-12.05.01L	demonstrate knowledge of irrigation equipment and systems, their applications and operation	identify hazards and describe safe work practices pertaining to irrigation
		identify water sources for irrigation and describe the ***considerations and procedures for determining water quality and availability***
		identify the types of ***irrigation systems***
		identify ***system components*** and describe their applications and procedures for use
D-12.05.02L	demonstrate knowledge of the procedures used to maintain, troubleshoot and repair irrigation equipment and systems	identify the ***factors*** that determine irrigation rates and methods
		describe the ***procedures*** used to maintain, troubleshoot, repair and adjust irrigation equipment and systems

RANGE OF VARIABLES

considerations and procedures for determining water quality and availability include: sample preparation, water testing, water pressure, flow rate, results interpretation
irrigation systems include: drip/low water volume, sprinkler
system components include: screens, heads, pipes, wires, filters, valves
factors include: plant material (growth stage, mature size, water use rate), root zone assessment, soil/water relationship, site conditions, application (time, rate, duration), evapo-transpiration rates
procedures include: spring start-up, seasonal operation, fall shut-down

D-12.06 Maintains water features

Essential Skills Thinking, Document Use, Continuous Learning

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-12.06.01P	inspect water features	water features are inspected for ***defects***
D-12.06.02P	prime systems and test pumps	systems are primed to start up operation for the season and pumps are replaced if required
D-12.06.03P	set and reset timers	timers are set and reset according to manufacturers' specifications
D-12.06.04P	drain and refill features for seasonal maintenance	features are drained and refilled according to industry standards and jurisdictional regulations
D-12.06.05P	clean ***components***	***components*** are cleaned according to manufacturers' specifications
D-12.06.06P	run systems to ensure functioning	systems are run to confirm function according to manufacturers' specifications
D-12.06.07P	inspect water for ***conditions*** and mitigate	***conditions*** of water are identified by visual inspection and mitigated according to industry standards
D-12.06.08P	test water	water is ***tested*** for optimal function of the water feature
D-12.06.09P	test ground fault circuit interrupter (GFCI)	GFCI are tested according to Canadian Standards Association (CSA)
D-12.06.10P	clean water features and amend water	water features are cleaned and water is amended with aquatic products according to manufacturers' specifications and contract documents
D-12.06.11P	remove and protect plants and fish during winter or when cleaning the features	plants and fish are removed and protected during winter, or when cleaning the features, according to conditions and species requirements
D-12.06.12P	winterize water features	water features are winterized according to environmental conditions and type of feature

RANGE OF VARIABLES

defects include: cracks, leaks, plugged filters, faulty gaskets and seals
components include: filters, screens, nozzles, pumps, skimmers
conditions include: clarity, algae, debris, water levels
tested includes: pH levels, nitrogen, bacteria, oxygen

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-12.06.01L	demonstrate knowledge of the maintenance of water features	identify hazards and describe safe work practices pertaining to the maintenance of water features
		interpret codes and regulations pertaining to the maintenance of water features
		interpret documentation pertaining to the maintenance of water features
		identify types of water features and describe their characteristics and applications
D-12.06.02L	demonstrate knowledge of the procedures and products used to maintain water features	describe the procedures and products used to maintain water features

D-12.07 Maintains landscape lighting

Essential Skills Document Use, Thinking, Continuous Learning

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
D-12.07.01P	turn on systems	systems are turned on to detect defects
D-12.07.02P	visually check ***lighting components***, and repair and replace	***lighting components*** are visually checked, repaired and replaced according to manufacturers' specifications
D-12.07.03P	repair low voltage cable	low voltage cable is repaired according to manufacturers' specifications and industry standards
D-12.07.04P	check and adjust lighting coverage and positioning	lighting coverage and positioning is checked and adjusted according to original design goals

D-12.07.05P	clean and clear ***lighting components***	***lighting components*** are cleaned and cleared to ensure optimum operation according to manufacturers' specifications
D-12.07.06P	check light timing and adjust program	light timing is checked and program is adjusted according to seasonal and functional requirements
D-12.07.07P	adjust voltage levels	voltage levels are adjusted to meet original design goals

RANGE OF VARIABLES

lighting components include: lamps, fuses, sensors, fixtures, transformers, connectors

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-12.07.01L	demonstrate knowledge of the maintenance of low voltage landscape lighting	identify hazards and describe safe work practices pertaining to the maintenance of low voltage landscape lighting
		interpret codes and regulations pertaining to the maintenance of low voltage landscape lighting
		interpret documentation pertaining to the maintenance of low voltage landscape lighting
		identify types of low voltage landscape lighting and describe their characteristics and applications
		identify components of low voltage landscape lighting
D-12.07.02L	demonstrate knowledge of the procedures used to maintain low voltage landscape lighting	describe the procedures used to maintain low voltage landscape lighting

D-12.08 Practices snow and ice control

Essential Skills Thinking, Working with Others, Document Use

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-12.08.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to industry standards and manufacturers' specifications
D-12.08.02P	determine snow storage locations and removal requirements	snow storage locations and removal requirements are determined according to contract documents
D-12.08.03P	clear snow	snow is cleared according to contract documents
D-12.08.04P	apply ice control products	ice control products are applied according to contract documents, industry standards and jurisdictional regulations
D-12.08.05P	install snow fence	snow fence is installed according to industry standards
D-12.08.06P	install wind breaks	wind breaks are installed according to industry standards
D-12.08.07P	monitor weather conditions for precipitation and wind	weather conditions are monitored for control decisions

RANGE OF VARIABLES

tools and equipment include: vehicles with blades, walk-behind and tractor mounted blowers, spreaders, snow shovels, loaders, graders, power brushes, backpack blowers

KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-12.08.01L	demonstrate knowledge of snow and ice control and the procedures used	identify ***tools and equipment*** used for snow and ice control
		describe procedures used to control snow and ice
		identify jurisdictional regulations pertaining to snow and ice control procedures and products
		identify products used for snow and ice control
		identify sources used to gather weather information

	identify hazards associated with snow and ice control practices and products
	describe the impact of snow and ice control practices and products on plants and landscape features
	describe implications of snow and ice control on environmental stewardship

RANGE OF VARIABLES

tools and equipment include: vehicles with blades, walk-behind and tractor mounted blowers, spreaders, snow shovels, loaders, graders, power brushes, backpack blowers

D-12.09 Repairs hardscape

Essential Skills Document Use, Thinking, Reading

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-12.09.01P	perform minor repairs to drainage systems	minor repairs to drainage systems are performed to fix ***issues***
D-12.09.02P	apply preservatives, stains and sealants on ***hard surfaces***	preservatives, stains and sealants are applied to ***hard surfaces*** according to manufacturers' specifications to provide ease of cleaning, longevity and aesthetics
D-12.09.03P	repair damage to aggregate-based ***hard surfaces***	damage to aggregate-based ***hard surfaces*** is repaired
D-12.09.04P	visually inspect structural integrity of ***hard surfaces***	structural integrity of ***hard surfaces*** is inspected for ***damage***
D-12.09.05P	seal steps and retaining walls	steps and retaining walls are sealed according to manufacturers' specifications
D-12.09.06P	apply adhesive	adhesive is applied to loose caps on steps and retaining walls according to manufacturers' specifications
D-12.09.07P	perform lift and re-lay of ***hard surface*** materials	***hard surfaces*** with improper slope or elevation are fixed or replaced according to ICPI and manufacturers' specifications
D-12.09.08P	perform ***minor repairs*** to hardscape	***minor repairs*** are performed according to industry standards and jurisdictional regulations

RANGE OF VARIABLES

issues include: damaged pipes, plugged catch basins, pooling

hard surfaces include: structural planters, paving stones, gravel, asphalt, concrete, rubber, artificial turf, composite material

damage includes: cracks, frost heave, spalling, settling

minor repairs include: replacing cracked stones, rotting, splintering and cracked timber, levelling structures, staining or painting wood structures, applying mortar

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-12.09.01L	demonstrate knowledge of the procedures and products used to repair hardscapes	identify hazards and describe safe work practices pertaining to hardscape repair
		interpret ***documentation*** pertaining to hardscape repair
		describe the procedures and products used to repair hardscapes

RANGE OF VARIABLES

documentation includes: plans, contract specifications

TASK D-13 Maintains softscape

TASK DESCRIPTOR

Landscape horticulturists are responsible for maintaining interior and exterior plant material, including turfgrass. These activities are done to sustain plant health, to maintain the integrity of the design and to provide a functioning and aesthetically pleasing environment.

D-13.01 Maintains exterior softscape

Essential Skills	Thinking, Working with Others, Continuous Learning

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
D-13.01.01P	perform visual inspection	visual inspection identifies plant health
D-13.01.02P	irrigate plants	plants are irrigated according to plant needs
D-13.01.03P	fertilize plants	plants are fertilized according to test results
D-13.01.04P	cultivate growing media	growing media is cultivated for aesthetics and ease of planting
D-13.01.05P	perform seasonal planting and removal of plants	seasonal planting and removal of annuals, biennials, perennials and bulbs is performed

D-13.01.06P	apply or install ***seasonal protection***	***seasonal protection*** is applied or installed according to CLS, manufacturers' specifications and industry standards to ensure plant survival through winter
D-13.01.07P	perform hardening-off practices	hardening-off practices are performed according to CLS to ensure plant survival
D-13.01.08P	protect plants from snow and ice damage	plants are protected from snow and ice damage and ***seasonal protection*** is installed
D-13.01.09P	remove weeds	weeds are removed for plant health and aesthetics according to CLS and contract documents
D-13.01.10P	***mulch*** beds and containers	beds and containers are mulched for moisture retention, weed suppression, growing media amendment, aesthetics and temperature moderation according to CLS and contract documents
D-13.01.11P	edge beds	beds are edged for bed definition and weed control according to contract documents
D-13.01.12P	inspect and maintain natural and manufactured edge	natural and manufactured edges are inspected and maintained according to industry practices
D-13.01.13P	perform ***site cleanup***	***site cleanup*** is performed according to industry practices and contract documents
D-13.01.14P	remove staking and guying materials	staking and guying materials are removed to prevent plant damage and ensure safety according to CLS

RANGE OF VARIABLES

seasonal protection includes: anti-desiccants, burlap wrapping and binding with twine, flax straw
mulch includes: composted bark, manufactured wood products, pine needles, cones, coir
site cleanup includes: picking up litter, removing excess clippings, cleaning pathways

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-13.01.01L	demonstrate knowledge of exterior plants, their characteristics and ***cultural requirements***	define terminology associated with exterior softscape
		identify hazards and describe safe work practices pertaining to exterior softscape
		interpret codes and regulations pertaining to exterior softscape
D-13.01.02L	demonstrate knowledge of the procedures used to maintain exterior softscape	identify specific tools and equipment relating to exterior softscape and describe their applications and procedures for use

	describe the ***cultural requirements*** of plants
	identify the considerations for the selection of plants for exterior uses
	describe the procedures used to maintain exterior plants

RANGE OF VARIABLES

cultural requirements include: moisture, light, soil type, hardiness, nutrients, propagation, salt tolerance

D-13.02 Maintains interior softscape

Essential Skills Thinking, Continuous Learning, Document Use

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-13.02.01P	perform visual inspection	visual inspection identifies plant health and appearance
D-13.02.02P	test and amend irrigation water	irrigation water is tested for quality, temperature and pH and amended according to industry standards
D-13.02.03P	irrigate and fertilize plants	plants are irrigated and fertilized according to plant needs using manual or automated methods
D-13.02.04P	cultivate and amend growing media	growing media is cultivated and amended for aeration, aesthetics and plant health
D-13.02.05P	clean foliage and containers	foliage and containers are cleaned for aesthetics and plant health
D-13.02.06P	replace damaged or broken containers	damaged or broken containers are replaced
D-13.02.07P	perform seasonal plant replacement	seasonal plant replacement is performed for health and aesthetic reasons according to contract documents and industry practices
D-13.02.08P	protect furnishings and surfaces	furnishings and surfaces are protected from the effects of ***damaging materials*** according to contract documents and industry standards
D-13.02.09P	prune interior plants	interior plants are pruned for aesthetics, plant health and space restrictions

D-13.02.10P	root prune interior plants	interior plants are root pruned for containment
D-13.02.11P	pot-on, pot-up and divide interior plants	interior plants are potted-on, potted-up and divided for propagation and plant health
D-13.02.12P	use IPM practices	IPM practices are used to promote plant health
D-13.02.13P	move and rotate plant	plant is moved and rotated to promote uniform growth according to changing light

RANGE OF VARIABLES

damaging materials include: salts, fertilizers, water, plant secretions

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-13.02.01L	demonstrate knowledge of interior plants, their characteristics and ***cultural requirements***	define terminology associated with interior softscape
		identify hazards and describe safe work practices pertaining to interior softscape
		interpret codes and regulations pertaining to interior softscape
		describe the ***cultural requirements*** of plants
D-13.02.02L	demonstrate knowledge of the procedures used to maintain interior softscape	identify tools and equipment relating to interior softscape and describe their applications and procedures for use
		identify the considerations for the selection of plants for interior uses
		describe the procedures used to maintain interior plants
D-13.02.03L	demonstrate knowledge of pruning interior landscape plants	describe the application and procedures used to prune interior landscape plants
D-13.02.04L	demonstrate knowledge of fertilizers, their application and procedures for use	identify types of fertilizers and describe their characteristics and applications
		describe the procedures and equipment used for the application of fertilizers
D-13.02.05L	demonstrate knowledge of irrigation equipment and systems, their applications and operation	identify the ***factors*** that determine irrigation rates and methods

RANGE OF VARIABLES

cultural requirements include: moisture, light, growing media type, hardiness, nutrients, propagation, salt tolerance

factors include: plant material (growth stage, mature size, water use rate), root zone assessment, soil/water relationship, site conditions, application (time, rate, duration), climate

D-13.03 Maintains turfgrass

Essential Skills Thinking, Working with Others, Numeracy

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-13.03.01P	monitor turfgrass	turfgrass is monitored to identify ***plant health characteristics***
D-13.03.02P	irrigate turfgrass	turfgrass is irrigated according to species, environmental conditions, usage and jurisdictional regulations
D-13.03.03P	mow and trim turfgrass	turfgrass is mowed and trimmed using ***tools and equipment*** according to usage of site, climate conditions, contract documents and CLS
D-13.03.04P	aerate turfgrass	turfgrass is aerated according to growing media analysis, turfgrass conditions, time of year, usage of site and climate conditions
D-13.03.05P	adjust pH and fertility	pH and fertility are adjusted according to soil analysis and contract documents
D-13.03.06P	use IPM practices	IPM practices are used to promote plant health
D-13.03.07P	overseed turfgrass	turfgrass is overseeded for repairs, rejuvenation and introduction of new cultivars according to CLS
D-13.03.08P	topdress turfgrass	turfgrass is topdressed for enhancement of substrate profile and thatch control according to CLS and industry practices
D-13.03.09P	dethatch turfgrass	turfgrass is dethatched to promote optimum growth conditions
D-13.03.10P	repair turfgrass	turfgrass is repaired using sod or seed

RANGE OF VARIABLES

plant health characteristics include: pests and diseases, thinning, grades, drainage, irregularities in colour

tools and equipment include: reel and rotary mowers, blade edgers, string trimmers, core aerators, verticutters, slice seeders, spreaders, sprayers

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-13.03.01L	demonstrate knowledge of turfgrass establishment and maintenance	identify ***tools and equipment*** used to establish and maintain turfgrass
		identify ***methods of turfgrass establishment*** and describe their procedures
		identify possible turfgrass establishment problems and describe solutions
		identify the methods used for post-establishment care of seeded and sodded turf and describe their applications
		identify the ***considerations for determining turfgrass maintenance techniques***
		describe the ***procedures used to maintain turfgrass***
		identify possible ***turfgrass problems*** and describe their causes and the procedures used to correct them
D-13.03.02L	demonstrate knowledge of ***turfgrass maintenance products***, their characteristics and procedures for use	identify hazards and describe safe work practices pertaining to ***turfgrass maintenance products*** and their use
		identify types of ***turfgrass maintenance products*** and describe their characteristics and applications
		interpret codes and regulations pertaining to ***turfgrass maintenance products***

RANGE OF VARIABLES

tools and equipment include: reel and rotary mowers, blade edgers, string trimmers, core aerators, verticutters, slice seeders, spreaders, sprayers

methods of turfgrass establishment include: seeding, sodding

considerations for determining turf maintenance techniques include: grass type, site use, site size, cultural requirements, contract documents

procedures used to maintain turfgrass include: mowing, fertilizing, irrigating, cultivating (aeration, dethatching), top dressing, overseeding, edging/trimming

turfgrass problems include: compaction, thatch build-up, poor drainage, winter kill, pests and diseases, shade

turfgrass maintenance products include: fertilizer, lime, pest control products, top-dressing materials

D-13.04 Propagates plant material

Essential Skills	Thinking, Continuous Learning, Working with Others

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-13.04.01P	select and use clean hand tools	clean hand tools are selected and used according to task requirements and manufacturers' specifications
D-13.04.02P	harvest and divide ***underground storage organs***	***underground storage organs*** are harvested and divided according to plant requirements
D-13.04.03P	select and perform ***propagation methods***	***propagation methods*** are selected and performed according to time of year and plant requirements

RANGE OF VARIABLES

underground storage organs include: rhizomes, tubers, bulbs, corms, roots
propagation methods include: layering, dividing, cutting, seeding

KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-13.04.01L	demonstrate knowledge of the procedures associated with plant propagation	define terminology associated with plant propagation
		identify hazards and describe safe work practices relating to plant propagation
		identify the ***considerations*** used when selecting stock/parent plants for propagation purposes
		describe the procedures used to propagate plants using the various ***propagation methods***

RANGE OF VARIABLES

considerations include: vigor, health, propagation methods, timing
propagation methods include: layering, dividing, cutting, seeding

D-13.05 Repairs softscape

Essential Skills Thinking, Working with Others, Continuous Learning

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-13.05.01P	perfom damaged plant material ***management***	damaged plant material ***management*** is perform according to plant requirements, and industry standards and practices
D-13.05.02P	replace dead, damaged or diseased interior and exterior plants	dead, damaged or diseased interior and exterior plants are replaced according to industry standards and contract documents
D-13.05.03P	repair natural and ***manufactured edges***	natural and ***manufactured edges*** are repaired according to industry standards
D-13.05.04P	repair and adjust staking and guying materials	staking and guying materials are repaired and adjusted according to industry standards to prevent plant damage
D-13.05.05P	repair grading and drainage	grading and drainage are repaired according to CLS
D-13.05.06P	remediate non-viable growing media	non-viable growing media is remediated according to test results
D-13.05.07P	repair ***inorganic mulch***	***inorganic mulch*** is repaired by cleaning, replenishing and re-leveling

RANGE OF VARIABLES

management includes: cabling, staking, bracing, applying anti-desiccants, pruning, amending soils
manufactured edges include: brick, plastic, aluminum, lumber
inorganic mulch includes: aggregate, rubber

KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-13.05.01L	demonstrate knowledge of procedures used to repair softscapes	identify hazards and describe safe work practices pertaining to repairing softscapes
		identify specific tools and equipment related to repairing softscapes and describe their applications and procedures for use
		describe the procedures used to repair softscapes

TASK D-14 Maintains green infrastructure systems

TASK DESCRIPTOR

Landscape horticulturists are responsible for maintaining green infrastructure to prolong the integrity of the systems.

D-14.01 Maintains green roofs and walls

Essential Skills	Working with Others, Thinking, Document Use

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
D-14.01.01P	select and use tools and equipment	tools and equipment are selected and used according to industry practices and manufacturers' specifications
D-14.01.02P	inspect ***non-horticultural elements***	***non-horticultural elements*** are inspected to prevent impaired drainage and damage is reported to supervisor
D-14.01.03P	maintain ***non-horticultural elements***	***non-horticultural elements*** are maintained to prevent excess loading
D-14.01.04P	remove debris	debris is removed to avoid interference with plant growth
D-14.01.05P	monitor sediment	sediment is monitored and removed as required
D-14.01.06P	control weeds	weeds are controlled for aesthetics and to avoid damage to the green roof or wall system according to manufacturers' specifications and contract documents
D-14.01.07P	use IPM practices	IPM practices are used to protect plant health according to IPM, manufacturers' specifications and jurisdictional regulations
D-14.01.08P	apply fertilizer	fertilizer is applied as recommended by soil or water testing according to jurisdictional regulations
D-14.01.09P	irrigate green roof and walls	green roof and walls are irrigated according to plant requirements and jurisdictional requirements
D-14.01.10P	comply with safe working procedures	safe working procedures are followed according to jurisdictional regulations and company policies

D-14.01.11P	monitor green roof for plant coverage	plant coverage is monitored and replaced as required
D-14.01.12P	inspect wall for leaks	wall is inspected for leaks and issues are reported to supervisor

RANGE OF VARIABLES

non-horticultural elements include: exposed membrane, vents, drains, drain pathways, pumps, pipes

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-14.01.01L	demonstrate knowledge of types of green roofs and walls	describe the differences between extensive and intensive green roofs
		describe uses and functionality of different systems relating to green roofs
		describe uses and functionality of different systems relating to green walls
		describe the concept of structural loads relating to green roofs and wall systems
D-14.01.02L	demonstrate knowledge of types and functions of plants used on green roofs and walls	identify plants used on green roofs and walls and describe their functions
D-14.01.03L	demonstrate knowledge of growing media and walls used on green roofs	describe characteristics of growing media used on green roofs and walls
D-14.01.04L	demonstrate knowledge of ***components*** of green roofs and walls	describe the ***components*** of green roofs and walls
D-14.01.05L	demonstrate knowledge of procedures used to repair green roofs and walls	identify hazards and describe safe work practices pertaining to repairing green roofs and walls
		identify specific tools and equipment related to repairing green roofs and walls and describe their applications and procedures for use
		describe the procedures used to repair green roofs and walls
D-14.01.06L	demonstrate knowledge of site safety	describe fall protection procedures and regulations

RANGE OF VARIABLES

components include: vegetation, growing media, water retention mats, membrane, drainage, structural support, irrigation systems

D-14.02 Maintains rainwater and stormwater management systems

Essential Skills	Working with Others, Thinking, Continuous Learning

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-14.02.01P	inspect ***components*** of rainwater and stormwater management systems	***components*** of rainwater and stormwater management systems are inspected for blockage, unwanted leaks and sedimentation
D-14.02.02P	remove debris and sedimentation	debris and sedimentation is removed
D-14.02.03P	control weeds	weeds are controlled to prevent interference with desired species
D-14.02.04P	monitor plants	plants are monitored for health
D-14.02.05P	test water	water is tested for contaminants
D-14.02.06P	monitor for signs of erosion	growing media is monitored for erosion signs
D-14.02.07P	***maintain*** plants for system function	plants are ***maintained*** for system function
D-14.02.08P	apply mulch	mulch is applied according to site requirements
D-14.02.09P	monitor for standing water	standing water is monitored according to jurisdictional regulations
D-14.02.10P	inspect and maintain pumps	pumps are inspected and maintained according to manufacturers' specifications

RANGE OF VARIABLES

components include: mesh, filters, basins, inlet channels, outlet channels, pipes, cisterns, soil cells, plants, water harvesting crates, growing media

maintain includes: pruning, monitoring for plant health, replacing dead plants

KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-14.02.01L	demonstrate knowledge of operation of rainwater and stormwater management systems	describe rainwater and stormwater management systems and their ***components***
		describe benefits of rainwater and stormwater management systems
		interpret test results relating to water and soil quality

		interpret codes and jurisdictional regulations relating to rainwater and stormwater management systems
		identify signs of erosion
		describe soil water relationship with respect to sedimentation
D-14.02.02L	demonstrate knowledge of plant maintenance for rainwater and stormwater management systems	describe plant maintenance requirements in relation to their function within rainwater and stormwater management systems
D-14.02.03L	demonstrate knowledge of procedures used to maintain rainwater and stormwater management systems	describe procedures used to maintain rainwater and stormwater management systems and maintenance of their components

RANGE OF VARIABLES

components include: mesh, filters, basins, inlet channels, outlet channels, pipes, cisterns, soil cells, plants, water harvesting crates, growing media

D-14.03 Maintains erosion control

Essential Skills Thinking, Working with Others, Reading

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

SKILLS

	Performance Criteria	Evidence of Attainment
D-14.03.01P	inspect ***erosion control material***	***erosion control material*** is inspected to ensure functionality
D-14.03.02P	repair ***erosion control material***	***erosion control material*** is repaired in accordance with industry standards and manufacturers' specifications
D-14.03.03P	remove unwanted vegetation	unwanted vegetation is removed from ***erosion control material***

RANGE OF VARIABLES

erosion control material includes: roll-type materials (tarps, blankets, mats), aggregates, plant material, silt fences, boulders, wattles

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-14.03.01L	demonstrate knowledge of ***erosion control material*** and procedures for maintenance	describe procedures used for maintenance of ***erosion control material***
		identify ***erosion control material***

RANGE OF VARIABLES

erosion control material includes: roll-type materials (tarps, blankets, mats), aggregates, plant material, silt fences, boulders, wattles

D-14.04 Maintains biodiverse plantings and natural areas

Essential Skills Working with Others, Oral Communication, Thinking

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
D-14.04.01P	inspect area for safe public access	safe public access is ensured by inspecting area according to jurisdictional regulations and contract documents
D-14.04.02P	monitor and remove invasive and unwanted species	invasive and unwanted species are reported and removed according to contract documents and jurisdictional regulations
D-14.04.03P	monitor plant health	plant health is monitored for pests and diseases
D-14.04.04P	maintain pathways	pathways are maintained for safe access according to contract documents
D-14.04.05P	remove debris	debris is removed
D-14.04.06P	plant vegetation	vegetation is planted as required
D-14.04.07P	monitor for ***site disturbances***	***site disturbances*** are monitored and reported to site supervisor
D-14.04.08P	protect vegetation from excessive damage	vegetation is protected from excessive damage by installing ***protection measures***

RANGE OF VARIABLES

site disturbances include: erosion, vandalism, illegal camping
protection measures include: tree guards, fencing, deterrents

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-14.04.01L	demonstrate knowledge of biodiverse plantings and natural areas	describe and identify the types and characteristics of biodiverse plantings and natural areas
		describe the ***benefits*** of biodiverse plantings and natural areas
D-14.04.02L	demonstrate knowledge of procedures used to maintain biodiverse plantings and natural areas	describe the procedures used to maintain biodiverse plantings and natural areas

RANGE OF VARIABLES

benefits include: animal habitat, refugia for organisms, biodiversity, psychosocial health, preservation of natural resources

MAJOR WORK ACTIVITY E

Works in production of plant material (NOT COMMON CORE)

TASK E-15 Constructs growing facilities (Not Common Core)

TASK DESCRIPTOR

Landscape horticulturists are involved in the planning and building of growing facilities, which include greenhouse and nursery structures. Greenhouse structures may include glass and plastic growing houses. Nursery structures may include shade houses, cold frames, climate control storage sheds and header houses. Landscape horticulturists also install growing facility components, which include operational components, amenities and utilities.

E-15.01 Builds growing facilities (Not Common Core)

Essential Skills	Document Use, Working with Others, Thinking

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-15.01.01P	excavate base and prepare grade	base is excavated and grade prepared according to drawings, specifications and jurisdictional regulations
E-15.01.02P	install footings	footings are installed according to drawings and specifications
E-15.01.03P	install in-ground drainage, ***services*** and granular base material	in-ground drainage, ***services*** and granular base material are installed according to drawings, specifications and jurisdictional regulations
E-15.01.04P	construct ***floor surfaces***	***floor surfaces*** are constructed for accessibility throughout the facility, drainage and sanitation according to industry practices and jurisdictional regulations

E-15.01.05P	construct frame and install greenhouse covers	frame is constructed and greenhouse covers are installed according to drawings, specifications and jurisdictional regulations
E-15.01.06P	assemble premade structures and components	premade structures and components are assembled according to manufacturers' specifications and jurisdictional regulations

RANGE OF VARIABLES

services include: in-ground heat, electrical
floor surfaces include: concrete, gravel, paving stone, geo-textile

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-15.01.01L	demonstrate knowledge of building growing facilities	identify the ***types of growing facilities*** and their related components
		identify hazards and describe safe work practices pertaining to building growing facilities
		interpret codes and regulations pertaining to building growing facilities
		describe the procedures for preparing the site
		describe the procedures for building growing facilities

RANGE OF VARIABLES

types of growing facilities include: greenhouses, shade houses, cold frames, climate control storage sheds, header houses

E-15.02 Installs growing facility components (Not Common Core)

Essential Skills Document Use, Working with Others, Thinking

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

SKILLS

	Performance Criteria	Evidence of Attainment
E-15.02.01P	install ***operational components***	***operational components*** are installed according to building codes, jurisdictional regulations and manufacturers' specifications
E-15.02.02P	assemble and install ***amenities***	***amenities*** are assembled and installed according to drawings and manufacturers' specifications
E-15.02.03P	install or assist in installation of ***utilities***	***utilities*** are installed according to drawings, specifications and jurisdictional regulations

RANGE OF VARIABLES

operational components include: ventilation, irrigation, fertigation, water conservation and recapture systems, heat distribution, lighting, generators

amenities include: benches, nursery carts, shade material, greenhouse production equipment

utilities include: fuelling system, heating, plumbing, electrical, water

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-15.02.01L	demonstrate knowledge of growing facility components and the procedures used to install them	identify hazards and describe safe work practices pertaining to installing growing facility components
		interpret codes and regulations pertaining to installing growing facility components
		identify growing facility ***operational components***
		describe the procedures used to install growing facility ***operational components***
		identify growing facility ***amenities***
		describe the procedures used to install growing facility ***amenities***
		identify growing facility ***utilities***
		describe the procedures used to install growing facility ***utilities***

RANGE OF VARIABLES

operational components include: ventilation, irrigation, fertigation, water conservation and recapture systems, heat distribution, lighting, generators

amenities include: benches, nursery carts, shade material, greenhouse production equipment

utilities include: fuelling system, heating, plumbing, electrical, water

TASK E-16 Operates and maintains growing facilities (Not Common Core)

TASK DESCRIPTOR

Landscape horticulturists are involved in operating, maintaining and sanitizing growing facilities and their amenities. Growing facilities include glass and plastic growing houses, shade houses, cold frames, climate control storage sheds and header houses. Climate control, irrigation and fertigation systems are part of these growing facilities.

E-16.01 Operates growing facility structures and amenities (Not Common Core)

Essential Skills	Thinking, Continuous Learning, Digital Technology

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-16.01.01P	inspect, troubleshoot, maintain and repair greenhouses and growing structures	greenhouses and growing structures are inspected and maintained by replacing greenhouse covers and repairing ***floor surfaces***
E-16.01.02P	inspect, maintain and repair ***amenities***	***amenities*** are inspected for defects and maintained and repaired according to manufacturers' specifications
E-16.01.03P	use generators	generators are used for emergency back-up systems according to manufacturers' specifications
E-16.01.04P	winterize greenhouses and growing structures	greenhouses and growing structures are winterized to prevent snow buildup and ice damage

RANGE OF VARIABLES

floor surfaces include: concrete, gravel, paving stone, geo-textile
amenities include: benches, nursery carts, shade material, greenhouse production equipment

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-16.01.01L	demonstrate knowledge of ***growing facility structures***, their amenities and the procedures used to operate them	describe ***growing facility structures***, and the procedures used to operate and maintain them
		describe growing facility ***amenities*** and the procedures used to operate and maintain them

RANGE OF VARIABLES

growing facility structures include: greenhouses, shade houses, cold frames, climate control storage sheds, header houses

amenities include: benches, nursery carts, shade material, greenhouse production equipment

E-16.02 Maintains sanitary environment (Not Common Core)

Essential Skills Thinking, Continuous Learning, Document Use

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-16.02.01P	conduct regular inspections and follow check lists	regular inspections are conducted and check lists are followed according to industry practices and jurisdictional regulations to ensure ***sanitation practices*** are followed
E-16.02.02P	select cultural, physical or chemical sanitation methods	cultural, physical or chemical sanitation methods are selected to maintain a sanitary environment according to industry practices and manufacturers' specifications
E-16.02.03P	sanitize tools, containers, ***growing facility structures*** and ***amenities***	tools, containers, ***growing facility structures*** and ***amenities*** are sanitized to minimize pests and diseases according to industry practices and manufacturers' specifications

E-16.02.04P	select and use sanitized tools and equipment	sanitized tools and equipment are selected and used according to industry practices and manufacturers' specifications to control pests and diseases
E-16.02.05P	perform regular maintenance activities on areas adjacent to ***growing facility structures***	regular maintenance activities on adjacent areas are performed to manage sanitation and promote plant health

RANGE OF VARIABLES

sanitation practices include: hand washing, plant quarantine, inspection of new plants, use of foot baths
growing facility structures include: greenhouses, shade houses, cold frames, climate control storage sheds, header houses
amenities include: benches, nursery carts, shade material, greenhouse production equipment

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-16.02.01L	demonstrate knowledge of the ***sanitation practices***, tools and products used to create and maintain a sanitary environment	identify and describe ***sanitation practices*** for growing facilities
		identify the tools and products used to create and maintain a sanitary environment

RANGE OF VARIABLES

sanitation practices include: hand washing, plant quarantine, inspection of new plants, use of foot baths

E-16.03 Operates climate control systems (Not Common Core)

Essential Skills	Numeracy, Digital Technology, Thinking

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-16.03.01P	interpret results of ***environmental climate monitoring devices***	results of ***environmental climate monitoring devices*** are interpreted to determine inside and outside climate conditions
E-16.03.02P	conduct regular inspections of growing facilities and plants, and follow check lists	regular inspections are conducted and check lists are followed according to industry practices

E-16.03.03P	maintain heating, cooling, and ventilation systems	heating, cooling, and ventilation systems are maintained to ensure efficient operation according to industry practices and manufacturers' specifications
E-16.03.04P	perform troubleshooting and ***basic repairs*** on heating, cooling and ventilation systems	troubleshooting and ***basic repairs*** on heating, cooling and ventilation systems are performed to limit system downtime and to protect crops
E-16.03.05P	winterize heating and cooling systems when shutting greenhouse for winter	heating and cooling systems are winterized when shutting greenhouse for winter to protect from frozen lines, and ice and water damage of equipment according to manufacturers' specifications
E-16.03.06P	mist, flood and vent growing facility structures	growing facility structures are misted, flooded and vented to regulate humidity levels
E-16.03.07P	use shade material	shade material is used to regulate light and heat levels
E-16.03.08P	select and use artificial lights	artificial lights are selected and used to ensure adequate light levels according to crop requirements
E-16.03.09P	test and maintain emergency alarm system	emergency alarm system is tested and maintained according to manufacturers' specifications

RANGE OF VARIABLES

environmental climate monitoring devices include: automated and computerized control systems, thermometers, hygrometers (relative humidity meters), photometers (light meters), anemometers (wind meters)

basic repairs include: replacing fan belts, thermocouples, ventilation tubes

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-16.03.01L	demonstrate knowledge of ***environmental climate monitoring devices*** and ***climate control systems***, and the procedures used to operate them	identify ***environmental climate monitoring devices*** for growing facilities
		describe the procedures to operate ***environmental climate monitoring devices***
		identify ***climate control systems*** for growing facilities and their components
		describe the procedures to operate ***climate control systems***

RANGE OF VARIABLES

environmental climate monitoring devices include: automated and computerized control systems, thermometers, hygrometers (relative humidity meters), photometers (light meters), anemometers (wind meters)

climate control systems are heating, ventilation and cooling systems

E-16.04 Operates irrigation and fertigation systems (Not Common Core)

Essential Skills Document Use, Numeracy, Thinking

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

SKILLS

	Performance Criteria	Evidence of Attainment
E-16.04.01P	calibrate ***monitoring equipment***	***monitoring equipment*** is calibrated to establish standard settings and accuracy
E-16.04.02P	interpret test results and meter readings from ***monitoring equipment***	test results and meter readings are interpreted to determine water quality
E-16.04.03P	maintain irrigation and fertigation systems	irrigation and fertigation systems are maintained to ensure efficient operation
E-16.04.04P	conduct regular inspections and follow check lists	regular inspections are conducted and check lists are followed according to industry practices to ensure integrity of irrigation and fertigation systems
E-16.04.05P	perform troubleshooting and ***basic repairs*** on irrigation and fertigation systems	troubleshooting and ***basic repairs*** on irrigation and fertigation systems are performed
E-16.04.06P	inspect water retention, capture and recycling systems	water retention, capture and recycling systems are inspected to ensure that the systems are functioning according to drawings and specifications, industry standards and jurisdictional regulations
E-16.04.07P	maintain water retention, capture and recycling systems	water retention, capture and recycling systems are maintained using ***methods*** to preserve water quality according to manufacturers' specifications and jurisdictional regulations
E-16.04.08P	winterize irrigation and fertigation systems	irrigation and fertigation systems are winterized to protect equipment from frozen lines, and ice and water damage

RANGE OF VARIABLES

monitoring equipment includes: flow, pH and EC meters
basic repairs include: repairing and replacing distribution and drip lines, nozzles and injector systems
methods include: filter replacement, ultraviolet (UV) bulb replacement, chemical treatment

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-16.04.01L	demonstrate knowledge of irrigation and fertigation systems, and the procedures used to operate them	identify irrigation and fertigation systems
		identify water conservation and recapture systems
		describe the procedures to operate irrigation and fertigation systems
		explain the procedures for winterizing irrigation and fertigation systems

TASK E-17 Manages greenhouse crops (Not Common Core)

TASK DESCRIPTOR

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

E-17.01 Develop greenhouse crop production plan (Not Common Core)

Essential Skills Numeracy, Document Use, Continuous Learning

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-17.01.01P	determine capacity and characteristics of growing facilities	capacity and characteristics of growing facilities are calculated
E-17.01.02P	select species and varieties	species and varieties are selected according to availability and market demand
E-17.01.03P	calculate crop production quantities	crop production quantities are calculated based on facility capacity and market demand

E-17.01.04P	determine ***materials for production***	***materials for production*** are determined based on plant requirements, market demand and industry practices
E-17.01.05P	schedule ***production activities***	***production activities*** are scheduled according to plant requirements and to meet saleable quantities

RANGE OF VARIABLES

materials for production include: soil mixes, containers, trays, fertilizers, growth hormones, pest management products

production activities include: propagating, transplanting, growing, harvesting, shipping

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-17.01.01L	demonstrate knowledge of greenhouse crop production planning	describe production planning schedule and activities
		identify growing facility capacities
		identify market demand
		determine desired saleable quantities
		determine quantities and ***materials for production***

RANGE OF VARIABLES

materials for production include: soil mixes, containers, trays, fertilizers, growth hormones, pest management products

E-17.02 Propagates greenhouse crops (Not Common Core)

Essential Skills	Thinking, Continuous Learning, Document Use

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-17.02.01P	select and use ***tools and equipment***	***tools and equipment*** are used according to industry practices and manufacturers' specifications
E-17.02.02P	sow seeds in flats and containers	seeds are sown in flats and containers using ***seeding methods*** according to plant requirements

E-17.02.03P	perform ***vegetative propagation***	***vegetative propagation*** is performed to grow additional plants according to plant requirements
E-17.02.04P	maintain propagated materials	propagated materials are maintained until viable for transplanting, harvesting and growing-on
E-17.02.05P	label plants and complete propagation documents	plants are labelled to identify species and propagation documents are completed

RANGE OF VARIABLES

tools and equipment include: mechanical seeders, dibblers, watering cans, misters
seeding methods include: hand seeding, mechanical seeding
vegetative propagation includes: cutting, grafting and budding, layering, division, separation, micro-propagation

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-17.02.01L	demonstrate knowledge of the procedures for plant propagation	identify the ***propagation methods***
		describe seeding methods and their characteristics and applications
		describe cutting methods and their characteristics and applications
		describe budding methods and their characteristics and applications
		describe grafting methods and their characteristics and applications
		describe dividing and separation methods and their characteristics and applications
		describe layering methods and their characteristics and applications
		describe micro-propagation methods and their characteristics and applications
		identify the considerations used when selecting stock/parent plants for propagation purposes
		describe the procedures used to maintain stock/parent plants
		describe the procedures used to maintain post-propagated plants

RANGE OF VARIABLES

propagation methods include: seeding, cutting, grafting and budding, layering, division/separation, micro-propagation

E-17.03 Transplants greenhouse crops (Not Common Core)

Essential Skills Document Use, Thinking, Continuous Learning

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

SKILLS

	Performance Criteria	Evidence of Attainment
E-17.03.01P	select and use ***tools and equipment***	***tools and equipment*** are used according to industry practices and manufacturers' specifications
E-17.03.02P	select stock for transplanting	most viable and true-to-type stock are selected according to plant requirements
E-17.03.03P	select containers	containers are selected according to intended use and plant requirements
E-17.03.04P	select growing media	growing media is selected according to plant requirements
E-17.03.05P	transplant plants	plants are transplanted according to container (potting up) and plant requirements
E-17.03.06P	label plants and complete transplant documents	plants are labelled to identify species and transplant documents are completed
E-17.03.07P	irrigate plants	plants are irrigated according to plant requirements
E-17.03.08P	place plants in controlled growing environment	plants are placed in controlled growing environment according to plant requirements

RANGE OF VARIABLES

tools and equipment include: mechanical transplanter, potting machine, soil batch mixer, dibbler, misters

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-17.03.01L	demonstrate knowledge of the procedures for transplanting greenhouse crops	identify criteria for timing transplant process
		identify the procedures for transplanting greenhouse crops
		identify how ***environmental factors*** affect transplants

RANGE OF VARIABLES

environmental factors include: temperature, humidity, light levels, soil moisture, ventilation

E-17.04 Grows greenhouse crops (Not Common Core)

Essential Skills	Thinking, Continuous Learning, Document Use

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

SKILLS

	Performance Criteria	Evidence of Attainment
E-17.04.01P	monitor and maintain water quality	water quality is monitored and maintained, and pH and nutrients are amended as required
E-17.04.02P	monitor crop growth	crop growth is monitored to identify health and development rate
E-17.04.03P	monitor crop health	crops are monitored for pests and disease
E-17.04.04P	apply ***interventions***	***interventions*** are applied to manage crop according to plant growth and health requirements
E-17.04.05P	group crops	crops are grouped according to plant requirements
E-17.04.06P	monitor growing media fertility levels	growing media fertility levels are monitored using ***monitoring methods*** to determine ***interventions*** according to plant requirements
E-17.04.07P	harden-off crops	crops are hardened-off to prepare for sale

RANGE OF VARIABLES

interventions include: temperature, fertility, lighting, water, pinching, spacing, leaching, potting-on, quarantining, growth hormone application, application of pest and disease control methods

monitoring methods include: soil and tissue sampling, testing, analyzing

KNOWLEDGE

	Learning Outcomes	Learning Objectives
E-17.04.01L	demonstrate knowledge of the procedures associated with growing greenhouse crops	define water quality requirements
		identify and describe cultural requirements for plant growth
		describe characteristics of plant growth and health
		identify and describe ***environmental deficiencies***
		identify and describe pests and diseases

	identify and describe common ***interventions***
	determine crop groupings based on plant requirements
	describe hardening-off process

RANGE OF VARIABLES

environmental deficiencies include: excess or insufficient light, fertilizer/nutrients, temperature, water
interventions include: temperature, fertility, lighting, water, pinching, spacing, leaching, potting-on, quarantining, growth hormone application, application of pest and disease control methods

E-17.05 Harvests greenhouse crops (Not Common Core)

Essential Skills	Continuous Learning, Thinking, Document Use

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

SKILLS

	Performance Criteria	Evidence of Attainment
E-17.05.01P	select crop	crops are selected according to maturity to fill sales orders
E-17.05.02P	inspect plant material before shipping	plant material is inspected before shipping to ensure it is free of insects and disease
E-17.05.03P	label plants	plants are labelled for marketing, species, cultural practices and retail price
E-17.05.04P	clean and prune harvested plants	harvested plants are cleaned and pruned to prepare for staging area

KNOWLEDGE

	Learning Outcomes	Learning Objectives
E-17.05.01L	demonstrate knowledge of the procedures associated with harvesting greenhouse crops	describe the ***procedures*** used for harvesting and handling greenhouse crops
		describe the procedures used to maintain harvested greenhouse crops

RANGE OF VARIABLES

procedures include: storage, grading, labelling, shipping

E-17.06 Ships greenhouse crops (Not Common Core)

Essential Skills	Numeracy, Document Use, Thinking

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

SKILLS

	Performance Criteria	Evidence of Attainment
E-17.06.01P	assemble harvested crops in staging area	harvested crops are assembled in staging area according to order specifications
E-17.06.02P	prepare harvested crops for transport	harvested crops are prepared for transport using ***packaging materials*** according to crop requirements
E-17.06.03P	select ***equipment***	***equipment*** is selected according to load requirements
E-17.06.04P	arrange harvested crops and load on transportation	harvested crops are arranged and loaded on transportation
E-17.06.05P	complete ***documentation*** related to shipping	***documentation*** for shipping is complete according to policies, regulations and industry practices

RANGE OF VARIABLES

packaging materials include: boxes, nursery carts, pallets, trays, packing material (moist or dry mulch)
equipment includes: forklifts, loaders, tractors
documentation includes: labels, phytosanitary documents, legislative and regulatory documents, movement certificates, import/export documents, packing lists, care and maintenance instructions

KNOWLEDGE

	Learning Outcomes	Learning Objectives
E-17.06.01L	demonstrate knowledge of shipping greenhouse crops	describe procedures for packing and loading harvested crops for transportation
		describe climate control requirements during transportation
		identify ***documentation*** required for shipping harvested crops and its function
		identify the ***equipment*** used for loading greenhouse crops for shipping and their procedures for use

	identify ***packaging materials*** used for packing and protecting greenhouse crops for shipping
	identify ***covering materials*** used for protecting greenhouse crops during shipping

RANGE OF VARIABLES

documentation includes: labels, phytosanitary documents, legislative and regulatory documents, movement certificates, import/export documents, packing lists, care and maintenance instructions
equipment includes: forklifts, loaders, tractors
packaging materials include: boxes, nursery carts, pallets, trays, packing material (moist or dry mulch)
covering materials include: tarps, security straps, netting, shade materials

TASK E-18 Manages nursery crops (Not Common Core)

TASK DESCRIPTOR

Landscape horticulturists are involved in the planning and production of field and container crops. These crops are distributed in retail and wholesale facilities, and in the horticultural industry.

E-18.01 Develop nursery crop production plan (Not Common Core)

Essential Skills	Numeracy, Document Use, Continuous Learning

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-18.01.01P	determine capacity and characteristics of growing facilities	capacity and characteristics of growing facilities are calculated
E-18.01.02P	select species and varieties	species and varieties are selected according to availability and market demand
E-18.01.03P	calculate crop production quantities	crop production quantities are calculated based on facility capacity and market demand

E-18.01.04P	determine ***materials for field production***	***materials for field production*** are determined based on plant requirements, market demand and industry practices
E-18.01.05P	schedule ***production activities***	***production activities*** are scheduled according to plant requirements and to meet saleable quantities

RANGE OF VARIABLES

materials for field production include: soil mixes, containers, trays, fertilizers, growth hormones, pest management products, wire baskets, burlap, tree stakes

production activities include: propagating, transplanting, growing, harvesting, shipping, winterizing

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-18.01.01L	demonstrate knowledge of nursery crop production planning	describe production planning schedule and activities
		identify growing facility capacities
		identify market demand
		determine desired saleable quantities
		determine quantities and ***materials for field production***

RANGE OF VARIABLES

materials for field production include: soil mixes, containers, trays, fertilizers, growth hormones, pest management products, wire baskets, burlap, tree stakes

E-18.02 Propagates field and container crops (Not Common Core)

Essential Skills	Thinking, Document Use, Continuous Learning

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-18.02.01P	harvest and divide ***underground storage organs***	***underground storage organs*** are harvested and divided to produce additional plants according to plant requirements
E-18.02.02P	take cuttings and graft scion wood and buds to selected rootstocks and stems	cuttings are taken, scion wood and buds are grafted to selected rootstocks and stems according to plant requirements

E-18.02.03P	maintain propagated material	propagated material is maintained until viable for transplanting, harvesting and growing-on to marketable size
E-18.02.04P	label plants and complete propagation documents	plants are labelled with ***propagation information*** and propagation documents are completed
E-18.02.05P	prepare fields and beds	fields and beds are prepared for ***nursery activities*** according to crop and site requirements
E-18.02.06P	plant out ***field materials***	***field materials*** are planted out according to crop requirements
E-18.02.07P	direct-seed ***crops***	***crops*** are direct-seeded using mechanical field seeding equipment according to crop requirements
E-18.02.08P	select growing media for container-grown plant material	growing media for container-grown plant material is selected according to crop requirements

RANGE OF VARIABLES

underground storage organs include: roots, tubers, bulbs, corms, rhizomes
propagation information includes: row marking, species, date
nursery activities include: lining-out, pot-in-pot, seeding, irrigation
field materials include: liners, whips, roots, bulbs, plugs
crops include: nursery sod, herbaceous plants, woody plants

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-18.02.01L	demonstrate knowledge of the procedures associated with nursery crop propagation	identify the ***propagation methods***
		describe seeding methods and their characteristics and applications
		describe cutting methods and their characteristics and applications
		describe budding methods and their characteristics and applications
		describe grafting methods and their characteristics and applications
		describe dividing and separation methods and their characteristics and applications
		describe layering methods and their characteristics and applications
		describe micro-propagation methods and their characteristics and applications
		identify the considerations used when selecting stock/parent crops for propagation purposes

	describe the procedures used to maintain stock/parent crops
	describe the procedures used to maintain post-propagated crops

RANGE OF VARIABLES

propagation methods include: seeding, cutting, grafting and budding, layering, division/separation, micro-propagation

E-18.03 Transplants field and container crops (Not Common Core)

Essential Skills Thinking, Document Use, Working with Others

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

SKILLS

	Performance Criteria	Evidence of Attainment
E-18.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to industry practices and manufacturers' specifications
E-18.03.02P	select stock for transplanting	most viable and true-to-type stock are selected for transplanting according to plant requirements
E-18.03.03P	select containers	containers are selected according to intended use and plant requirements
E-18.03.04P	prune crops' roots and shoots selectively	crops' roots and shoots are pruned selectively to mitigate transplanting shock
E-18.03.05P	select growing media	growing media is selected according to plant requirements
E-18.03.06P	transplant plants	plants are transplanted according to container (potting up) and plant requirements
E-18.03.07P	irrigate crops	crops are irrigated according to crop requirements
E-18.03.08P	place crops	crops are placed in ***location*** according to crop requirements
E-18.03.09P	label crops and complete transplant documentation	crops are labelled for species and date of transplanting and transplant documentation is completed

RANGE OF VARIABLES

tools and equipment include: mechanical transplanters, potting machines, shovels, treespades, skid steers/attachments, tractors

locations include: cold frame, field, container yard, winter storage area

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-18.03.01L	demonstrate knowledge of the procedures for transplanting field and container crops	identify criteria for timing the transplant process
		identify the procedures for transplanting field and container crops
		identify how ***environmental factors*** affect transplants

RANGE OF VARIABLES

environmental factors include: temperature, humidity, light levels, soil moisture, wind

E-18.04 Grows field and container crops (Not Common Core)

Essential Skills	Continuous Learning, Thinking, Working with Others

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-18.04.01P	collect and record ***crop data***	***crop data*** is collected and recorded according to company policies
E-18.04.02P	monitor plant growth and apply ***interventions***	crops are monitored to identify signs of nutritional and physiological disorders and ***interventions*** are applied to ensure proper health and development rate according to crop requirements
E-18.04.03P	monitor growing media fertility levels	growing media fertility levels are monitored using ***methods*** to determine corrective actions
E-18.04.04P	mulch field crops	fields are mulched according to plant and site requirements
E-18.04.05P	harden-off crops	crops are hardened-off according to plant and site requirements

RANGE OF VARIABLES

crop data includes: fertilizer applications, treatments, temperatures, cropping schedules, inventory management

interventions include: fertilizer, irrigation, pruning, root pruning, potting-on, mowing, staking, pest and disease control

methods include: soil and tissue sampling, testing, analyzing

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-18.04.01L	demonstrate knowledge of the procedures associated with growing field and container crops	describe the procedures used to select and prepare nursery growing sites
		describe the procedures required for field and container crop production planning
		describe characteristics of plant growth and health
E-18.04.02L	demonstrate knowledge of water requirements	identify water quality, accessibility and supply for field and container crop production
E-18.04.03L	demonstrate knowledge of field and container crop maintenance	identify the ***interventions*** used for maintaining field and container crops
		identify ***environmental factors*** for field and container crops
E-18.04.04L	demonstrate knowledge of hardening-off process for field and container crops	identify techniques used for hardening-off field and container crops

RANGE OF VARIABLES

interventions include: fertilizer, irrigation, pruning, root pruning, potting-on, mowing, staking, pest and disease control

environmental factors include: excessive or insufficient light, fertilizer/nutrients, temperature, water, wind

E-18.05 Harvests field and container crops (Not Common Core)

Essential Skills Thinking, Working with Others, Continuous Learning

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-18.05.01P	identify harvest-ready field crops	harvest-ready field crops are identified
E-18.05.02P	harvest seeds, roots, corms, bulbs, and cuttings	seeds, roots, corms, bulbs, and cuttings are harvested according to plant requirements
E-18.05.03P	dig harvest-ready field crops	harvest-ready field crops are dug according to CLS, industry practices and plant requirements
E-18.05.04P	wash and divide ***bare root plant material***	***bare root plant material*** is washed and divided for storage prior to shipping

E-18.05.05P	protect bare roots	bare roots are protected from ***damage*** according to plant requirements
E-18.05.06P	grade plant material	plant material is graded according to size, conditions and industry standards
E-18.05.07P	select and use ***root containment products*** for field-grown trees and shrubs	***root containment products*** for field-grown trees and shrubs are selected and used according to suitability for resale and CLS
E-18.05.08P	clean, prune and ***label*** harvested plants	harvested plants are cleaned, pruned and ***labelled*** for shipment
E-18.05.09P	select container crops	container crops are selected for filling orders
E-18.05.10P	inspect and count plants before shipping	plants are counted and inspected before shipping to ensure they are the required number and are free of diseases and pests
E-18.05.11P	harvest sod crop	sod crop is harvested using mechanical sod cutters according to CLS
E-18.05.12P	document grading, inventory and type	grading, inventory and type are documented according to company policies

RANGE OF VARIABLES

bare root plant material include: perennials, vines, shrubs, trees
damage includes: desiccation, breakage, pests and disease, temperature extremes
root containment products include: wire-baskets, burlap, grow bag
labelling includes: species, grade

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-18.05.01L	demonstrate knowledge of the procedures associated with harvesting crops	describe the ***procedures*** used for harvesting and storing bare root plant material
		describe the ***procedures*** used for harvesting and handling ***root-contained*** field crops
		describe the ***procedures*** used for harvesting and handling seeds and ***underground storage organs***
		describe the ***procedures*** used for harvesting and handling container crops
		describe the steps to harvest sod crops

RANGE OF VARIABLES

procedures include: grading, sorting, labelling
root containment products include: wire-baskets, burlap, grow bag
underground storage organs include: roots, tubers, bulbs, corms, rhizomes

E-18.06 Ships field and container crops (Not Common Core)

Essential Skills	Numeracy, Document Use, Thinking

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

SKILLS

	Performance Criteria	Evidence of Attainment
E-18.06.01P	assemble harvested crops in staging area	harvested crops are assembled in staging area according to order specifications
E-18.06.02P	complete ***documentation*** related to shipping	***documentation*** for shipping is complete according to policies, regulations and industry practices
E-18.06.03P	prepare harvested crops for transport	harvested crops are prepared for transport using ***packaging materials*** according to crop requirements
E-18.06.04P	select ***equipment***	***equipment*** is selected according to load requirements
E-18.06.05P	load onto transportation	harvested crops are loaded onto transportation
E-18.06.06P	secure loads	loads are secured using ***covering materials*** according to plant requirements, environmental conditions and jurisdictional regulations

RANGE OF VARIABLES

documentation includes: labels, phytosanitary documents, legislative and regulatory documents, movement certificate, import/export documents, packing list, care and maintenance instructions
packaging materials include: boxes, nursery carts, pallets, trays, packing materials (moist or dry mulch)
equipment includes: forklifts, loaders, tractors
covering materials include: tarps, security straps, netting, shade materials

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-18.06.01L	demonstrate knowledge of shipping nursery crops	describe procedures for packing and loading harvested crops for transportation
		describe climate control requirements during transportation
		identify ***documentation*** required for shipping harvested crops and their function
		identify the ***equipment*** used for loading nursery crops for shipping and their procedures for use
		identify ***packaging materials*** used for packing and protecting nursery crops for shipping
		identify ***covering materials*** used for protecting nursery crops during shipping

RANGE OF VARIABLES

documentation includes: labels, phytosanitary documents, legislative and regulatory documents, movement certificate, import/export documents, packing list, care and maintenance instructions
equipment includes: forklifts, loaders, tractors
packaging materials include: boxes, nursery carts, pallets, trays, packing materials (moist or dry mulch)
covering materials include: tarps, security straps, netting, shade materials

E-18.07 Winterizes field and container crops (Not Common Core)

Essential Skills	Thinking, Working with Others, Continuous Learning

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

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-18.07.01P	collect and group container crops	container crops are collected and grouped in winterizing location
E-18.07.02P	arrange container crops	container crops are arranged to maximize insulation value
E-18.07.03P	apply container crop pest protection methods	container crop pest protection methods are applied according to pesticide labels and jurisdictional regulations
E-18.07.04P	store container crops	container crops are stored beneath ***protective coverings***

E-18.07.05P	monitor container crop over winter	container crop is monitored for pest damage, condition of insulation, temperature fluctuations and moisture requirements
E-18.07.06P	identify field crops that require winter protection	field crops that require winter protection are identified according to production planning
E-18.07.07P	apply field crop pest protection barriers	field crop pest protection barriers are applied according to crop species and local pests
E-18.07.08P	protect field crops against sunlight damage	field crops are protected against sunlight damage by installing snow fences and reducing the reflectivity of the snow
E-18.07.09P	monitor field crop over winter	field crop is monitored for pest damage and sunlight damage
E-18.07.10P	heel in balled-and-burlapped and wire-basketed field crops	balled-and-burlapped and wire-basketed field crops are heeled-in to prevent desiccation and frost damage to the root zone
E-18.07.11P	perform ***spring maintenance activities***	***spring maintenance activities*** are performed according to plant requirements and site conditions

RANGE OF VARIABLES

protective coverings include: white polyethylene, insulated tarps, organic mulches, thermal blankets, snow

spring maintenance activities include: removing protective coverings, spacing out plants, pruning, culling plants, checking labels

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-18.07.01L	demonstrate knowledge of ***winterizing procedures*** for field and container crops	identify and describe ***winterizing procedures*** for field and container crops
		identify field crops that require winter protection
		identify and describe ***spring maintenance activities***

RANGE OF VARIABLES

winterizing procedures include: installing snow fences, heeling in nursery stock, using shelter houses, applying animal repellents, reducing snow reflectivity, using protective coverings

spring maintenance activities include: removing protective coverings, spacing out plants, pruning, culling plants, checking labels

APPENDIX A
ACRONYMS

ANSI	American National Standards Institute
ATV	all-terrain vehicles
CLS	Canadian Landscape Standard
CSA	Canadian Standards Association
EC	electrical conductivity
GFCI	ground fault circuit interrupter
GPS	global positioning systems
HVAC	heating, ventilation and air conditioning
ICPI	Interlocking Concrete Pavement Institute
IPM	integrated pest management
LID	low impact development
OEM	operator equipment manual
OH&S	Occupational Health And Safety
PMRA	Pest Management Regulatory Agency
PPE	personal protective equipment
ROP	rollover protection devices
TDG	Transportation Of Dangerous Goods
UV	ultraviolet
WHMIS	Workplace Hazardous Material Information System

APPENDIX B
TOOLS AND EQUIPMENT / OUTILS ET ÉQUIPEMENT

Hand Tools / Outils à main

axes	haches
backpack sprayer	pulvérisateurs à dos
blocks	blocs
box cutters	couteaux à lame rétractable
brick carriers	pinces à brique
brick splitter	coupeuses de briques
brooms	balais
bypass pruners	sécateurs à lame franche
calculator	calculatrices
cart	chariots
chains	chaînes
chisels (various types)	ciseaux (différents modèles)
core samplers (probe)	sondes (géodoseurs)
crimpers	pinces à sertir
crowbars	pinces-monseigneur
cultivator (manual)	cultivateurs à main
dibblers	plantoirs
dolly	diable
edgers	coupe-bordures
files	limes
flags	dalles
forks (various types)	fourches (différents modèles)
grease guns	pistolets graisseurs
guillotine	guillotines
hammers (various types)	marteaux (différents modèles)
hand plane	rabots
hand tamper	dames
handheld watering equipment	équipement d’arrosage portatif
handsaws (various types)	scies à main (différents modèles)
hedge shears	cisailles à haie
hex keys	clés Allen
hoes	binettes
knives (various types)	couteaux (différents modèles)
ladders (various types)	échelles (différents modèles)
levels (various types)	niveaux laser
loppers	ébrancheurs
microscope	microscopes
nursery carts	chariots de pépinière
paving stone cart	chariots à pavé
paving stone extractor	extracteurs de pavé
picks	pioches
pipe cutters	coupe-tuyaux
pliers (various types)	pinces multiprises (différents modèles)
plumb line	niveaux de maçon
pole pruners	échenilloirs

Hand Tools / Outils à main (*continued / suite*)

pole saw	scies à long manche
post hole auger	bêches tarières
post maul	masses à pieu
post pounder	pilons à poteaux
pruning saw	scie à tailler
pruning shears	sécateurs
pry bar	leviers
rakes (various types)	râteaux (différents modèles)
roller	rouleaux à gazon
scaffolding	échafaudages
screeding bars	barres d'aplanissement
screwdrivers (various types)	tournevis (différents modèles)
scythe	faux
secateurs	sécateurs
seed/fertilizer spreader	épandeurs
sharpening tools	outils d'affûtage
shears	cisailles
shoring equipment	équipement d'étayage
shovels (various types)	pelles (différents modèles)
side cutters	couteaux latéraux
sod lifter	lève-gazons
soil screener	blutoirs de terre
spades (various types)	bêches (différents modèles)
sprinklers	arroseurs
spreaders (various types)	épandeurs (différents types)
string line	cordeaux
square (various types)	équerres (différents types)
tape measure	rubans à mesurer
tarps	bâches
tie downs (various types)	arrimages (différents modèles)
transplant table	tables à transplanter
tree cart	chariots à arbres
trowels	déplantoirs
water hose	tuyaux d'arrosage
water key	soupapes d'évacuation
watering cans	arrosoirs
weed digger	arracheuses de mauvaises herbes
weed torch	torches pour brûler les mauvaises herbes
wheelbarrow, trolley	brouettes, chariots
wire cutters	coupe-fils
wire strippers	pinces à dénuder
wrenches (various types)	clés (différents modèles)

Power Tools and Motorized Equipment / Outils mécaniques et équipement motorisé

air seeder	semoirs pneumatiques
attachments	accessoires
chainsaw (pole)	tronçonneuses (perches élagueuses à moteur)
circular saw	scies circulaires
compressor	compresseurs
concrete saw (dry, wet)	scies à béton (sec, humide)
core aerator	aérateurs de gazon
demolition hammer (electric)	marteaux de démolition (pneumatiques)
demolition hammer (pneumatic)	marteaux de démolition (électriques)
electric drill	perforatrices rotatives électriques

Power Tools and Motorized Equipment / Outils mécaniques et équipement motorisé (*continued / suite*)

fertilizer injector	injecteurs d'engrais
grinders (various types)	broyeurs
hammer drill	marteaux perforateurs
heat gun	pistolets à air chaud
hydro-seeders	semoirs hydrauliques
lathe	tours
mechanical diggers	pelles mécaniques
misters	brumisateurs
mitre/chop saw	scies à onglet/à tronçonner
mortar/cement mixer	malaxeurs à mortier/bétonnières portables
mower/mulcher	tondeuses/rouleau rayonneur et herse canadienne combinés
powder-actuated tools	outils à charge explosive (cloueuses)
power auger	tarières mécaniques
power cultivator (rototiller)	motoculteurs (rotoculteurs)
power pole saw	scie électrique à long manche
power seeder/ power spreader	semoirs motorisés/épandeurs motorisés
power soil screener	blutoirs de terre mécaniques
power sprayer	pulvérisateurs à moteur
power washers	laveuses à pression
powered wheelbarrow	brouettes motorisées
reciprocating saw	scies alternatives
sabre saw	élagueurs
saws	scies
spider lifts	élévateurs à nacelle
table saw	scies circulaire à table
torch	lampes de poche
tree spade	machines à transplanter les arbres
trencher	cureuses
vacuum (various types)	aspirateurs (différents modèles)
vacuum lifter	élévateurs à ventouses
walk-behind aerator	aérateurs de gazon poussés
wet saw	scies à eau

Measuring Equipment / Équipement de mesure

anemometer	anémomètres
automated plan scaler	mises à l'échelle automatisées
barometer	baromètres
catch can reader	pluviomètres
compaction measuring device	appareils de mesure de compactage
EC meter	mesureurs de CE
engineer levels	niveaux d'ingénieur
flow meter	débitmètres
gas meter	compteurs de gaz
gauges	jauges
GPS	système de positionnement global
hygrometer	hygromètres
laser distance measure	rubans à mesurer au laser
levels (various types)	niveaux (différents modèles)
light meter	posemètres
graduated cylinders (metric/imperial)	pot-verseurs gradués (métrique et impérial)
measuring wheel	roues d'arpentage

Measuring Equipment / Équipement de mesure (*continued / suite*)

moisture metre/sensor	humidimètres/sondes d'humidité
monitoring devices	dispositifs de surveillance
pH meter	pH-mètres
scale ruler	règles triangulaires
scales	balances
soil tester	analyseurs de sol
measuring tape	rubans à mesurer
tension meter	tensiomètre
thermometer	thermomètres
timers & controllers	minuteries et contrôleurs
tire pressure meter	manomètres pour pneus
tree caliper	compas forestier
volt meter/multimeter	voltmètres/multimètres
water meter	compteurs d'eau

Motorized Equipment / Équipement motorisé

air compressor	compresseurs à air
all-terrain vehicles	véhicules tout-terrain
backhoe	pelles rétrocaveuses
baggers	ensacheuses
bale breaker	brise-balles
bed edger	bordures de parterre
blender (power)	mélangeurs
blower trucks	camions souffleurs
blowers (various types)	souffleurs à feuilles (différents modèles)
brush cutter	débroussailleuses
chipper	déchiqueteuses
circulation/exhaust fans	ventilateurs de recirculation et d'extraction
clearing saw	scies d'éclaircissage
compactor (various types)	plaques vibrantes (différents modèles)
conveyor belt	courroies transporteuses
dollies	diables
edgers	coupe-bordures
excavator	excavatrices
fertilizer injector	injecteurs d'engrais
flat deck truck	camions à plateforme
flat filler	chargeurs
fork lift	lève-palettes
front end loader	chargeuses à godet
generators	génératrices
golf carts	voiturettes de golf
guillotine under hand tools	dispositifs à coupe transversale
hedge trimmer (various types)	taille-haies (différents modèles)
hydro-seeding equipment	hydro-semoirs
lifts (various types)	chariots élévateurs (différents modèles)
loaders(front end, pay)	chargeuses (frontales/à benne frontale)
mechanical rototillers	motoculteurs à fraise rotative
mortar mixer	mélangeurs de mortier
mower (various types)	tondeuses (différents modèles)
mulcher	rouleau rayonneur et herse canadienne combinés
paddle broom	balais électriques
pallet jacks	transpalettes à main
peat shredder	déchiqueteuses de tourbe
pipe puller	charrue enfouisseuse vibrante

Motorized Equipment / Équipement motorisé (*continued / suite*)

pneumatic hammer	marteaux pneumatiques
post hole auger	bêches tarières
post pounders	pilons à poteaux
pot filler	empoteuses
potting machines	machines à rempoter (différents modèles)
dethatchers (various types)	déchaumeuses mécaniques
power rake	râteaux rotatifs
powered rollers	rouleaux à gazon motorisés
powered wheelbarrow	brouettes motorisées
pressure washer	nettoyeurs à haute pression
pumps	pompes
rototiller	motoculteurs
shredder (various types)	déchiqueteuses (différents modèles)
skid-steer (various types)	chargeuses à direction à glissement (différents modèles)
slit seeder	semoirs-scarificateurs
sod cutter	déplaqueuses à gazon
soil screener	blutoirs de terre
steam cleaners	nettoyeuses à jet de vapeur
sterilizers	stérilisateurs
tractors	tracteurs
tree gantry	supports à arbre
tree spades	machines à transplanter les arbres
trencher	trancheuses
trimmers (various types)	coupe-bordures (différents types)
trucks	camions
vehicles with blades	véhicules équipés de pelles
walk behinds (various types)	équipement poussé (différents modèles)
walk-behind aerator	aérateurs de gazon poussés
walk-behind snowblower	souffleuses à neige poussées

Equipment Attachments / Accessoires pour équipement

aerator	aérateurs de gazon
auger/post hole digger	tarières/bêches tarières
back hoe	pelles rétrocaveuses
blade	socs
bucket (various types)	godets (différents modèles)
cultivator (various types)	cultivateurs (différents modèles)
de-thatcher	déchaumeuses
fertilizer spreader	épandeurs d'engrais
flat deck	plateformes
forks	fourches
graders (various types)	niveleuses (différents types)
grapple	grappins
ladders	échelles
landscape rake	râteaux de paysagement
leaf vacuum	aspirateurs de feuilles
loaders	chargeuses
mower baggers	tondeuses ensacheuses
mowers	faucheuses
overseeder	sursemis
plough	charrues
power sweeper	balayeuses industrielles
rollers	rouleaux

Equipment Attachments / Accessoires pour équipement (*continued / suite*)

seeders	semoirs
snow equipment (various types)	souffleuses à neige (différents modèles)
spray equipment	équipement pour pulvérisation aérienne
spreader	épandeurs
top dresser	distributeurs d'engrais
tow behind dethatcher	déchaumeuses à remorquer
tow behind trencher	cureuses à remorquer
trailer	remorques
tree dollies	diables horticoles
tree spade	machines à transplanter des arbres
u-blade	lames en U
vacuum	aspirateurs
water tanker	camions-citernes

PPE and Safety Equipment / Équipement de protection individuelle et de sécurité

chaps/ballistic pants	jambières de cuir/pantalons ballistique
chemical suit	combinaisons protectrices contre les produits chimiques
ear protection	bouchons d'oreille
eye protection (various types)	protecteurs oculaires (différents modèles)
eye wash kit	trousses de rinçage oculaire d'urgence
face shields	écrans faciaux
fall protection equipment	amortisseurs de chute (harnais)
fire extinguisher	extincteurs
first aid kits	trousses de premiers soins
flares	fusées éclairantes
gloves	gants
hard hat	casques de sécurité
hearing protection	dispositifs de protection anti-bruit
high visibility clothing	vêtements à haute visibilité
respiratory protections	appareils respiratoires
safety boots or shoes	bottes ou chaussures de sécurité
safety vests	gilets de sécurité
scabbard/protective sheath	fourreaux/gaines de recouvrement
skin protection	équipement de protection de la peau
spill kit	trousses de lutte contre les déversements
sun hat	chapeaux de soleil
sunblock	écrans solaire
traffic cones	cônes de signalisation
ventilation fans	ventilateurs

APPENDIX C
GLOSSARY / GLOSSAIRE

Note: a Canadian plant list approved and kept up-to-date by the Canadian Nursery and Landscape Association can be obtained by visiting their website (https://cnla.ca/learn/national-plant-list/) or contacting the association.

abiotic factors	non-living condition or thing, such as climate or habitat, that influences or affects an ecosystem and the organisms in it	**facteur abiotique**	condition ou élément non vivant, comme le climat ou l'habitat, qui influence un écosystème et les organismes qui y vivent, ou qui nuit à ces derniers
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	**seuil d'action**	avant de prendre des mesures de lutte antiparasitaire, la lutte antiparasitaire intégrée établit un seuil d'action, un point où les populations de parasites ou les conditions environnementales indiquent qu'une mesure de lutte contre les parasites doit être prise; l'observation d'un seul parasite ne signifie pas toujours qu'il est nécessaire de mettre en œuvre les mesures de lutte; il est essentiel de connaître le niveau à partir duquel les parasites deviennent une menace économique pour guider les futures décisions en matière de lutte antiparasitaire.
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	**aération**	processus par lequel l'air de l'atmosphère est amené à circuler dans le sol; on y a normalement recours pour compenser la perte de macropores à la suite d'un compactage.

aggregates	broad category of coarse particulate material used in landscape construction, including sand, gravel, crushed stone, slag, recycled concrete etc.	**agrégat**	vaste catégorie de matériaux particulaires grossiers utilisés dans la construction d'aménagements paysagers, comprenant du sable, du gravier, de la pierre concassée, des scories, du béton recyclé, etc.
annual	plant that completes its life cycle, from germination to the production of seed, within one year, and then dies.	**plante annuelle**	plante qui complète son cycle de vie, de la germination à la production de graines, en un an, et qui fane ensuite.
anti-desiccants	compounds applied to plants to reduce dehydration.	**agents antitranspirants**	composés appliqués sur les plantes afin de diminuer la déshydratation.
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.	**mettre en tontines**	préparation pour la transplantation d'arbres, d'arbustes ou d'autres végétaux pour laquelle les racines demeurent couvertes par une motte de terre entourée d'une toile de jute, parfois renforcée d'une corde ou d'un panier en treillis.
bedding materials	layer of material placed over a compacted base on which interlocking/segmental pavers will be installed.	**matériaux de lit de pose**	couche de matériau placée sur une base compacte sur laquelle est installé du pavé uni ou sectionnel.
biennial	flowering plant that takes two years to complete its biological lifecycle.	**plante bisannuelle**	plante florale qui prend deux années pour compléter son cycle biologique.
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.	**biodiversité**	variabilité chez les organismes vivants sur la Terre, y compris la variabilité au sein des espèces et entre ces dernières ainsi qu'au sein des écosystèmes et entre ces derniers; terme dérivé de « diversité biologique ».
biome	a large naturally occurring community of flora and fauna occupying a habitat.	**biome**	grande communauté naturelle de faune et de flore occupant un habitat.

bioswales	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.	**rigoles écologiques**	éléments de l'aménagement paysager conçus pour enlever le limon et la pollution de l'eau provenant du ruissellement des eaux de surface ; il s'agit d'une couche drainante creuse dont les côtés sont légèrement inclinés et qui est remplie de végétation, de compost ou d'enrochement.
biotic factors	living thing that influences or affects an ecosystem.	**facteur biotique**	espèce vivante qui a une incidence sur un écosystème ou qui l'influence.
blue infrastructure	landscape elements which are linked to water such as pools, ponds and pond systems, wadis, artificial buffer basins or water courses.	**infrastructure bleue**	éléments de l'aménagement paysager reliés à l'eau, comme les piscines, les étangs et les systèmes d'étangs, les oueds, les bassins tampons ou les cours d'eau.
botany	scientific study of plants, including their physiology, structure, genetics, ecology, distribution, classification, and economic importance.	**botanique**	étude scientifique des végétaux, comprenant leur physiologie, leur structure, leur écologie, leur distribution, leur classification et leur importance économique.
brown field reclamation	redevelopment of abandoned, vacant, derelict or underutilized commercial and industrial properties where past actions have resulted in actual or perceived contamination.	**remise en état des zones désaffectées**	réaménagement des propriétés commerciales et industrielles abandonnées, inoccupées ou sous-utilisées où les actions qui y étaient exercées ont laissé une contamination réelle ou probable.
bud	small lateral or terminal protuberance on the stem of a plant that may develop into a flower, leaf, or shoot.	**bourgeon**	petite protubérance latérale ou terminale sur la tige d'une plante qui pourrait devenir une fleur, une feuille ou une pousse.

bulbs	underground storage structure that is the resting stage of certain seed plants, particularly perennial monocotyledons, that grows into a new plant when growing conditions are favourable.	**bulbe**	structure de réserve souterraine qui représente le stade de réserve de certaines plantes porte-graines, plus particulièrement les monocotylédones vivaces, qui poussent pour devenir une nouvelle plante lorsque les conditions de culture sont favorables.
calibrate	the process of measuring products and adjusting components in order to deliver the desired volume. (Used for sprayers and fertilizer spreaders).	**étalonner**	processus de mesure des produits et de réglage des composantes afin d'obtenir le volume désiré (utilisé pour les pulvérisateurs et les épandeurs d'engrais).

Canadian Landscape Standard (CLS)	The purpose of the CLS is to document acceptable Canadian landscape construction practices as agreed upon by the Canadian Society of Landscape Architects, the Canadian Nursery Landscape Association, government authorities and other industry associations. The CLS sets guideline and makes recommendations for all major aspects of the landscape industry. It is intended that the CLS will set guidelines for landscape construction projects across Canada. It is intended for use by anyone who specifies landscape work, including landscape architects, landscape designers, municipal parks, planning departments, procurement departments, and allied organizations. It is intended for landscape contractors to support them in the bid process. Furthermore, it supports industry related educational and training programs. Although the standard is not a specification, it will help streamline the specification writing process by referencing one nationally recognized industry standard.	**Norme canadienne du paysage**	Le but de cette norme est de documenter les pratiques acceptables des travaux d'aménagement paysager du Canada, telles que convenues par L'Association des Architectes paysagistes du Canada (l'AACP), l'Association canadienne des pépiniéristes et des paysagistes (l'ACPP), les autorités gouvernementales ainsi que d'autres associations de l'industrie. Cette norme établit des lignes directrices et propose des recommandations relativement à tous les principaux aspects de l'industrie de l'aménagement paysager. L'intention de la Norme canadienne du paysage est d'établir des lignes directrices pour les projets d'aménagement paysager à travers le Canada. Elle est destinée à être utilisée par toute personne qui établit les exigences des travaux d'aménagement paysager, dont les architectes paysagistes, les concepteurs-paysagistes, les parcs municipaux, les services de planification, les services d'approvisionnement et des organisations connexes. Elle est destinée aux entrepreneurs paysagistes pour les assister dans le processus de soumission. De plus, elle appuie des programmes d'éducation et de formation reliés à l'industrie. Bien que la norme ne constitue pas une spécification, elle vous aidera à rationaliser le processus de rédaction des spécifications en faisant référence à une norme de l'industrie reconnue au niveau national.

canker	localized diseased or necrotic area on a trunk, branch, or twig of a woody plant, usually caused by fungi or bacteria.	**chancre des arbres**	zone malade ou nécrotique localisée sur un tronc, une branche ou une brindille d'une plante ligneuse, généralement causée par un champignon ou une bactérie.
canopy raising	removal of lower branches from the tree crown to provide understorey clearance.	**élévation du couvert forestier**	suppression des branches plus base du collet de l'arbre afin de dégager le sous-étage.
capstone	one of a set of slabs on the top of a wall or structure.	**pierre de couronnement**	élément d'un ensemble de dalles sur le dessus d'un mur ou d'une structure.
carbon capturing	trapping carbon emissions and storing them away from the atmosphere to prevent global warming.	**capture de dioxide de carbone**	capter les émissions de carbone et les stocker loin de l'atmosphère afin de prévenir le réchauffement climatique.
catch basins	receptacle or reservoir that receives surface water runoff or drainage.	**puits de captation**	réceptacle ou le réservoir qui recueille l'écoulement de surface ou le drainage de l'eau de surface.
change orders	written order approved by a project owner directing the contractor to change contract amount, requirements, or time.	**ordre de modification**	ordre écrit approuvé par un maître d'ouvrage qui indique à l'entrepreneur de changer le montant, les exigences ou les calendriers du contrat.
chemical	any basic substance that is used in or produced by a reaction involving changes to atoms or molecules.	**produit chimique**	substance basique utilisée dans une réaction ou produites par cette dernière pendant laquelle des atomes ou des molécules sont modifiés.
circle check	a circle check is 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.	**inspection sommaire**	inspection visuelle, parfois physique, d'une pièce d'équipement (p. ex., camion, remorque, chariot élévateur à fourche, etc.), ce qui implique de marcher autour de l'équipement pour veiller à ce qu'il n'y ait pas de problèmes de sécurité.

climate control	is the process of producing particular environmental conditions to regulate the growing environment such as temperature, ventilation and humidity.	**régulation du climat**	processus de production de conditions environnementales précises afin de réguler l'environnement de culture, comme la température, la ventilation et l'humidité.
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. (greenhouse, cold storage facilities etc.).	**systèmes de régulation du climat**	systèmes ajustables installés pour cultiver les végétaux avec une efficacité optimale; ils contrôlent le climat intérieur, y compris la lumière, la température, le renouvellement d'air, l'humidité et la concentration de CO_2 (serres, entrepôts frigorifiques, etc.).
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.	**codes**	normes de sécurité auxquelles les technologies et les techniques de construction doivent répondre; celles-ci doivent être conformes aux codes municipaux, provinciaux et fédéraux comme les codes de l'électricité, du bâtiment, de plomberie, de prévention contre les incendies, etc.
companion planting	close planting of different plants that enhance each other's growth or protect each other from pests.	**compagnonnage des plantes**	plantation rapprochée de différentes plantes qui améliorent leur croissance réciproque ou qui se protègent les unes les autres des parasites.
compost	decayed organic material used as a soil conditioner, amendment or plant fertilizer.	**compost**	matière organique décomposée utilisée comme un revitalisant du sol, un amendement du sol ou un engrais pour les plantes.
concrete	mixture of gravel, sand, cement, and water that can be spread or formed and forms a stone-like mass upon hardening.	**béton**	mélange de gravier, de sable, de ciment et d'eau qui peut être étendu ou formé, et qui devient une masse similaire à une pierre lorsqu'il a durci.

confined space	is a space that is not both designed and constructed for continuous human occupancy, has limited access and may cause atmospheric and ventilation hazards for workers.	**espace clos**	espace qui n'est pas conçu ni construit aux fins d'occupation humaine, qui a un accès limité et qui pourrait représenter des dangers atmosphériques et de ventilation pour les travailleurs.
coniferous	mostly needle-leaved or scale-leaved, chiefly evergreen, cone-bearing gymnospermous plants of the order Coniferales, such as pines, spruces, and firs.	**conifères**	principalement des arbres ou des arbustes gymnospermes à feuillage généralement persistant en aiguilles ou en écailles, à tronc conique, de l'ordre des conifférales. L'ordre comprend le pin, l'épinette et le sapin.
contaminant	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.	**contaminants**	substance biologique, chimique, physique ou radiologique (normalement absente de l'environnement) qui, en concentration suffisante, peut nuire aux organismes vivants par l'entremise de l'air, de l'eau, du sol ou des aliments.
contract	an agreement between two parties to perform work or provide goods, including an agreement or order for the procurement of supplies or services.	**contrat**	accord entre deux parties pour effectuer un travail ou fournir des biens, y compris un accord ou un ordre pour l'approvisionnement de fournitures ou de services.
corm	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.	**corme**	organe de stockage rond et souterrain présent dans les plantes comme les crocus, les glaïeuls et les cyclamens, qui est un renflement charnu à la base de la tige couverte de minces feuilles externes en forme d'écailles; les cormes diffèrent des bulbes par le fait qu'ils ont plus de tissus caulinaires et moins de feuilles en forme d'écailles.

cropping schedule	schedule to grow plants to marketable size at the right time of year.	**calendrier de récolte**	calendrier pour cultiver les plantes afin qu'elles atteignent une taille commercialisable au bon moment de l'année.
cultivar	a plant variety that has been produced in cultivation by selective breeding.	**cultivar**	variété de plantes qui a été produite dans une culture au moyen de la reproduction sélective.
cultivation	the planting, tending, improving, or harvesting of crops or plants; or the preparation of ground to promote plant growth.	**culture**	plantation, les soins, l'amélioration ou la récolte des cultures ou des plantes; ou la préparation du sol pour promouvoir la croissance des plantes.
cut-and-fill	adding or removing to achieve grade whereby the amount of material from cuts roughly matches the amount of fill needed.	**déblai et remblai**	mettre ou enlever des matériaux pour obtenir le niveau voulu lorsque la quantité de matériau déblayée est relativement la même que la quantité de matériau remblayée.
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.	**boutures**	technique, aussi connue sous le nom de reprise ou de clonage, pour les plantes à multiplication végétative (asexuelles) pendant laquelle une partie de la tige ou de la racine de la plante mère est placée dans un milieu convenable pour pousser.
deadhead	remove spent flower heads from a plant to encourage further blooming.	**enlever les éléments morts**	enlever les têtes florales mortes d'une plante afin d'encourager la floraison.
deciduous	trees, shrubs, and herbaceous perennials that shed their leaves for part of the year due to dormancy.	**à feuilles caduques**	se dit des arbres, arbustes et vivaces herbacées qui perdent leurs feuilles pendant une partie de l'année appelée phase de dormance.
defoliation	to strip (a tree, bush, etc.) of leaves.	**défoliation**	enlever les feuilles (d'un arbre, d'un arbuste, etc.).

desiccation	drying out of a living organism, such as when plants are exposed to sunlight or drought.	**dessiccation**	dessèchement d'un organisme vivant, comme lorsque les plantes sont exposées aux rayons du soleil ou à une sécheresse.
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.	**principes de conception**	incluent les principaux éléments en matière de répétition, de variété, d'équilibre, d'emphase, de séquence (rythme) et d'échelle qui s'appliquent à la qualité d'une conception.
dethatch	mechanical removal from a lawn of the layer of dead turfgrass tissue known as "thatch."	**déchaumer**	suppression mécanique de la couche de gazon mort sur une pelouse, également appelé « chaume ».
dichotomous key	analytical guide to the identification of plants, based on the use of contrasting characters to subdivide a group under study into branches.	**clé de détermination**	guide analytique pour identifier les plantes, selon l'utilisation de caractéristiques contrastées pour subdiviser un groupe à l'étude en sections.
disease	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.	**maladie**	croissance anormale ou dysfonctionnement d'une plante, causé par une interruption des cycles de vie normaux d'une plante; les maladies peuvent être causées par des facteurs biotiques ou abiotiques.
dormancy	period in an organism's life cycle when growth and development are temporarily stopped, in part, due to low temperatures that slow chemical activity.	**dormance**	période du cycle de vie d'un organisme au cours de laquelle la croissance et le développement sont temporairement et partiellement arrêtés en raison de basses températures qui ralentissent l'activité chimique.
ecosystem	biological community of interacting organisms and their physical environment.	**écosystème**	communauté biologique d'organismes qui interagissent et leur environnement physique.

efflorescence	white powdery substance on the surfaces of unsealed concrete caused by migrating vapour bringing soluble salts to the surface.	**efflorescence**	substance poudreuse blanche sur les surfaces de béton non scellé causée par la vapeur migratrice qui entraîne les sels solubles à la 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.	**conductivité électrique (CE)**	mesure commune de la salinité du sol, qui indique la capacité d'une solution aqueuse à transmettre un courant électrique; il s'agit d'une mesure indirecte qui correspond très bien à plusieurs propriétés physiques et chimiques du sol.
environmental stewards	individuals who responsibly use and protect the natural environment through conservation and sustainable practices.	**responsables en matière de gérance environnementale**	personnes qui utilisent de façon responsable l'environnement naturel et qui le protègent au moyen de pratiques de conservation et de pratiques durables.
fertigation	application of fertilizers, soil amendments, or other water soluble products through an irrigation system.	**fertirrigation**	application d'engrais, d'amendements du sol ou d'autres produits solubles dans l'eau au moyen d'un système d'irrigation.
fertilizer	a chemical or natural substance added to soil or land to increase its productivity.	**engrais**	substance chimique ou naturelle ajoutée à la terre ou au sol afin d'accroître sa productivité..
filtration systems	process of filtering liquids or gases, such as air, through a filter in order to remove solid particles.	**systèmes de filtration**	processus de filtration des liquides ou des gaz, comme l'air, au moyen d'un filtre afin d'éliminer les particules solides.

foot baths	a tub or mat containing disinfectants to provide sanitation protection of the footwear of all workers/visitors entering growing area to prevent the introduction of soil-borne pests and diseases from contaminating crops.	**pédiluves**	bassins ou tapis contenant des désinfectants qui fournissent une protection en matière d'assainissement pour les chaussures pour tous les travailleurs et les visiteurs entrant dans les régions de culture afin d'éviter d'introduire des parasites et des maladies terricoles qui pourraient contaminer les cultures.
gall	abnormal outgrowths of plant tissues caused by many living organisms living on plants including insects, mites, fungi, parasites, and bacteria.	**galle**	excroissances anormales des tissus d'une plante causées par plusieurs organismes vivants sur les plantes, y compris les insectes, les acariens, les champignons, les parasites et les bactéries.
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.	**géotextiles**	tissus synthétiques perméables, qui, lorsqu'utilisés avec le sol, ont la capacité de séparer, de modifier le drainage, de filtrer, de renforcer, de protéger ou drainer, et de servir d'obstacles aux mauvaises herbes.
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.	**germination**	processus par lequel une plante croît à partir d'une semence, Par exemple, la germination de semis à partir de la semence d'une angiosperme ou d'une gymnosperme et la croissance d'un hyphe à partir de spores fongiques.
grades	specified elevations of existing terrain or base.	**pentes**	élévations précises du niveau ou du terrain existant.

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.	**nivellement**	travail d'altération d'un terrain, d'une base, d'une élévation ou d'une pente existants afin de respecter les spécifications des travaux comme une fondation, une base, un élément d'aménagement paysager ou un drainage de surface.
green infrastructure	planned and managed technologies that mitigate 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, rainwater and stormwater management systems and permeable hard surfaces.	**infrastructure écologique (verte)**	technologies planifiées et gérées qui réduisent la pollution et fournissent des écosystèmes qui soutiennent un environnement sain. L'infrastructure écologique prend bien des formes, dont les suivantes : les forêts urbaines, les aires naturelles, les voies vertes, les ruisseaux et les zones riveraines, les prairies et les terres agricoles, les toits et les murs écologiques, les parcs, les jardins et les espaces aménagés, les jardins communautaires et d'autres espaces verts, les jardins pluviaux, les rigoles de drainage biologiques, les marais artificiels, les systèmes de gestion des eaux pluviales et des eaux d'orages et les surfaces dures perméables.
green roof	a green roof system is an improvement of an existing roof which includes a water proofing and root repellant system, a drainage system, filter cloth, a lightweight growing medium and plants that can provide building owners and municipalities with a return on investment.	**toit écologique (vert)**	amélioration d'un toit existant qui comprend un système d'étanchéité et anti-racines, un système de drainage, une toile filtrante, un milieu de culture léger et des plantes qui peuvent offrir aux propriétaires des immeubles et aux municipalités un rendement du capital investi.

grey infrastructure	includes traditional roads, stormwater management including pipes and sewers, utilities and buildings.	**infrastructure grise**	comprend les routes traditionnelles, la gestion des eaux pluviales, y compris les tuyaux et les égouts, les services publics et les immeubles.
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.	**milieu de culture**	matériau dans lequel la plante est cultivée, qui a trois principales fonctions : fournir des éléments nutritifs, de l'air et de l'eau aux racines; soutenir la croissance maximale des racines et soutenir physiquement la plante.
growth habits	general appearance, form (shape) and manner of growth of a plant.	**habitudes de croissance**	apparence générale, forme et façon de croître d'une plante.
guy	cable designed to add stability to a tree or free-standing structure.	**hauban**	câble conçu pour ajouter de la stabilité à un arbre ou une structure autoportante.
hardiness	describes a plant's ability to tolerate and survive adverse growing conditions such as cold, heat, drought, flooding, or wind.	**rusticité**	capacité d'une plante à tolérer des conditions de culture défavorables comme le froid, la chaleur, la sécheresse, les inondations ou le vent, et à y survivre.
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.	**éléments inertes**	composants de la conception et de la construction de tout projet d'aménagement paysager par rapport à la variété de matériaux utilisés, comme la brique, la pierre, le bois, les métaux ou tout autre matériau naturel ou fabriqué, dans la construction de l'aménagement créé; on y inclut les rues, les allées, les structures, les murs, les infrastructures des rues, les piscines et les fontaines, les foyers intérieurs et extérieurs, etc.

heading	cutting back the terminal portion of a branch to a bud. A term whose subcategories include "topping" and "pollarding."	**rabattage**	couper le bout d'une branche pour obtenir une bouture; il s'agit d'un terme dont les sous-catégories incluent « l'écimage » et « l'émondage ».
herbaceous	plants or plant parts that are fleshy as opposed to woody and that dies back to the ground at the end of each growing season.	**herbacées**	plantes ou parties d'une plante qui sont charnues plutôt que ligneuses et qui, à la fin de chaque saison de culture, meurent en tombant au sol.
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.	**lutte antiparasitaire intégrée (LAI)**	approche à la planification et à la gestion des parasites qui utilise une combinaison de méthodes culturelles, biologiques, mécaniques et chimiques pour réduire les populations de parasites à des niveaux acceptables et avec le moins de perturbations possible pour l'environnement, à commercer par la mesure de contrôle la moins toxique.
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.	**espèces envahissantes**	plantes non indigènes qui ont la capacité d'envahir les zones agricoles et naturelles, qui peuvent causer d'importants dommages à l'économie et à l'environnement du Canada et qui, parfois, peuvent représenter un danger pour la santé humaine.
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.	**régulateurs d'irrigation**	dispositif utilisé pour faire fonctionner les systèmes d'irrigation automatiques, comme les arroseurs de pelouse et les systèmes d'irrigation par goutte à goutte, et avec lequel peut être fixé la fréquence de l'irrigation, l'heure de début et la durée de l'arrosage.

irrigation systems	automated systems that deliver and distribute water to the landscape and horticultural crops (greenhouse and nursery), for the purpose of growing and maintaining moisture during periods of inadequate rainfall. Components of these systems typically include sprinklers, nozzles, controllers, bubblers, drip emitters, valves, backflow prevention, pipe etc.	**systèmes d'irrigation**	systèmes automatisés qui apportent et distribuent de l'eau à l'aménagement paysager et aux cultures horticoles (serre et pépinière), aux fins de culture et du maintien de l'humidité du sol pendant les périodes où les pluies sont insuffisantes; les composants de ces systèmes comprennent généralement des arroseurs, des buses, des contrôleurs, des barboteurs, des goutteurs, des vannes, des dispositifs antirefoulement, des tuyaux, 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.	**produits de jointoiement**	composants utilisés pour combler l'espace entre des pavés adjacents et les pierres des murs. Ils peuvent également être liés ou non liés; ces matériaux incluent le sable, le sable polymérique, le mortier de ciment Portland, le mortier de résine, etc.
layering	propagation method by which a branch/shoot takes root while still attached to the parent plant.	**marcottage**	méthode de multiplication par l'entremise de laquelle une branche ou une pousse s'enracine alors qu'elle est toujours attachée à la plante mère.
let-it-lay	leave in place, let lie, take no action, not removing natural debris in forested and natural areas.	**jachère**	laissé au repos, non cultivé, aucun retrait de débris dans les aires forestières et naturelles.
lifts	layers of soil or aggregate fill.	**couches**	étendues de terre ou de remblai d'agrégat.
liming	treatment of soil or water with lime to reduce acidity (increasing pH) and improve fertility or oxygen levels.	**chaulage**	traitement du sol ou de l'eau avec de la chaux afin de réduire l'acidité (augmentam6 le pH) et d'améliorer les niveaux de fertilité ou d'oxygène.

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.	**plans à repiquer**	jeunes plantes immatures conçues pour être cultivées jusqu'à une taille mature dans les pépinières, soit en les repiquant en ligne dans le sol ou en les plantant dans des contenants; elles sont généralement cultivées pendant un an ou deux et sont souvent vendues à racines nues ou dans un petit contenant.
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.	**exigences de distribution des charges**	charge distribuée uniformément sur la totalité de la longueur d'une pièce de charpente ou de la surface d'un véhicule, d'une remorque, d'un plancher ou d'un toit et qui s'exprime en poids par longueur ou en poids par surface.
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.	**verrouiller et étiqueter**	procédure de sécurité utilisée pour protéger les travailleurs en étiquetant les outils, les machines et les équipements dangereux et en veillant à ce que les sources d'énergie soient verrouillées afin de prévenir leur utilisation accidentelle ou leur démarrage avant la fin des travaux d'entretien ou de réparation.
low impact development (LID)	planning and engineering design approach to managing stormwater runoff. Its basic principle is modelled after nature. LID's goal is to mimic a site's pre-development hydrology by using design technologies that infiltrate, filter, store, evaporate and detain runoff close to its source.	**développement à faible impact (DFI)**	concept de planification et d'ingénierie pour la gestion des eaux de ruissellement. Le principe fondamental s'inspire de la nature. Le but du DFI est de reproduire l'hydrologie préalable à l'aménagement du chantier à l'aide de méthodes de conception qui permettent aux eaux de ruissellement de s'infiltrer, d'être emmagasinées, de s'évaporer et d'être retenues près de la source.

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.	**microclimat**	conditions climatiques d'une zone précise, incluant la température, la lumière, le vent et l'humidité, qui sont influencées par les murs, les clôtures, les pentes, les élévations, l'exposition et l'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.	**multiplication végétative in vitro**	multiplication des plantes à partir de minuscules parties, cellules ou tissus de plantes qui sont cultivés dans un tube à essai ou un contenant où l'environnement et la nutrition sont rigoureusement contrôlés.
minimum tillage	is a soil conservation system with the goal of minimum soil manipulation. It is a tillage method that does not turn the soil over. It is contrary to intensive tillage, which damages the soil structure.	**labourage minimal**	méthode de conservation du sol qui consiste à le manipuler le moins possible, où le sol n'est pas retourné; et qui est contraire au labourage intensif qui endommage la structure du sol.
morphology	the study of organism structures, including reproductive structures, and also addresses the pattern of development and relationships of these structures as they mature.	**morphologie**	étude des structures des organismes, notamment des structures reproductives, qui porte également sur le type de développement et les relations de ces structures pendant la maturation.
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 reduce weeds, promote the soil microbiome and improve aesthetics	**paillis**	couche d'écorces, de mousse de tourbe, de compost, de feuilles déchiquetées, de foin, de paille, d'accumulations d'herbe coupée, de gravier, de papier, de plastique ou d'un autre matériau étendu sur le sol autour de la base des plantes utilisé avant tout pour réduire les mauvaises herbes, promouvoir le microbiome du sol et améliorer l'esthétique.

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.	**matière organique**	substance organique, comme un engrais d'origine végétale ou animale, pesticide dont le composant actif est un composé organique ou un mélange de composés organiques, ou plante produite à partir d'une culture biologique.
overseed	to spread grass seed on turf or an established lawn to fill in thin or bare spots.	**sursemer**	action d'épandre des graines de graminées sur le gazon ou une pelouse existante afin de combler les espaces dégarnis ou dénudés.
pathogens	biological agent that causes disease or illness to its host by disrupting the normal physiology. Can be a fungus, virus, bacteria or parasite.	**pathogène**	agent biologique qui cause une maladie à son hôte en perturbant sa physiologie normale; l'agent peut être un champignon, un virus, une bactérie ou un parasite.
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.	**mousse de tourbe**	amendement du sol organique et spongieux utilisé pour accroître l'acidité, la quantité de matière organique, l'aération et la rétention d'eau du sol; la mousse de tourbe de sphaigne est considérée comme étant de plus grande qualité par rapport aux autres; la plupart des mélanges sans terre ont de la mousse comme principal ingrédient.
perennial	a non-woody plant which grows and lives for more than two years.	**plante vivace**	plante non ligneuse qui croît et vit pendant plus de deux ans.
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.	**parasite**	toute espèce de plante, d'animal ou d'agent pathogène qui affaiblit la productivité ou la santé des plantes, soit de manière directe en les consommant, soit de manière indirecte en leur transmettant des maladies.

physiology	plant physiology is 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.	**physiologie**	étude des processus vitaux et de l'activité fonctionnelle d'une plante relativement à sa survie, ses activités métaboliques, ses relations hydriques, son métabolisme des minéraux, son développement, ses mouvements, son irritabilité, son organisation, sa croissance et ses processus de transport.
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.	**certificat phytosanitaire**	document, émis par un inspecteur, qui atteste de l'état sanitaire de tous les végétaux et produits végétaux importés au Canada et exportés du Canada; le document contient des renseignements requis par le modèle de certificat phytosanitaire de la Convention internationale pour la protection des végétaux, il est signé par un inspecteur ou un représentant officiel et il porte un sceau officiel de certificat phytosanitaire.
pinching	a form of pruning that encourages branching on the plant.	**pincement**	type de taille qui encourage la formation de branches sur une plante.

plant classification	assignment and identification of organisms to groups and taxonomies 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.	**classification des plantes**	attribution et identification des organismes selon des groupes et des taxonomies dans un système de catégories caractérisées par, notamment, la structure, l'origine, l'adaptation écologique, l'utilisation, les besoins culturaux ou climatiques, les habitudes de croissance et la longévité. Les plantes sont regroupées selon différentes caractéristiques communes afin de nous aider à communiquer les adaptations écologiques et les besoins culturaux similaires.
plant hardiness zone map	the plant hardiness zones 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.	**carte des zones de rusticité**	carte donnant une vue d'ensemble des zones du Canada les plus propices à la survie de différents types d'arbres, d'arbustes et de fleurs, d'après les conditions climatiques moyennes de chaque région et d'après une vaste gamme de facteurs climatiques, dont les températures hivernales minimales, la durée de la période sans gel, les précipitations estivales, les températures maximales, l'enneigement, les pluies de janvier et les vitesses maximales des vents. Au Canada, la carte est divisée en neuf zones principales : de la plus rigoureuse, c'est-à-dire 0, à la moins rigoureuse, c'est-à-dire 8; la légende de la carte indique également des divisions à l'intérieur de chaque zone (p. ex., 4a ou 4b, 5a ou 5b).

plugs	cylinder of medium in which a plant is grown. The term is generally used for seedlings and rooted cuttings.	**motte**	cylindre d'un milieu dans lequel une plante est cultivée. Le terme est généralement utilisé pour les semis et les boutures racinées.
positive drainage	grade that ensures that surface water drains away from all structures on a property so as not to damage structures and buildings on a site nor negative impact on human health.	**drainage dirigé**	pente qui veille à ce que l'eau de surface soit drainée loin de toutes les structures d'une propriété, de façon à ne pas endommager les structures et les bâtiments et à ne pas avoir d'effets négatifs sur la santé humaine.
potting-on	transplanting a plant from a smaller container up to a bigger container in the growing-on process (also called bumping-up).	**empotage**	transplantation d'une plante d'un petit contenant vers un contenant plus gros pendant le processus de 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.	**taille**	coupe sélective et suppression de parties d'un arbre ou d'un arbuste; ce terme englobe un certain nombre de techniques horticoles visant à gérer la croissance et la forme, supprimer le bois mort ou malade, et stimuler la formation de fleurs et de bourgeons à fruit. La taille signifie souvent de couper les branches, parfois supprimer complètement les plus petites branches maîtresses afin de maintenir ou d'améliorer la santé de la plante et sa structure.

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.	**quarantaine**	confinement ou isolement de plantes ou de produits végétaux soupçonnés d'être porteurs d'un agent infectieux, aux fins d'observation et de recherche ou aux fins d'inspection, d'examen ou de traitement plus approfondis pendant une période déterminée, en vue d'empêcher la maladie de se propager.
rainwater management	collection and storage of rainwater (often from rooftops in storage units) for reuse on-site, rather than allowing it to run off. Uses include water for garden, irrigation, domestic use with proper treatment, etc.	**gestion des eaux pluviales**	collecte et stockage des eaux pluviales (souvent à partir des toits, dans des unités de stockage) aux fins de réutilisation sur place, plutôt que de permettre à l'eau de s'écouler; les utilisations incluent l'eau pour arroser le jardin, l'irrigation, l'utilisation domestique à la suite des traitements appropriés, etc.
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.	**remise en état**	processus conçu pour renforcer la santé du sol ou pour le remettre en état, y compris l'entretien d'un pourcentage élevé de matière organique dans les sols, le travail réduit du sol, la biodiversité, le compostage, le paillage et la rotation des cultures pour soutenir un environnement de culture durable.
refugia	area where a population of organisms can survive through a period of unfavourable conditions.	**refuge**	zone où une population d'organismes peut survivre pendant une période de conditions défavorables.

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.	**bassins de rétention**	bassins conçus pour contenir temporairement une quantité fixe d'eau et pour recueillir l'écoulement des zones plus élevées tout en drainant lentement l'eau vers un autre emplacement. Ils sont en partie construits pour lutter contre les inondations lorsque de grandes quantités d'eaux pluviales peuvent causer des crues éclairs.
ribbon tests	simple method used to estimate the percentage of sand, silt and clay in a soil sample.	**analyses de rubans de terre**	méthode simple utilisée pour estimer le pourcentage de sable, de limon et d'argile dans un échantillon du sol.
rootstock	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.	**porte-greffes**	racine ou partie de la racine utilisée pour la multiplication des plantes; en ce qui a trait au greffage, le porte-greffe est la partie d'une plante greffée qui fournit les racines.
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.	**rotation des cultures**	système dans lequel les cultures sont cultivées dans différentes sections d'une parcelle de terrain selon un cycle de trois ou quatre ans afin de favoriser la fertilité du sol, stimuler la production et le rendement économique et minimiser les effets négatifs des parasites et des maladies terricoles.
scarify	to break up and loosen (soil) to a shallow depth. Roughing up the surface of a root ball that has circling roots.	**scarifier**	ameublir et décompacter le sol à une faible profondeur; rendre rugueuse la surface d'une masse racinaire dont les racines sont enroulées.
scion wood	short length of stem, taken from one plant, which is then grafted onto the rootstock of another plant.	**scion**	courte partie de tige, prélevée d'une plante, qui est ensuite greffée sur le porte-greffe d'une autre plante.

silt fencing	temporary sediment control device used on construction sites to protect water quality in nearby streams, rivers, lakes and seas from sediment (loose soil) in stormwater runoff.	**clôture anti-érosion**	dispositif de blocage temporaire des sédiments utilisé dans les chantiers de construction pour protéger la qualité de l'eau des cours d'eau, des rivières, des lacs et des mers proches des sédiments (terre meuble) lors du ruissellement des eaux d'orages.
site assessment	site assessment includes identifying the existing inventory of elements and features including roads, neighbouring properties, soil type, drainage, microclimate, compaction, slopes, waterways, existing plants, wildlife, utilities and hazards, access and security requirements etc.	**évaluation du chantier**	évaluation qui implique de dresser la liste des éléments existants et des caractéristiques, notamment les routes, les propriétés avoisinantes, le type de sol, le drainage, le microclimat, le compactage, les pentes, les voies navigables, les plantes existantes, les animaux sauvages, les services publics et les dangers, ainsi que les exigences en matière d'accès et de sécurité, 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.	**plan des services souterrains du chantier**	illustre l'emplacement des services publics souterrains existants du site sur une propriété, chantier les câbles pour les télécommunications, la distribution d'électricité, le gaz naturel, la câblodistribution, la fibre optique, les feux de circulation, les lampadaires, les collecteurs d'eaux d'orages, les conduites maîtresses et les conduites des eaux usées. Dans certains emplacements, les principales conduites de pétrole et de gaz, les câbles de télécommunication de la défense nationale, le transport en commun, ainsi que les tunnels ferroviaires et routiers peuvent également compétitionner pour de l'espace souterrain.

smart water technology	irrigation best management practices and components that address landscape needs without overwatering.	**technologie de gestion intelligente de l'eau**	pratiques exemplaires en gestion de l'irrigation, et les composants qui répondent aux besoins des aménagements paysagers sans les arroser excessivement.
sod	carpet-like sheets of turf that are laid over prepared soil to establish new lawns. Many types of grasses are available.	**gazon en plaques**	plaques de pelouse semblables à du tapis qui sont déposées sur de la terre préparée afin de faire de nouvelles pelouses; de nombreux types de graminées sont disponibles.
softscape	parts of a landscape that comprise and support living material such as flowers, plants, grass, trees, soil, mulch, etc.	**éléments naturels de l'aménagement paysager**	parties d'un aménagement paysager qui comprennent et soutiennent des végétaux vivants, par exemple, les fleurs, les plantes, le gazon, les arbres, la terre, le paillis, etc.
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.	**amendements du sol**	matériaux ajoutés à un sol ou à un milieu afin d'améliorer ses propriétés physiques, comme la rétention d'eau, la perméabilité, l'infiltration de l'eau, le drainage, l'aération et la structure, et d'ainsi accroître la production.
soil texture	soil texture is a qualitative classification tool used in both the field and laboratory to determine classes for soils based on their physical texture.	**texture du sol**	outil de classification qualitatif utilisé sur le terrain et en laboratoire pour déterminer les classes des sols à partir de leur texture physique.

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.	**effritement**	perte d'un fragment, d'un éclat ou d'une écornure, généralement sous la forme d'une écaille ou d'apparence piquée, qui se détache du bord ou de la surface d'un pavé ou du béton en raison d'un coup ou d'une force soudaine, de l'action des conditions météorologiques ou de la pression; l'effritement est généralement causé par une mauvaise installation ou par des facteurs météorologiques.
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.	**spécifications**	énoncé précis des renseignements ou documents légaux qui définissent les exigences qualitatives détaillées pour les produits, les matériaux et la qualité de l'exécution, et sur lesquelles le contrat pour la construction est fondé.
spill containment	where spills of chemicals, oils, sewage etc. are contained within a barrier or drainage system rather than being absorbed.	**confinement des déversements**	lorsque les déversements de produits chimiques, de pétrole, d'eaux usées, etc. sont confinés par des barrières ou un système de drainage plutôt que d'être absorbés.
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.	**équipement de lutte contre les déversements**	matériaux absorbants épandus sur des déversements ou tissus spongieux placés autour des déversements afin de les restreindre; l'équipement peut également inclure de l'équipement protecteur, comme des lunettes et des gants.

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.	**normes**	document élaboré afin d'établir des niveaux de qualité minimums reconnus et acceptés pouvant être reconnu par le propriétaire, l'utilisateur et le consultant pour les matériaux, les produits, les plantes, la conception, les systèmes ou les procédures d'installation; et afin de normaliser ou de simplifier des variables comme les dimensions, les variétés ou d'autres caractéristiques de produits ou de plantes précises afin de minimiser la variation dans la fabrication, la production ou l'utilisation.
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.	**tige**	corps ou axe principal d'une plante ou d'un arbuste, s'élevant généralement du sol, occasionnellement souterrain; il s'agit d'un organe élancé soutenant ou reliant une autre partie de la plante, comme les feuilles ou les fleurs.
stormwater management	stormwater management practices are developed to reduce, control, and prevent stormwater 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.	**gestion des eaux d'orages**	pratiques développées afin de réduire, de contrôler et de prévenir l'écoulement des eaux d'orages au moyen de plusieurs stratégies différentes; ces stratégies varient tant en nature qu'en efficacité et visent à améliorer la qualité de l'eau et à réduire ou limiter les inondations et l'érosion.

structural integrity	ability of an item to hold together under a load, including its own weight, resisting breakage or bending. It ensures that the construction will perform its designed function, during reasonable use, for as long as the designed life of the structure.	**intégrité structurelle**	capacité d'un élément de se maintenir sous une charge, y compris son propre poids, et de résister aux ruptures ou aux pliages; l'intégrité structurelle assure que la construction effectuera sa fonction prévue, pendant une utilisation raisonnable, tout au long de la vie utile de la structure.
subsoil	the stratum of earth or earthy material immediately under surface of topsoil. It contains little or no humus.	**sous-sol**	strate de la terre ou matière terreuse située immédiatement sous la surface de la couche arable; il contient peu ou pas d'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.	**système de drainage souterrain**	processus par lequel l'excès d'eau est dirigé loin des rhizosphères des plantes à l'aide de moyens naturels ou artificiels, comme au moyen d'un système de tuyaux et de drains placés sous le niveau du sol.
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.	**avant-métré**	processus au cours duquel des listes détaillées sont compilées, à partir des dessins et des spécifications, sur l'ensemble des matériaux et de l'équipement requis pour réaliser un projet. Les préposés aux devis utilisent les plans de construction, manuellement ou électroniquement, et commencent à réaliser l'avant-métré des quantités d'articles dont ils auront besoin à partir de ces plans afin de préparer une partie de leur estimation; des exemples d'avant-métrés incluent le nombre de plantes, les mesures linéaires des pavés, les volumes d'agrégat, etc. requis pour compléter le travail.

thinning	selective removal of plants/trees to improve to allow sufficient room for the remaining plants to grow 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.	**éclaircissage**	suppression sélective de plantes ou d'arbres afin de donner suffisamment d'espace aux plantes restantes pour croître type de taille qui enlève une pousse ou une branche entière à son point d'origine afin de revitaliser une plante en enlevant les éléments surmatures, faibles, problématiques et dont la croissance a été excessive; lorsque l'éclaircissage est fait correctement, il encourage la formation de nouvelles pousses qui porteront plus facilement les fruits et les fleurs; il s'agit d'une technique courante pour tailler les rosiers et pour « ouvrir » les branches d'un arbre négligé, ou pour renouveler les arbustes à branches multiples; une plante éclaircie est plus ouverte et peut plus facilement garder sa forme naturelle; l'éclaircissage laisse davantage pénétrer la lumière dans la plante, et les branches et le feuillage intérieurs resteront plus près du centre de l'arbre.
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.	**épandage en surface**	application d'engrais solubles, d'une nouvelle terre ou de compost sur la surface du sol autour d'une plante ou sur des pelouses afin de restaurer les éléments nutritifs et d'améliorer la santé de la plante.

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.	**écimage**	couper la tige verticale (tige principale) et les branches primaires supérieures (branches charpentières) des arbres matures afin d'obtenir une hauteur uniforme; l'écimage est également nommé le rabattage, raboutage ou ravalement.
turf	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.	**gazon**	strate supérieure du sol liée par des graminées et les racines des plantes en un tapis épais Toutes variétés de graminées (comme le pâturin des prés ou l'ivraie vivace) cultivées pour obtenir une pelouse.
vines	plant whose stem requires support and which climbs by tendrils or twining or creeps along the ground.	**vigne**	plante dont la tige a besoin de soutien et qui grimpe en vrilles, en grimpant ou en rampant sur le sol.
wattles	a method of erosion control.	**fascine**	méthode de contrôle de l'érosion.
wetland	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.	**réserves des zones humides**	les zones humides incluent généralement les marécages, les marais, les tourbières et d'autres endroits similaires qui sont protégés et gérés afin de préserver un type d'habitat précis, ainsi que sa flore et sa faune, lesquels sont souvent rares et en voie de disparition.
whip	a slender, un-branched shoot or plant.	**fouet**	pousse ou plante élancée qui n'a pas de branches.
woody	stems or trunks that are hard and thickened rather than soft and pliable and which increase in diameter each year.	**ligneux**	tiges ou troncs durs et épais plutôt que mous et pliables et dont le diamètre augmente chaque année.

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.	**principes de xéropaysage**	conceptions d'aménagements paysagers et concepts d'entretien qui visent à conserver l'eau et à protéger l'environnement. Les sept principes incluent la planification et la conception, l'analyse du sol, les étendues de gazon pratiques, la sélection de plantes appropriées, l'irrigation efficace, l'utilisation de paillis et l'entretien approprié.